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MISSISSIPPI OCEAN POLICY STUDY

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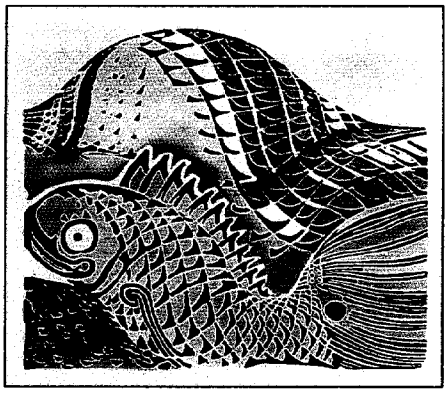

MISSISSIPPI OCEAN POLICY STUDY

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July 1991

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Mississippi-Alabama Sea Grant Legal Program
University of Mississippi Law Center
University, Mississippi

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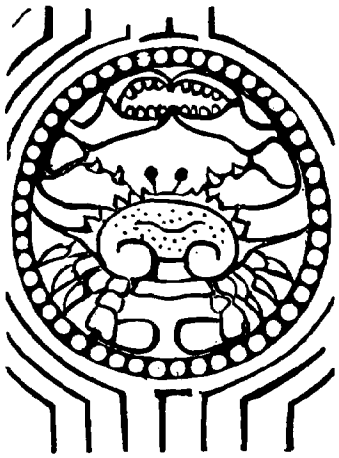
Finally, the authors are indebted to the family of Walter Anderson for allowing us to display that gifted artist's vision of the unique and fragile beauty of the Mississippi Gulf Coast.



INTRODUCTION

"I am greatly impressed with the beauty and value of this coast. The high sandy lands, heavily timbered with pine, and the lovely bays and rivers, from Pearl River to Mobile, will furnish New Orleans with a rich commerce and with a delightful Summer Resort."

This remark was made in 1811 by Dr. William Flood, who was appointed by President James Madison to visit the Mississippi Gulf Coast and claim it as part of the United States. The following years saw the coast develop as Dr. Flood predicted—primarily as a retreat for the city dwellers of New Orleans and Mobile. Eventually, permanent residents settled on Mississippi's coast and began to develop it into a vital commercial area, which today contributes much to the state of Mississippi. However, the ties that were built in the early days between the Mississippi Gulf Coast and its neighbors to the east and west still exist, and in many ways are stronger than those with the rest of its own state to the north.

In fact, although the Mississippi coast has always been an important area to the state, coastal and ocean activities have traditionally played a relatively minor role in Mississippi's cultural, historical, and political heritage. The historical economic dominance of agriculture and forestry ensured that the Mississippi River Delta and central interior regions would become the state's cultural and commercial heartland. Today, even though Mississippi's coastal area contributes hundreds of millions of dollars to the state's economy and is growing faster than any other region, its comparatively small size (the state's three coastal counties contain about 81 miles of ocean coastline) and lack of a major coastal city have limited its ability to influence state policy in coastal and ocean matters. Sustained and effective coastal and ocean policy initiatives are also hindered, to some extent, by chronically underfunded marine management programs and the traditional perception by some who live along the coast that increased governmental activity will stifle economic growth.

Given this climate, it is perhaps not surprising that Mississippi's present institutional framework for ocean management is primarily geared toward the management of single

ocean uses, such as fisheries or offshore oil and gas development. Few formal structural mechanisms exist to promote the integrated and comprehensive management of the state's ocean areas. For example, unlike many coastal states, no government-sponsored coastal and ocean advisory panels, interagency management committees, or citizens' advisory groups are currently in place.

The lack of a coordinated ocean management structure posed relatively few problems in the past. However, in recent years Mississippi's ocean waters have experienced significantly increased environmental degradation and user competition for dwindling ocean resources. A majority of the state's shellfish beds have been conditionally or permanently closed because of contamination from municipal sewage or other pollution sources. Hundreds of tons of plastics and other litter wash up on Mississippi's beaches and barrier islands each year. Oil and hazardous substance spills commonly occur in the state's marine waters, and many believe it is only a matter of time before Mississippi suffers a catastrophic event. As a consequence of federal moratoriums in other parts of the country, extensive offshore energy exploration and drilling in the central Gulf region is likely to continue in coming years, placing additional environmental pressure on the state's marine waters and economic pressure on the resources of coastal communities. Moreover, there is growing animosity between commercial and recreational fishermen as they compete for the same declining stocks of fish.

Many of these problems are regional in scope and require a comprehensive and coordinated response by the Gulf states and the federal government. Ocean resource management involves the reconciliation of a wide spectrum of conflicting uses, jurisdictional claims, and government policies. Effective management of Mississippi's marine areas can only come about if the state develops a comprehensive, coordinated, and long-term ocean management program.

Goals of the Mississippi Ocean Policy Study

In 1989, the Mississippi-Alabama Sea Grant Legal Program received funding from the National Sea Grant Program to produce a preliminary ocean policy study for the state of Mississippi. Patterned after similar studies undertaken in North Carolina, Hawaii, Oregon, and Florida, the study focuses on a number of the major ocean issues facing the state — identifying areas where additional or improved state management initiatives may be warranted. Although this study has received valuable assistance and cooperation from a number of state agencies, it represents an independent effort that has received no official sponsorship from Mississippi state government.

The goals of the Mississippi Ocean Policy Study are slightly different from those of other state studies published to date. Because Mississippi's ocean management infrastructure is at an early stage of development in comparison with most coastal states, the study's primary aim is to encourage the state to adopt an effective ocean management institutional framework, rather than to provide detailed, issue-specific policy recommendations. The study examines specific ocean use issues and identifies unstated or unclear state policies, but solely within the context of developing a working agenda and source of information for future policymakers once an improved management framework has been put into place. Instead of providing recommendations intended for immediate adoption, state policymakers are encouraged to meet

with their constituents to determine what ocean issues are of greatest concern and then to examine the areas identified in greater depth. Implementation of specific recommendations should probably not take place until a more effective ocean management program is adopted. This program should offer, among other measures, an opportunity for experts in the fields of marine science and technology to evaluate policy options, greater citizen participation in the policy-making process, and an improved framework for interagency policy debate and coordination.

Research Methods

Prior to beginning research on the ocean policy study, a survey was developed and mailed to members of the academic, government, and private-sector communities who have special knowledge of Mississippi's ocean and coastal areas. There were two reasons for sending out the survey: first, to learn from those who are most interested in the state's management of its ocean resources whether certain ocean issues were significant enough to warrant discussion in the study; and second, a survey and accompanying letter of explanation was considered the most cost-effective way of informing selected individuals that an ocean policy study was being undertaken and of soliciting their help in reviewing and commenting on draft portions.

More than forty survey responses were received. Generally, every ocean issue that received a rating of "great significance" or "some significance" in at least 75 percent of the responses was included in the study. (For a summary of the survey responses see appendix two.) A few issues that received a lower percentage of response than 75 percent were also addressed because of their close relationship to issues of greater concern.

Organization of the Study

After a brief introductory discussion of the physical and cultural setting of the Mississippi coastal area, the study is divided into eleven major issue areas. The focus and organization of each issue area is varied, but all generally follow the same organizational pattern. The first portion provides background information on the topic, including a discussion of the social, economic, and environmental significance of the issue, as well as an overview of the existing management framework within the national and international context. The second portion discusses each issue as it relates directly to the state of Mississippi. Information is provided on the issue's present status and the role that the state currently plays in its management. The last portion discusses challenges that should be addressed by state policymakers and recommends actions pertaining to areas of special concern. References are provided at the end of each section to assist those who would like to look at a particular ocean issue more closely.

The final section of the study suggests methods for initiating a comprehensive state ocean management program. Model legislation is provided that includes provisions for the establishment of an advisory body to act as a leading policy voice in this effort.

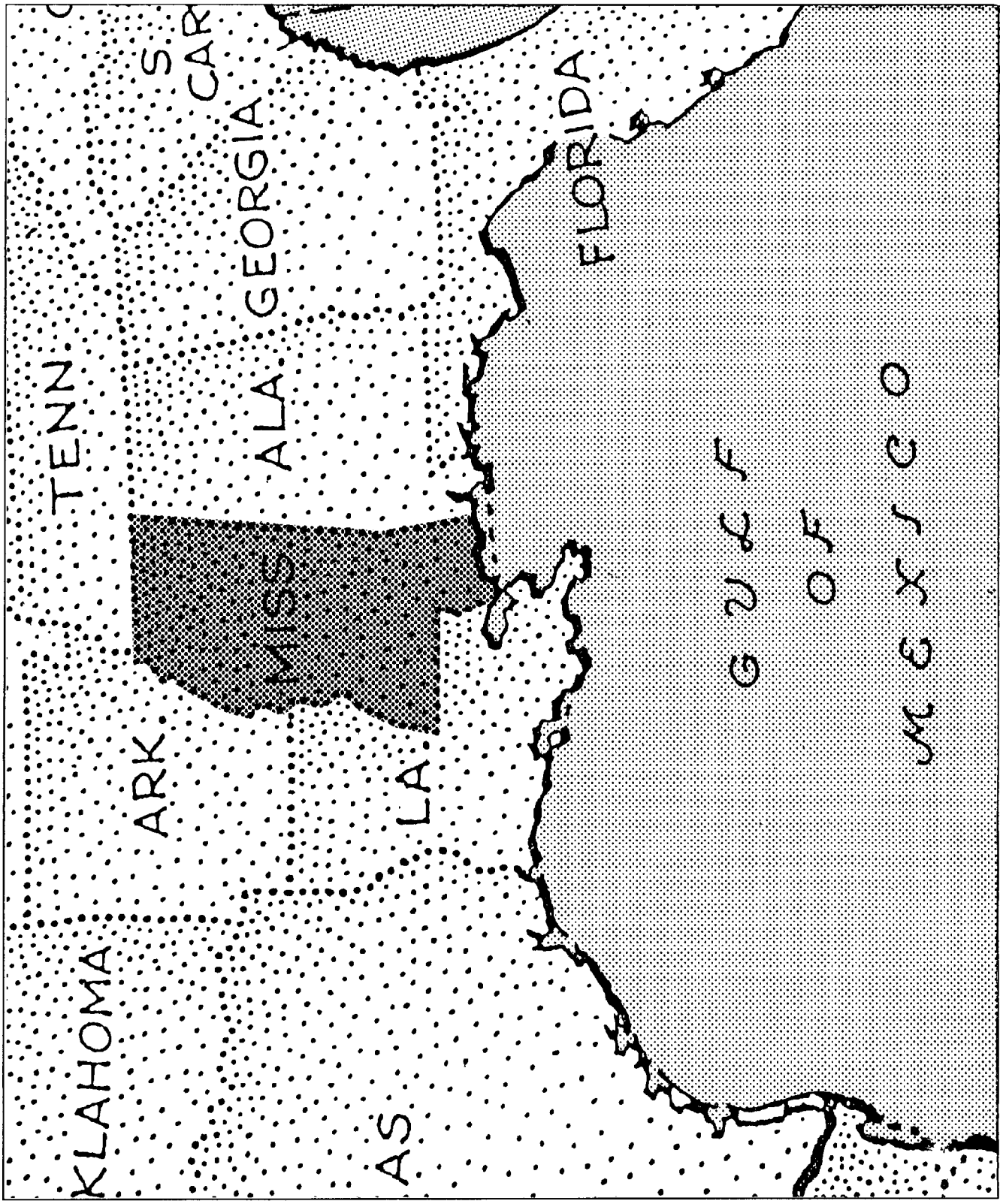


Figure1.1 [Source: Miller, Graphic History of the Americas (1969)]

PHYSICAL AND CULTURAL SETTING

Background

Mississippi joins the states of Florida, Alabama, Louisiana, and Texas as one of the five states that border the Gulf of Mexico. Those states, along with Mexico and Cuba, surround the 600,000 square miles of the Gulf and make it an almost entirely enclosed body of water. As a result of this physical setting, the Gulf is more separate and distinct than many marine environments. Other elements also contribute to its singularity; among them are distinctive oceanographic, climatological, geological, and hydrological factors. Finally, the area is culturally rich in character: as an easily accessible part of the New World, rich in natural resources, many countries at times claimed it as part of their colonial empires. All of these elements combine to define the Gulf of Mexico and make it one of the most remarkable marine areas in the world.

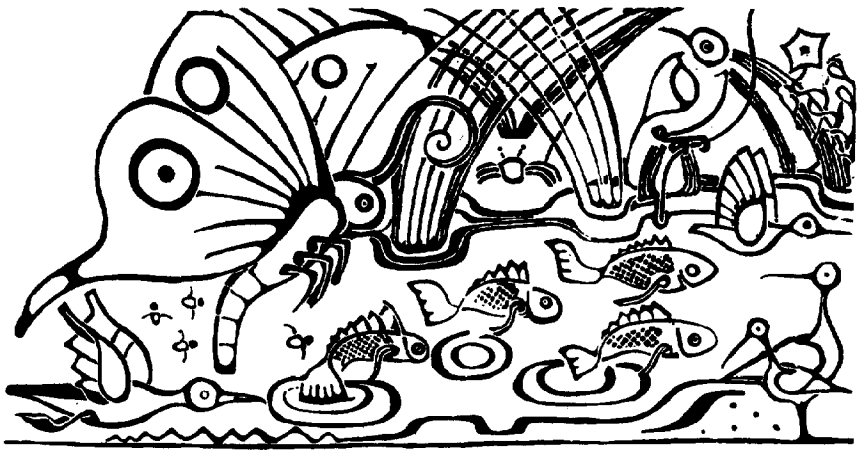
The Gulf is a relatively shallow body of water, with an average depth of 5,000 feet. It is ringed by a shallow continental shelf, which slopes away from the mainland shore, and varies in width from 140 miles off the coast of Florida to 62 miles off Texas. Off the coast of Mississippi, the shelf is relatively narrow, from a width of approximately 15 miles on the portion known as the Mississippi-Alabama Shelf, to virtually nothing at the mouth of the Mississippi River, where sediment from the River's delta empties into the Gulf and depresses the shelf.

The Mississippi coastal zone is made up of extensive tidal wetlands, natural and man-made beaches, several bays, and a chain of barrier islands, which lie 12 miles offshore. The barrier islands form a semi-enclosed body of water known as the Mississippi Sound. The Sound, which is approximately 81 miles long, merges to the west with Lake Borgne, which in turn merges with Lake Pontchartrain, and is marked to the east by Mobile Bay. It is a shallow body, with an average depth of only 15 feet. It contains two small islands: Round Island, which lies at the mouth of the Pascagoula River, and Deer Island, an elongated bar located at the mouth of Biloxi Bay.

A network of rivers, originating far to the north, eventually empties into Mississippi Sound. Of these, the most significant are the

Pearl River to the west and the Pascagoula River to the east. Between these major rivers are two large bays, each fed by smaller river systems. The Bay of St. Louis is served by the Wolf-Jourdan, while the Biloxi-Tchoutacabouffa flows into Biloxi Bay. Still smaller embayments exist and are fed by a number of tributaries, among them (from east to west) Heron Bay, Biloxi Back Bay, and Point Aux Chenes Bay. (See figure 1.1.)

With that description of the general geography of the Mississippi coastal zone, the following discussion highlights some of the significant characteristics of the zone's environmental systems, which can be broken into four areas: (1) the coastal plains and uplands; (2) the coastal estuary, including Mississippi Sound, bays, bayous, marshlands, tidally influenced river basins, mainland shoreline beaches, and the nearshore islands; (3) the offshore barrier islands; and (4) the offshore Gulf waters located south of the barrier islands. Naturally, although these systems have separate identities and characteristics, they are all interrelated, and cannot function independently of any of the others. Since the focus of this study is on the offshore ocean waters and its resources, this description of the area's physical features will be limited to Mississippi Sound, the offshore barrier islands, and the offshore Gulf waters south of the barrier islands. Following a discussion of the physical setting, the chapter will briefly describe some of the cultural characteristics and economic elements of the Mississippi Gulf Coast.



Physical Setting

Mississippi Sound

The shelter provided by the offshore islands, coupled with the freshwater influence from a number of rivers and tributaries, contribute to make Mississippi Sound and its related estuarine areas one of the most biologically productive marine environments in the world. It supports a great diversity of plant and animal life, serving as a nursery for approximately 95 percent of Mississippi's saltwater fisheries. A number of economically important species of finfish and shellfish are included in this number, such as menhaden, croaker, black drum, red drum, seatrout, striped mullet, spot, sheepshead, flounder, shrimp (brown, white, and pink), oyster, and blue crab.

In addition to the dynamics of fresh water meeting with the sea in a semi-enclosed area, other factors contribute to make the Sound and its related estuaries highly productive. The offshore barrier islands protect the estuary from offshore wave action and ocean currents, allowing sea grasses to attach and grow, algae to establish, and nutrients to remain in concentrations. The shallow waters of the Sound allow sunlight to reach the bottom, supporting plant life which is essential to the food chain. The lower salt content of the waters, which is less than half as salty as the Gulf itself, deters many ocean

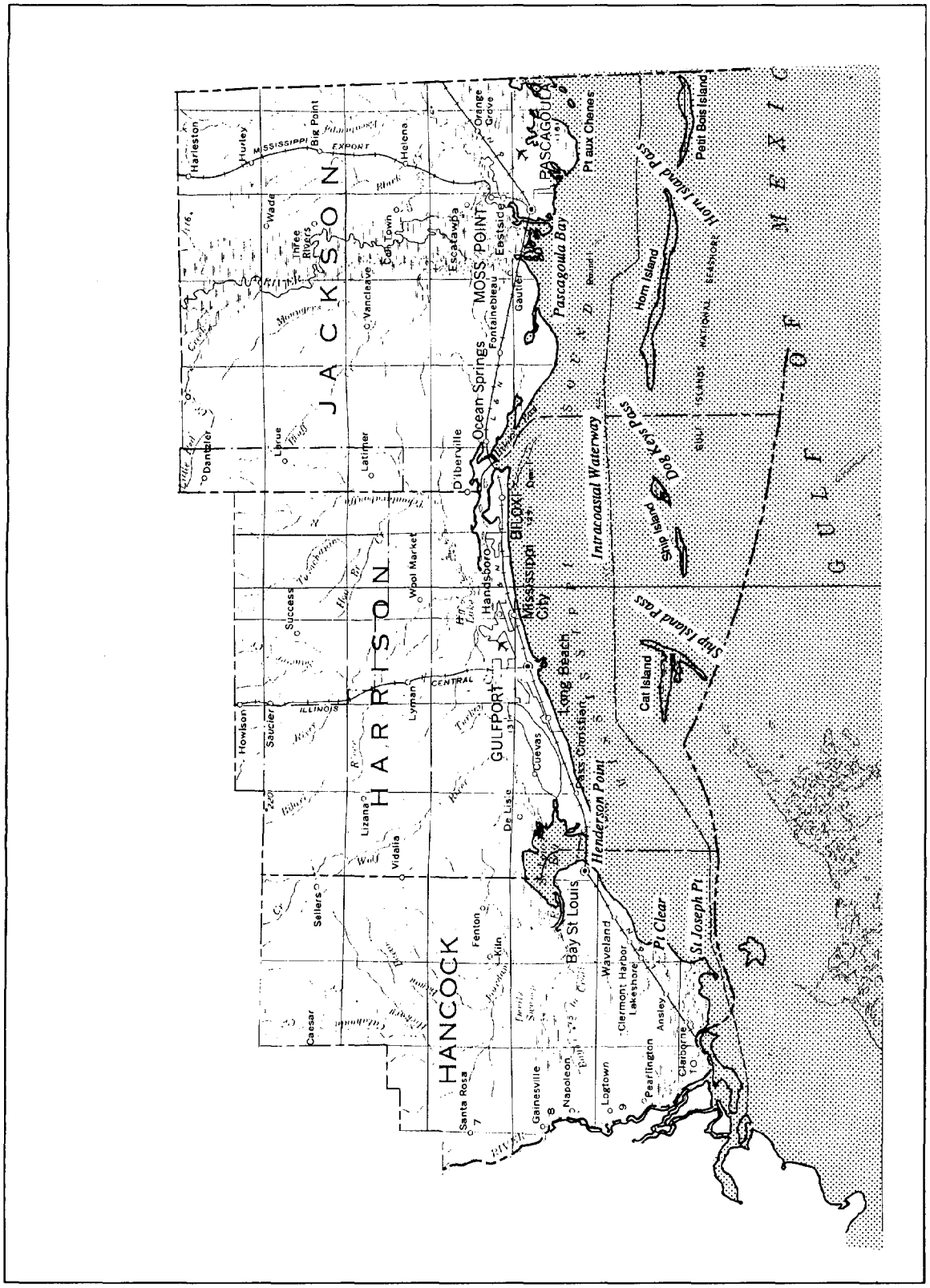


Figure 1.2. [Source: U.S. Department of Interior—Geological Survey, Washington, D.C. (1978)]

predators from entering the area. Finally, productivity is enhanced by the warm climate which prevails most of the year.

Offshore Barrier Islands

Built by wave and current action, the offshore barrier islands are located 10 to 12 miles off the mainland, and lie practically end-to-end across the entire Mississippi coastal area. The islands making up this barrier are (from east to west) Petit Bois, Horn, Ship (sundered in 1969 by Hurricane Camille), and Cat. The only natural deep-water harbor along the entire length of Mississippi Sound is located immediately to the west of Ship Island, giving that island historical significance as an anchorage for the area until recent times.

As is the nature of barrier islands, these islands migrate by virtue of current action, eroding on their eastern ends and building up on their western portions. The islands are characterized by wide sandy beaches and dunes on their Gulf sides, and narrow sandy beaches, tidal creeks, and vegetation on their Mississippi Sound sides. They provide shelter and habitat for a variety of species of fish and wildlife, including coastal and migratory birds. The islands also serve as critical habitat to threatened and endangered species, among them several species of migratory sea turtles. The nearshore waters of these islands also serve as a location for a significant amount of finfish spawning activity.

Offshore Gulf Waters

Mississippi's waters extend seaward from the barrier islands to the three-mile territorial boundary in the Gulf. Currents and water-movement patterns in these open Gulf waters are substantially different from those of the shallow system of the Sound to the north of the barrier islands.

These waters are rich in nutrients because of the movement of estuarine water out of the Sound. Furthermore, the offshore currents bring nutrients from the Gulf to mix with the estuarine waters, thus creating a very nourishing environment for many marine organisms, finfish, and shrimp. A number of these species spawn in this area immediately to the south of the barrier islands; their young later move into the Sound and its protective estuarine waters to grow.

Cultural Setting

Background

The economy of the Mississippi Coast thrives on the ocean's resources. Tourists and retirees come to enjoy the scenic beaches and barrier islands, to go deep-sea fishing, water skiing, or sailing. Commercial fishermen and seafood processors depend on Gulf fisheries for their livelihood. Much of the area's industry is dependent on access to the transportation opportunities that the coastal ports offer. The backgrounds of the people who live on the coast, the employment opportunities, and recreational offerings are varied, as are the problems that accompany a growing population and the stresses that will continue to be placed on ocean resources. It is the responsibility of the state's policymakers to pursue careful ocean resource management options to ensure that the vitality of the area is not only preserved, but enhanced.

Approximately 350,000 residents live within the 1,800 square miles of the Mississippi Gulf Coast. While the area is a popular retirement location, the 1987 census indicated that the age groups were well divided, with nearly half the population falling within the ages of 18-44, the prime employment bracket.

The three coastal counties of Harrison, Hancock, and Jackson are comprised of series

of small communities, including Biloxi, Gulfport, Pascagoula, Bay St. Louis, Ocean Springs, Waveland, Long Beach, and Pass Christian. These communities boast a number of ethnic groups, among them English, Irish, French, Greek, Italian, Scot, Slovenian, African, Vietnamese, and German. The occupations and pastimes of these residents are varied as well. Civilian employment opportunities include tourism, commercial fishing, timber, and a number of service and industrial endeavors. The military provides jobs to hundreds at Keesler Air Force Base, the U.S. Coast Guard Base, and the U.S. Naval Construction Battalion Center. For recreation these people are most likely to pursue ocean-related pastimes such as fishing, swimming, sailing, beachcombing, windsurfing, and bird-watching.

Like most coastal areas, the Mississippi Gulf Coast is experiencing rapid population growth, currently projected to reach over 400,000 persons by the year 2000. This growth will be accompanied by a number of factors, including increases in industrial activities, greater demands for jobs, goods, and services, and additional stresses on coastal environmental systems and valuable natural resources. Special care must thus be taken to address the needs of a growing population while simultaneously protecting Mississippi's valuable coastal environment.

The Counties

Harrison County

Most of the 178,870 people who live in Harrison County reside in one of five cities—Biloxi, Gulfport, D'Iberville, Long Beach, or Pass Christian. Pass Christian, incorporated in 1838, was one of the "Six Sister Cities" favored by wealthy New Orleanians who built summer or weekend retreats in the area.

Harrison County has two county seats, Biloxi and Gulfport. Gulfport, which is a planned city incorporated in 1898, was founded by a former Confederate captain, William H. Hardy, and a former Union captain, Joseph T. Jones. Biloxi's history, however, dates back to 1699, when French Canadians first explored the area. In 1719, Fort Louis was built at Biloxi, which enjoyed a brief period as the capital of the Louisiana Territory. While a few of the French settlers remained in Biloxi when the capital was moved to New Orleans in 1722, the city was not chartered until 1838.

In addition to important tourist and fishing industries, Harrison County is also home to a number of other industries. In the western part of the county, E. I. Du Pont, de Nemours & Co., operates a large titanium dioxide processing plant. Several other moderately sized industries, such as metalworking plants, apparel manufacturing, shipyards, seafood processing plants, and an electric power generating plant are scattered across the coastal and bay areas of the county. One of the county's most important contributions to the economy of the coast is the Port of Gulfport. A deepwater port, the facility handles a variety of seaborne cargo, with a particularly heavy trade in bananas from Central and South America. Another major contributor to the coastal economy is the military. The Naval Construction Battalion Center, the United States Coast Guard Station, and the Combat Readiness Training Center are all located in Gulfport. The Keesler Technical Training Center is located in Biloxi.

Hancock County

Hancock County, with a population of 33,039, is comprised primarily of two cities—Bay St. Louis and Waveland. Bay St. Louis

("The Bay") is the county seat, and was named in memory of King Louis IX by the French-Canadian explorer Bienville in 1699. Bay St. Louis was the first coast town to apply for incorporation in 1818, and was also one of the "Six Sister Cities". Larger industries in this county are Borg-Warner, a specialized plastics manufacturer, and a marine concrete products manufacturer. The John C. Stennis Space Center, a NASA installation, is also located in the county and is the site of a major research and testing facility. The Center has more than 18 federal and state agencies on location, employs over 5,400 highly skilled personnel, and exerts a major economic influence not only over the county, but the entire coastal area.

Jackson County

The cities of Gautier, Moss Point, Ocean Springs, and Pascagoula are located in Jackson County, and contribute to an overall county population of 144,578. Gautier is named after Fernando Upton Gautier, who established a sawmill there in 1860. This old mill community fought annexation by Pascagoula until 1986, when Gautier was incorporated as a city.

Numerous mineral springs are found at Ocean Springs, with waters that Indians of the area believed had healing powers. Dr. George Austin, a New Orleans physician who set up a sanitarium at this location, gave the town its current name, which describes its two major attractions.

Lumber, pecans, citrus trees, and fishing have all figured in this county's growth. Significant contributions to the county's economic health are also made by industrial activity in the county. The Port of Pascagoula is home to one of the state's most important industries, Litton Industries-Ingalls Shipbuilding Division. Established in the 1930s, Ingalls Shipyard has enjoyed a reputation as a quality shipbuilder, and today is the largest employer in the state, with more than 10,000 employees. It has delivered over 40 warships to the Navy since 1975, and is currently involved in the construction of several new ships.

Chevron U.S.A. operates one of the largest refineries in the country—designed to process over 16 million tons of crude oil a year. Other industrial activities in the county include Mississippi Chemical Corporation, Chicago Bridge and Iron Company, seafood processing houses, an oil rig repair facility, a large grain elevator, and several other marine-related manufacturing industries.

Personal Income

Residents of the Mississippi Coast are employed in a number of different occupations. The historically important industries of fishing and tourism remain significant contributors to the economic landscape; the area continues, however, to diversify its manufacturing and industrial capabilities. Recent reports indicate that the area claims a larger than average number of white collar workers. Nonetheless, production workers still account for a major portion of the workforce. It is estimated that 12.7 percent of Mississippi's manufacturing output is from this region. Federal or military personnel are an additional significant segment of the workforce. They are employed at Keesler Air Force Base, the John C. Stennis Space Center, and the U.S. Naval Construction Battalion Center.

The projected numbers of civilian workers employed on the Mississippi coast for 1990 was 172,000. In 1987 the labor participation rate for men was 75 percent, while only 54 percent of working-age women were absorbed into the labor force. The salaries reflect the lower cost of living on the coast than in many

areas of the country. In 1987 the hourly earnings of production workers was 23 percent less than the national average, with the average family income in that year at approximately $30,000. Traditionally, unemployment in the area has been slightly lower than the state average.

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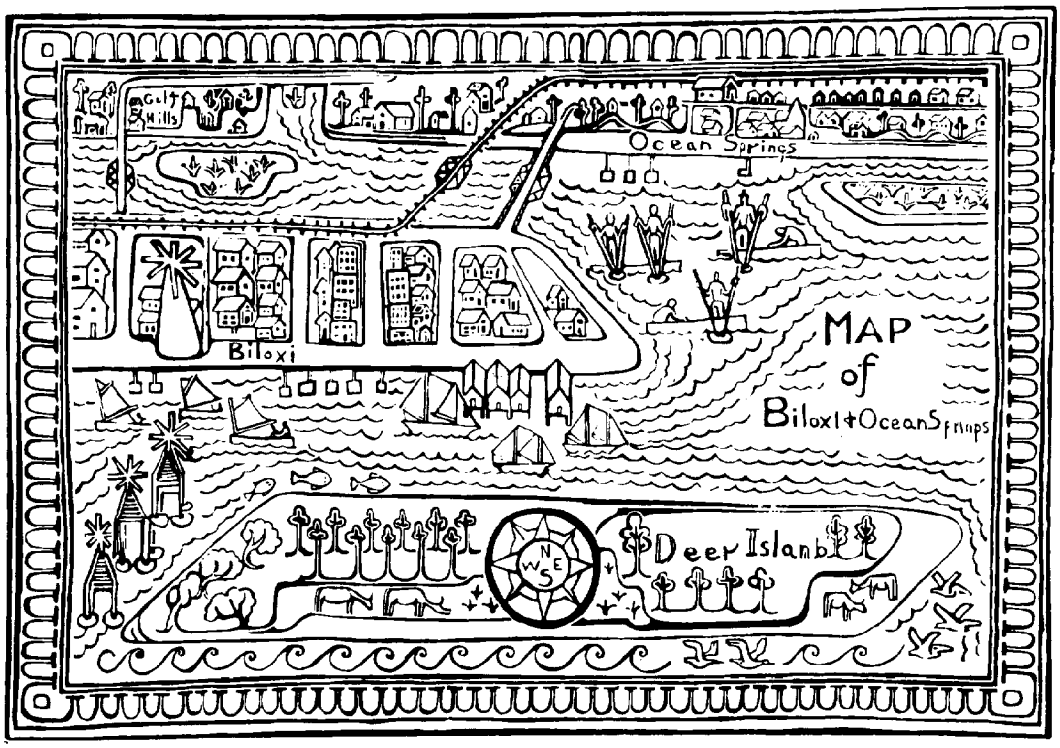
Golf Hills
Ocean Springs
Biloxi
MAP
of
Biloxi & Ocean Springs
Deer Island
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GOVERNMENTAL STRUCTURE

Background

This chapter briefly outlines the duties of governmental bodies charged with the responsibility over the use and management of Mississippi's ocean resources. The first section describes state governmental bodies, followed by a brief treatment of regional and national entities that may play a role in ocean management in Mississippi. While county and local entities have some limited management authority over the use and development of the state's offshore areas, local regulatory authority is divided among numerous governmental entities and is beyond the scope of this study.

State Governmental Entities

Office of the Governor

The governor's office provides staff assistance and liaison efforts for all areas of state government administration, and also investigates and evaluates agency policies and programs. The governor's special assistant for natural resources works in this capacity, advising the governor on proposed legislation and working with the state agencies involved in natural resources management, including ocean resources management. The assistant's role, however, is purely a reactive one, and consists primarily of responding to problem issues at the request of the governor.

Office of the Secretary of State

The secretary of state's office is a multifaceted service and information agency charged with many statutory obligations. Among the Secretary's duties are those of the former state land commissioner, which involve the supervision and leasing of public lands, such as sixteenth section lands, tax-forfeited lands, agency lands, and coastal public trust tidelands and submerged lands.

The secretary is aided in the administration of his public lands duties by an assistant secretary of state for public lands. The assistant secretary and his staff of public land specialists perform a number of functions. For instance, the specialist for tidelands works with local officials to determine state ownership of various tidelands, and formulates policies and procedures to implement statutory requirements concerning these lands. The

specialist executes a number of other tasks, such as reviewing appraisals and data to determine the fair market value of public lands, preparing manuals to aid in statutory compliance, serving as a liaison between the legislature and the secretary of state's office in matters pertaining to state-controlled public lands, and monitoring legal actions that involve the agency with regard to state-owned tidelands and submerged lands.

State Legislature

Geographically, the Mississippi coast represents only a small portion of the state. As a consequence, the Mississippi legislature historically has not exhibited as great an interest in managing the state's ocean resources as have other states with more extensive coastlines. While legislative activity may not be great, several standing committees consider ocean-related legislation when the occasion arises. The Senate committees include the Committee on Wildlife and Marine Resources, the Committee on Ports and Industries, the Committee on Oil, Gas, and Other Minerals, and the Committee on Environmental Protection, Conservation, and Water Resources. In the House of Representatives the committees are the Committee on Conservation and Water Resources, the Committee on Game and Fish, and the Committee on Oil, Gas, and Other Minerals. None of these committees consider ocean issues exclusively; furthermore, there are no legislative staff members in either house who specialize in ocean and coastal affairs.

One newly created standing legislative body that could have some involvement in ocean issues has been formed by the legislature. The Environmental Protection Council was created in 1989 to study and make recommendations to the Legislature concerning three main areas of concern: hazardous waste management and disposal, nonhazardous waste management and disposal, and groundwater management needs. The membership consists of six representatives and six senators, and is supported by staff from the Department of Environmental Quality. While not specifically mandated to consider ocean issues, the council's activities may play an important future role in controlling pollution of the state's marine environment.

Administrative Agencies

The executive and legislative branches of Mississippi state government play important roles in the governance of the state's ocean resources; however, they have only a modicum of involvement in the actual daily management of this important state asset. Most responsibility and authority for implementation of ocean-related policies belongs to Mississippi's administrative agencies. The following identifies the agencies with primary authority over ocean activities and briefly describes some of their duties.

■ Department of Wildlife, Fisheries, and Parks

The Department of Wildlife, Fisheries, and Parks (DWFP) is Mississippi's principal natural resource agency, with primary authority for conservation, protection, and beautification of the state's environmental and living resources. The department is headed by a commission of five persons appointed by the governor and is administered by a gubernatorially selected executive director. DWFP directs programs under the following divisions: the Division of Parks and Recreation, which oversees the state park system; the Division of Support Services, which handles such matters as accounting, public

information, field services, and purchasing for the department; and the Division of Wildlife and Fisheries. Along with this division's responsibility for the management of freshwater resources and wildlife is the direction of two subdivisions: the Mississippi Museum of Natural History and the Bureau of Marine Resources.

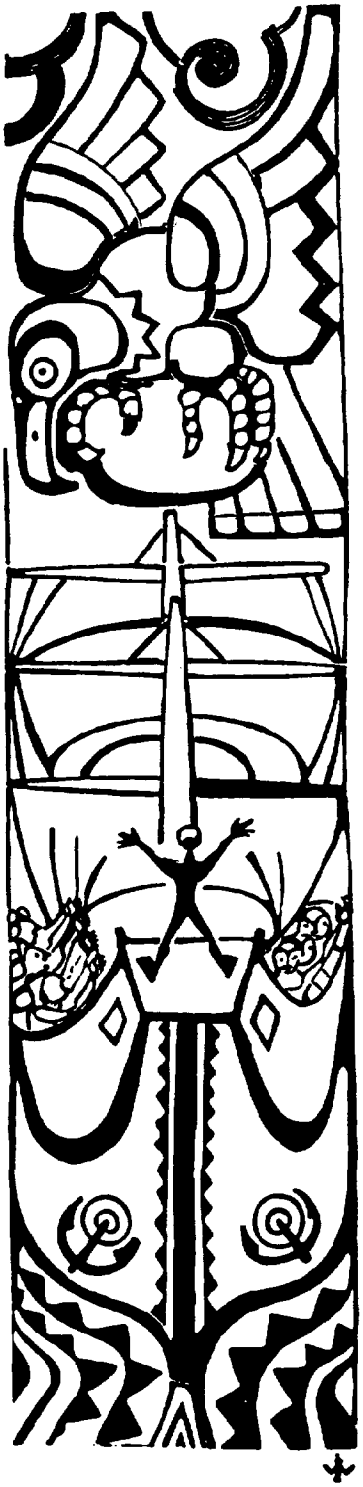
The Bureau of Marine Resources (BMR) is the principal body in charge of marine resource management. Under its umbrella of authority from DWFP, the bureau is responsible for implementation of the state's coastal management program, which is a federally approved management plan and part of a resulatory scheme created by the Coastal Zone Management Act of 1972. BMR has authority over all the state's marine aquatic life, including management of fishing resources, regulation of aquaculture, safety inspection for seafood production and processing, and protection of endangered species. It is also the liaison with federal agencies for Outer Continental Shelf oil and gas development, and has review authority for mineral lease permits issued by the Department of Environmental Quality.

The Bureau promulgates the regulations necessary to implement the Mississippi Marine Litter Act and has administrative charge over boat and water safety. BMR is also authorized to coordinate all tidal surveying and mapping of public trust lands.

Obviously, BMR's responsibilities and management duties concerning ocean management are extensive. As the agency responsible for implementation of Mississippi's coastal management program, as well as many ocean management duties not covered under that regulatory scheme, BMR is involved in practically every aspect of ocean and coastal management.

■ Department of Environmental Quality

The Department of Environmental Quality (DEQ) has charge over regulation of air and water quality, resource recovery, and pollution prevention. DEQ promulgates regulations and develops programs to prevent, control, or abate new or existing pollution, regulates wastewater, solid and hazardous waste disposal facilities, and protects groundwater resources. The department operates under the direction and control of a seven-member commission, appointed by the governor, and is headed by an executive director, who is also appointed by the governor. DEQ pursues its duty to formulate policy regarding natural resource management and exercises its administrative obligations through three divisions: the Bureau of Land and Water Resources, the Bureau of Pollution Control, and the Bureau of Geology and Energy.



Two of DEQ's divisions are involved in ocean-related matters. Legislation gives the Commission on Environmental Quality the exclusive authority to execute mineral leases located on state-owned submerged lands through the Bureau of Geology and Energy (BGE). The bureau has the authority to oversee all aspects of mineral exploitation in this area, from promulgation of regulations governing mineral exploration

to the establishment of a fee system for the issuance of permits. It should be noted that once a mineral lease is obtained, a permit must also be issued by the State Oil and Gas Board for the construction, operation, and maintenance of any facilities for the exploration, production, and transportation of oil and gas.

The Bureau of Pollution Control (BPC) is responsible for the designation of water quality parameters for the state and issues water pollution permits for activities affecting state waters. It also administers the state component of the U.S. Environmental Protection Agency's National Pollution Discharge and Elimination System Program (NPDES).

■ Department of Archives and History

The Department of Archives and History (DAH) is responsible for the care and custody of official archives, the collection of items of prehistoric and historic value to the state, and the encouragement of historical research or other work that relates to Mississippi's past. It is controlled by a board of nine trustees and is under the immediate management of a director who is elected by the board.

Recent legislation has authorized the department to serve as the official historic preservation agency for the state and to administer the new state antiquities law. In that capacity, DAH is responsible for the protection of all sunken or abandoned ships or wrecks under state waters. Under the antiquities law, all such sunken relics are the sole property of the state, and cannot be taken or altered without a contract or permit from the Board of Trustees of the Department of Archives and History.

■ Mississippi Department of Economic and Community Development

The mission of this agency is to create a climate for economic growth in the state. The department is headed by an executive director, who is selected by the governor, and advised by a twenty-five member advisory council, whose members are also appointed by the governor. The Department seeks to accomplish its goals through the recruitment of new business and industry, the provision of technical assistance to new and existing businesses, and by offering leadership and support to local officials and economic development professionals.

One of the agency's numerous duties is the promotion of tourism. In pursuance of that duty, the state is divided into regional tourist councils, which act to promote tourist travel and vacation business in their areas of the state. The coastal counties of Hancock, Harrison, and Jackson are in Area Tourist Council Five.

Regional Entities

The following regional organizations play a role in ocean policy-making.

Gulf of Mexico Fishery Management Council

Established by the Federal Magnuson Fishery Conservation and Management Act of 1976 (MFCMA), this group is one of eight regional councils created by the Act to implement and maintain a comprehensive fishery management scheme in different areas of the country. The constituent states in the Gulf of Mexico region are Texas, Louisiana, Alabama, Florida, and Mississippi. It is comprised primarily of representatives from each state who are from the local communities adjacent to the ocean area and who are familiar with local and regional needs. The council develops

management plans for federal waters of the Gulf, based on national standards set out in the MFCMA; such plans must be approved and implemented by the Secretary of Commerce. The regulations promulgated pursuant to the management plans are enforced by the Coast Guard and the National Marine Fisheries Service.

Gulf States Marine Fisheries Commission

This commission is made up of three representatives from each Gulf state and acts strictly in an advisory capacity. It is authorized to study fishery management, conservation, marine, shell, and anadromous activities concerning the Gulf. It also consults and comments on possible legislation for each of the member states. The Commission houses and coordinates such programs as the Interjurisdictional Fisheries Program (IJF), which develops and implements regional fishery management plans; the Southeast Area Monitoring and Assessment Program (SEAMAP), which coordinates the collection and dissemination of fishery-related data; and the Sport Fish Restoration Program, which addresses recreational fisheries issues. In addition, the commission issues an annual report to the member states and to the U.S. Congress, as well as lending support to the Marine Fisheries Initiative Program (MARFIN).

Mississippi-Alabama Sea Grant Consortium

The Mississippi-Alabama Sea Grant Consortium is one of a network of 29 Sea Grant programs in coastal states, Great Lakes states, and Puerto Rico. It is a federal-state partnership, with federal support provided by the National Sea Grant College Program of the National Oceanic and Atmospheric Administration, U.S. Department of Commerce. The Mississippi-Alabama Sea Grant Consortium consists of eight member universities and research institutions in the two states. These institutions, along with Sea Grant advisory service offices, pursue the tripartite Sea Grant approach of integrated research, education, and public service, and apply expertise to the problems and opportunities that affect the coastal areas and waters of not only Mississippi and Alabama, but also the nation and the world.

Southern States Energy Board

The Southern States Energy Board (SSEB) is a public, non-profit interstate compact agency, consisting of 16 Southern states and Puerto Rico. Its purpose is to provide technical staff support, policy and program development, and implementation and information services in matters relating to all areas of energy and environmental quality. In recent years, SSEB has turned more of its attention to coastal issues, and in pursuance of that interest has created a Coastal Resources Technical Advisory Committee in an effort to facilitate an interjurisdictional and cooperative approach to marine and coastal protection issues.

United States Environmental Protection Agency's Gulf of Mexico Program

In recognition of the fact that the Gulf of Mexico is one of America's most valuable natural areas, the U.S. Environmental Protection Agency has initiated what is known as the Gulf of Mexico Program to address the complex problems that face the Gulf.

The program endeavors to involve a myriad of state, local, and federal agencies to formulate a comprehensive strategy to improve the long-term health of the Gulf of Mexico. Mississippi is involved in this multijurisdictional effort—in fact, offices for

the program are located in the state at the John C. Stennis Space Center near Bay St. Louis. A number of Mississippi representatives participate in the work of this program and will contribute to the development of a long-term management program for the Gulf of Mexico.

National Entities

At a national level, groups like the National Governors' Association, the Coastal States Organization, the National Association of Attorneys General, and the National Association of Secretaries of State all attempt to represent ocean interests. While these organizations are instrumental in coordinating the representation of coastal states' interests and also engage in needed lobbying efforts, they lack the formal authority to participate actively in ocean management.

As for the federal government itself, all branches are involved in ocean affairs. However, federal involvement in ocean management has tended to be on an ad hoc, issue-specific basis, resulting in a number of agencies pursuing their duties in an uncoordinated manner. The resulting mix is characterized by numerous competing policies designed to respond to one use or resource rather than any comprehensive philosophical strategy to manage the oceans as a whole. The following will describe some of the federal involvement and the key policies relative to a number of these distinct issues.

Executive Branch

Since the dissolution of the National Advisory Committee on Oceans and Atmosphere, the president no longer has a sitting advisory committee to study and make recommendations on ocean-related matters. Efforts are currently being made to establish an ocean policy council and thus reinstate that leadership role. Until such a role is established, ocean matters are handled by the president's Domestic Policy Council or issue-specific task forces, which are created to address specific issues such as wetlands or offshore oil and gas development. In addition, the State Department's Office of Ocean Affairs, Bureau of Oceans, Environment, and Science chairs the National Security Council's Policy Coordinating Committee on Oceans, Environment, and Science. This office also chairs the Council's Working Group on Oceans Policy and Law of the Sea.

Legislative

In the legislative branch, Congress has more than 50 standing committees and subcommittees whose provinces include interests in ocean activity. Some of the committees that are most active in ocean management are the House Committee on Merchant Marine and Fisheries, the House Committee on Appropriations, the House Committee on Public Works and Transportation, the Senate Committee on Environment and Public Works, and the Senate Committee on Commerce, Science and Transportation.

Administrative Agencies

As is the case with ocean management on a state level, the federal administrative agencies are largely responsible for regulation of ocean uses and resources, albeit in a resource-specific manner. The principal agencies with duties in this area (there are others as well) are the Department of Commerce, which houses the National Oceanic and Atmospheric Administration with its sub-agencies—the National Marine Fisheries Service, the Office of Coastal and Ocean Resource Management, and the National Sea Grant College Program; the Department of the Interior, which houses

the Minerals Management Service, the National Park Service, the Bureau of Land Management, and the U.S. Fish and Wildlife Service; the Department of Defense, which houses the U.S. Navy and the U.S. Army Corps of Engineers; the Department of Transportation, which houses the U.S. Coast Guard and the Maritime Administration; and the Department of State, which handles any matters concerning foreign relations.

Finally, other independent agencies and govenmental corporations, such as the Environmental Protection Agency, the National Science Foundation, the National Aeronautics and Space Administration, and the Federal Maritime Commission have broad responsibilities which include ocean activities.

Conclusion

Numerous state, local, and federal governmental bodies have authority or involvement in the use and management of Mississippi ocean resources. However, although there are many agencies and other governmental groups that participate in ocean governance, there is no comprehensive regulatory framework — no structure to bring all the groups and their duties together. The next portion of this study will examine a number of ocean activities and the policies in place for their management. Following the discussion of specific topics, this study will explore in depth the intergovernmental ocean management framework that currently exists in Mississippi and will make recommendations for its improvement.

STATE ENTITIES

Office of The Governor:

- Provides staff assistance to state administrative research agencies
- Advised by Governor's Special Assistant for Natural Resources
- Provides liaison efforts for all areas of government
- Suggests legislative initiatives

Office of The Secretary of State:

- Operates under the former duties of the State Land Commissioner which include supervision and leasing of public lands
- Aided by the Assistant Secretary of State for Public Lands
  - determines ownership of tidelands
  - formulates policies and procedures
  - determines fair market value of public lands
  - prepares manuals to aid in statutory compliance
  - serves as liaison between the Legislature and Secretary of State
  - monitors legal actions that involve the agency with regard to state-owned tidelands and submerged lands

The Mississippi Legislature:

- Senate Committees
  - Committee on Wildlife and Marine Resources
  - Committee on Ports and Industries
  - Committees on Oil and Gas and other Minerals
  - Committee on Environmental Protection, Conservation and Water Resources
- House of Representatives Committees
  - Committee on Conservation and Water Resources
  - Committee on Game and Fish
  - Committee on Oil and Gas and other Minerals
- Environmental Protection Council
  - makes recommendations concerning hazardous and non-hazardous waste management disposal and groundwater management

Administrative Agencies:

- Department of Wildlife, Fisheries and Parks
  - Division of Parks and Recreation - oversees State Park System
  - Division of Support Services - handles accounting, public information, field services and purchasing
  - Division of Wildlife and Fisheries
    - Mississippi Museum of Natural Resources

- Bureau of Marine Resources
    - Implements state's coastal management program
    - Authority over all marine aquatic life
    - Regulates aquaculture
    - Inspects seafood production and processing
    - Protects endangered species
    - Acts as liaison with federal agencies for OCS oil and gas development
    - Has review authority for mineral lease permits issued by the Department of Environmental Quality.
    - Implements the Mississippi Marine Litter Act
    - Oversees boat and water safety

- Department of Environmental Quality
    - Regulates air and water quality, resource recovery and pollution prevention
    - Promulgates regulations
    - Develops programs to prevent, control or abate pollution, waste water and hazardous waste disposal facilities
    - Protects groundwater resources
    - Controls several divisions
        - Bureau of Land and Water Resources
        - Bureau of Pollution Control - sets water quality parameters for the state and issues permits
        - Bureau of Geology and Energy - executes mineral leases on state-owned submerged lands
- Department of Archives and History
    - Responsible for the care and custody of official archives
    - Encourages historical research
    - Administers the state antiquities law
        - Protects all sunken or abandoned ships in state waters
- Mississippi Department of Economic and Community Development
    - Creates a climate for economic growth
    - Recruits new business and industry
    - Offers leadership and support to local officials and economic development professionals
    - Promotes tourism

NATIONAL ENTITIES

Executive Branch:

- Has no sitting advisory committee to study ocean related matters
- President's Domestic Policy Council
  - handles any ocean matters
- Specific task forces created as issues arise

Legislative Branch: (Over fifty standing committees and subcommittees with province over ocean activity, some of the major ones are)

- House Committee on Merchant Marine and Fisheries
- House Committee on Appropriations
- House Committee on Public Works and Transportation
- Senate Committee on Environment and Public Works
- Senate Committee on Commerce, Science and Transportation

Administrative Agencies: (Primary departments with duties in ocean uses and resources)

- Department of Commerce
  - National Oceanic and Atmospheric Administration
    - National Marine Fisheries Service
    - Office of Coastal and Ocean Resource Management
    - National Sea Grant College Program
- Department of the Interior
  - Minerals Management Service
  - National Park Service
  - Bureau of Land Management
  - U.S. Fish and Wildlife Service
- Department of Defense
  - U.S. Navy
  - U.S. Army Corps of Engineers
- Department of Transportation
  - U.S. Coast Guard
  - Maritime Administration
- Department of State
  - Handles matters concerning foreign relations

Independent Agencies and Governmental Corporations:

- U.S. Environmental Protection Agency
- National Science Foundation
- National Aeronautics and Space Administration
- Federal Maritime Commission

REGIONAL ENTITIES

Gulf of Mexico Fishery Management Council:

- Implements and maintains a comprehensive fishery management scheme in federal waters
- Develops management plans based on national standards

Gulf States Marine Fisheries Commission:

- Acts only in an advisory capacity
- Studies fishery management, conservation and marine activity in the Gulf
- Consults and comments on possible legislation
- Coordinates the Interjurisdictional Fisheries Program, Southeast Monitoring and Assessment Program and Sportfish Restoration Program
- Issues an annual report to the member states and the U.S. Congress
- Helps support the Marine Fisheries Initiative Program

Southern States Energy Board:

- Provides technical staff support to areas of energy and environmental quality
- Supports program development
- Implements information services
- Sponsors the Coastal Resources Technical Advisory Committee
  -facilitates interjurisdictional cooperation concerning marine and coastal issues

United States Environmental Protection Agency's Gulf of Mexico Program:

- Coordinates state, local, and federal agencies
- Sets long term management plans for the Gulf of Mexico

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STATE SUBMERGED LANDS JURISDICTION

Background

Submerged Lands Jurisdiction

Jurisdiction over the nation's ocean areas is divided between the federal government and the coastal states. The current division came about as a result of the U.S. Supreme Court decision in *United States v. California,* 332 U.S. 19 (1947), which held that the federal government rather than the coastal states owned the land and resources within the three-mile territorial sea. In 1953 Congress responded to public concerns over the states' inability to own and develop living and non-living resources off their coasts by enacting the Submerged Lands Act (SLA), 43 U.S.C. §§ 1301 *et seq.*(1988), and the Outer Continental Shelf Lands Act (OCSLA) 43 U.S.C. §§ 1331 *et seq.* (1988). These laws clarified the interests of the state and federal governments in submerged lands and provided a framework for regulating and managing the exploration, development, and production of offshore minerals.

The Submerged Lands Act granted coastal state ownership of the submerged lands and natural resources "to a line three geographical miles distant from the coast of each state." The Outer Continental Shelf Lands Act, on the other hand, was enacted primarily to establish a federal regulatory scheme over the use of mineral resources located beyond state jurisdiction.

Although the SLA grants authority over submerged lands within the territorial sea to the coastal states, that authority is not absolute. The federal government retains paramount rights, grounded in the commerce and property clauses of the Constitution, to regulate state waters for the purposes of navigation, commerce, national defense, and international affairs.

The Exclusive Economic Zone

In keeping with the international trend during the 1960s and 1970s of expanding national claims to ocean space, the United States extended exclusive fisheries jurisdiction out to 200 miles in 1976. This was followed in 1983 by a proclamation by President Reagan that gave the U.S. control over the exploration, conservation, use, and management of all living and non-living resources located within a 200-mile exclusive economic zone.

Extension of the Territorial Sea

On December 27, 1988, President Reagan proclaimed that the seaward boundary of the territorial sea of the United States was extended from the former distance of three miles from the coast to a distance of 12 miles from the coast. While the establishment of a 12-mile territorial sea is fully consistent with international law, the proclamation presents a number of potential problems domestically. A disclaimer in the president's proclamation indicates that it does not extend or otherwise alter "existing Federal or State law or any jurisdiction, rights, legal interests, or obligations derived therefrom." The intent of this disclaimer is to allow the president to assert United States sovereignty out to 12 miles for international purposes yet retain the three-mile limit for all domestic laws and regulations.

Many observers believe that the president does not have the legal authority to limit the effects of the proclamation exclusively to foreign affairs. Over 70 federal statutes and an unknown number of state statutes contain some reference to a territorial sea of an undefined width. If the territory to which these statutes apply is defined simply as the "territorial sea," the statute could be interpreted to incorporate an expanded 12-mile territorial sea rather than be limited to three miles.

Of particular interest to Mississippi and other coastal states are the potential benefits created as a consequence of expanded state ownership and control of resources in the territory between three and 12 miles out to sea. An examination of the language and legislative history of the SLA clearly indicates that it was Congress' intent that state ownership of submerged lands be limited to a distance of three miles (three leagues off of Texas and the Gulf Coast of Florida) in the absence of specific congressional action. Similarly, Congress recently placed language in the Coastal Zone Act Reauthorization Amendments of 1990 that expressly limits the seaward boundary of the "coastal zone" to the extent of state ownership and title. (For a discussion of the 1990 CZMA amendments, see Chapter 5). However, a legitimate argument can be made that other federal statutes containing references to the "territorial sea," unless expressly limited, are susceptible to being interpreted as covering activities out to the limits of the expanded 12-mile territorial sea.

The impact on the state of Mississippi of an expanded territorial sea remains unclear. Much depends on the steps that Congress takes to clarify discrepancies in the dozens of laws governing the ocean environment and the manner in which Mississippi and other coastal states choose to assert their legal rights.

Status in Mississippi

Seaward Boundaries

In 1985, the United States Supreme Court held in *United States v. Louisiana* (hereinafter referred to as the Mississippi-Alabama Boundary Case), 470 U.S. 93 (1985), that the entire Mississippi Sound is a historic bay and that its waters are inland waters owned by the coastal states of Mississippi and Alabama. The Court described the Sound as "a body of water immediately south of the mainland of the two States. It extends from Lake Borgne at the west to Mobile Bay at the east, and is bounded on the south by a line of barrier islands. These islands, from west to east, are Isle au Pitre, Cat Island, Ship Island, Horn Island, Petit Bois Island, and Dauphin Island. The Sound is approximately 80 miles long and 10 miles wide."

For purposes of determining the state's seaward boundary, the coastline of Mississippi consists of the lines of "a line at" the

shoreline watermark along the southern coasts of the barrier islands together with appropriate lines connecting the barrier islands. This forms the baseline from which the three-mile territorial sea is measured.

Although the Mississippi-Alabama Boundary Case settled a number of legal questions concerning Mississippi's offshore boundaries, several issues remain in dispute. The nearshore boundary between Mississippi and Louisiana was established by the Supreme Court in *Louisiana v. Mississippi*, 202 U.S. 1 (1906). However, Mississippi failed to reach agreement with the federal government or with the state of Louisiana regarding the western extremity of the state's seaward boundary southwest of Ship Island and north of the Chandeleur Islands. Mississippi claimed that the area is part of Chandeleur Sound, and therefore inland waters based upon a 1975 agreement between Louisiana and the federal government that delineated that state's seaward boundary. The federal government contended that the agreement involved a limited, conditional concession to Louisiana and that it never conceded that Chandeleur Sound was inland waters.

Following several years of negotiations, on November 5, 1990 the United States Supreme Court approved an agreement between Mississippi and the federal government that sets the state-federal seaward boundary in *Mississippi v. United States*, 111 S. Ct. 380 (1990). Without prejudice to their differing positions on the inland water status of Chandeleur Sound, the parties have agreed to fix a permanent line using the same "closing line" agreed to between the federal government and Louisiana in 1975. Interestingly, the agreement also stipulates that rather than permanently fixing the outer seaward boundary based upon geographic coordinates, as is the federal government' s preferred practice, the boundary will instead be permanently fixed based upon the current geographical position of Mississippi's coastline. The state demanded that the coastline rather than the seaward boundary be fixed to protect its rights should there be a future SLA grant to the state as a result of the newly established 12-mile territorial sea.

Mississippi's lateral seaward boundaries—the boundaries between the territorial sea of Mississippi and the waters of its neighboring states—have not as yet been settled. No formal agreement currently exists with Alabama, and there continues to be some disagreement between Mississippi and Louisiana over that portion of the lateral seaward boundary not addressed in *Louisiana v. Mississippi*.

Regardless of the precise location of the state's offshore boundaries, Mississippi has been awarded jurisdiction over a large area of the ocean as a consequence of its ownership of Mississippi Sound. Unlike the territorial claims of most coastal states, which are limited to three miles, Mississippi exercises jurisdiction over the Mississippi Sound to a point three miles seaward of the barrier islands. Consequently, the state controls the living and non-living marine resources out to a distance ranging from approximately 11 to 18 miles offshore.

Management of Submerged Lands

Mississippi's submerged lands management policy was developed in association with the state's coastal program. Consequently, the management regime is primarily devoted to coastal and near-shore submerged land issues. There is no comprehensive policy for planning and management of submerged lands of the territorial sea. Instead, policy decisions continue to be made by state agencies with single regulatory missions such as the management of fisheries or development of offshore oil and gas resources.

All state agencies must comply with the general statutory goals of the coastal program, which are specified in Miss. Code Ann. § 57-15-6 (1) (1990) as follows:

> (a) To provide for reasonable industrial expansion in the coastal area and to ensure the efficient utilization of waterfront industrial sites so that suitable sites are conserved for water dependent industry;
>
> (b) To conserve the resources of the coastal area for this and succeeding generations in accordance with the public policies expressed in sections 39-7-3 (historic preservation), 49-15-1 (seafood), 49-17-3 (pollution control), 49-27-3 (coastal wetlands protection), and 51-3-1 (water resources), Mississippi Code of 1972 (1990);
>
> (c) To consider the national interest involved in planning for and in siting of facilities in the coastal area;
>
> (d) To encourage the preservation of natural scenic qualities in the coastal area;
>
> (e) To assist local governments in the provisions of public facilities and services in a manner consistent with the coastal program; and
>
> (f) To ensure the effective, coordinated implementation of public policy in the coastal area of Mississippi comprised of Hancock, Harrison, and Jackson counties.

In Mississippi, the secretary of state has been designated as the trustee of public lands. Day-to-day management is left to the assistant secretary of state for public lands, in cooperation with a variety of state agencies that have been delegated management responsibilities under the coastal program. The Department of Wildlife, Fisheries and Parks' Bureau of Marine Resources, the Department of Environmental Quality's Bureau of Pollution Control and Bureau of Geology and Energy, and the Department of Archives and History are the primary agencies involved in policy development and permitting review on state submerged lands. (For a more detailed discussion of state agency management responsibilities, see chapter 2.)

Ocean Policy Challenges

■ Mississippi needs to evaluate the impact of the extension of the territorial sea on the following state interests:

- oil and gas revenue-sharing in the 12-mile territorial sea:
- federal consistency for activities that occur in the ocean zone between three and 12 miles;
- recognition by federal agencies that state water quality standards and certification requirements extend beyond the three-mile limit;
- state criminal and civil authority over the activities of foreign-flag vessels that operate within the three-to-12-mile zone.

■ If the extension of state jurisdiction is found to be essential for the accomplishment of important ocean management objectives, the state should cooperate with the Coastal States Organization, the Southern Governors Association, and other national and regional bodies to convey that position vigorously to the federal government.

■ Mississippi should examine the feasibility of developing a comprehensive state

policy and regulatory process regarding the leasing and other use of submerged land. Some progress has been made as a result of recent legislation regulating public trust tidelands. *See* Miss. Code Ann. §§ 29-15-1 *et seq.* (1990). While a good first step, the public trust tidelands legislation is exclusively devoted to the use and ownership of the nearshore tidally influenced areas of the state, and not to the broader range of activities taking place in the territorial sea.

■ Mississippi should support recently introduced federal legislation that provides additional guidance to the states regarding their role in managing ocean areas within the 12-mile territorial sea.

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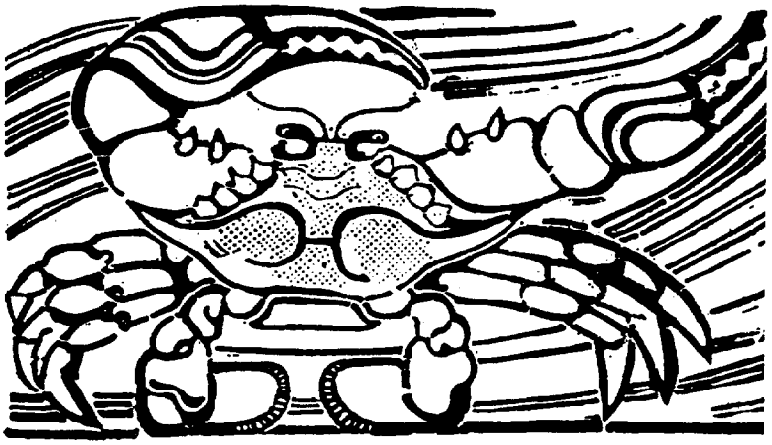

COASTAL ZONE MANAGEMENT ACT AND FEDERAL CONSISTENCY

Background

In response to the substantial degradation of the coastal environment caused by increasing population and development pressures, Congress enacted the federal Coastal Zone Management Act of 1972 (CZMA), 16 U.S.C. §§ 1451 *et seq.* (1988). As envisioned, the CZMA creates a program of collaborative planning between federal and state authorities. By developing federally approved coastal management programs, states are given the opportunity to participate in a joint federal-state initiative to protect and enhance their coastal lands and waters. The act provides incentives for states to develop their own coastal management plans by giving them federal financial and technical assistance and by promising that any federal activities conducted in the states' coastal zone must be consistent with its coastal management program. As originally drafted, the act provided that federal agency actions "directly affecting" a state's coastal zone must be consistent "to the maximum extent practicable" with that state's coastal management program. 16 U.S.C. §1456(c)(1) (1988).

The requirement that federal agencies act in a manner that is consistent with state coastal management programs is at the very heart of the CZMA. It is one of the elements that encourages states to participate in the program and to comply with the requirements set up by federal law. Furthermore, since interest in and competition over coastal resources have increased, federal consistency provisions have become an important management tool for the coastal states. Nevertheless, problems have arisen concerning the applicability of the Act's consistency provisions, the reach of which has been a point of serious contention between federal agencies and the coastal states.

One of the most heated battles has revolved around a 1984 United States Supreme Court decision. *Secretary of the Interior v. California*, 464 U.S. 312 (1984), involved the Department of Interior's (DOI) sale of oil and gas leases on the outer continental shelf of the coast of California. The state of California notified the Interior Department that it had determined that one of the lease sales was an activity that "directly affected" the California

coastal zone and requested a consistency determination. DOI disagreed with California; when negotiations failed to resolve the dispute, the parties turned to litigation. The Supreme Court agreed with DOI and in a 5-4 decision ruled that oil and gas lease sales were not activities that "directly affect" the coastal zone within the meaning of the CZMA, and thus are not subject to state consistency review.

Since the *Interior v. California* decision, other federal agencies have broadly interpreted it to apply to their activities as well. The U.S. Army Corps of Engineers adopted a policy that federal consistency review is not necessary for its ocean dredging projects that take place beyond state waters. In 1988, the U. S. Environmental Protection Agency (EPA) also released a draft legal opinion stating that it did not have to comply with consistency provisions when making proposed dump site designations in waters beyond state jurisdiction. While EPA eventually altered its position, the Corps of Engineers did not, provoking serious concern from states with approved coastal management programs and providing impetus for substantial legislative changes to the CZMA when it came before Congress for reauthorization in 1990.

Coastal Zone Reauthorization Amendments of 1990

The Coastal Zone Reauthorization Amendments of 1990, Title VI, Subtitle C, Sec. 6208, Omnibus Budget Reconciliation Act of 1990, Pub. L. No. 101-508 (1990), were passed in the final hours of the second session of the 101st Congress and made major changes to the CZMA. Among other measures, the new act provides additional federal funding to state coastal management agencies, encourages state ocean resources planning, and institutes a program that seeks to implement coastal land use management measures for controlling nonpoint source pollution. In addition, it amends the "federal consistency" provisions to overturn *Secretary of the Interior v. California.* It establishes that any federal agency activity that takes place either "in or outside the coastal zone" is subject to consistency review if it "affect[s] any natural resources, land uses, or water uses in the coastal zone."

Federal consistency requirements will be determined based upon a case-by-case assessment of whether a specific federal agency action affects natural resources, land uses, or water uses in a coastal zone of a state. According to the legislative history accompanying the new legislation, federal agencies should construe the term "affecting" broadly, so that it includes both direct and indirect effects that are reasonably foreseeable. Although no federal agency activities are categorically exempt from the consistency requirements, the President may exempt activities if they are in the paramount interest of the United States.

Present Status in Mississippi

The Mississippi Coastal Program was approved in 1980. Its federal consistency review process is administered by the Department of Wildlife, Fisheries, and Parks through the offices of the Bureau of Marine Resources (BMR). In addition to BMR, which serves as the coordinating agency and clearinghouse for the program, three additional agencies — the Bureau of Pollution Control, the Bureau of Land and Water Resources, and the Department of Archives and History — have been assigned responsibilities under the approved coastal program to review and comment on

federal activities that affect the coastal area and to ensure that those activities comply with coastal program goals.

BMR is required to inform the federal agency whether its proposed action is in compliance with the Mississippi Coastal Program within 45 days of receiving the federal agency's application. If BMR disagrees with a federal agency's consistency determination, it must provide a response that describes:

(1) How or why the proposed activity is inconsistent with specific elements of the Coastal Program;

(2) Alternative measures, if feasible, which could be adopted by the federal agency to make the proposed action consistent; and

(3) The nature and necessity of additional information that would be necessary to determine the consistency of the activity or development.

(Mississippi Coastal Program, Chap. VIII, Sec. IV, Part III, C(l)(d) (Rev. 1988)).

In the event of disagreement, BMR will use the remaining portion of the 90-day review period, provided in 15 C.F.R. § 930.35 (d) (1990), to attempt to resolve its differences with the federal agency.

A number of federal activites are currently taking place in Mississippi coastal waters that have received or will be seeking state consistency determinations. The most significant projects are probably the dredging associated with the Navy home port in Pascagoula, the deepening of the Gulfport Ship Channel, and the establishment of the proposed ocean-dredged material disposal site in state waters near Horn Island.

Ocean Policy Challenges

■ In light of the new standards brought about by the Coastal Zone Management Reauthorization Amendments of 1990 (CZMA), the state should consider revising its coastal program to take advantage of the increased consistency authority granted by the Act. Additional provisions could be adopted that better protect the state from federal activities that affect "any natural resources, land uses, or water uses in the coastal zone." Of special concern should be the state's role in reviewing proposed oil and gas lease sales in offshore federal waters pursuant to the 1990 CZMA amendments.

■ The federal government has expressed its concern about states placing conditions on their federal consistency determinations. When appropriate, Mississippi should continue to offer conditional consistency determinations rather than merely affirming or denying federal consistency requests.

■ Mississippi should take a leadership role among the states to ensure that federal agencies abide by the terms and spirit of the 1990 CZMA amendments.

■ The state should carefully examine the kinds of federal activities that are currently taking place in the ocean area beyond state waters to determine how these activities may "affect" the state's coastal zone. Special attention should be paid to dredging projects undertaken by the Corps of Engineers, offshore oil and gas exploration and drilling authorized by the Minerals Management Service, and ocean disposal activites of the Environmental Protection Agency.

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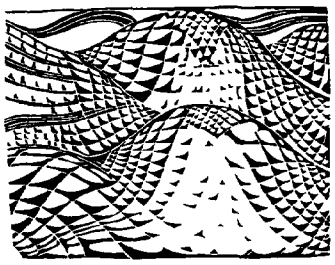
MARINE POLLUTION



Background

In Mississippi, the clean ocean waters and air that are vital to a healthy marine environment are continually threatened by pollution from a variety of sources. These include direct discharge of waste materials and debris directly into the ocean as well as runoff from coastal watersheds that carry pollution from urban, agricultural, industrial, and residential areas. The effects of these different types of pollution have been acknowledged for years. Unfortunately, the progress that has been made to control their role in the degradation of the state's coastal waters has been extremely slow and costly.

Susceptibility to environmental damage in Mississippi coastal waters is increased by the shallow depths and limited water exchange within the Gulf as a whole, and the Mississippi Sound in particular. The fact that the average depth of the Sound is only about 15 feet, coupled with the presence of the barrier islands, means that there is relatively little circulation and "flushing" of Mississippi coastal waters. Furthermore, the eastern portion of the Sound is highly industrialized. Due to the westerly direction of the Gulf currents, toxic pollutants which are introduced from the east through the Pascagoula River and Mobile Bay are readily spread over the entire Mississippi coastal area.

Regulation of ocean pollution is overseen by both state and federal agencies. The discussion below focuses on a number of the specific pollution problems facing Mississippi, followed by a description of the federal and state authorities involved in trying to alleviate the ill effects of marine pollution.

Pollution Sources

Point Source Pollution

Point source pollution originates from locations such as pipes, ditches, wells, vessels, and containers, and is referred to as "point source pollution" because pollution from these sources come from a single, identifiable point. Point sources are numerous in the Gulf of Mexico; in fact, a total of 460 municipalities and industries dump wastes directly into Gulf waters or related estuaries. In Mississippi alone, over 30 major industrial facilities discharge into Gulf waters, along with municipalities, which

discharge primarily sewage wastes. Localized pollution within the vicinity of the Pascagoula River System, Biloxi Bay System, and the St. Louis Bay System is of special concern.

Nonpoint Source Pollution

One of the most troublesome sources of water pollution is referred to as nonpoint source pollution. This type of pollution includes such things as runoff from urban locations, agricultural enterprises, industrial sites, and construction projects. Pollutants can also originate from the air (carried by rain or other precipitation), septic tank systems, and overflows from municipal storm sewers. Waters draining these areas contribute a variety of pollutants, including oils and chemicals from streets, rooftops, and parking lots; toxic chemicals from industrial or agricultural activities; and bacteria and viruses from domestic sewage. Sediment which washes into coastal waters is also a problem because these nonpoint source discharges are sometimes toxic. Not only does this pollution significantly affect the open waters of the Gulf, it also is responsible for the degradation of crucially important wetland areas.

A recent study released by the U.S. Environmental Protection Agency (EPA) determined that nonpoint sources of pollution were more significant sources of pollution than point sources for all areas of the country except the Northeast. In Mississippi, as in other states, the problem is one of the state's biggest challenges. Nonpoint sources are the primary pollution contributor in many estuarine areas that would otherwise be suited for swimming, fishing, or the propagation of healthy marine life.

Toxic Materials and Industrial Waste

Toxic pollutants are also a major concern in the state and may be derived from both point and nonpoint sources of pollution. Pesticides from agricultural runoff may become concentrated within major watersheds and eventually drain into coastal wetlands or open waters. Other toxic substances, such as heavy metals and organic carcinogens, are also present in Gulf Coast waters. Some of these are difficult to detect and can be very long-lived. For example, although it has been outlawed for years, DDT still persists in Gulf Coast waters in detectable levels.

The waste stream generated by industries discharging directly into coastal waters may include arsenic, mercury, PCBs, dioxin, and thermal pollution. Although these industries are required to obtain permits to dump at acceptable levels, a shortage of personnel by state regulatory agencies, coupled with the common practice of requiring only self-reporting by these industries, does not guarantee that these standards are always met.

Dioxin, one industrial chemical that is routinely discharged, deserves special mention. According to the EPA, dioxin is among the most potent animal carcinogens ever tested. The most potent form of dioxin is a by-product of bleach kraft pulp mills, and can also be found in association with certain petroleum refinery processes. Both of these industrial activities are found on tributaries of rivers emptying into the Mississippi Sound, and dioxin has been located in high concentrations downstream of these sites. Because of the apparent high rate of dioxin pollution, state regulatory agencies and the federal government have recently made the detection of dioxin a priority.

Municipal Waste

Sewage runoff from Gulf Coast communities that rely primarily on septic tanks has

been a persistent and costly problem. Most of the major shellfish harvesting areas in Mississippi coastal waters have been designated either "conditionally approved" or "restricted" due to elevated fecal coliform levels in urban runoff from these unsewered communities. Although laudable efforts by some coastal communities to improve sewage collection and treatment in recent years has led to a significant reduction of fecal coliform levels, the present levels still exceed acceptable standards.

In addition to the problems caused by septic tanks, several municipalities discharge treated wastewater through outfall pipes directly into the Gulf. Municipal sewage transports nitrogen, phosphorus, detergents, oils, grease, lead, chromium, floatable material, and disease-causing pathogens to the outfall area. A further threat is imposed when the sewer systems reach capacity and effluents are routed through outfall pipes without proper treatment.

Municipal runoff and agricultural runoff are often nutrient-rich and significantly affect the oxygen balance in the marine environment. The elevated nitrogen levels deplete oxygen, rendering broad areas of coastal waters and coastal wetlands generally unproductive. These nutrient-rich waters may also cause the proliferation of marine algae and plant life. These marine organisms are cycled through the marine food web, generating large masses of particulate matter. This particulate matter sinks to the seafloor and decomposes, further depleting the available oxygen supply that is necessary for a vital ecosystem.

Discharges from Ships and Oil Platforms

Discharges from ships or oil platforms may be intentional or accidental. Vessel discharges include fouled water, sewage, oil, gasoline, food, and seafood industry by-products. These substances are routinely pumped or manually thrown overboard, and collectively contribute to the degradation of marine waters. The cumulative environmental effects of these discharges are exacerbated when ships are in or near ports where ship, barge, tanker, and recreational boating traffic is greatest and water circulation is minimal.

Oil platform discharges include effluents, drilling muds, oils, diesel fuel, and gasoline. These various pollutants may seem insignificant, but the high concentration of oil production activity in the northwestern Gulf, and heavy tanker traffic along the Mississippi Coast has a cumulatively deleterious effect on Mississippi's water quality.

Marine Debris

Although all marine debris is unsightly and unpleasant, it is those kinds of litter that do not readily degrade—in particular plastics, styrofoam, and glass—that pose the greatest threat to marine life. This litter enters the ocean waters via dumping by military, merchant, and commercial fishing vessels, offshore drilling operations, recreational boaters, sportsfishermen, and cruise ships. Rivers bring debris from upland areas into Gulf waters, and litter is also left by beach visitors. Globally, over 14 billion pounds of trash is generated at sea each year.

Plastic debris is the most troublesome of all marine litter. It does not readily break down and it has accumulated for more than two decades. Plastic fishing nets, monofilament fishing line, plastic packing bands, and plastic six-pack beverage holders have accumulated in such great numbers that they have become a serious hazard to marine life. Each year an estimated two million sea birds, 100,000 sea mammals, and countless fish die from entanglement in plastic debris.

A recent inventory of the trash found along the United States' beaches found that plastics comprised 62 percent of all trash collected. The beaches of Mississippi, Louisiana, and Texas had more trash per mile of beach than any other states in the country. Gulf states have a greater concentration of debris than other coastal regions because of the heavy maritime traffic within the Gulf, coupled with limited oceanic mixing and circulation of its waters. In 1989, 1,760 volunteers collected an estimated 31 tons of trash from approximately 100 miles of Mississippi beaches and shorelines.

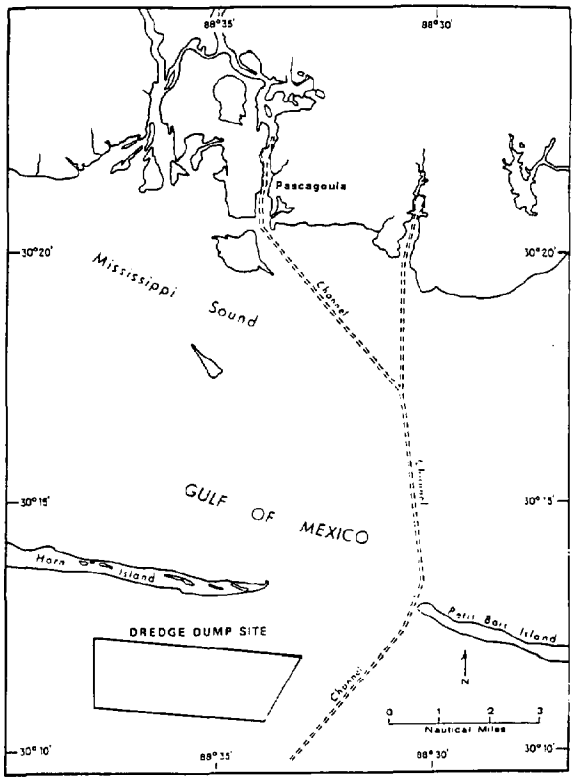


Figure 5.1. Proposed Pascagoula Ocean Dredged Material Disposal Site. [Source: Draft Environmental Impact Statement for the Designation of an Ocean Dredged Material Disposal Site Located Offshore Pascagoula, Mississippi. EPA, (July 1990)]

Ocean Dumping

For years the oceans were used as a convenient disposal site for a variety of wastes. However, by the late 1960s, it had become apparent that dumping wastes in the oceans was not necessarily without adverse consequence. As a result of serious public concern about the problem, dumping of waste materials has been strictly curtailed, and any dumping that is allowed is closely regulated by the federal government.

The U.S. Army Corps of Engineers (Corps) is responsible for conducting and permitting dredge projects designed to enhance navigability of the nation's waters. Even though the Mississippi Sound is quite shallow, it bears a heavy commercial maritime traffic load, including deep-draft ships. Thus, dredging and offshore disposal of dredge materials have always been a common occurrence off the Mississippi coast.

There are a number of major dredging projects currently taking place along the Mississippi coast. Of greatest significance is dredging associated with the Navy's development of Singing River Island near

Pascagoula as a new home port and the deepening of the Gulfport Ship Channel from 34 feet to 38 feet. Dredge material from channels is deposited in various disposal sites, including open water sites in Mississippi Sound and in upland sites adjacent to the channel. Because of the capacity at some of the sites, a special state-federal task force was formed in 1984 which initiated a long-range dredge material development plan for the Port of Pascagoula. The plan included measures to allow uncontaminated spoils to be disposed of in the deep Gulf, while toxic spoils could continue to go to upland disposal sites. In July 1990, EPA proposed to designate an area within state waters located approximately 1.5 nautical miles southeast of Horn Island and 14 nautical miles south of the mainland as an ocean-dredged material disposal site. Use of the new site would be restricted to disposal of dredged material from the Mississippi Sound area that meets the ocean dumping criteria set by federal regulation (40 C.F.R. § 228) (1990). (See figure 5.1.)

Government Response to Pollution

Federal Regulation of Marine Pollution

While much of the pollution affecting Mississippi waters is generated within state borders, the scope of the problem goes beyond the state, and is of national and even international concern. At the federal level, the government has initiated a number of laws, policies, and programs designed to address the problem of marine water quality. The following describes federal governmental actions regarding control and abatement of marine pollution.

Clean Water Act

The Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. §§ 1251 *et seq.* (1988), is the most important federal act covering water pollution in the United States, and continues to evolve through numerous amendments. The act creates a dual system for monitoring the quality of the nation's waters, including marine waters. It establishes water use categories and delineates acceptable water quality standards for those categories. An additional program creates a permitting system for establishing uniform national pollution standards for effluent discharges from point sources. Known as the National Pollution Discharge Elimination System (NPDES), this program makes it the responsibility of individual states to formulate and administer their own NPDES programs upon approval by the EPA. (More on the state NPDES program follows.)

Section 404 of the Clean Water Act, 33 U.S.C. § 1344 (1988), regulates dredge and fill activities. Jointly administered by EPA and the Corps of Engineers, this program establishes a permitting procedure for the discharge of any dredge material into waters of the United States.

Marine Plastic Research and Control Act of 1987

The Marine Plastic Research and Control Act of 1987, 33 U.S.C. §§ 1901 *et seq.* (1988), was implemented by Congress pursuant to Annex V of the Protocol of 1978 Relating to the International Convention for the Prevention of Pollution from Ships (MARPOL). The Act requires EPA to regulate what had become a severe marine plastics problem—requiring the cessation of disposal of plastics at sea and imposing civil fines upon violators. The Act requires the Department of Transportation to ensure that garbage receptacles are available at port for discarding plastics. Furthermore, shipowners must post placards warning crews

not to dump plastics and must keep a log book of all garbage dumpings. All vessels are mandated to comply with this law, with the exception of military and other "public" ships, which are not required to come into compliance with the ban on plastics dumping until 1994.

In the international arena, the United States has been actively pursuing a "special area" designation for the Gulf of Mexico under Annex V of MARPOL. Under the MARPOL treaty, a special area is defined as a "sea area where for recognized technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods of prevention of sea pollution by garbage is required." In an Annex V special area all dumping of solid wastes is prohibited.

Marine Protection, Research, and Sanctuaries Act of 1972

In response to calls for restrictions of materials being dumped into the ocean, Congress passed the Marine Protection, Research, and Sanctuaries Act of 1972 (MPRSA), 33 U.S.C. §§ 1401 *et seq.* (1988). The portion of this legislation that deals with ocean dumping is referred to as the Ocean Dumping Act(ODA). It establishes a permitting system under which dumping is regulated by the EPA and the Corps of Engineers.

EPA sets the criteria for evaluation of all permit applications and is the permitting agency for transportation of nondredge materials for the purpose of dumping. The Corps is responsible for granting permits for dumping dredge materials, using the criteria formulated by EPA and subject to its review authority.

Controversy has recently arisen regarding the relationship between the ODA and the Coastal Zone Management Act of 1972 (CZMA), 16 U.S.C. §§ 1451 *et seq.* (1988). The CZMA is an effort to promote cooperative planning between the states and the federal government, and offers states the opportunity to develop federally approved state coastal management plans in return for financial support from the federal government, along with the promise that any federal activities conducted in a state's coastal zone will be consistent with its approved management plan. Both EPA and the Corps have argued that the ODA preempts the CZMA and its consistency requirements. As a result of the 1990 amendments to the Coastal Zone Management Act, this issue should now be resolved. According to the new legislation, consistency requirements of the Coastal Zone Management Act apply to all federal agency activities — presumably this includes Corps and EPA activities under the ODA. (For a detailed discussion of the federal consistency provisions, see chapter 4.)

Clean Air Act

The Clean Air Act of 1977, 42 U.S.C. §§ 7401 *et seq.* (1988) provides the legal framework for the establishment and maintenance of air quality standards for the United States. Under the Act, EPA is mandated to set air quality standards and to develop and implement programs designed to achieve those standards. The Clean Air Act was substantially amended in 1990. Included in those amendments was a measure moving responsibility for offshore oil rig emissions from MMS to EPA for every region except the Gulf of Mexico. For the Gulf, OCSLA is still the operative act, with MMS responsible for monitoring of air quality of offshore drilling operations.

Oil Pollution Control Act of 1990

In response to growing concerns over the threat of oil spills, Congress passed, and the president signed into law, the Oil Pollution Act of 1990, P.L. 101-380 (1990). Among other things, the new oil spill prevention law requires tanker and tank barge operators to phase in use of double hulls on their vessels. Other measures include crew manning standards, vessel traffic management systems, and alcohol and drug testing for personnel. A comprehensive scheme for spill response is created, and provisions for liability and damages are included. (For a discussion of the issue of oil spills, and the regulatory response to the problem by the federal government and the state of Mississippi, see chapter 7).

Coastal Zone Management Act

In addition to requiring consistency determinations for federal activities such as disposal of dredge material, the Coastal Zone Act Reauthorization Amendments of 1990, P.L. 101-508 (1990), included a new program aimed at addressing the problem of nonpoint source pollution. The Coastal Non-Point Pollution Control Program requires coastal states to develop programs to protect their waters from nonpoint source pollution, and authorizes grant money for this objective. The new programs are to be coordinated with state and local water quality plans developed under the Clean Water Act. If states fail to submit approvable plans by 1996, funds from their CZMA and Clean Water Act grants will be withheld.

State Regulation of Marine Pollution

Water Quality

Within the state of Mississippi most water pollution control and abatement is carried out by the Department of Environmental Quality's Bureau of Pollution Control (BPC). The bureau is charged with carrying out the mandates of the federal Clean Water Act and is also responsible for implementing state legislation.

The Bureau of Pollution Control is organized into the following divisions: the Water Quality Management Branch, the Water Quality Monitoring Branch, the Municipal Construction Branch, the Municipal Permit Compliance Branch, the Industrial Wastewater Control Branch, and the Commercial Control Branch. The Water Quality Management Branch conducts the state's nonpoint source control program, and the Industrial Wastewater Control Branch oversees state and federal permitting of wastewater discharge, including the National Pollution Discharge Elimination System (NPDES). (See Table 5.1.) The Emergency Branch is responsible for the cleanup of any hazardous substance spills, including oil spills. (For a discussion of oil spills, see chapter 7.)

To control point source pollution and meet the requirements of the NPDES, BPC has divided discharge permits into municipal, industrial, commercial, and domestic categories. In Mississippi, there are currently 1,730 NPDES permits in force. Of these, 350 are municipal (20 percent), 530 are industrial (31 percent), and 850 are commercial permits (49 percent).

Federal water quality standards promulgated by EPA have been adopted in Mississippi. Applicants must apply for a permit at least 180 days before beginning a regulated activity. BPC will make a preliminary determination and develop a draft permit based on this determination. The draft permit will be forwarded to the applicant prior to offering the permit for public comment. After the public participation requirements are fulfilled,

the bureau will either issue or deny the permit.

If the applicant proposes to discharge dredged material into state waters, a Corps section 404 permit is also required. The Corps will not issue a permit unless it receives a state Water Quality Certification from BPC. An application for water quality certification is automatically made when submitting a permit application to the Corps.

Control of nonpoint source pollution in the Mississippi Gulf Coast area has been aided in recent years by the installation of new sewer systems and the upgrading of existing systems. Despite the decline of Mississippi's oyster reefs and the unacceptable bacterial pollution levels in some areas, the reversal of this trend seems possible.

Marine Litter

Mississippi was the first state to enact state legislation adopting the mandate of Annex V of MARPOL. The Mississippi Marine Litter Act of 1989, Miss. Code Ann. §§ 51-2-1 *et seq.* (1990), makes it unlawful for any vessel, large or small, to discharge any type of plastic, including synthetic ropes, fishing nets, garbage bags, and other packing materials, into the state's marine waters. All marinas or other access areas are required to have proper disposal facilities. Violations are punishable by fines or license revocation, and the Mississippi Department of Wildlife, Fisheries, and Parks is authorized to issue regulations and to enforce the act.

Ocean Policy Challenges

■ Mississippi should work with EPA's Gulf of Mexico Program and other regional organizations to develop and implement a Gulfwide marine environmental quality monitoring program and to publish an atlas of the Gulf of Mexico.

■ The state should continue to make efforts to promote public awareness of the harmful effects of marine litter, and to foster citizen participation in activities such as beach clean-ups.

■ Mississippi should encourage citizen involvement regarding the use and disposal of hazardous materials such as motor oil, paint, household cleaners, antifreeze, brake and transmission fluid, and pesticides. Conservation efforts should be promoted and local civic recycling and disposal centers established to facilitate proper disposal.

■ The state should reexamine funding of state marine resource agencies to ensure that they have the capability to monitor adequately the quality of the state's marine waters. Special attention should be given to an extensive sampling program to test for the appearance of carcinogens and heavy metals in Gulf Coast finfish and shellfish.

■ The state should strictly enforce all regulations governing unnecessary vessel discharges.

■ Mississippi should place high priority on developing and implementing a statewide nonpoint source pollution plan as required by the 1990 Amendments to the CZMA.

■ The Bureau of Pollution control should seek to develop a storm water permit and regulatory plan.

■ The Bureau of Marine Resources should actively enforce compliance with the CZMA consistency provisions for all federal agency activities within the state's ocean area.

■ Mississippi should implement improved siting standards, backup facilities, and emergency procedures for municipal and industrial ocean outfalls to protect the quality of the state's marine waters, shellfish harvest areas, recreational resources, and critical habi-

tat areas.

■ The state should support the designation of the Gulf of Mexico as a special area under Annex V of MARPOL.

■ Mississippi's Marine Litter Act should be rigorously enforced. Efforts should be made to ensure that its mandates are continued through reauthorization of the current legislation.

Table 5.1. The Major Operating Branches for Water Quality Oversight Within the Bureau of Pollution Control

Branch	Function
Water Quality Management	Nonpoint Source Program Water Quality Standards Dredge and Fill Certification Clean Lakes Program
Water Quality Monitoring	Water Quality Sampling Wastewater Modeling
Municipal Construction	Engineering, Technical, and Administrative Review of Municipal Wastewater Facilities
Municipal Permit Compliance	Oversight of Compliance and Enforcement of Wastewater Treatment Permits
Industrial Wastewater Control	Pretreatment Program State Operating Permit Program NPDES Oversight
Commercial Control	Regulation of Privately Owned Facilities With Sewage Collection and Treatment Facilities
Emergency Branch	Oil and Hazardous Substance Spills General Emergency Response

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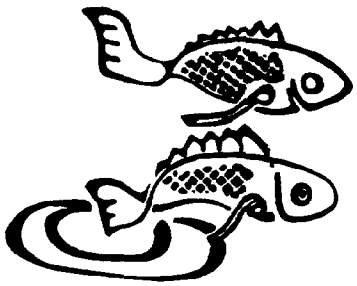
OFFSHORE MINERAL RESOURCES

Background

Mineral production in the Gulf of Mexico consists primarily of oil and gas development. The first successfully producing well in the Gulf of Mexico was drilled in 1937 and the Gulf has since become the most active area in the world for offshore oil and gas activities. Most of that activity has been off the shores of Texas and Louisiana; fewer than 50 wells have been drilled in Alabama and Florida, and only a handful have been drilled in Mississippi.

Nevertheless, offshore oil and gas production is an important issue for the state. Even though there has not been a great deal of activity off the Mississippi coast, the state has historically welcomed the development of oil and gas resources in its territorial waters and related federal waters. State leaders are attracted by the potential receipt of revenues and royalties for the development of the state's resources. Business and industry leaders are attracted by the economic boost associated with increased employment opportunities and the development of onshore support facilities. However, many warn that this economic windfall must be carefully considered in light of the environmental threat that energy development brings. The risk extends not only to the fragile areas of the Mississippi Sound, the barrier island system, and into federal waters, but also to the nearshore environment, because of increased population and industry-related pressures.



This chapter discusses the federal and state regulatory scheme for offshore oil and gas leasing, development, and production. The chapter also briefly discusses issues surrounding ocean pipelines and activities and regulations associated with hard minerals mining, another resource recovery effort conducted off the Mississippi coast.

Federal Leasing and Development Program

In the early 1940s as oil and gas reserves began to be identified offshore and technology was developed to exploit those reserves, interest in offshore development grew

rapidly. To assure that other nations would not develop petroleum off United States shores, President Truman issued a proclamation in 1945 stating that the United States had exclusive jurisdiction over the resources of the continental shelf. This resulted in a lengthy dispute between the federal government and the states, which claimed that they were the sole owners of the resources on the floor of the three-mile territorial sea.

In 1947, the United States Supreme Court agreed with the federal government and held in *United States v. California*, 332 U. S. 19 (1947), that it had exclusive rights to continental shelf resources, including those within the three-mile territorial sea. However, in 1953 Congress responded to that decision, by passing the Submerged Lands Act (SLA), 43 U. S. C. §§1311 *et seq.* (1988), which divided the offshore seabed area between the federal government and the states. The states were granted control of the area from their coastlines out to three miles (for historical reasons, the limit for Texas and Florida is three leagues or 10.35 miles). The area beyond the three-mile limit came to be known as the Outer Continental Shelf, which remained in the control of the federal government.

Several months after passage of the SLA, Congress enacted the Outer Continental Shelf Lands Act (OCSLA), 43 U.S.C. § 1331 (1988), to establish a federal regulatory scheme over use of natural resources located on submerged lands beyond the limit of state jurisdiction. Pursuant to the OCSLA, the Department of Interior (DOI) was charged with encouraging discovery and development of offshore petroleum resources through the creation of a leasing program.

Since the beginning of the program the federal government has offered approximately 127, 585 tracts for lease, constituting over 695 million acres. Of that number, over 10, 380 tracts have actually been leased, for a total of about 53 million acres. In 1989, 5,228 of the 6,367 leases in existence were in the Gulf of Mexico. Oil and gas production in this country has amounted to 107,244,842 billion barrels of oil and 605,653,640 cubic feet of gas. As of 1989, approximately 89 percent of this production was from federal leases in the Gulf of Mexico.

The Leasing Program

The federal OCS leasing program is conducted by the Department of Interior's Minerals Management Service (MMS). It is a complex program and is only generally summarized in the following discussion. The oil and gas leasing program was extensively amended in 1978 to incorporate a number of environmental safeguards and to create a role for state participation in OCS planning and development. The leasing and development process has four stages: (1) pre-leasing, (2) leasing, (3) exploration, and (4) development and production.

In the pre-leasing phase, MMS is charged with the preparation of five-year schedules of proposed lease sales (commonly referred to as the "five-year plan"). This plan must indicate as precisely as possible the location, size, and timing of lease sale activities. To facilitate planning and preparation of the program, the OCS has been divided into 26 planning areas (see figure 6.1). Mississippi is in the Central Gulf of Mexico planning area.

To determine which lands will be leased for exploration and production of oil and gas, MMS generally uses data from state geological surveys and the United States Geological Survey to determine the candidate areas for lease sales. Once the candidate areas are selected, MMS solicits comments from indus-

try, private individuals, state agencies, and local governments. A draft environmental impact statement is then prepared and is subject to comment by interested parties. These comments are considered and the final environmental impact statement is then written.

Under the OCSLA, the Secretary of the Interior must provide notice and copies of proposed lease sales and of proposed exploration, development, and production plans to the governors of affected states, and must accept the timely recommendations of a governor on lease sales if he determines that the recommendations provide a "reasonable balance between the national interest and the well-being of the citizens of the affected state." The secretary must explain to the governors, in writing, the reason for his decision to grant or deny the governors' requested modifications.

Provision for state input into the program comes not only from the OCSLA but also from the Coastal Zone Management Act (CZMA), 16 U.S.C. §§ 1451 *et seq.* (1984). Under the CZMA, states having a federally approved coastal zone management program may review federally permitted activities to ensure that they are consistent with the state program. This review is available at the exploration and development stages, and, with the passage of 1990 amendments to the CZMA, at the leasing stage. (For a discussion of issues surrounding federal consistency under the CZMA, see chapter 5.)

The Mississippi Coastal Program acknowledges its authority under the CZMA to review OCS oil and gas activities for consistency with the state's coastal management program. Department of Interior pre-lease sale "activities," such as determination of tracts to be offered and choice of lease sale stipulations, are subject to consistency determination, as are the other stages of development.

In general, Mississippi's policy regarding OCS oil and gas development off its coast has been that the state does not oppose such development as long as assurances can be made that the state's sensitive and important coastal and marine areas will not be harmed. This is not the view of all coastal states, many of which have unequivocally expressed opposition to any OCS development off their shores. In fact, so much opposition to offshore drilling has been raised recently that in the summer of 1990 President Bush announced a decision to ban drilling activities in most of OCS, except for the Gulf of Mexico and Alaska, until the year 2000. This was followed by congressional action imposing a one-year ban on drilling on more than 84 million acres of the OCS. While Mississippi has not seen much activity off its coast, with narrowing options for offshore drilling and an unstable situation in the Middle East it is likely that interest in development off Mississippi will increase.

OCS Revenues

Revenues from OCS leasing include any bonuses, rents, and royalties, all of which are deposited directly into the United States Treasury. From 1954 to 1988, the federal government has received over $54 billion in bonuses, $621 million in rents, and $35 billion in royalties from OCS oil and gas activities. Other than federal income tax, no other source provides as much revenue for the country as that produced by OCS oil and gas activities.

There is no real sharing of revenues received from OCS activities between the federal government and the states. Unlike onshore federal leasing activities on federally owned land, coastal states receive no direct monies from federal OCS lease activities. They do not share in the royalties, impose severance taxes, or receive payments to mitigate

the impact of leasing activities. Although there have been several attempts in Congress to address the problem of revenue sharing, no bills have been successful.

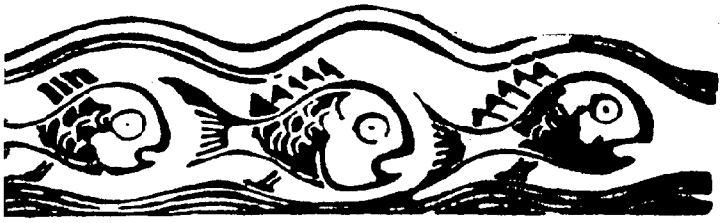
One mechanism does exist to provide states with a claim to a share of revenues. Section 8(g) of the OCSLA provides that states may claim 27 percent of revenues if a federal lease is within three miles of the territorial sea boundary and if drilling may tap into a resource pool that lies under both federal and state lands. Receipt of these funds is not truly revenue sharing, but rather compensation for recovery of state-owned resources.

Since 1980, Mississippi has received $10,483,356.46 in section 8(g) funds for leases within three miles of the state boundary. However, the recent reliance upon inexpensive imported oil has resulted in diminished production of Gulf Coast oil. The falling level of activity in the Gulf produced only $171,686.23 in payments from the DOI in 1989 and $194,462.66 in 1990(see figure 6.2).

Mississippi currently uses section 8(g) funds for three purposes, following guidelines established by state law that govern how monies received from oil and gas activities in state waters can be spent. Miss. Code Ann. §29-7-3 (1990). Under that directive, the section 8(g) money is invested, and the interest is transferred to the Department of Education, the Department of Wildlife, Fisheries, and Parks, and the Department of Environmental Quality.

The majority of the accumulated section 8(g) money is used by the Department of Education. For example, in 1990, $2,000,000.00 was spent for textbooks. A small amount is spent by DEQ to cover administrative costs incurred for regulating and permitting procedures. The amount of the remaining allocation is two percent of the section 8(g) interest made to the Department of Wildlife, Fisheries, and Parks. This money is placed in the Gulf and Wildlife Protection Fund. Of the amount in the fund, one percent goes to DWFP for oil spill cleanup, and one percent goes to the Commission on Wildlife, Fisheries, and Parks for land acquisition. As of early 1991, the total amount of section 8(g) funds placed in the Gulf and Wildlife Protection Fund was only $389,000.00. While the Commission has spent approximately $100,000.00 in a land acquisition contract with the Nature Conservancy, money allocated for oil spill abatement has never been spent.

It should be noted that Mississippi has not had a firmly established federal-state boundary, a fact that has been the subject of great debate between the federal government and the State of Mississippi. Since the Central Gulf of Mexico contains an estimated average of 3.82 billion barrels of undiscovered, economically recoverable oil and 37.66 trillion cubic feet of natural gas within 45 million acres of submerged federal lands, the location of the federal-state boundary, as well as the boundaries between Mississippi and its neighboring Gulf states, could be crucial to determining Mississippi's share of OCS revenues. However, the dispute has recently been resolved. On November 5, 1990, the United States Supreme Court approved a joint resolution from Mississippi and the federal government settling a dispute over control of natural resources in an area beneath Chandeleur Sound. Thus there should now



be certainty over allocation of revenues that may arise from any development in that area. (For a discussion of state boundaries, see chapter 3.)

Present Policies for Oil and Gas Development in State Waters

Leasing and Development

Interest in drilling within Mississippi coastal waters began in 1981. In 1985, Sapphire Exploration and Production, Inc. of Dallas,Texas acquired a lease to approximately 20,000 acres of submerged state lands located 4.5 miles south of Ship Island. In 1986, Sapphire drilled an exploratory well, but it proved to be unsuccessful.

In 1982 and 1985, Chevron U.S.A. also acquired leases to approximately 20,000 acres of submerged lands near Cat Island. Chevron drilled an exploratory well in 1988, but it was also unsuccessful. The drilling operation was abandoned in 1989, and Chevron removed the rig and relinquished all leases in 1990.

The Department of Environmental Quality's Bureau of Geology and Bureau of Energy are responsible for the administration of all exploration and leasing of minerals on state-owned lands and submerged lands subject to ebb and flow of the tide in Mississippi. Policy decisions are made by the Commission on Environmental Quality, which is authorized to lease state lands within its jurisdiction and to promulgate regulations for their management. Although the lease bidding process is usually by competitive bid solicited by newspaper advertising, leases may be granted through noncompetitive negotiation, if determined by the commission to be necessary or appropriate or in the best interests of the state. Discretionary variances and exceptions to regulations are allowed for good cause as well.

There is no differentiation between exploration and development for the purpose of obtaining a permit for oil and gas drilling in Mississippi. Before exploration may take place, a permit for seismic exploration must be obtained from DEQ's Bureau of Geology, and state seismic agents must accompany the crew conducting the seismic research in state waters. No permits will be issued without proof of liability insurance on the part of the applicant. All permit applications are forwarded to Bureau of Marine Resources (BMR) where the permit is subject to review and assessed for compliance with the Mississippi Coastal Program. There is also review by the Department of Archives and History to ensure that no archaeologically sensitive areas will be disturbed by the lease activity. Finally, a permit must also be obtained from the State Oil and Gas Board for the construction, operation, and maintenance of facilities for the exploration, production, and transportation of oil and gas.

BMR will not issue a permit until the potential lessee submits a written report of environmental impact of drilling activities, unless a report with this information has been submitted to another state or federal agency. Waste discharge permits, if necessary, must be secured from the Bureau of Pollution Control (BPC) or the U.S. Army Corps of Engineers (Corps). Pursuant to Section 404 of the Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. §§1251 *et seq.* (1988), the Corps may require that a permit be issued. However, the permit will not be granted unless BPC issues a State Water Quality Certification, application for which is automatically made when applying with the Corps.

Use of Revenues from State Leases

State law governs how Mississippi uses its lease and royalty payments from state

water tracts. Of the monies received, five-tenths of one percent is retained in a special fund, $100,000 of which is used by the Commission on Environmental Quality to defray the costs incurred for regulating and permitting procedures, with the rest going to the Education Trust Fund. Two percent of the lease money is used to maintain the Gulf and Wildlife Protection Fund, and is allocated as follows: one percent (not to exceed one million dollars) to the Department of Wildlife, Fisheries, and Parks for oil and gas pollution control or abatement, and one percent (not to exceed one million dollars) for use by the Commission on Wildlife, Fisheries, and Parks for land acquisition. Any remaining monies are deposited into the Education Trust Fund. Miss. Code Ann. § 29-7-3 (1990).

Disposal of Offshore Platforms — Rigs to Reefs

Another problem area surrounding oil and gas development involves the removal and disposal of drilling platforms that are no longer useful. For example, the common practice of removing the structures by blowing them up can be hazardous to surrounding wildlife. Disposal of the abandoned rigs is also problematic. The structures can be towed to a location where they can be scrapped, but the cost of this often outweighs their scrap value. In the Gulf of Mexico, an average of 40 to 50 structures per year are removed from the area, a number of which are dismantled and sold for scrap.

Recently proposals have been made to use the outmoded platforms as artificial reefs, either dismantling them and leaving them in place, or toppling and moving them to another location. However, this idea is controversial. Many questions persist as to the true fisheries enhancement capabilities of these structures. In addition, they may interfere with the trawling operations of commercial fishing, add to the litter of the ocean floor, and cause underwater navigational hazards.

Nevertheless, in November of 1985 the design, siting, permitting, construction, and management of artificial reefs—including the use of disused oil and gas platforms—was developed into a National Artificial Reef Plan under the National Fishing Enhancement Act of 1984, 33 U.S.C. § 2103 (1988). In conjunction with the federal legislation, Louisiana and Texas have implemented state laws regarding creation of artificial reefs through the use of abandoned drilling platforms. Under these programs, the structures are either toppled in place or removed to designated sites and function to enhance fishery resources.

Mississippi has not instituted any program or legislation encouraging the use of obsolete oil rigs as artificial reefs. However, the state does have a permit system for the construction of artificial reefs that would be applicable to petroleum platforms. The program is administered jointly by BMR and the Corps, and requires that any artificial reef created by an individual or corporation be in compliance with the state's coastal program. The permits issued to builders of artificial reefs state "any accepted standard fishery management technique except diking and filling in waters of the United States may be authorized under this general permit." Any construction application for a reef in state waters would be coordinated with the Corps and BMR. Any proposal for construction on the outer continental shelf would also be coordinated with the MMS.

According to a public notice issued jointly by the Corps and BMR in 1988, a number of restrictions would be placed on an entity interested in sinking an obsolete oil rig for use as

an artificial reef. Of those restrictions, the most relevant include denials for (1) structures and activities that may interfere with navigation; (2) activities which will adversely impact or threaten endangered species or their critical habitat; (3) activities that will affect or degrade cultural resources; and (4) activities that do not meet state-ordered water quality standards.

Ocean Pipelines

The Gulf of Mexico is home to the most extensive ocean pipeline system in the world. Currently there are 15,640 miles of approved outer continental shelf pipeline in the Gulf of Mexico; 90 percent of this is located in the Central Gulf. In addition, state waters have their own share of pipelines, which are not included in this figure.

Safety standards, design, installation, operation, and maintenance of pipelines and related facilities are governed by two federal statutes. The Natural Gas Pipeline Safety Act, 49 U.S.C. §§ 1671 *et seq.* (1988) applies to pipelines for natural gas, and the Hazardous Liquid Pipeline Safety Act, 49 U.S.C. §§ 2001 *et seq.* (1988) controls pipeline transportation of petroleum. Both statutes provide that while states may impose more stringent controls over pipelines in intrastate waters, state regulation of pipelines is preempted by federal standards for interstate pipelines. Neither Act governs associated siting requirements, easements, or environmental permits for pipelines and facilities.

Offshore pipelines may be subject to a number of federal acts, and may require dredge and fill permits from the Corps of Engineers, water quality (NPDES) and air quality permits from the Environmental Protection Agency (EPA), and consistency certification under the Endangered Species Act. In addition, easements over the OCS may be required from the MMS.

At the state level, the Oil and Gas Board has primary permitting authority for pipeline construction, operation, and maintenance. Rule OS-10 of the Oil and Gas Board regulations sets forth a number of requirements with which a permit applicant must comply before being issued a permit from that agency. BMR also issues permits, specifying that pipeline projects must be aligned along the route least damaging to the environment, avoiding areas of submerged grass, shellfish beds, artificial reefs, or hard banks.

On its face, the idea of moving oil by pipelines seems preferable to moving it by tankers or tank barges; however, the extensive pipeline system has created the need for many large capacity refineries along the Gulf shoreline, making the Central Gulf a major destination for tankers laden with unprocessed oil. Approximately 1,000 tankers carrying oil and chemicals and 350 ships carrying oil enter Mississippi coastal waters to reach the Pascagoula port every year. The increased tanker traffic and the fact that most of the recent ocean pipelines have been installed at a depth of less than 200 feet has created the possibility of a major threat to the wetlands and fisheries.

Hard Minerals Mining

Mississippi's territorial sea bottoms and adjacent continental shelf contain other mineral resources besides oil and gas. Commercial sand, gravel, and shell dredging take place in waters of the Mississippi Sound. Other heavy minerals that are of commercial interest, such as ilmenite, rutile, kyanite, staurolite, zircon, monazite, and xenotine exist in such quantities as to be potentially economically feasible to recover. While many of the

known deposits are not accessible because they are located on the margins of the barrier islands and make up part of the Gulf Islands National Seashore, other economically promising deposits exist in areas that may be environmentally suitable.

Jurisdiction over hard mineral mining activities is divided between the state and federal governments. Mississippi manages resources located within the three-mile area, and MMS exercises federal regulatory authority over these activities on the Outer Continental Shelf. A licensing scheme for mining activities on the high seas beyond the continental shelf is set up by the Deep Seabed Hard Mineral Resources Act, 30 U.S.C. § 1401 (1988).

Until recently the federal government had no regulatory scheme for the mining of minerals other than oil, gas, and sulfur. However, in 1989 MMS adopted a three-tiered regulatory program. The first tier of regulations establishes practices and procedures specific to the prospecting activities associated with geological and geophysical exploration and scientific research. The second tier prescribes procedures and requirements for leasing minerals other than oil, gas, and sulfur on the OCS. The third tier governs postlease activities. 30 C.F.R. §§ 251, 256, 281, 282 (1989)

Joint state-federal task forces are provided for in the regulations to promote coordination between the governmental entities. Task forces give state governors the opportunity for access to available data and information regarding exploration and development and the ability to monitor the leasing process. However, MMS has stated that consistency determinations are not required under the CZMA. This position should change with the 1990 amendments to the Act that all federal agency activities affecting a land or water use or a natural resource of the coastal zone be consistent with the enforceable policies of the state's approved coastal management plan (For a discussion of the CZMA, see chapter 4).

The MMS regulatory scheme has generated a great deal of controversy. The most commonly levelled criticism is that MMS does not have authority to regulate hard minerals mining. The agency claims its authority from the OCSLA; however, that Act deals almost exclusively with oil and gas activities, with only one sentence in the entire Act mentioning the leasing of "any mineral other than oil, gas, and sulfur." 43 U.S.C. §1337(k) (1988). Industry, coastal states, and environmental groups have argued that this thin reference is not enough to give MMS the authority to promulgate an entire regulatory program.

At the state level, the same regulatory scheme that governs oil and gas applies to exploration, leasing, and development of hard minerals. The regime was originally tailored to meet the needs of the established petroleum industry rather than the peculiarities of the hard mineral mining industry. In any case, the Commission on Environmental Quality has the discretion to tailor lease bids and royalties, giving the state a mechanism to address the special needs related to the development of these resources.

Ocean Policy Challenges

■ Mississippi, through its governor and state agencies, should take full advantage of the opportunity provided by the Outer Continental Shelf Lands Act to comment on the proposed OCS leasing program.

■ The state should recommend, support, and participate in the initiation of regional studies to investigate the impact of increased drilling activities in the Gulf that may occur as a result of recent oil and gas drilling moratoriums in other parts of the country.

■ The advisability of proposed federal legislation that awards greater control to the states over oil and gas development in the expanded territorial sea should be evaluated.

■ The state should monitor federal legislative efforts to increase coastal state revenue sharing from Section 8(g) lands and aggressively support appropriate legislation.

■ Current policies regarding the allocation of Section 8(g) revenues as well as revenues from state oil and gas leases should be reexamined. Special attention should be given to earmarking Section 8(g) funds for coastal communities to help local governments offset the onshore impact of outer continental shelf drilling and for funding the state's oil spill contingency program.

■ The state should evaluate the need for, and feasibility of, a regulatory scheme specifically addressing hard mineral mining in state waters.

■ Developing a program that encourages the use of abandoned oil rigs as artificial reefs should be considered.

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OIL AND HAZARDOUS SUBSTANCE SPILLS

Background

The recent spate of devastating oil spills caused by tankers and ruptured pipelines off the coasts of Alaska, California, Texas, and a number of East Coast states has resulted in renewed interest at the state and national levels in additional preventive and liability measures. Because the near coastal waters of the Gulf of Mexico are among the most productive coastal waters of the United States, Mississippi is particularly susceptible to the threat posed by the drilling and transportation of oil and hazardous substances off its shore.

Today over 20 million acres of the Gulf of Mexico have been leased for oil and gas development. There are at present an estimated 4,000 offshore oil and gas wells in the Gulf region, as well as hundreds of oil and chemical refineries along with their associated pipelines and tanker vessel traffic.

Although Louisiana and Texas possess most of the offshore oil and gas production and refinery capacity in the Gulf region, Mississippi's close proximity to those states, along with the Gulf's prevailing easterly ocean current system, makes it relatively likely that the state would be affected by a major spill off the coasts of neighboring states. Currently Mississippi has no operating offshore oil and gas rigs in state waters. However, there are a number of operating wells just outside state waters south of Petit Bois Island, about 10 miles offshore from the city of Pascagoula.

Mississippi's coastal waters serve as a transportation corridor for crude oil and petroleum products being transferred by pipeline and tanker from offshore oil fields to coastal refineries and other users. Chevron U.S.A. has built one of the largest refineries in the United States just east of the Port of Pascagoula in the Bayou Casotte Industrial Channel. The refinery is designed to process over 16 million tons of heavy crude per year and receives its supply of oil from a pipeline that originates in the coastal Louisiana oil fields and from supertankers that anchor beyond the barrier islands south of Pascagoula. Smaller tankers transfer the crude oil to the refinery's oil dock located on Bayou Casotte.

Other industrial activities in the Bayou Casotte area could potentially spill oil or other hazardous chemicals. These include

NUSOUTH Industries, the Chicago Bridge and Iron Company, and a large fuel dock. The huge Ingalls Shipyard and several other marine manufacturing industries located near Bayou Casotte on the East Pascagoula River also use large quantities of oil and chemical products.

Four major industrial parks are located along the coastal area of Harrison County. On the north shore of the Bay of St. Louis in western Harrison County, the Du Pont Corporation operates a large titanium dioxide processing plant. In southwest Hancock County, the more sizeable water-dependent industries include a Borg-Warner plastics manufacturing plant and a marine concrete products manufacturer. Also located in Hancock County is the National Space Technology Laboratories, which is the headquarters for some 18 federal and state agencies and is a major research and testing facility.

Over the years, there have been a number of oil spills in Mississippi coastal waters. Two of the most recent occurred during the fall of 1989 when a damaged Chevron pipeline spilled 4,200 gallons of oily water into Bayou Casotte, and when a ruptured barge near Horn Island spilled 32,000 gallons of light crude into Mississippi Sound.

Legal Framework

Duties and responsibilities in the event of an oil spill are determined by various laws and regulations. These include: (1) international treaties; (2) federal environmental laws; (3) national oil spill contingency plans; (4) regional oil spill contingency plans; and (5) U.S. Coast Guard regulations.

International Treaties

Several international treaties have been adopted to control intentional and accidental discharges of oil and to deal with civil liability for pollution damage. The most important convention to control pollution from vessels is the International Convention for the Prevention of Pollution from Ships (MARPOL), which was concluded in 1973 and modified by protocol in 1978. MARPOL 73/78 requires new crude oil tankers to comply with strict design and construction standards, including segregated ballast tanks and oil washing systems. Retrofit options are specified for older vessels. The United States ratified MARPOL 73/78 in 1980, but has not yet ratified Annex II or Annex III, which are concerned with the control of pollution by noxious liquid substances in bulk.

Two treaties deal with civil liability for pollution damage. The 1969 International Convention on Civil Liability for Oil Pollution Damage (Civil Liability Convention) provides strict (but limited) liability for pollution damage caused by vessels carrying oil in bulk as cargo. The 1971 International Convention on the Establishment of an International Fund for Compensation for Oil Pollution (Fund Convention) established a supplemental fund of up to 675 million gold francs to ensure increased compensation for victims of oil pollution. Neither the Civil Liability Convention nor the Fund Convention has been ratified by the United States because both are perceived to offer too little protection to pollution victims.

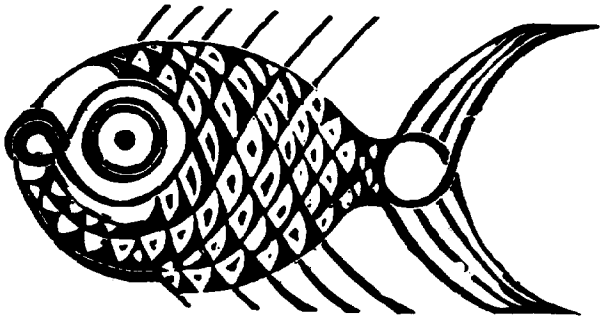
In an effort to allay the misgivings of nations like the United States, the International Maritime Organization adopted the 1984 Civil Liability Protocols. These Protocols, among other measures, dramatically increase the limits of liability under the Civil Liability and Fund Conventions. Although endorsed by the Reagan administration, Congress chose not to ratify these protocols when passing new federal oil spill legislation.

Private oil companies have also created an international funding system for damages arising from tanker oil spills. The Tank Owners' Voluntary Agreement Concerning Liability for Oil Pollution (TOVALOP) provides up to 10 million dollars to governments for cleanup costs, and the Contract Regarding an Interim Supplement to Tanker Liability (CRISTAL) extends coverage to other governmental costs and private damages.

Other international conventions that may have an effect on oil or chemical spills in Mississippi waters include the 1969 International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties and the 1983 Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region. The Intervention Convention allows coastal states to take any measures necessary on the high seas to prevent grave or imminent danger to their coastline from pollution by oil. The Wider Caribbean Region Convention attempts to prevent a number of sources of pollution, including oil spills. Mississippi is located within the Wider Caribbean Region.

Federal Environmental Laws

In the wake of the Exxon Valdez oil spill in Prince William Sound and in answer to growing public concern over the effects of oil spills on the marine environment, Congress adopted a new regime governing oil spill liability and prevention on August 18, 1990. The Oil Pollution Act of 1990 (OPA), Pub. L. No. 101-380, establishes a comprehensive scheme for prevention, removal, liability, compensation, and penalties relating to oil pollution. However, even though the OPA is now the principle statute regarding oil pollution, it builds upon and amends the existing statutory framework relating to water pollu-



tion. The following discussion briefly summarizes the provisions of the new OPA and other federal water pollution laws that address problems of oil spill prevention and liability.

Prior Legislation

During the late 1960s and 1970s, Congress enacted two laws that provide broad federal authority to prevent or remove pollution by oil and other hazardous substances that have been discharged into navigable waters, including the 200-mile exclusive economic zone. The first is the Federal Water Pollution Control Act (Clean Water Act) 33 U.S.C. §§ 1251 *et seq.* (1988), which prohibits the discharge of both oil and other hazardous substances into U.S. waters. The second is the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9601 *et seq.* (1988), which governs the discharge of all hazardous substances except crude oil and petroleum products.

Under the Clean Water Act, a discharge of oil or other hazardous substance is in violation of the Act if it fails the "sheen" test, which is defined as a "film or sheen upon a discoloration of the surface of the water." Failure of the sheen test creates a rebuttable presumption that there was a harmful discharge. A defendant must then present evidence proving that the discharge was not harmful.

Spillers must report any spill to the U.S.

Coast Guard and must contain and remove the oil or hazardous substance. Failure to report can result in criminal penalties. If the spiller cannot be identified or if the private response is inadequate, the federal government is responsible for removing the pollution. Under these circumstances, the government may recover its response costs from the spilling party.

If the discharged substance is not oil or a petroleum product, CERCLA may be relied upon as a method of recovering government response costs. In some instances, an action under CERCLA is preferable because the potential liability for cleanup costs is larger than under the Clean Water Act. In the absence of willful misconduct, both Acts limit spiller liability to certain maximum dollar amounts, but CERCLA's limits are considerably higher.

Although recovery by the federal government for cleanup costs under the Clean Water Act or CERCLA is exclusive and cannot be supplemented by other federal theories of liability, many state governments have passed legislation that allows for additional recovery of state cleanup costs. The United States Supreme Court in *Askew v. American Waterway Operators, Inc.*, 411 U.S. 325 (1973), held that state law is not preempted by the Clean Water Act, but did not rule on whether states may impose liability beyond the dollar limits on liability contained in the federal legislation.

New Legislation

The Oil Pollution Act of 1990 is intended to be a comprehensive scheme addressing all matters related to oil pollution. It establishes comprehensive prevention measures, creates strict (although limited) liability for owners and operators of vessels and facilities, and sets liability limits eight times higher than under pre-existing law. It also creates a $1 billion federal oil spill trust fund to assure complete compensation for parties injured or damaged by an oil spill and provides strong enforcement, including authorizing states to enforce certain federal requirements. Finally, it establishes national, district, and local units to respond to an oil spill. States play an important role under the OPA. Not only do they work with the federal government and industry regarding prevention, response, clean up, and compensation, but they also are completely free to implement oil spill legislation that best fits the needs, economy, and environment of their own state. In other words, a central feature of the Act is that it does not preempt state authority in any way. States may impose unlimited liability under state law, and may also construct their own regimes regarding financial responsibility requirements, response and compensation funds, taxing authority to finance those funds, civil and criminal penalties, and regulatory authority over safety, operation, and maintenance of facilities and, to some extent, vessels.

The following measures were enacted to prevent future oil spills: crew manning standards, vessel traffic service systems, and alcohol and drug testing. Applicants for licenses, certificates, or vessel documentation will have their criminal records and drivers licenses checked; if found to be under the influence of alcohol or illegal drugs, a ship's master will be removed. In addition, tankers carrying oil or hazardous substances are required to have double hulls. Any tanker operating in U.S. ports is required to have the double hull fitting or be retired as of January 1, 1995. New tankers built after passage of the bill are required to be fitted with double hulls. An existing vessel with double sides or bottoms can continue in operation until January 1, 2015.

Federal liability systems were streamlined into one system, with all state civil, criminal, and taxation authorities left in place. Under the federal system, "responsible parties" are liable for removal costs and damages, including liability to state, local and federal governments for removal costs incurred by those agencies. The Act defines responsible parties as "any person owning, operating, or demise chartering a vessel, and any person owning or operating an onshore facility (other than a federal agency, or state or subdivision of the state)." "Removal" refers to containing and removing oil and hazardous substances from water and shorelines, and taking actions needed to minimize or mitigate damages to fish, wildlife, and other resources.

Any person incurring a loss must first seek compensation from the responsible party or its guarantor. If the claim is not settled within 90 days, the party may then seek compensation through the legal system or from the Oil Spill Liability Trust Fund, which would be subrogated against the responsible party to all legal rights that originally belonged to the claimant. The Oil Spill Trust Fund was created in the Internal Revenue Code of 1986, 26 U.S.C. §9509 (1988). Penalties paid from Clean Water Act fines will be deposited in the trust fund. All owners and operators of vessel and facilities must demonstrate that they have sufficient resources to cover potential liability for spills or show proof of insurance. Any amounts recovered under this Act by a government entity are maintained by a trustee in a revolving trust account to be used to reimburse or pay costs of damages. Any amounts recovered over the damages are deposited in the fund for settling recovery amounts later.

Damages include the "injury, destruction of, loss of, or loss of use of natural resources, including the costs of assessing the damage recoverable by the United States trustee, State trustee or foreign trustee." Defenses to liability are included in the Act but are limited to proof by the responsible party that the damage was the result of an act of God, war, or an act or omission of a third party

other than an employee or agent of the responsible party. Defenses are not allowed if the responsible party fails to report an incident and provide reasonable cooperation and assistance to removal activities.

National Oil Spill Contingency Plans

The National Oil and Hazardous Substances Pollution Contingency Plan (40 C.F.R. § 300) (1990) was created to effectuate the response powers and responsibilities created by the Clean Water Act and CERCLA. Among other measures, the plan includes (1) division and specification of duties among federal, state and local governments; (2) descriptions of the organization, response personnel, and resources that are available to respond; (3) preplanning for response by state and local authorities; (4) procedures for undertaking operations pursuant to the Clean Water Act and CERCLA; and (5) national policies and procedures for the use of dispersants and other chemicals.

National planning and coordination is accomplished through a standing committee called the National Response Team (NRT). The NRT is made up of representatives from several federal agencies. When the NRT is activated for response actions, the chairman is either the Environmental Protection Agency (EPA) or Coast Guard representative, depending on whether the discharge occurs in the inland zone or coastal zone.

Regional Oil Spill Contingency Plans

In addition to a national contingency plan, a federally sponsored plan has also been developed for each of the 10 EPA Regions. The regional plan is developed by a Regional Response Team (RRT), which consists of designated representatives from each participating federal agency, state government, and local government. Mississippi is located in Region IV, headquartered in Atlanta, Georgia. The purpose of the regional contingency plan is to promote further the coordination among federal, state, and local governments and private sectors to respond effectively to releases of oil. Region IV places great emphasis on states assisting local communities to develop local contingency plans. It encourages states within the region to utilize Civil Defense or Emergency Management Operations to prepare contingency plans on the county level to address possible emergency situations involving oil and hazardous substances.

Federal law requires that spillers be given the opportunity, when time and circumstances permit, to conduct cleanup operations before federal funds are committed. This requires that the federal government and a majority of coastal states rely upon private contractors to supply emergency oil spill equipment and personnel. Region IV uses three primary private contractors, two of which are based in Atlanta, while the third has most of its equipment housed in Ohio. In addition, Mississippi has its own list of designated environmental cleanup contractors drawn from within the state, as well as from Texas, Louisiana, Alabama, Georgia, Tennessee, and Illinois.

Although the national and regional efforts described above remain in force, the new Oil Pollution Act adds another layer of response mechanisms. The Act calls for a revision of the National Contingency Plan to establish procedures for removing a "worst-case" discharge. Furthermore, it mandates creation of a national response unit with 10 regional response groups to maintain a list of oil spill removal resources, personnel, and equipment, and to inspect vessels, facilities, and equipment. Under the system, the private sector will supply the bulk of the equipment

and personnel needed. Demonstration projects are authorized for three areas: New York and New Jersey, Los Angeles and Long Beach, and New Orleans. These port areas will receive special funds to test cleanup techniques and response procedures.

Area committees, comprised of presidentially appointed members of federal, state, and local government are established by the Act. Each area committee is charged with formulating an area contingency plan to prepare for a "worst case" oil spill from a vessel or facility operating in the area. Owners and operators of vessels or facilities are also required to prepare individual response plans that identify and ensure the availability of private personnel and equipment to remove a worst case spill and to mitigate or prevent substantial damage from a spill.

Finally, in addition to governmental response groups, private industry has reacted to the new legislation by creating a new industry response organization. Funded by some 20 oil companies, the Marine Spill Response Corporation (formerly the Petroleum Industry Response Organization) will set up five regional centers and a number of equipment staging areas at the major port regions.

U. S. Coast Guard Regulations

The U.S. Coast Guard has the principal responsibility for implementing and administering the OPA. Under its provisions, Coast Guard representatives take the leading role in coordinating the response teams at all levels — national, regional, and local — and are charged with carrying out numerous other duties that are mandated by the legislation. The Coast Guard also relies on international treaties, other federal environmental laws and their associated regulations, and internal administrative guidelines to provide guidance in performing their response duties.

Status in Mississippi

Mississippi state law permits fines of up to $25,000 per day for discharges of pollutants into state waters. Miss. Code Ann. §49-17-43(e) (1990). It also has a state emergency spill response fund, which is financed by legislative appropriation and by fines for environmental violations. Miss. Code Ann. §49-17-68 (1990). Furthermore, there is a provision allowing a portion of revenues gained from oil and gas activities off the Mississippi coast to be used for cleanup response. Miss. Code Ann. §29-7-3 (1990). The state has not, however, yet enacted legislation that deals specifically with the prevention and control of oil and hazardous substance spills, choosing instead to rely on the federal legislative framework.

The Mississippi Bureau of Pollution Control (BPC) has responsibility for coordinating the state's role in controlling spills in coastal waters. Upon notification of a spill, BPC dispatches the closest staff member trained in emergency response. If the state cannot respond adequately, BPC requests assistance from the Coast Guard, EPA, and the RRT.

To complement the national and regional contingency plans, Mississippi has developed a state contingency plan for oil and chemical spills. This plan is currently little more than an information booklet that explains who to contact in case of a spill and lists environmental cleanup companies in the region. Recent major spills in other states have shown that even the best written plan and the most experienced personnel lose valuable time to reduce the effects of a potentially major spill if the needed equipment is not immediately available, or public and private agencies and organizations fail to coordinate efforts to the fullest extent under the circumstances. In Mis-

sissippi, there are no official state or county plans that coordinate intragovernmental response activities. There is also no mechanism in place to inventory cleanup equipment owned by private companies to ensure that it is available in the event of a large spill.

The state has also developed a document entitled *A Contingency Guide to the Protection of Mississippi Coastal Environments from Spilled Oil.* Filled with large maps and illustrations, the guidebook carefully delineates protection priorities and provides discussion of related environmental information. This contingency guide was intended to provide a scientific basis for setting priorities for response and protection. Although still valuable, the guide has not been reviewed or updated since its original publication in 1984.

The federal Oil Pollution Act takes a total non-preemption stance and gives the states wide latitude to fashion oil spill legislation that best suits their needs. Mississippi made a first step toward planning a program that would work in conjunction with the federal act by introducing a bill during the 1991 legislative session. Unfortunately, the bill did not survive and is dead for the time being.

Ocean Policy Challenges

■ Mississippi should cooperate with the Southern States Energy Board, EPA's Gulf of Mexico Program, the Marine Spill Response Corporation, and other groups to strengthen regional capabilities for responding to marine oil or hazardous material spills.

■ Existing oil spill legislation should be reevaluated, with a view to implementing a comprehensive state oil spill management program.

■ Consideration of any state oil spill management program should include the following:

■ revision of state contingency plan to coordinate better intrastate administrative cooperation and community awareness.

■ establishment of periodic oil spill drills and annual or periodic revisions of the contingency plan for the appropriate local officials to study.

■ creation of a citizens' cleanup network, similar to a volunteer fire department. Should a major spill occur, volunteers would agree to carry out various cleanup duties under the supervision of government officials.

■ determination of the feasibility of an inventory system that would accurately catalogue the location and availability of specific types of oil cleanup equipment held by third-party contractors.

■ determination of the feasibility of purchasing state-owned cleanup equipment to ensure that it is always available when needed.

■ development of a state policy for the use of advanced cleanup technology such as microorganisms, chemical dispersants, and advanced boom technology.

■ development of a state policy that details how state monies will be used in cleaning up a spill—specifically, whether state money should be expended prior to the depletion of all federal cleanup funds.

■ a reevaluation of the roles and responsibilities of the Bureau of Marine Resources and the Bureau of Pollution Control in state oil spill prevention and response efforts.

■ evaluation of the environmental impacts of chronic low-level petroleum spills.

■ evaluation of the environmental effects of drilling mud and cuttings on the marine environment.

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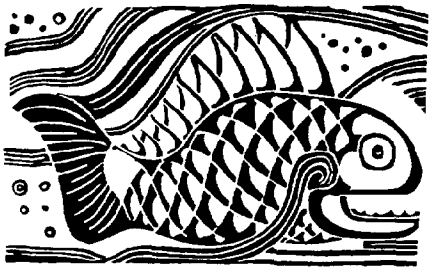
LIVING RESOURCES MANAGEMENT



Background

The significance of marine fisheries to the U.S. economy is tremendous. U.S. consumers spent approximately $28.3 billion on fishery products in 1989 (a five percent increase from 1988); of this amount $19.1 billion was spent in food service establishments, $9.0 billion was spent in retail stores, and $181 million was spent on industrial fishery products. Altogether, the fisheries markets added $17.2 billion to the U.S. Gross National Product.

Changing dietary attitudes have brought about a measurable increase in the consumption of seafood by Americans. The per capita consumption of fish and shellfish in 1989 was 15.9 pounds—a 0.7 pound increase from 1988 and an increase of 1.4 pounds from 1985. The per capita use of all fish products, industrial and edible, was 62.2 pounds.

Marine commercial landings at U.S. ports in 1989 were 8.5 billion pounds valued at $3.2 billion, a 1.3 billion pound increase over 1988. In 1989 the states with the greatest quantity of marine commercial fishery landings were Alaska with 4.1 billion pounds; Louisiana with 1.2 billion pounds; Virginia with 692.8 million pounds; California with 418.4 million pounds; and Mississippi with 298.2 million pounds.

Gulf of Mexico coastal waters are particularly productive. The major commercial fisheries consist of mullet, tuna, snapper, grouper, and menhaden. In Mississippi, menhaden account for about 94 percent of the volume and 42 percent of the total value of all fishery products landed in the state. Shellfish harvested from the Gulf of Mexico include hard bluecrab, shrimp, and oysters. The U.S. shrimp industry alone was valued at $470 million in 1989, making it the most valuable fishery in the nation. While shrimp make up only 2.8 percent of the total volume of all of the fishery products landed in Mississippi, they account for almost 46 percent of the total value.

The recreational fishing industry also plays a significant role in the economies of Mississippi and the other Gulf states. National Marine Fishery Service statistics reveal that in 1989 approximately 289.2 million marine finfish, with a cumulative weight of 469.2 million pounds, were caught by 17 million saltwater recreational fishermen from the coastal waters of the United States (excluding

Pacific coast salmon and fish catches from Alaska and Hawaii). Finfish catches from Atlantic and Gulf coasts represented almost 86 percent of all marine fish caught by sports fishermen. (For a discussion of the sportfishing industry in Mississippi, see chapter 10).

Typically, recreational fishermen are not regulated as closely as commercial fishermen, and their catches are generally unreported. Many states, including Mississippi, do not require saltwater sport fishermen to purchase licenses, making it difficult to determine important facts necessary for fisheries management, such as the number of fishermen, the number of fish caught, where the fish are caught, and which species are being taken.

In coming years, economic and political competition between commercial and recreational fishermen will undoubtedly increase. Growing domestic and international demand for seafood, coupled with mounting population pressure in coastal areas, makes conflict over the diminishing supply of marine living resources almost unavoidable. One of the primary tasks facing federal and state fisheries management agencies in the next decade will be to develop strategies to satisfy the competing interests of these powerful user groups.

State and Federal Management of Living Resources

Historically, marine fisheries were managed by the states. Today, however, management of living marine resources is shared between the states and the federal government. In response to haphazard and ineffective state management and conservation efforts, in 1976 Congress enacted the Magnuson Fishery Conservation and Management Act (MFCMA), 16 U.S.C. §§ 1801 *et seq.* (1988). The MFCMA created a new and unique system of regional comprehensive management and conservation plans to protect marine fisheries resources from over-exploitation. Under this system the states retain jurisdiction in state territorial waters and the federal government regulates fishing in the fishery conservation zone (that zone from three to 200 miles off the coast).

Generally, states only have jurisdiction over commercial and recreational fishing within state territorial waters. In Mississippi, this includes the entire Mississippi Sound to a line three miles south of the barrier islands. However, in some instances the MFCMA does allow the states to extend their authority beyond their territorial seas and into the fishery conservation zone. For example, the Act allows the states to maintain some authority over fishing vessels in the fishery conservation zone if the vessels are registered in that state, although the extent of that authority is uncertain.

Just as the MFCMA forbids attempts by states to regulate fishing activities in federal waters unless the subject fishing vessel is registered in the concerned state, the federal government may not regulate fishing within state waters unless a fishery, regulated by a fishery management plan, is located in both state and federal waters and the activities (or inaction) of state regulatory agencies are adversely affecting the achievement of the goals of fishery management.

Many species of fish migrate through a broad region of the ocean and are subject to varying fishing pressures and government jurisdictional zones as they migrate. Any attempt to conserve a species in one state could be hurt by an unresponsive legislature or regulatory agency in a neighboring state. To avoid such problems, the MFCMA created regional councils to formulate area-wide management plans.

To date, the following fishery management plans have been developed by the South Atlantic and Gulf management councils:

Migratory Pelagics (mackerels)	-Joint
Coral and Coral Reefs	-Joint
Reef Fish (snapper, grouper, sea basses)	-Gulf
Snapper/Grouper	-South Atlantic
Shrimp	-Gulf, South Atlantic
Stone Crab	-Gulf
Spiny Lobster	-Joint
Swordfish	-Joint
Billfish	-Joint
Summer Flounder	-South Atlantic
Red Drum	-Gulf, South Atlantic
Bluefish	-Part of migratory pelagics plan in Gulf; Joint South Atlantic, Mid-Atlantic & New England Council on the East Coast

Figure 8.1 [Source: Christie, 5 J. Land Use and Envir. L. 447 (1990)]

Cooperation between the Gulf states and the federal government is maintained through the Gulf of Mexico Fishery Management Council and the state regulatory agencies. The Gulf Council, which is made up of experts from the member states who are appointed by the U.S. Secretary of Commerce, is responsible for fisheries management recommendations in federal waters off the coasts of Alabama, Mississippi, Louisiana, Texas, and the Gulf coast of Florida. The Council and the state regulatory agencies work together to develop regional fisheries management plans for selected fishery stocks. (See figure 8.1 for Gulf regional fishery management plans developed to date.)

Mississippi and the other Gulf states are also members of the Gulf States Marine Fisheries Commission. GSMFC is an interstate compact that provides member states and the National Marine Fisheries Service with fishery management advice and policy recommendations. Its role is advisory and it has no official regulatory authority. (See figure 8.2 for GSMFC fishery management plans that have been completed or are under development.)

Status in Mississippi

The role of the states in maintaining the nation's fisheries cannot be overstated. The bulk of the nation's domestic production of fish is taken from state waters. Commercial landings from state waters increased 52 percent in the years between 1975 and 1985. In addition, those onshore activities that may severely harm the nearshore environment crucial to fish larvae and young fish are usually subject to state regulation. Coastal development activities, such as the draining and filling of wetlands, may destroy the sheltered estuarine areas that protect young fish, shell-

GSMFC Fishery Management Plans

Completed

Menhaden
Spanish Mackerel
Striped Bass
Blue Crab
Oyster
Shrimp (superseded by Gulf of Mexico Fishery Management Council Plan)

Under Development

Black Drum
Striped Mullet

Figure 8.2. [Source: Gulf States Marine Fisheries Commission]

fish, and shrimp from the predators of the open shelf waters. Moreover, domestic effluent runoff and industrial discharges contaminate the nutrient supplies that are critical to larvae and adults.

The Mississippi Department of Wildlife, Fisheries, and Parks, through its subdivisions and bureaus, is responsible for the enforcement of fishery management regulations, biological investigations, and issuing permits and reviews for activities in state territorial waters. The Bureau of Marine Resources (BMR) is delegated the responsibility of implementing most regulatory activities relating to marine living resources.

BMR makes regulatory recommendations to the Commission on Wildlife, Fisheries, and Parks. The Commission is appointed by the Governor and is made up of one representative from each of the state's five congressional districts. The Commission considers agency recommendations, as well as those from industry and other interested parties, before making regulatory decisions.

In late 1988, the then Mississippi Department of Wildlife Conservation commissioned an outside review team to examine BMR and recommend agency improvements. A number of the resulting recommendations focused on BMR's fisheries management responsibilities. Suggested reforms included major organizational changes, better long-range planning, and greater citizen participation in the formulation of marine resource policies. There was also a recognition of inadequate and unstable funding of the agency from state and nonstate sources. While many of the recommendations proposed in the 1988 review have been implemented pursuant to the Mississippi Executive Reorganization Act of 1989, Miss. Code Ann. §§ 7-17-1 *et seq.* (Supp. 1990), state funding levels have not increased, and much still needs to be done to realize the full effectiveness of BMR. (See figure 8.3.)

The 1989-90 seafood season was one of the poorest in recent memory. The situation was considered so dire that Governor Mabus declared a "seafood emergency." The purpose of this action was to try to secure low-interest loans from the U.S. Small Business Administration to help local producers through the rough times. Shrimp, blue crab, oyster, and red snapper fisheries present special management problems for Mississippi. The following summarizes some of the concerns facing these particular fisheries.

Shrimp

During the past decade, shrimp landings have remained above the six million pound mark (heads off). Despite these relatively stable catch statistics, price per pound has dropped dramatically, due primarily to the influx of large volumes of cheaper imported shrimp. Moreover, the number of participants in the shrimp industry has risen in recent years. As a consequence, although the total

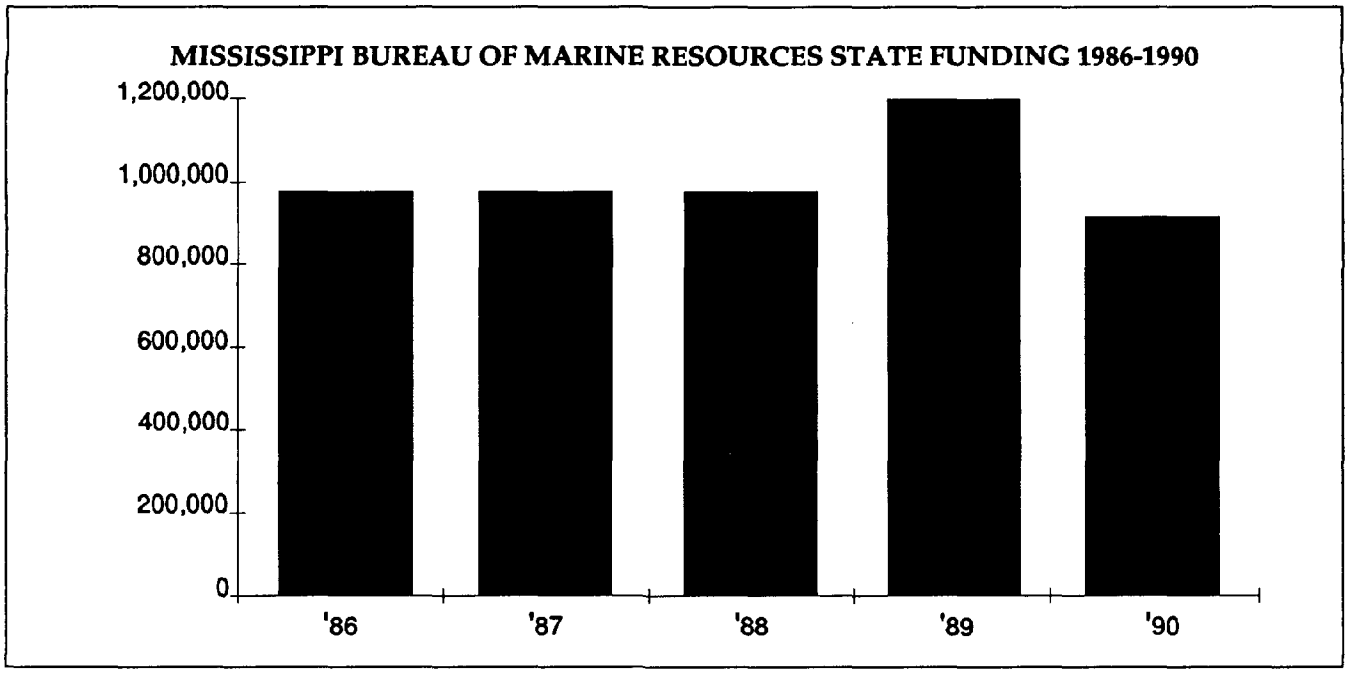


Figure 8.3. [Source: Bureau of Marine Resources (1990)]

landings have increased slightly, the individual portion and income allocated to each fisherman has become smaller.

In an effort to address the problems associated with the state's shrimp industry, BMR is in the process of developing a shrimp strategic management plan. This plan will focus on solving the problem of user conflicts and allocation of shrimp resources, including the feasibility of some type of limited entry program and additional season and area closures. Methods of reducing the loss of habitat and better production and utilization of scientific data will also be examined. Finally, the plan will seek to improve cooperation among the Gulf states in managing shrimp resources. This will include strategies to formalize existing sampling or management schemes between the Gulf states, provide uniform laws among the Gulf states, and encourage improved agency contacts.

Blue Crab

Blue crab is a very valuable resource for the Gulf of Mexico. More than 70 million pounds of this estuarine-dependent shellfish is landed annually in Gulf Coast states, which represents over 38 percent of all blue crab landed in the United States. Recently, Mississippi's average yearly commercial contribution to this industry has been approximately 1.5 million pounds per year.

In Mississippi, the number of commercial crab fishermen has been stable. In the early 1970s there was a yearly average of 64 commercial fishermen; this was slightly reduced to 56 during the period of 1981 through 1985.

Mississippi and Alabama are the only two Gulf states that do not require their recreational crab fishermen to purchase licenses. Mississippi, unlike Alabama, has taken steps to limit the harvesting of egg-bearing female crabs—an essential step to a healthy crab fishery—by forbidding such harvesting in a

western portion of the Mississippi Sound. Fishermen using trawl nets are also required to throw overboard any crabs incidentally caught in those nets unless they have a commercial license for the harvesting of crabs.

More information is needed on the status of the blue crab within Mississippi waters. There is a lack of environmental data concerning factors that affect the ability of crabs to flourish within Mississippi Sound. Nor has there been enough research to determine with certainty the effects of different harvest methods and timing of harvest upon the blue crab population of the Mississippi Gulf Coast.

Mississippi has no comprehensive crab management plan of its own. However, BMR personnel and members of Mississippi's academic community were key contributors to the development of a regional management plan prepared by the Gulf States Marine Fisheries Commission in 1990. This plan provides an in-depth analysis of the blue crab fishery within the Gulf of Mexico and presents a recommended course of action for keeping the blue crab fishery healthy. Implementation of this plan and its recommendations is up to the states.

Oysters

Throughout the late 1800s and up until the 1940s, nearly 250,000 barrels of oysters were harvested each year in Mississippi. Today the harvest is well below 100,000 barrels per year. (See figure 8.4). Pollution, unnatural physical disruption, overfishing, and the lack of a comprehensive management plan have all contributed to a significant decline in Mississippi's oyster fishery.

Pollution of the waters of the Gulf Coast is one of the more persistent and destructive problems faced by the Gulf Coast oyster fishery. The pollution comes primarily from effluents due to inadequate sewering of coastal communities. Runoff from agricultural fields, parking lots, and feedlots are other sources of pollution. Incidental and intentional discharges from ships, recreational craft, or industrial facilities may further add to pollution of the waters of the Mississippi Sound. As a result, 57 percent of the shellfish growing areas in the Gulf of Mexico are currently permanently or conditionally closed.

Another threat to Gulf oysters is directly linked to the destruction of wetlands caused by rapid increases in growth and development along the Gulf Coast. Given their nearshore habitat, oysters are able to tolerate some variation in environmental parameters. When floods wash large volumes of fresh water into the Gulf, oysters need to be able to tolerate fluctuations in salinity. While they have some natural capability to accommodate these conditions, the destruction of wetlands diminishes their chances of survival. Wetlands serve as natural holding basins during times of heavy rainfall; the destruction of wetlands destroys a watershed's natural ability to slow the flow of water. The result is the sudden dumping of fresh water and sediment into the shallow waters of the Gulf, and a sudden change in salinity that may destroy an oyster population.

Overharvesting of oysters is also a problem. It is not uncommon for some oyster fishermen to underreport their catch. There is also a problem with fishermen from surrounding states entering Mississippi waters and illegally taking oysters without reporting them. This sometimes happens within reefs that have been closed because of pollution. Greater manpower for enforcement could help reduce the problem. Oyster fishermen could help by reporting this illegal conduct.

The good news about the Gulf Coast

oyster industry is that most of its problems are curable. Important steps have already been taken in some areas. There is a general recognition in the United States that coastal wetlands are an immensely important resource worthy of strict protection. Numerous laws and regulations on the federal and state levels have been adopted in recent years to prevent future wetlands destruction. In addition, many municipalities in Mississippi and other Gulf states are in the process of upgrading sewer systems and reducing other sources of point and nonpoint pollution. Furthermore, an important contribution was included as part of the 1990 reauthorization of the Coastal Zone Management Act. Sponsored by Congressman Gene Taylor from Mississippi, the amendment provides a mechanism for funding programs to restore and enhance shellfish production on publicly owned reefs.

Finally, a comprehensive oyster management plan for the Gulf of Mexico was prepared by the Gulf States Marine Fisheries Commission in 1991. Mississippi and the other Gulf states were involved in the development of this plan. Although an excellent first step, the comprehensive plan will be advisory only and its efficacy will depend on legislative actions by the Gulf states for implementation.

Red Snapper

Shrimp trawl bycatch, especially of red snapper, is a fishery management issue of increasing importance to the Gulf states and to the federal government. Shrimp trawls are inherently nonselective harvesting gear. Fishermen catch nontarget species along with shrimp and must sort through whatever is caught to separate shrimp and other marketable species from the catch. The fish that remain are called "bycatch" and are shoveled overboard either dead or in a very weakened condition.

In response to National Marine Fishery Service data indicating that about 12 million juvenile red snapper are caught annually in shrimp trawls, the Gulf of Mexico Fishery Management Council has attempted to enact specific regulations designed to reduce overfishing of red snapper. The Gulf Council proposed in August 1990 that the Gulf shrimp fishery be closed from May 1-July 31 during 1991-92, with additional modifications of fishing gear or area closures beginning in 1993 in order to effect a 64 percent overall reduction in red snapper bycatch.

Broad and vocal opposition to the proposed regulations by all segments of the industry — including shrimpers, seafood processors, gear shops, and others—forced the Council to withdraw the proposed regulations. Moreover, members of Congress representing Gulf states authored legislation amending the 1990 Reauthorization of the MFCMA to prohibit regulations to reduce shrimp bycatch until January 1, 1994.

There seems to be agreement from all user groups that with further research, workable methods of reducing shrimp bycatch can be developed. The total extent of trawl bycatch is still largely unknown, in part because of the reluctance of state governments to conduct the needed research. Mississippi should actively support joint industry-regulatory agency research efforts and innovative federal-state management options. If the state ignores the shrimp bycatch problem, it may be confronted with a true crisis in years to come.

Ocean Policy Challenges

■ The state should reassess the funding requirements of the Bureau of Marine Resources to give it added capabilities to man-

age effectively the state's living marine resources and to enforce laws and regulations.

■ The feasibility of requiring saltwater sportfishing licenses should be reexamined.

■ More information needs to be gathered on the effects that onshore activities have on offshore fishery development. Sufficient resources should be supplied to the Department of Environmental Quality for the implementation of regulatory and compliance programs pertaining to nearshore industries, agricultural runoff, and municipal waste.

■ Funding and support should be increased for the development and implementation of state and regional strategic fishery management plans.

■ State and local efforts to upgrade coastal sewage facilities should continue, and resources should be devoted to developing better coastal water quality criteria and monitoring capabilities.

■ Resource allocation conflicts such as the shrimp trawl bycatch issue will become increasingly burdensome. The state should examine management options to reduce the conflicts between recreational and commercial fishermen in the Gulf region.

■ The Bureau of Marine Resources should increase the relative importance of fisheries statistics and biostatistics data collection as a basis for its resource assessment and environmental impact analyses.

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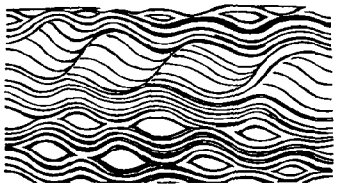
MARINE RECREATION



Background

The popularity of the Mississippi Gulf Coast as a recreational destination dates back to the 1820s, when the advent of steam power, coupled with the fear of yellow fever, produced a string of "watering places" (resort spas thought to possess medicinal waters) along the Mississippi coast. Known as the "Six Sisters," these watering places were found at Shieldsboro (now Bay St. Louis), Pass Christian, Mississippi City, Biloxi, Ocean Springs, and East and West Pascagoula. City dwellers from New Orleans and Mobile flocked to the area to escape the heat and disease of the cities, and residents from upland areas also traveled south to enjoy the benefits of the coastal climate and waters.

Since that time, untold numbers of people have enjoyed the coast's many recreational activities. For example, the beaches between Pass Christian and Biloxi and on the barrier islands are the most frequently cited tourist destinations for those visiting the coastal counties. Additionally, recreational boating and sportfishing have long been favorite pastimes of visitors and residents alike. The activities surrounding these and other tourist and recreational attractions generate a number of jobs for the coastal counties and substantial tax revenue for the state. Protection and enhancement of Mississippi's marine recreational opportunities must therefore be an essential element in ocean resource planning. The following discussion describes some of the more important tourist and recreational activities pursued in Mississippi ocean waters and along its accompanying beaches.

Recreational Boating

Recreational boating is one of the most popular pastimes on the Mississippi Gulf Coast: almost any day will find scores of pleasure craft on the waters enjoying the sea and sun. In addition to individual boating excursions, the coast offers a number of organized activities that are enjoyed by spectators as well as participants.

For example, organized recreational boating on Mississippi's coast officially began with the formation of the Southern Yacht Club (now the Pass Christian Yacht Club) at Pass Christian in July 1849. A few years later,

the Bay-Waveland Yacht Club sponsored its first annual regatta, a popular event that is still enjoyed today, with the Pass Christian Yacht Club and others continuing to sponsor regattas involving visiting boats as well as local ones.

Sailing races between seafood factory schooners were popular summer Sunday afternoon events from the late 1880s until 1933, when the sailing races ceased primarily because the seafood industry had converted to power-driven boats. However, schooner racing was revived when the *Corsair*, owned by Michael Broussard of Pass Christian, and the *Glenn L. Swetman*, owned by the Biloxi Seafood Industry Museum, raced on November 23 and 24, 1990. Public attendance at the first race of the "White Winged Queens" in more than 50 years was outstanding.

In addition to the regattas and schooner races, the Mississippi coast offers several other organized boating activities:

(1) Blessing of the Fleet—Traditional along much of the Gulf of Mexico, the Blessing of the Fleet is a religious ceremony in which the local Catholic bishop blesses the shrimping fleet so that the shrimp harvest will be bountiful. To the uninformed, the occasion may appear to be a giant parade on the water, as nearly all boats are decorated for the event. Blessings are held annually in several coastal locations, with heavy spectator participation both on land and on the water.

(2) Biloxi's "Christmas on the Water"—To complement the usual land-bound Christmas parades, Biloxi sponsors an annual Christmas parade on the water, with its route being between the mainland and Deer Island. Spectator participation is considerable at this event.

(3) Excursion boats—During the prime tourist season (March through October), boats carry passengers several times daily from Biloxi and Gulfport to the western portion of Ship Island.

(4) Diamondhead Mardi Gras—The Krewe of Diamondhead sponsors a Mardi Gras parade on the water in addition to their land-bound parade.

(5) Personal watercraft rental—Personal watercraft (commonly called "jet skis") are rented at several locations on the Harrison County beach during the warmer months.

Although the above-mentioned activities and events contribute a certain amount of recreational activity on and around Mississippi waters, the primary recreational boating activity pursued is excursions on private craft. In fact, boat registrations in the three coastal counties account for a significant portion of the Mississippi total, as shown below:

TOTAL NUMBER OF BOATS REGISTERED

	Three Coast Counties	Miss.State Total
1981	21,365	102,428
1990	35,871	182,356

Furthermore, recreational boating is increasing. The number of boats registered in the tri-county coastal area is expected to reach nearly 40,000 by 1995 and almost 44,000 by 2000. This increase reflects a national trend; the estimated national retail expenditure on boating more than doubled 1970 to 1980. Obviously, the recreational boating market has significant impact on the state's economy.

As boating activity increases, so do problems of access to the water, user conflicts, and boating safety. Current Mississippi law addresses basic boating safety issues, including operation of a vessel while under the influence of drugs or alcohol (Miss.Code.Ann. §59-

21-83 (1989)). However, no provision exists for ensuring that boat operators are knowledgeable about the safe operation of their craft. The state has no boat operator licensing program.

The increase in the number of boats in the coastal counties also results in an increased demand for access and for marina services. Most often, Mississippi coastal marinas are not full service (i.e., supplying electricity, fuel, launch, bait, supplies, repairs, water, phone, and sanitary pumpout facilities). Occupancy rates at coastal marinas are typically very high, accompanied with long waiting lists at the more desirable locations. Seven marinas and harbors face the Gulf along Mississippi's coast. These are not all full-service, but generally provide most of the needed services. Numerous other marinas (at least 35) exist on the coastal inland waters and provide widely varying degrees of service. Any increase in boating means further pressure on existing marina facilities, as well as pressure to build additional facilities and to upgrade existing ones.

Building, upgrading, or even routine maintenance of marina facilities has environmental consequences that must be considered. Dredging and backfill is almost always required, and with it the danger of losing valuable wetlands. An additional consequence of dredging is the resuspension of buried sediment. A study by Lytle and Lytle of the Gulf Coast Research Laboratory indicated that sediment from certain locations along the coast possess moderately high toxicity levels. While recent improvements in water quality have reduced toxicity to some extent, accumulated polluted sediment still exists and its resuspension could be hazardous.

While most marina services do not present a significant environmental impact, the lack of sanitary pumpout facilities is an increasing problem. Pursuant to federal law, Mississippi does require marina facilities to maintain trash receptacles on the property (Miss. Code Ann. § 51-2-7 (1990).

Sportfishing

The Gulf of Mexico is the most popular region in the country for marine recreational fishing, with hundreds of thousands of fishermen partaking of the Gulf's bounty each year. The waters off the state of Mississippi have traditionally been particularly prolific and are part of what is sometimes called the "fertile fisheries crescent"— a northern Gulf area containing a variety of the marine fishery resources that have been the basis for a vital commercial and recreational fishing industry for many years.

Sportfishing off the Mississippi coast has long been a favorite activity for residents and visitors, and adds at least $45 million to the income of the state each year. It has been estimated that this sum is respent and multiplies itself at least three times, adding even more to the state and local economy. Because Mississippi does not require a saltwater fishing license, reliable data is difficult to obtain. However, recent figures estimate that over 10.5 million fish are caught annually in Mississippi waters by more than 300,000 sportfishermen who made 1.19 million fishing trips into the state's marine waters. With those numbers, it is easy to see why management of recreational fishing is worthy of the state's attention.

In Mississippi, recreational fishing is conducted both in the shallow inshore waters and the offshore waters surrounding the barrier islands. The most popular species taken are the spotted seatrout (speckled trout) and red drum (redfish), although a number of other species, such as croaker, catfish, mullet,

mackerel, and other species are also often sought. While most fishing is done on private vessels, charter boats from Mississippi home ports also routinely take fishermen to search for popular gamefish. There are currently at least 38 locally owned and operated charter boats available for charter along the Mississippi coast.

Regulatory authority for all fishery management, commercial as well as sport, resides with the Bureau of Marine Resources (BMR). In this capacity, the bureau is responsible for setting seasons, size, and weight limits (see figure 9.1), and establishing all enforcement procedures and penalties. The bureau also conducts studies and evaluates practices in an effort to improve overall fishery management. Other regulatory authority, such as enforcement of water quality and wetlands protection laws, helps preserve a healthy habitat for fish stocks and contributes in a less direct manner to fisheries management.

Many challenges accompany efforts to manage Mississippi's fishery resources for recreational as well as commercial fishermen. Burgeoning coastal development and accompanying loss of wetlands has destroyed habitat for many estuarine-dependent species. Population growth has increased water pollution, which decreases the water's ability to support healthy plant and animal life. These factors, coupled with growing numbers of commercial and recreational fishermen, have combined to diminish once-abundant fish stocks.

Shrinking fish stocks have led to growing conflicts between commercial and recreational fishermen. Commercial fishermen argue that recreational catch of favorite species often exceeds that of allowable commercial landings. Conversely, recreational fishermen point out that large quantities of non-targeted gamefish are caught as a result of wasteful harvesting techniques by commercial fishermen. Resource utilization between these competing user groups is an issue that continues to be controversial and must be addressed.

Another major problem stems from the fact that no licensing procedure exists for saltwater recreational fishermen. As a result, there are no adequate data for assessing the dimensions of the resource base. Without reliable information, it is difficult to implement effective management programs.

Sand Beaches

Mississippi has many popular beaches, both along the mainland and on the barrier islands. The largest and most popular beach is located in Harrison County, extending its entire length. A man-made beach, it was created in 1951 primarily to act as a buffer between the Sound and the seawall. Because prevailing winds on the Mississippi coast are onshore, the wind transports sand toward the seawall and U.S. Highway 90. County crews routinely move the sand that is blown near the seawall back toward the shore. However, once over the seawall and onto the highway, the sand is costly to remove and may be lost to the beach. Furthermore, storms and severe tides may move sand back into deep waters of Mississippi Sound. Thus, replenishment of the beach sand is occasionally required.

Restoration has been required several times since the creation of the beach. Subsequent to the last restoration, erosion control measures were implemented in an attempt to reduce wind transport of sand onto U.S. 90 and adjacent properties. Sand fences have been erected in some areas of high use and vegetation plots established in lower use areas. Expansion of these measures to include

the entire length of the beach will be necessary to contain further the wind erosion problem.

Storm tide erosion is much more difficult to control, particularly on a man-made beach. "Hard" tidal-erosion control measures such as bulkheads and walls generally only shift the loss from one area to another. Vegetation appears to be the best solution to storm tide-related losses. Development of larger plantings along the beach would help foster duning of the sand, which would slow both wind and water losses.

Other popular beaches are found on the state's barrier islands. The western portion of Ship Island, as a part of Gulf Islands National Seashore, receives the most recreational use among the islands. During warmer months, excursion boats from Gulfport and Biloxi ferry visitors to the island. Visitor facilities (snack bar, rest rooms, etc.) have been added by the National Park Service. The availability of facilities and transportation has made visiting this part of Ship Island extremely popular with tourists and local residents.

Barrier Islands

Going to the beach is not the only recreational activity enjoyed by visitors to the barrier islands. Ship Island is the home of Fort Massachusetts, a Civil War site that is visited by thousands of tourists each year. Although the other islands are accessible only by private boat, several of them, particularly Horn Island, offer fishing, picnicking, and primitive camping. Others are in private ownership, thereby limiting the public's ability to enjoy many of their recreational opportunities. (For additional discussion of Mississippi's barrier islands, see chapter 12.)

Scuba Diving

Because the waters of Mississippi Sound are relatively turbid, scuba diving is not as popular as in other coastal states. Most diving activity occurs south of the barrier islands, where water is clearer than in the Sound. Spearfishing is popular in Mississippi waters. Like other recreational fishermen, these divers are often interested in creation of artificial reefs.

Another important issue involves safety. Easily recognizable markers, such as diving flags, should be useful for the safety of divers, and scuba divers should be required to have national certification.

Gambling Vessels

Recent years have seen a growth in popularity of so-called "cruises to nowhere," which sail from a U.S. port into international waters for a number of hours and then return to the same port. While onboard these cruiseships, passengers are offered meals, live entertainment, dancing, sightseeing, drinks, and gambling in fully-equipped casinos. A number of Mississippi communities have been attracted to this concept, viewing it as a way to boost their ailing tourist industries and local economies.

In 1989, Mississippi became the first state to enact legislation that allowed gambling aboard cruise ships in state waters as they were in transit to or from international waters. The following year the state repealed the 1989 statute and passed much more comprehensive legislation that created a state gaming commission and legalized gambling aboard approved vessels of a minimum size while underway or docked in state waters. Miss. Code Ann. § 97-33-1 (Supp. 1990). The new legislation authorized two existing cruiseships, the *LA Cruise* based in Biloxi and the *Europa Jet* berthed in Gulfport, to continue gambling operations without a privilege license. Miss. Code Ann. § 27-109-9 (1990).

Except for the two "grandfathered" vessels, county residents were given the authority by a majority vote to halt gambling in state waters on vessels that operate from county ports or are docked there. Miss. Code Ann. § 19-3-79 (Supp. 1990).

Voters in all three of Mississippi's coastal counties went to the polls in November 1990 to decide whether each county would allow cruiseship gambling. Harrison County and Jackson County rejected the measure, while Hancock County voted in favor. Because both the *LA Cruise* and *Europa Jet* operate from Harrison County ports, the vessels may only open their casinos within state waters if they continue their longstanding practice of cruising to international waters.

Cruiseships operating from Mississippi ports may be faced with an additional obstacle. In a move that has been under consideration for some time, United States Attorney General Richard Thornburgh, recently issued a national policy directive that effectively prohibits gambling aboard most "cruises to nowhere" in ocean areas beyond state waters. The new policy provides that all cruiseships that offer gambling must cruise for a minimum of 24 hours and have lodging for all passengers or risk being arrested as a "gambling ship" under the Federal Gambling Ship Act, 18 U.S.C. §§ 1081-1084.

Neither of the existing cruiseships in Mississippi will be able to meet the new criteria. If these vessels are forced to cease operations as a result of the new federal policy, the state's coastal communities will lose a significant source of employment and tourism-related income.

The state has already received license applications for dockside gambling along the Mississippi River and in coastal Hancock County. Just what consequences the proposed enterprises will have on the social structure and physical environment of the affected communities remains to be seen and should be monitored closely.

Ocean Policy Challenges

■ The feasibility of requiring a boating safety course or operator's license to improve safety on Mississippi waters should be further investigated.

■ The state should examine the possibility of establishing a Coastal Watch Program in Mississippi. The Coastal Watch Program trains volunteers regarding fishing regulations and increases the observation capacity of enforcement officials dramatically. The program has been used effectively in Texas, where it was organized as a joint effort between the state agency and Gulf Coast Conservation Association (GCCA). GCCA is a nonprofit fishing conservation organization that is very active in the Mississippi coastal counties.

■ The state should examine the problem of finfish bycatch and its effect on fisheries. (For discussion and recommendations related to this issue, see chapter 8).

■ There should be strict enforcement of all state litter laws, including the Mississippi Marine Litter Act. Requirements that the trash receptacles be maintained at all marinas should be aggressively enforced by the state.

■ The state should examine measures to improve fisheries habitat. Studies should be undertaken to determine whether additional artificial reefs need to be created in deeper Mississippi waters beyond the barrier islands. These reefs serve as habitat for forage fish and as attractors for larger fish.

■ The state should investigate the potential environmental consequences of dockside gambling activities that will likely occur in Hancock County.

■ The state's goals regarding promotion of ocean tourism and support for the ocean recreation industry should be clarified.

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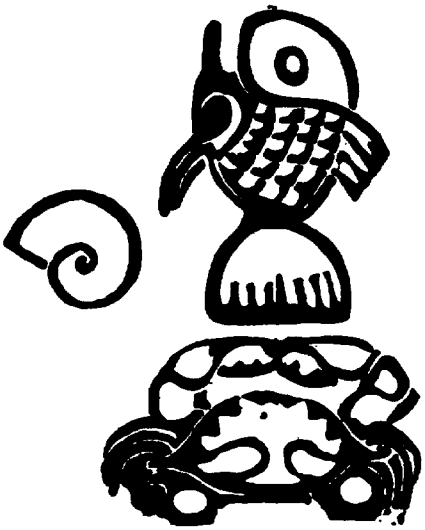


MARINE EDUCATION AND RESEARCH

Background

An informed and educated public is essential if our nation's ocean and coastal areas are to be properly managed and protected. Support for ocean resource management initiatives can only be achieved if the public fully appreciates both the value and the fragility of our ocean and coastal environment. Marine education for primary and secondary students is especially important and challenging. Recent studies have consistently shown that U.S. students are significantly behind many of their international counterparts in knowledge of science, mathematics, and geography. Without a sound understanding of the basic principles of the sciences and social sciences as well as an appreciation of the arts and humanities, our youth will be unprepared to deal with the complex ocean and coastal issues facing the nation. We should also provide our adult citizens with enhanced opportunities for continuing education. Citizens can only participate in the coastal and ocean decision-making process if they are made aware of present advances in the fields of marine science and policy.

Adequate marine research is just as important to the successful management of our ocean and coastal resources as marine education. Access to relevant and timely scientific information is essential if policymakers and interested citizens are to make informed decisions regarding the use and protection of our ocean environment. The following discussion will address efforts that are being made in this state.

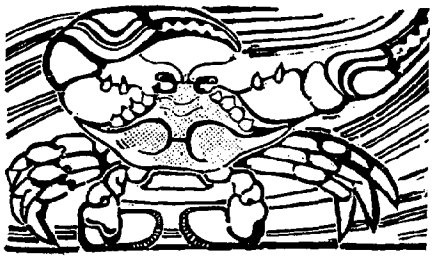
Marine Education

Despite relatively limited state resources, Mississippi has developed a number of innovative marine educational programs at the primary and secondary levels. State agencies have also sponsored valuable community-based marine education and beach cleanup efforts. Moreover, the state's universities and colleges offer a number of marine-related research and teaching programs that have achieved national and international prominence.

Primary and Secondary Education Programs

Although there is currently no state-man-

dated marine or environmental education curriculum, it is not uncommon for teachers at Mississippi's public and private schools to supplement regular classroom curricula with marine education materials, hands-on experiences, and field trips. A number of state and federal organizations assist educators to develop marine educational programs. For more than 20 years, the Mississippi-Alabama Sea Grant Consortium (MASGC) has provided funding to support marine education programs at the primary and secondary levels. In the past, MASGC has sponsored a series of summer programs that offered selected teachers specialized training in marine science. It has also established a very successful program called "Project Marine Discovery" in cooperation with the Gulf Coast Research Laboratory for pre-school through twelfth grade students in public and private schools. Project Marine Discovery is a series of programs and activities intended to foster an increased awareness and understanding about the marine environment and its resources to the state's children and to the general public.



Project Marine Discovery has a number of programs targeting different age groups. Project Marine Discovery—ABC's is a collection of 20-minute sessions of activities tailored to teach preschoolers about the marine environment. In the Project Discovery—K-12 program, held at the Gulf Coast Research Laboratory's J.L. Scott Marine Education Center and Aquarium in Biloxi during the school year, students from kindergarten to twelfth grade are given an opportunity to conduct field and laboratory experiments, see videos on marine-related topics, and tour the J. L. Scott aquarium.

A summer seacamp is also offered through Project Marine Discovery. This daycamp is offered six times during the summer for children from six to fourteen years old. Campers are given an opportunity to take field trips to the mainland and barrier island beaches and shorelines, and to engage in a variety of hands-on experiences.

The Mississippi Museum of Natural Science in Jackson also offers some programs that are designed to help school-age children understand and respect the importance of aquatic ecosystems. Some of the museum's programs related to fisheries biology and management are federally funded and administered by the U.S. Fish and Wildlife Service.

Community Education

A number of community-based efforts have been established in recent years to improve the public's awareness of problems associated with the state's coastal and ocean areas. The "Coastweek" and "Adopt-A-Beach" programs have been especially successful in getting the public involved in cleaning up marine debris from the public beaches and barrier islands. The Adopt-A-Beach program is a joint effort between the Gulf Island National Seashore and the Mississippi Marine Trash Task Force, which is made up of a coalition of 13 groups including state agencies, academic organizations, and private industry.

In the Adopt-A-Beach program, groups of individuals are asked to adopt a stretch of mainland or barrier island beach for one year. During the year, they agree to clean their "adopted" section of beach three times during the year: once in the spring, once in the summer, and once with other volunteers in September as part of the beach cleanup campaign associated with "Coastweek." In 1989,

approximately 1,800 volunteers participated in the Coastweek beach cleanup effort.

Government agencies and organizations such as the Bureau of Marine Resources, U.S. Fish and Wildlife Service, the Mississippi Sea Grant Advisory Service, and others also offer educational opportunities to the public. In addition to sponsoring workshops and symposia addressing current issues of concern in marine resource management, these organizations publish a variety of materials for school-age and adult audiences.

College and University Education Programs

Most of Mississippi's public and private institutions of higher learning offer undergraduate or graduate courses in marine-related studies. However, graduate programs in marine-related disciplines are limited to Mississippi's three largest universities—the University of Southern Mississippi, Mississippi State University, and The University of Mississippi.

The University of Southern Mississippi (USM) offers the most comprehensive marine-related graduate programs. The USM Center for Marine Science (USM CMS), located at the NASA John C. Stennis Space Center, is the only dedicated marine science department within the state institutions of higher learning. The USM CMS offers interdisciplinary graduate programs leading to both master's and Ph.D. degrees in Marine Science, including areas of specialization in biological, chemical, geological, and physical oceanography. Academic and thesis/dissertation research opportunities are also available through the adjunct faculty, who are drawn from NASA and the U.S. Navy research programs located at the Stennis Space Center. The Gulf Coast Research Laboratory (GCRL), located in Ocean Springs, is a cooperative member of the Ph.D. program, and students can interact with these faculty members. Graduate programs in the Departments of Biological Sciences and Geology in Hattiesburg also have marine-related degree emphases, and the USM CMS works closely with these departments to provide students additional interdisciplinary academic/research options. In conjunction with the USM Department of Political Science, the USM CMS has initiated planning efforts to develop an interdisciplinary marine policy program. Thus, the USM CMS graduate programs, including the adjunct faculty and GCRL faculty, can provide students with academic and research opportunities which are normally unavailable on university campuses.

Mississippi State University (MSU) offers undergraduate degrees in such marine-related fields as engineering, biology, and chemistry. A baccalaureate degree in marine engineering is offered as an optional field of study in the Department of Mechanical and Nuclear Engineering. Within the School of Wildlife and Fisheries there is a master's degree program in wildlife ecology with an emphasis in aquaculture or fisheries management. Doctoral programs are also offered in a broad range of scientific disciplines such as biology, chemistry, geology, and engineering.

The University of Mississippi offers masters and doctoral degrees in biological science, engineering, chemistry, and other disciplines with some marine applications. It also houses a number of research centers that deal with marine-related issues. The Mississippi Law Research Institute, Mississippi Mineral Resources Institute, Marine Minerals Technology Center, and National Center for Physical Acoustics all offer students the opportunity to conduct research relating to the marine environment.

The Mississippi-Alabama Sea Grant

Consortium (MASGC) plays an especially important role in funding marine education and research at the state's colleges and universities. MASGC is part of the national network of university-based marine programs established by Congress in 1972 to promote the wise use, development, and conservation of ocean resources through marine research, education, and advisory services. The consortium is unique in the National Sea Grant College Program in that it is composed of eight public institutions located in two states. Member institutions in Mississippi include the University of Southern Mississippi, Mississippi State University, The University of Mississippi, and the Gulf Coast Research Laboratory. In addition to funding individual projects by researchers at the member institutions, MASGC sponsors marine extension and public education activities in cooperation with the Mississippi Cooperative Extension Services.

Marine Research

Marine research in the ocean waters off Mississippi is conducted by a variety of state and federal organizations. The Gulf Coast Research Laboratory (GCRL) in Ocean Springs is a state-operated marine research facility. The laboratory is administered by USM and is divided into six scientific research thrust areas. Recent research efforts include the development and evaluation of mariculture techniques and disease prevention strategies for the mass production of fish and shellfish; an investigation of the possible health benefits associated with fatty acids in Gulf fishes; a study to assess toxicity of drilling-produced mud on marine species models; and detection of carcinogens through the development of rapid, economical marine species models.

GCRL's research fleet consists of three ocean-going vessels and a number of smaller coastal boats. The *R/V Tommy Munro* is a 97-foot, steel-hull vessel that has been fitted for fisheries, oceanographic, and meteorological research. The *M/V Hermes* is a 38-foot steel trawler that is used primarily as an educational facility. The *M/V Bill Demoran* is a wooden trawler that is equipped for a wide variety of research purposes.

In addition to serving the needs of its own scientists and researchers from other institutions, GCRL provides research vessel surveys for the Mississippi Bureau of Marine Resources and Gulf States Fisheries Commission under a state-federal cooperative program called the Southeast Area Monitoring and Assessment Program (SEAMAP). These surveys provide fisheries data for use in assessments or fishery management analyses.

The University of Southern Mississippi Center for Marine Science (USM CMS) has active research programs which are directed at understanding processes in estuarine, coastal, and open ocean environments. Federally funded projects include examining the effect of anthropogenically derived chemical nutrients contained in Mississippi River waters on the inner Gulf of Mexico shelf environment; trace metal studies on river, estuarine, and coastal waters; coastal currents and sediment transport in the Gulf of Mexico; deep-sea paleooceanography studies; global climate change studies; and satellite remote sensing studies. At-sea studies are conducted onboard research vessels of the National Science Foundation University-National Oceanographic Laboratory System fleet, the National Oceanic and Atmospheric Administration research fleet, and the U.S. Navy Oceanographic Research fleet, as well as vessels operated by GCRL.

The University of Mississippi in Oxford also houses a number of marine-related research institutes. Of special note is the Marine Mineral Technology Center (MMTC), which is administered by the Mississippi Mineral Resources Institute (MMRI). MMTC is a federally funded component of the Bureau of Mines' Mineral Institutes Program. Its mission is to "serve the development of the domestic technological capability that is required for the efficient and environmentally compatible exploitation of the nation's seabed mineral resources." MMTC and MMRI jointly operate the 61-foot wood-hull vessel *R/V Kit Jones* which is docked at Gulf Coast Research Laboratory facilities in Biloxi. The *Kit Jones* is a shallow draft vessel designed for the testing of geologic sampling and surveying systems and for in-house and cooperative research and exploration programs.

The Mississippi Law Research Institute's Sea Grant Legal Program, located at The University of Mississippi School of Law, conducts research on ocean and coastal law and policy issues. Attorneys from the Sea Grant Legal Program publish research on topics of concern to the state, provide legal advice to state and federal agencies and to the Sea Grant advisory services, and offer students at the University of Mississippi Law School specialized training in the field of marine law and policy.

Many of the faculty at Mississippi State University also conduct significant marine-related research. Moreover, MSU operates the Coastal Research and Extension Center (CREC) located in Biloxi. Units within CREC that are involved in applied marine research include the Sea Grant Marine Advisory Service, the Seafood Processing Laboratory, and the Coastal Aquaculture Unit.

Federal agencies such as the Environmental Protection Agency, U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers sponsor a broad range of marine research activities in Mississippi. EPA's Gulf of Mexico Program has a Gulf-wide education committee that works on projects throughout the Gulf region. Additionally, they produce a number of educational "fact sheets" concerning the Gulf of Mexico.

Permanent federal research facilities also exist in the state at the well-established naval oceanographic research group at the Stennis Space Center and at the National Marine Fisheries Service (NMFS) Southeast Fisheries Center in Pascagoula. NMFS conducts fisheries research on two large ocean-going research vessels. The *Oregon II* is a 168-foot, steel-hull vessel that has been designed to sample smaller marine organisms. The *Chapman* is a 130-foot, steel-hull vessel with larger nets to target species such as herring and mackerel. NMFS actively participates in the SEAMAP federal-state program and provides Mississippi state agencies with a variety of fisheries-related data and resources.

Ocean Policy Challenges

■ Mississippi should consider enacting state legislation similar to that in Florida and other states which directs school districts to disseminate materials and develop activities that inform students, teachers, and administrators about the environment. Any environmental education program should have a marine component.

■ State education administrators should work with the Mississippi-Alabama Sea Grant Consortium and the Gulf Coast Research Laboratory to expand further the state's role in programs such as "Project Marine Discovery."

■ In addition to marine-related courses in the so-called "hard sciences," Mississippi's

colleges and universities should offer more courses and graduate programs that prepare students to address issues relating to ocean and coastal management and policy.

■ Efforts to develop closer long-term research collaboration between the Bureau of Marine Resources, The USM Center for Marine Sciences, the Gulf Coast Research Lab, and the Mississippi-Alabama Sea Grant Consortium should continue with renewed vigor.

■ Efforts spearheaded by the Gulf State Marine Fisheries Commission to establish a coordinated data collection program in the Gulf of Mexico should be strongly supported. The existing state-federal Cooperative Statistics Program and SEAMAP should also be strengthened and integration with state agencies improved.

■ BMR's efforts to create strategic management plans should be encouraged. Long-term research priorities should be an important part of the strategic planning process. Once determined, research priorities should be supported at the highest levels and protected from opposing political pressures.

■ The state should continue to pursue efforts to improve public awareness and education. Methods such as the publication of a Gulf of Mexico atlas or a citizen's guide to environmentally sensitive land use practices would help promote a broad-based understanding of the ecological and economic value of marine resources in the Gulf region.

■ Mississippi should develop a marketing and promotional strategy to diversify and expand the state's ocean research and development opportunities and to attract federal research and development funding.

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MARINE SALVAGE AND FINDS

Background

The Mississippi Gulf Coast possesses a rich and diverse historical background. While today the area is known primarily for its resort ambience, marine research facilities, shrimp fleets, and shipbuilding capabilities, it is important to remember the vital role this area played in history. Ever since Ponce de Leon embarked on his epic search for the fabled city of Eldorado in 1513, a steady succession of explorers, beginning with the Spaniards Alonso de Pineda in 1519 and Panfilo de Navarez in 1528, has brushed the Mississippi coast. In 1540 Hernando de Soto crossed Mississippi by land to reach the Mississippi River. The region initially came under Spanish influence, although no permanent colonies were established on Mississippi's coast. This early period culminated in 1682 when La Salle, moving southward, reached the mouth of the Mississippi River and claimed the surrounding region for France. Seventeen years later Sieur d'Iberville established the first permanent European settlement at Fort Maurepas in present-day Ocean Springs. This marked a turning point in the coast's history, as Spanish control gave way to a French influence that culturally persists to this day. France's political dominion over the region east of the Mississippi River ended in 1763 when the Mississippi coast became part of British West Florida. However, the era of British dominance was short-lived and came to a close following the War of 1812.

By the 1830s, a thriving tourism industry had developed on the coast, fed by the arrival of steamboats plying the waters between New Orleans and Mobile. In the years following the Civil War the coast witnessed a period of intense economic activity. These "boom years" were fueled by the Gulf Coast's rising reputation as a health and vacation resort area, a resurgence of the shipbuilding industry, and the growth of lumber and fishing as important economic activities for the area.

With such a diverse history it is no surprise that many of the vessels which brought multitudes of people from different nations or parts of the country have been left in Mississippi waters. The relics sunken in the state's waters have the potential to reveal even more than is currently known about

Mississippi's coastal history. While shipwrecks are important historical and archaeological sites, without proper management they could be lost without the state ever taking advantage of the valuable historical information available from them. The following discussion describes the current regulatory structure surrounding management of submerged shipwreck sites.

The Abandoned Shipwreck Act of 1987

The questions surrounding marine salvage, finds, and historic preservation involve not only who has the right of title to submerged relics but also who has the responsibility to manage them. Prior to the adoption of the Abandoned Shipwreck Act of 1987, there was some question regarding who owned these shipwrecks. Many states passed legislation claiming ownership of the sites in accordance with the federal Submerged Lands Act. However, this position was legally challenged by salvors and others who claimed that admiralty law, particularly the law of salvage and finds, applied. Under the law of salvage, the original owner retains ownership but the salvor is entitled to a reward for salvaging that is in proportion to his labor, expenses, skill, the degree of peril to the salvor or to the property, and the value of the property involved. The law of finds holds that an individual gains title when he takes possession of and control over abandoned property.

When the Submerged Lands Act was passed, many states assumed that it vested title in them to shipwrecks within their territorial waters. The Act was ambiguous on this point. While the Act did transfer to states title to all submerged land and natural resources within a general three-mile belt extending seaward from the state's coastline, it did not specifically address the issue of shipwrecks. There was some conflict regarding this point, for in some cases the federal courts concluded that the law of salvage and finds still applied to abandoned shipwrecks regardless of state statutes to the contrary.

In 1988 ambiguities concerning ownership and management of abandoned shipwrecks in state waters were resolved when President Reagan signed into law the Abandoned Shipwreck Act of 1987, 43 U.S.C. §§ 2101 *et seq.* (1988). Under the Act, Congress gives the states responsibility to manage a broad range of resources in state waters and submerged lands, including certain abandoned shipwrecks. The Act asserted title for the United States to any abandoned shipwrecks that are embedded in submerged lands or coralline formations protected by a state, and on submerged lands of a state that are included in or determined eligible for inclusion in the National Register. The Act then transferred title to these ships to the proper state.

In order to assist states in their management duties, the Act directs the Secretary of Interior, acting through the National Park Service (NPS), to develop guidelines for states and federal agencies to follow in designing and implementing management programs. According to the guidelines, "abandoned shipwreck" refers to any shipwreck to which title has been given up by the owner with no intent of ever claiming a right or interest in the property in the future. The term "historic shipwreck" is defined as one listed in or determined eligible for listing in the National Register of Historic Places. Eligibility can be determined on request by the Secretary of the Interior. Distinction between an abandoned shipwreck and a historical shipwreck becomes important with respect to how they may be managed. The guidelines stress that utmost care be given to protect and preserve histori-

cal shipwrecks.

Among other matters that the NPS guidelines address are recommendations concerning funding for the management program. Among them are (1) seeking appropriation of federal and state funds; (2) seeking available funds such as grants or loans from the Historical Preservation Fund; (3) seeking funding from private grants or organizations; (4) requiring fees for access and salvage (in establishing a permit system for commercial salvage); (5) inviting commercial participation (for example, allowing salvors to retain an extensive percentage of what they recover); (6) inviting the enthusiastic participation of recreational divers who could assist in mapping, surveying, inventorying, and evaluating the sites.

Mississippi Management of Shipwreck Sites

The Mississippi Legislature passed the Antiquities Act of 1988, Miss. Code Ann. §§ 39-7-1 *et seq.* (1990), which specifically declares that all sunken or abandoned ships and wrecks embedded in state-owned lands (including submerged lands) are state archaeological landmarks and the sole property of the state. The Act also gives the state the power to "locate, protect, and preserve all shipwrecks of historical, archaeological, educational, or scientific interest." The Act then specifies that it applies to "sunken or abandoned ships and wrecks of the sea or any part or the contents thereof."

The Act gives the Board of Trustees of the Department of Archives and History the authority to administer its provisions. The duties of the board under the Act consist of designating state archaeological landmarks, providing for the discovery and salvage operations, requesting and issuing permits, and protecting and preserving the archaeological resources of the state.

The Antiquities Act establishes a permit system under which, upon the board's approval, a permit may be issued allowing interested parties to enter into contracts with state agencies and qualified private institutions for the discovery and salvage of sunken or abandoned ships. The contracts must be specific regarding the site's location, the nature of the activity, and the expected time period for the operation. The contracts should be filed in the county where the operation is to take place, and subject to the board's discretion, the contract may provide for fair compensation for the salvage, either in terms of a reasonable cash amount or a percentage of the objects recovered. Currently, the Department of Archives and History is attempting to implement a management program. Reports from the department indicate that they are assimilating information from other states including Florida, North Carolina, and Virginia, all of which have strong programs in place. However, due to understaffing (the department does not even have an underwater archeologist on staff), the implementation process is progressing at a very slow rate. As of this time, no applications for permits have been received. Furthermore, while USGS quad maps indicate the existence of several shipwrecks, the department reports that it is only aware of one eighteenth-century vessel buried in the Biloxi Bay area. There has been no significant attempt to salvage this vessel, partly due to the fear of potential damage to the site.

Ocean Policy Challenges

■ The Department of Archives and History should be provided with sufficient resources to implement a shipwreck management plan pursuant to the Mississippi Antiquities Act.

■ State agencies entrusted with the authority to enforce the Mississippi Antiquities Act should be provided with adequate resources to carry out their duties. Adequate deterrence is only possible if the state enacts stiff fines and penalties for violation of its policies.

■ Mississippi should investigate the availability of outside funding sources to enlarge and enhance its program to locate and protect submerged archaeological finds.

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PROTECTED MARINE AREAS

Background

Protected marine areas in Mississippi waters consist of its barrier islands. Barrier islands have a number of unique geologic and ecological values. For example, they protect the bays, estuaries, and mainland communities that lie behind them from the full force of storms. By shielding estuaries they provide calm nursery areas for a wide variety of marine life. The islands themselves provide habitat for hundreds of species of birds and wildlife, many of them rare and endangered. From a human perspective they provide a number of opportunities for recreational activities, scientific research, and a highly sought (yet hazardous and expensive) place to live.

The harmful effects of development on barrier islands have been well documented. The beaches and marshes that make up barrier islands are fragile, vulnerable, and dynamic systems, always changing location and shape. Development on these coastal islands often causes destruction of wildlife habitat and deterioration of dunes, beaches, estuaries, and other natural coastal resources. In addition, development places lives and property in danger, increases public costs from storm-related damages, and requires more costly public infrastructure than on the mainland. It is now generally acknowledged that continued public investments and subsidies for development on hazardous coastal islands are a wasteful expenditure of public revenue.

While many barrier islands on the Atlantic and Gulf coasts have been developed, Mississippi's barrier islands have largely managed to escape this trend. Furthermore, there is now federal legislation in place that promotes a policy of protecting barrier islands from further development. The following discussion highlights this regulatory structure and also briefly notes other efforts being made by the government to protect sensitive marine areas.

Management Scheme

Coastal Barrier Resource Act

The first federal statute to coordinate environmental protection with fiscal policy was enacted in 1982. The aim of the Coastal Barrier Resources Act (CBRA), 16 U.S.C.A. §§ 3501 *et seq.* (1985 and Supp. 1990) is to pre-

Summary of Changes to the Coastal Barrier Resources System by the 1990 Improvement Act

State	Number of Units			Total Acreage			Fastland[4] Acreages			Miles of Shoreline		
	1982[1]	Change[2]	Total[3]	1982	Change	Total	1982	Change	Total	1982	Change	Total
Maine	12	14	26	1,045	3,754	4,799	485	602	1,087	10.0	13.4	23.4
Massachusetts	44	18	62	17,214	50,196	67,410	3,871	3,401	7,272	70.7	51.6	122.3
Rhode Island	11	9	20	4,791	4,240	9,031	1,058	443	1,501	17.7	9.1	26.8
Connecticut	11	12	23	3,045	2,972	6,017	333	245	578	8.2	4.1	12.3
New York (Atlantic)	12	29	41	4,635	13,588	18,223	1,131	750	1,881	21.0	22.7	43.7
New Jersey	0	9	9	0	8,096	8,096	0	938	938	0.0	10.4	10.4
Deleware	2	2	4	1,565	5,380	6,945	517	223	740	17.1	0.4	17.5
Maryland	0	36	36	0	7,163	7,163	0	1,605	1,605	0.0	28.0	28.0
Virginia	4	47	51	11,298	36,442	47,740	1,148	1,792	2,940	13.8	62.5	76.3
North Carolina	8	1	9	31,913	1,618	33,531	8,610	-2,534	6,076	54.6	-11.9	42.7
South Carolina	13	3	16	26,885	70,903	97,788	4,511	3,194	7,705	38.4	21.8	60.2
Georgia	6	0	6	33,073	31,334	64,407	5,126	532	5,658	16.2	3.7	19.9
Florida	33	34	67	61,575	223,371	284,946	19,378	14,920	34,298	118.8	70.1	188.9
Alabama	3	1	4	10,678	703	11,381	2,940	105	3,045	17.6	2.0	19.6
Mississippi	4	2	6	4,309	1,672	5,981	557	105	662	9.6	3.2	12.8
Louisiana	12	5	17	59,243	292,495	351,738	4,518	8,110	12,628	91.7	86.3	178.0
Texas	11	6	17	181,565	10,197	191,762	46,751	-1,178	45,573	161.0	14.9	175.9
Puerto Rico	0	41	41	0	20,349	20,349	0	2,119	2,119	0.0	51.5	51.5
Virgin Islands	0	24	24	0	3,775	3,775	0	639	639	0.0	14.6	14.6
Ohio	0	6	6	0	3,187	3,187	0	387	387	0.0	6.3	6.3
Michigan	0	46	46	0	18,686	18,686	0	3,609	3,609	0.0	55.2	55.2
Wisconsin	0	7	7	0	1,958	1,958	0	259	259	0.0	7.6	7.6
Minnesoia	0	1	1	0	940	940	0	269	269	0.0	3.0	3.0
New York (Great Lakes)	0	21	21	0	6,679	6,679	0	689	689	0.0	16.4	16.4
Total	186	374	560	452,834	819,698	1,272,532	100,934	41,224	142,158	666.4	546.9	1,213.3

1. As included by the 1987 Coastal Barrier Resources Act
2. Net addition or deletion made by the 1990 Coastal Barrier Improvement Act
3. Total in CBRS after passage of the 1990 Coastal Barrier Improvement Act
4. Land above mean high tide

Figure 12.1. [Source: Department of Interior, U.S. Fish and Wildlife Service]

serve the natural resources of undeveloped barrier islands, minimize danger to human life from poorly located development, and to end federal support for such development. At the heart of the Act is a prohibition on federal assistance or expenditures, such as federal flood insurance, government loans, or other forms of federal assistance or subsidies. The idea is that without federal assistance, the incentive to build will be greatly reduced by placing the entire burden of costs and risks on the developer and purchaser of coastal property covered by the Act.

The effect the Act will have on the growth of barrier island development is unclear. Much will depend on the amount of federal assistance needed to complete a project. It may well be that insurance and other incentives will be available in the private sector, and that there will continue to be consumers willing and able to pay the price for development without government aid.

Expansion of the Coastal Barrier Resource System

The Coastal Barrier Resource System originally encompassed only undeveloped barriers and their adjacent ecosystems on the United States' Atlantic and Gulf coasts. As a result of the success of the program, Congress passed legislation in 1990 that expanded not only the geographical scope of the CBRA, but also broadened a number of its definitions. (See figure 12.1.)

The Coastal Barrier Improvement Act of 1990, Pub.L. No. 101-591 (1990) (to be codified

at 16 U.S.C. § 3502) adopted additions, deletions, or modifications to existing territory included in the system (areas are divided into "units"). In addition to units being added in areas where the system is already in place (Mississippi gained two new units) the system was expanded to include parts of the Great Lakes, the Florida Keys, Puerto Rico, and the Virgin Islands.

Another provision of the new law dealt with considerable federal holdings that are within the area targeted by the CBRA, although not specifically included in the Act. Although these areas receive protection while they are federally owned, a potential problem could arise if they were sold by the government to private citizens interested in developing them. Therefore, the new legislation calls for the Administrator of General Services to consult with the Department of Interior (DOI) prior to disposal of excess federal lands to determine how much, if any, of the property may be an undeveloped barrier as defined by the Act.

Another provision offers state or local governments and qualified nonprofit organizations the opportunity to add to the system any area owned by the state, local government, or nonprofit organization. Finally, the Act creates an Interagency Coastal Barriers Task Force to submit to Congress a report that will, among other things, analyze the effects federal regulatory activities and tax policies under the Act have had on development. The task force's report will also make recommendations for federal policies and legislation with respect to developed and undeveloped barrier islands to promote the protection of coastal barriers and minimization of their destruction and degradation.

The CBRA is not the only mechanism available to the federal government for protection of barrier islands. For example, the Department of Interior's National Park Service (NPS) maintains nine National Seashores located along coastal islands, and the U.S. Fish and Wildlife Service manages about 50 national wildlife refuges along barrier island shores. There are additional mechanisms, such as the Emergency Wetlands Resources Act of 1986, 16 U.S.C. §§ 3901 *et seq.* (1988), which the federal government could use to conserve barrier island areas by acquiring the land. These areas could also be protected by encouraging land management agencies and private conservation organizations to acquire these areas.

Marine Protection, Research, and Sanctuaries Act of 1972

Another federal protection measure is found in Title III of the Marine Protection, Research, and Sanctuaries Act of 1972 (MPRSA), 16 U.S.C. §§ 1431 *et seq.* (1988), which gives the Secretary of Commerce the power to set aside certain ocean waters as National Marine Sanctuaries. The selection of a site takes into consideration such things as management concerns, ecological diversity, immediacy of need, and potential activity impacts.

The management program is designed to increase and coordinate enforcement and monitoring of existing regulations, implementing new regulations when necessary. The program does not prohibit all uses, but rather seeks to manage compatible uses while protecting the values of the site by creating a "management plan" for the area. For example, the 1983 amendments to the Act permit the appropriate regional fishery management council to decide how and when regulations for commercial fishing should be implemented. Restrictions might be placed on such activities as oil and gas operations, discharges,

alteration of or construction on the seabed, vessel traffic, and overflight. The management plans address such matters as long-term research activities, resource interpretive programs, and description of administration and surveillance-enforcement systems.

At present, there are eight designated national marine sanctuaries: three off the Pacific Coast (Cordell Bank, Gulf of the Farallones, and Channel Islands), three off Florida (Key Largo, American Shoals, and Looe Key), one in the American Samoa (Fagatele Bay), and two off the Atlantic Coast (Grays Reef and *U.S.S. Monitor*). In addition, there are 10 proposed areas for potential designation.

The designation process is quite complicated. Responsibility for the program resides with the National Oceanic and Atmospheric Administration's (NOAA) Office of Ocean and Coastal Resources (OCRM). Not only must OCRM prepare a prospectus, environmental impact statements, and management plans, it must also provide for public input and congressional committee approval in practically all phases of the designation procedure. Even after federal approval is granted, the governor of any state where the sanctuary might include state waters can disapprove the site as far as it impacts that state's waters. This designation process is time-consuming and has stifled the growth of the National Marine Sanctuary Program.

The Program's growth has been further retarded by other considerations, such as the need for oil and gas, political factors, and budget limitations. Nevertheless, the 1988 amendments to the Act requested the designation of four new sanctuaries, the preparation of prospectuses for two other new sanctuaries, and the study of potential sanctuary sites. Furthermore, attempts to address a number of the program's problems were made by The Marine Sanctuaries Review Team, which released its report on the National Marine Sanctuaries Program to NOAA on February 22, 1991.

National Estuary Program

Estuaries represent some of the most fertile habitats on earth. They serve as spawning, nursery, and feeding grounds for a multitude of fish and shellfish. Their wetlands and shallow waters support waterfowl of all descriptions and countless species of other wildlife.

Estuaries are also among the most intensively used habitats. Because of their location, they are subjected to activities such as fishing, shipping, tourism, recreation, boating, waste disposal, industrial processes, and commercial or residential development. The effects of these activities cause enormous stress on fragile estuarine areas.

To address the issues facing estuaries, Congress established the National Estuary Program in 1987. Operating under the Clean Water Act, the program endeavors to establish a comprehensive management plan that protects and enhances estuaries and their resources. The approach is one built on partnership. The states take a lead role by identifying areas to be recommended for participation in the program. Once included, a range of participants from federal agencies, state and local governments, citizens, user groups, and others work to develop a Comprehensive Conservation and Management Plan that identifies environmental problems and details how to solve them.

The National Estuary Program currently includes 12 estuaries, all in different stages of development. While none of the areas covered by the program are in Mississippi, state

policymakers may want to consider making attempts to participate in its protection efforts. The program is a young one, but its 1990 Report to Congress advances that already important lessons have been learned. One of the most important is that the most critical choices for coastal areas are made by state and local governments. Thus, participation at the state and local level is necessary to protect coastal resources.

Present Status in Mississippi

While Mississippi law empowers the Mississippi Commission on Wildlife, Fisheries, and Parks to establish sanctuaries in order to protect fishing resources, the state has not set aside any marine areas to be specifically regulated for their protection. Neither has the federal government designated or proposed a national marine sanctuary to encompass any of the Mississippi waters.

Barrier Islands and The National Gulf Seashore

The four primary islands that make up the barrier system in the Mississippi Sound are Cat Island, Ship Island, Horn Island, and Petit Bois Island. Of these, Ship, Horn, and Petit Bois Islands are part of the National Gulf Seashore and are therefore partially protected by the NPS. Mississippi is very fortunate to be part of this unique system, which provides important protection for the state's barrier island resources. The National Park Service's jurisdiction is pursuant to 16 USCA §§ 459h (1988), which states that the purpose for the establishment of the National Gulf Seashore is to preserve for public use and enjoyment certain areas possessing outstanding natural, historic, and recreational values. Cat Island is privately owned, and thus is not part of the Gulf Islands National Seashore. It is, however, covered under the Coastal Barrier Resources System.

The NPS is for the most part limited to protecting resources and providing for orderly use of the seashore. The NPS also carries out cooperative research efforts on the Mississippi barrier islands. For example, a project conducted in 1986 sought to reestablish bald eagle populations in the United States. The NPS also helps promote programs such as the "Adopt-A-Beach" program, which involves the public in helping to remove marine trash from the beaches.

NPS only has proprietorial jurisdiction, which does not give it the authority to deal with many criminal activities that may occur on the barrier islands within the Gulf Islands National Seashore. This means that the state and its subdivisions are responsible for primary law enforcement, and that most serious crimes are handled in accordance with state laws and by state officers. According to federal officials, this arrangement has led to confusion and conflict between federal and state personnel and needs to be corrected.

In addition to the offshore barrier islands, there are two nearshore islands off the mainland coast. Deer Island, which is in Harrison County and very close to the City of Biloxi, protects the mainland beaches of Biloxi. Limited development of the island has been attempted in the past. Round Island, which is

in Jackson County, is directly south of Pascagoula Bay. With the exception of a lighthouse, development has never been attempted on this island. Both of these islands are covered by the Coastal Barrier Resources System.

The Mississippi Coastal Wetlands Protection Law, §§ 49-27-1 *et seq.* (1990), expresses the state's concern over the management of the barrier islands. The Act specifies that the natural state of the coastal wetlands and their ecosystems should be protected and preserved, unless a specific alteration would serve a "higher public interest" and would comply with the purpose for which the wetlands are held. The mission of the Coastal Wetlands Protection Law is implemented by the regulations found in the Mississippi Coastal Program. The Mississippi Commission on Wildlife, Fisheries, and Parks has ultimate responsibility for administration of the Coastal Program, while daily management is carried out by the Bureau of Marine Resources (BMR).

Even before enactment of the CBRA the Coastal Program was used to prevent harmful development on the barrier islands. For example, in 1981 the commission denied a permit to the Deer Island Development Corporation, to build a utilities corridor from the mainland to the island. The corporation had intended to build condominium cabins, a swimming pool, and tennis courts on this island, which in its natural state serves as an important nursery and breeding area for many different species of wildlife.

Following BMR's evaluation of the permit request, the commission unanimously denied the corporation's permit application because the proposed activities were inconsistent with the goals and policies of the Coastal Program and would have damaged coastal wetlands, and, ultimately, the public interest.

Ocean Policy Challenges

■ The state should continue to protect undeveloped barrier islands, using all means available to it, such as wetlands protection provisions of the Coastal Program and the CBRA. The state should also consider requesting that any state or locally owned areas not covered by the CBRA be added to the system pursuant to the provision of the recently passed Coastal Barriers Improvement Act. Finally, the state should support efforts to increase the amount of regulatory protection offered by the Coastal Barrier Resources Act.

■ The Mississippi barrier islands that are part of the Gulf Islands National Seashore would benefit from the enhanced protection brought about by the expansion of federal proprietorial jurisdiction into full-fledged police jurisdiction. To avoid conflicts between goals of various state and federal agencies, cooperative measures should be adopted to provide a comprehensive and consistent regulatory scheme.

■ The state should examine the feasibility of recommending state estuarine areas for inclusion in the National Estuary Program.

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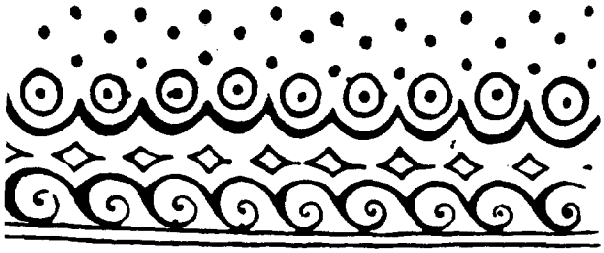

MANAGEMENT FRAMEWORKS FOR IMPROVED INTERSTATE, INTERAGENCY, AND CITIZEN PARTICIPATON

Background

The Gulf of Mexico is a marine ecosystem defined by distinct and interrelated oceanographic and biologic features. It is a semi-enclosed subtropical sea with predominately circular currents and limited inflow and outflow from the Atlantic Ocean. Tide and current patterns tend to confine buoyant marine debris and other pollutants within the Gulf to a much greater extent than is the case along the Atlantic or Pacific coasts. A variety of fisheries stocks of great commercial and recreational value migrate throughout the Gulf, unhindered by existing state, federal, and international political boundaries.

It is clear that environmental damage and resource allocation decisions in one part of the Gulf can have a significant impact on other parts. Because ocean management problems in the Gulf in general, and in the Mississippi Sound in particular, are the result of multistate and international activities, effective solutions will require improved interstate and interagency cooperative efforts.

To date, the coastal states of the Gulf region have not attempted to address areawide ocean and coastal issues in a coordinated manner, even though Mississippi participates in interstate and federal-state cooperative research programs such as the Gulf States Marine Fisheries Commission, the Environmental Protection Agency's Gulf of Mexico Program, and the Gulf Marine Hard Mineral Task Force. State representatives also serve in a policy-making capacity on the Gulf of Mexico Fishery Management Council. However, none of these regional organizations is capable of addressing the full range of ocean policy issues facing the state.

Mississippi's present institutional framework is geared primarily toward the management of single ocean uses such as fisheries or offshore oil and gas development. Few formal structural mechanisms exist to promote the integrated and comprehensive management of the state's ocean areas. For example, unlike many coastal states, Mississippi has no government-sponsored ocean and coastal advisory panels, interagency management committees, or citizens' advisory groups.

Although state agency personnel in Mis-

sissippi interact on an informal basis with colleagues from other agencies and with the public, there is no formal institutional mechanism that provides coordinated state action concerning ocean policy decisions. The Commission on Wildlife, Fisheries and Parks is statutorily empowered to coordinate marine policy initiatives, but to date has not created a formal framework to ensure that coordination is carried out. Miss. Code Ann. § 57-15-5 (1989).

No agency or bureau has been delegated the authority to coordinate and review federal, state, and regional permit and planning projects and to effectively integrate agency actions. Currently, each agency and legislative committee tends to formulate its own policy goals guided by its narrow perception of the interests of its constituents. As a result their regulatory actions have been characterized by overlapping jurisdictions and authority, and uncoordinated development and management efforts. The public, moreover, is very often excluded from the ocean policy decision-making process.

State Ocean Management Legislation

Mississippi must adopt state ocean policy legislation as the first step in the development of a comprehensive and integrated framework for managing its ocean resources. In the absence of appropriate enabling legislation there will be little incentive for agencies and ocean interest groups to work together to modify the existing management system. The following discussion proposes and explains new state ocean management legislation. (For the full text of the proposed model legislation, see appendix 1.) First, the legislation should include a detailed set of legislative findings and declarations of purpose that clearly express the importance of protecting and properly managing the state's ocean resources. It should designate the Bureau of Marine Resources (BMR) as the primary agency for coordinating the state ocean management program. BMR is the appropriate lead agency because of its broad regulatory mandate over ocean activities, its in-house technical expertise, and its extensive experience in implementing the state's coastal program.

The legislation should also create a Mississippi Ocean Resources Task Force to advise and assist the governor and legislature on ocean-related matters and to develop a Mississippi Ocean Resources Management Plan. In addition to establishing the procedures for selecting task force members, the legislation should describe how the Ocean Management Plan should be organized, the type of analysis it should incorporate, and how it should be reviewed, distributed, and implemented. Provisions should be included that specify state agency responsibilities and cooperative arrangements for the preparation of the plan. County governments should be assured that any state program will be compatible to the maximum extent practicable with any local land use plans currently in force. There should also be some procedure for federal agencies with ocean resource regulatory responsibilities to designate a non-voting liaison to the task force. Federal representatives could respond to task force requests for technical and policy information and keep the federal agency apprised of the task force's activities. Finally, the legislation should provide a mechanism to encourage public participation in the development and implementation of the plan. This should include opportunities for public hearings to solicit ideas, opinions, and information prior to the plan's publication, and as broad

a distribution of the completed plan as possible.

Proposed Mississippi Ocean Resource Task Force

The principle duties of the proposed Mississippi Ocean Resource Task Force would be to provide a broad-based forum for discussing ocean resource issues; to assist in the coordination of agency and legislative actions; to plan, coordinate, develop, and implement the Mississippi Ocean Resources Management Plan; to encourage improved public participation in the ocean decision-making process; and to recommend interstate and state-federal cooperative ocean management programs.

Task Force membership should consist of six *ex officio* members or their designees, including the Director of the Department of Wildlife, Fisheries, and Parks; the Director of the Department of Environmental Quality; the Director of the Department of Economic Development; the Secretary of State; the Director of the Mississippi-Alabama Sea Grant Consortium; and a representative from the governor's office. Seven additional voting members should be appointed by the governor representing each of the following user groups: (1) commercial fishing; (2) charter, sport, or recreational ocean fishing; (3) mineral or energy production; (4) marine transportation; (5) recreation and tourism; (6) ocean research interests from the public or private sector, such as marine mining, ocean energy, fisheries, or marine biotechnology; and (7) the public state university system. Three voting representatives from the general public should be appointed as members by the governor. At least one of the public appointees must be a representative of an environmental organization. The director of the Department of Wildlife, Fisheries, and Parks or his designee should serve as Task Force chairman.

A scientific and technical advisory committee should assist the task force by providing advice and research on ocean-related programs and activities. Membership of the committee should be composed of experts in the fields of marine science, law, or technology appointed by the task force chairman; state agency technical staff and university faculty designated by the directors of the agencies represented on the task force; and the planning directors of each of the three coastal counties.

Mississippi Ocean Resources Management Plan

The task force is charged with the responsibility of preparing and coordinating the implementation of a proposed Mississippi Ocean Resources Management Plan. As envisioned, the plan would address a broad range of ocean issue areas and provide specific recommendations to develop or improve state agency programs. It is not intended to serve as a compulsory coastal and ocean use plan. Nothing in the proposed Ocean Resources Management legislation or Ocean Resources Management Plan changes the statutorily or constitutionally mandated responsibilities of any state agency.

In preparing the management plan, the task force should inventory and analyze state and federal laws and regulations pertaining to ocean resources management within or directly affecting Mississippi's territorial sea and adjacent exclusive economic zone, as well as existing management plans developed by state agencies. It should also inventory existing and potential uses and activities in the ocean off the coast of Mississippi, analyze potential impacts to ocean and coastal resources and coastal communities from these activities, and evaluate the ability of state agencies to manage those uses consistent with

the proposed legislation. Special emphasis should be placed on analyses of state laws, rules, authorities, or programs that conflict with one another or that need to be modified or eliminated, as well as laws, rules, or programs that may need to be enacted in order to provide for coordinated, comprehensive management of ocean resources.

Specific recommendations should be developed that contain: (1) a brief statement of the issues or need requiring the recommended action; (2) a description of how the recommendation will address the issues or meet the identified need; (3) policies and objectives; (4) a brief work program describing the actions necessary to carry out the recommendation; (5) a list of state agencies or programs to be affected by the recommendation; (6) an estimate of the time and costs required to carry out the recommendation; and (7) any change in state law that may be required.

Recommendations for a permanent ocean resources planning management process should also be developed. Among the issues considered should be options for an advisory coordinating body to succeed the task force; the formation of advisory committees; the role of the governor, state agencies, federal agencies, citizens, interest groups, and ocean users; and a process for plan update and amendment.

Funding

In light of recent state budget constraints and the decline in funding of BMR and other state resource management agencies (see figure 8.3), it is important that the state examine outside funding opportunities available for the Ocean Resources Management Program. For example, the potential exists to receive significant federal funding through recently passed amendments to the Coastal Zone Management Act. This new legislation makes funds available for states that endeavor to improve their coastal management programs in one of eight identified areas, of which ocean resource planning is one.

Other funding potential could be found by using a portion of the state's receipt of OCSLA Section 8(g) funds or revenue from state offshore oil and gas leases. State special funds that may become available in the future, such as gambling revenue or fees from saltwater fishing licenses, could be earmarked for this use as well.

Finally, the state should investigate methods of acquiring funds from existing federal sources. Opportunities may be available under ocean-related legislation such as the Saltonstall-Kennedy Program, the Upton-Jones Act, or the Wallop-Breaux Act. Other federal funding might be found with the EPA Near Coastal Waters Program, other EPA water resources grants programs, or with the Mineral Management Service's environmental studies program.

Conclusion

Mississippi is responsible for the management of a broad range of ocean resource uses in its territorial sea and for the coordination of federal activities in the ocean areas beyond. The days are past in which it was possible to effectively manage different ocean uses on a case-by-case basis. Today's ocean managers are faced with increasing user conflicts and deteriorating environmental conditions. Dealing with the demands placed on the state's ocean areas will require a coordinated and equitable management program. It is in the interest of all Mississippians that the state take reasonable steps today to improve its ocean management capabilities by establishing a coordinated management framework.

The proposed Mississippi Ocean Resources Management Program is intended to serve as a valuable planning tool for state government. If adopted, it will provide the governor, state agencies, and the legislature with options that will enable them to better manage the state's ocean resources. The goal of this ocean policy study is to lay the foundation for the creation of a comprehensive ocean management program. Developing an effective ocean resource management scheme is a great challenge for state policymakers. The rewards, however, are equally great. Taking responsibility for the wise use and management of Mississippi's abundant ocean resources presents not only countless possibilities for human benefit and enjoyment for this generation, but more important, will preserve the ocean's bounty for future generations.

MODEL MISSISSIPPI OCEAN RESOURCES MANAGEMENT PLANNING ACT

Section

1 Policy
2 Mississippi Ocean Resources Management Program; Establishment
3 Definitions
4 Mississippi Bureau of Marine Resources; Primary Coordinating Agency
5 Mississippi Ocean Resources Task Force; Establishment
6 Scientific and Technical Advisory Committee; Establishment
7 Powers and Duties of the Task Force
8 State Agency Responsibilities and Cooperation
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Section 1 **[Policy.]**

It is the policy of the state to:

(1) Exercise an overall conservation ethic in the use of Mississippi's ocean resources;

(2) Encourage ocean resources development which is environmentally sound and economically beneficial;

(3) Provide for efficient and coordinated ocean resources and activities management;

(4) Assert the interests of this state as a partner with federal agencies in the sound management of the ocean resources within the United States exclusive economic zone;

(5) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources to acquire the scientific inventory information necessary to understand the impacts and relationship of ocean development activities to ocean and coastal resources; and

(6) Encourage research and development of new, innovative marine technologies for exploration and utilization of ocean resources.

Section 2 **[Mississippi Ocean Resources Management Program; establishment.]**

To assure the conservation and development of ocean resources affecting Mississippi that are consistent with the purposes of this chapter, a coordinated program for the planning of ocean resources and activities management is established. This program shall be known as the Mississippi Ocean Resources Management Program. The Mississippi Ocean Resources Management Program shall consist of:

(1) The Mississippi Ocean Resources Task Force as established in this chapter, any successor to the task force, and any cooperative agreements entered into by the task force or its successor; and

(2) The Mississippi Ocean Resources Management Plan as prepared and implemented pursuant to this chapter.

Section 3 **[Definitions.]**

As used in this chapter unless the context requires otherwise:

"Task Force" means the Mississippi Ocean Resources Task Force.

"Exclusive economic zone" has the meaning set forth in Presidential Proclamation 5030 issued March 10, 1983, whereby the United States proclaimed jurisdiction from the seaward boundary of the state out to 200 nautical miles from the baseline from which the breadth of the territorial sea is measured.

"Plan" means the Mississippi Ocean Resources Management Plan.

"Program" means the Mississippi Ocean Resources Management Plan, background studies, and analysis undertaken in the development of the plan, the implementation activities recommended by the plan, and the Mississippi Ocean Resources Task Force.

"Territorial sea" means the waters and seabed extending three geographical miles seaward from the coastline in conformance with federal law.

Section 4 **[Mississippi Bureau of Marine Resources; primary coordinating agency.]**

(a)The Bureau of Marine Resources (BMR) is designated the primary agency for coordination of ocean resources planning activities. The bureau shall assist the governor with the governor's duties and opportunities to respond to federal agency programs and activities affecting coastal and ocean resources.

(b)BMR, coordinating with the expertise within the Department of Wildlife, Fisheries, and Parks; Department of Environmental Quality; Department of Economic Development; Secretary of State's office, and the Governor's office, shall provide technical, clerical, and other necessary support services for carrying out the purposes of this chapter.

Section 5 **[Mississippi Ocean Resources Task Force; establishment.]**

(a) There is established within the BMR a Mississippi Ocean Resources Task Force for the purpose of advising and assisting the governor and legislature on matters relating to the use, development, and management of Mississippi's ocean resources. The task force shall be composed of 14 voting members as follows:

(1) Six shall be voting ex officio members to consist of the Director of the Department of Wildlife, Fisheries, and Parks; the Director of the Department of Environmental Quality; the Director of the Department of Economic Development; the Secretary of State; the Director of the Mississippi-Alabama Sea Grant Consortium; and a representative of the governor's office.

(2) Ten voting members appointed by the governor representing each of the following:

(A) Commercial fishing interests;
(B) Charter, sport, or recreational ocean fishing interests;
(C) Mineral or energy production;
(D) Marine transportation;
(E) Recreational or tourism interests;
(F) Ocean research interests from the private or public sector, such as marine mining, ocean energy, fisheries, engineering or marine biotechnology;
(G) Public state university system; and
(H) Three members of the public to be appointed by the governor. At least one of these appointed positions must be held by a representative from an environmental organization.

(b) There shall be only one designated representative selected by each of the six *ex officio* members. The designee shall be a person with knowledge and experience in matters relating to the development, conservation, or management of ocean resources. The Director of the Department of Wildlife, Fisheries, and Parks or his/her designee shall serve as the chairperson of the task force. The Department of Wildlife, Fisheries, and Parks shall provide staff services to the task force as needed. All members of the task force shall serve without compensation and shall be entitled to reimbursement for necessary expenses while attending meetings and while in the discharge of duties and responsibilities of the task force.

Section 6 **[Scientific and Technical Advisory Committee; Establishment.]**

(a) A scientific and technical advisory committee to the task force is established and composed of:

(1) Such members with expertise in marine science, law, or technology appointed by the task force chairman;
(2) State agency technical staff designated by the directors of the agencies represented on the task force; and
(3) The planning directors of the counties bordering the territorial sea.

(b) The scientific and technical advisory committee shall provide advice to the task force on scientific and technical research related to all programs and activities in the Mississippi ocean waters.

(c) The chairman of the advisory committee shall be appointed by the chairman of the task force.

Section 7 **[Powers and duties of the task force.]**

The task force shall advise and assist the governor and the legislature on matters relating to marine affairs of the state by:

(1) Serving as a forum for comprehensive ocean policy formulation and public and private sector coordination, and information dissemination;
(2) Planning, coordinating, and facilitating development and implementation of the Mississippi Ocean Resources Management Plan;
(3) Performing such services and activities as may be required by the governor and

legislature;

(4) Preparing and submitting a report on the implementation of this chapter to the governor and the legislature prior to each regular session; and

(5) Developing procedures to conduct its business to carry out the purposes of this chapter.

Section 8 **[State agency responsibilities and cooperation.]**

(a) The provisions of this chapter do not change statutorily and constitutionally mandated responsibilities of the state agencies.

(b) The task force may request and shall receive from any department, division, board, bureau, commission, or agency of the state or any political subdivision thereof such assistance and data as it deems necessary or desirable to carry out its powers and duties.

Section 9 **[Coordination with federal agency programs.]**

To ensure that the Mississippi Ocean Resources Management Program is coordinated with federal agency programs for coastal and ocean resources, the task force shall invite federal agencies with responsibility for the study and management of ocean resources, or regulation of ocean activities to designate a liaison to the task force to attend task force meetings, respond to task force requests for technical and policy information, and review materials prepared by the task force.

Section 10 **[Compatibility with local or county land use plans.]**

(a) The program shall be compatible to the maximum extent practicable with any acknowledged county land use plans of each county.

(b) To ensure that the program is compatible with any applicable local or county land use plans, the task force shall consult with county officials, and solicit comments on task force activities.

Section 11 **[Public participation.]**

The task force shall involve citizens and interested groups and organizations in the development and implementation of the plan. The task force shall:

(1) Provide citizens, coastal and ocean interest groups, organizations, and ocean resource users:

(A) Opportunities for involvement; and

(B) Opportunities for comment on issues and topics which should be addressed;

(2) Conduct at least [three] public workshops, including [two] in coastal locations, to solicit ideas, opinions, and facts to be considered in developing the proposed plan.

(3) Distribute the plan to all public libraries statewide and to interested individuals and groups, upon request.

Section **12 [Preparation of plan.]**

(a) The task force shall prepare and coordinate implementation of a proposed Mississippi Ocean Resources Management Plan.

(b) The proposed plan shall be submitted to the legislature prior to the convening of the regular session of [1993].

(c) The task force shall send the proposed plan for review and comment to the board or governing body of the agencies and groups represented on the task force and to each county.

Section **13 [Mississippi Ocean Resources Management Plan process.]**

(a) The Mississippi Ocean Resources Management Plan shall address ocean issue areas to include overall ocean resources management, conservation and preservation, marine water quality, fisheries, ocean minerals, aquaculture, mariculture, recreation, coastal erosion, harbors, ocean and coastal energy facilities, marine education and research, waste disposal, accidental spills, and other issues of importance to the state. In developing the plan, the task force shall consider:

(1) Inventories of the existing state laws and agency rules, authorities, and programs which pertain to ocean resources;

(2) Inventories of federal laws, regulations, and agency programs which pertain to ocean resources management within or directly affecting Mississippi's territorial sea and adjacent exclusive economic zone;

(3) Analyses of state laws, rules, authorities, or programs which conflict with one another, that need to be modified or eliminated, as well as laws, rules, or programs which may need to be enacted in order to provide for coordinated, comprehensive management of ocean resources;

(4) Existing management plans developed by state agencies; and

(5) Current activities regarding computer and noncomputer maps of existing ocean conditions, uses, and resources of the coastline, territorial sea, and exclusive economic zone.

(b) The plan shall include:

(1) Specific recommendations to develop or improve state agency programs to manage ocean resources and activities consistent with this chapter. These recommendations:

(A) Shall be the basis for agency or legislative action and shall contain:

(i) A brief statement of the issues or need requiring the recommendation;

(ii) A description of how the recommendation will address the issues or meet the identified need;

(iii) Policies and objectives;

(iv) A brief work program describing the actions necessary to carry out the recommendation;

(v) A list of state agencies or programs to be affected by the recommendation;

(vi) An estimate of the time and costs required to carry out the recommendation; and

(vii) Any change in state law which may be needed;

(B) Shall address the following as appropriate:

(i) Marine water quality, including ocean outfalls from municipal and industrial wastes, toxic and hazardous chemicals, water quality standards and monitoring, and research programs to ensure marine water quality;

(ii) Areas within the territorial sea and the exclusive economic zone which should be excluded from energy or nonenergy mineral development, or for which special precautions must be taken;

(iii) Coastal oil spill prevention, response, clean up, damage assessment, and compensation;

(iv) Programs to facilitate greater cooperation between federal and state entities and between the different Gulf state entities;

(v) Programs to encourage and facilitate research and development into technologies for the exploration and development of ocean resources;

(vi) Strategies to promote private investment in Mississippi into responsible research, exploration, and development of ocean resources; and

(vii) Recommendations for alternative dispute resolution techniques to resolve conflicts among competing interests; and

(viii) [Specify other issues to be addressed]

(2) Recommendations for a permanent ocean resources planning and management process, including consideration of:

(A) Options for an advisory coordinating body to succeed the task force;

(B) Advisory committees;

(C) The role of the governor, state agencies, federal agencies, counties, citizens, interest groups, and ocean users; and

(D) A process for plan update and amendment including integration of new information and adoption and incorporation of plan amendments;

(3) A summary of state and federal issues of ocean resource management and jurisdiction, including recommendations to the Mississippi congressional delegation for changes in federal law or agency programs;

(4) Identification of issues which affect county planning programs and an analysis of additional work which may be needed to fully address those issues in the county plans; and

(5) A summary of task force actions to involve citizens of this state and to

coordinate with county governments and federal agencies in development of the plan.

Section 14 **[Distribution of proposed plan copies.]** The BMR shall supply copies of the proposed plan to public libraries statewide and shall make copies available by request. The bureau may charge a small fee to recover the costs of mailing. The bureau shall supply copies, without charge, to the governor, the legislature, all affected state agencies, and each county government.

Section 15 **[Appropriations.]** [Insert appropriations amounts.]

Section 16 **[Effective Date.]** [Insert effective date.]

Mississippi Ocean Policy Survey Results*

		Great Significance	Some Significance	Not Significant	Don't Know
I.	OCEAN JURISDICTION AND CONTROL				
	1.Extension of the Territorial Sea to 12 miles	50%	31%	5%	14%
	2. Offshore Submerged lands and jurisdiction	62%	21%	2%	14%
II.	OFFSHORE ENERGY				
	1. Territorial Sea, Oil and Gas leasing	50%	12%	0%	7%
	2. OCS Oil and Gas leasing	55%	26%	7%	10%
	3. OCA Revenue leasing	57%	10%	2%	29%
	4. Exploration	33%	40%	14%	10%
	5. Ocean Pipelines	50%	26%	7%	14%
	6. Alternative	17%	33%	24%	24%
III.	MARINE HARD MINERAL MINING				
	1. All minerals other than oil, gas, and sulfur	5%	43%	24%	24%
IV.	MARINE POLLUTION				
	1. Oil Spills	86%	10%	0%	2%
	2. Offshore Ocean Outfalls	52%	17%	12%	14%
	3. Vessel Discharges	79%	17%	2%	2%
	4. Ocean Dumping	81%	17%	0%	2%
	5. Plastics Pollution	74%	21%	0%	5%

*Survey results represent responses from forty-two individuals who live in Mississippi and have expertise in ocean and coastal issues. All were asked to rate the significance of selected ocean uses to the state. Survey responses were received in September-October 1989.

	Great Significance	Some Significance	Not Significant	Don't Know
6. Hazardous Substance Transportation	67%	24%	5%	2%
V. MARINE FISHERIES				
1. Commercial Fisheries and Oysters	81%	12%	0%	7%
2. Recreational Fisheries	64%	24%	7%	5%
3. Mariculture	64%	24%	7%	5%
4. Artificial Reefs and Fish Aggregation Devices	38%	48%	5%	10%
VI. MARINE SALVAGE AND FINDS				
1. Protection of Cultural and Archaeological Resources	26%	45%	14%	14%
2. State Salvage Laws	14%	40%	24%	21%
VII. BARRIER ISLANDS				
1. Gulf Islands National Seashore	43%	43%	10%	2%
2. Use Conflicts	40%	45%	7%	7%
VIII. PROTECTION OF THE MARINE ENVIRONMENT				
1. Marine Sanctuaries	55%	33%	5%	7%
2. Estuarine Sanctuaries	69%	24%	0%	7%
3. Endangered, Threatened Protected Marine Species	48%	45%	0%	7%
4. Regional Protection Efforts	48%	36%	5%	12%

	Great Significance	Some Significance	Not Significant	Don't Know
IX. NAVIGATIONAL SAFETY				
1. Traffic Separation Schemes Marking of Hazards	21%	33%	17%	26%
X. MARINE RECREATION	52%	36%	5%	7%
XI. MILITARY USES OF THE OCEAN	31%	38%	12%	19%
XII. MARINE EDUCATION AND RESEARCH	60%	29%	7%	2%
XIII. OCEAN MANAGEMENT COOPERATION				
1. Interstate Cooperation	71%	19%	0%	7%
2. Interagency Cooperation	62%	21%	7%	7%
XIV. STATE-FEDERAL CONSISTENCY	71%	21%	0%	5%

SAMPLE OCEAN POLICY SURVEY

INSTRUCTIONS

Please rank the significance to the state of Mississippi of each of the listed ocean issues. Take into consideration the impact that each issue has on factors such as the state's economy, tourism industry, historic or cultural heritage, health and safety, aesthetics, and overall quality of life. Rank the issue in the following manner: (a) if you believe it to be of great significance, (b) if it is of some significance, (c) if it is not significant enough to warrant discussion in the study, and (d) if you don't have enough information to make a decision.

Space is provided so that you may list additional issues that you would like to see addressed and for any comments that you may have regarding any aspect of this project.

This survey is designed so that up to three individuals may respond. Please place your name on the space as indicated, and record your responses in the column below. (If more than three individuals will be responding, we have included more than one form for your convenience).

	NAME & TITLE	NAME & TITLE	NAME & TITLE
	_____	_____	_____
I. OCEAN JURISDICTION AND CONTROL			
1. Extension of the Territorial Sea to Twelve Miles	_____	_____	_____
2. Offshore Submerged Lands and Jurisdiction	_____	_____	_____
II. OFFSHORE ENERGY			
1. Territorial Sea, Oil, and Gas Leasing	_____	_____	_____
2. Outer Continental Shelf (OCS) Oil and Gas Leasing	_____	_____	_____
3. OCS Revenue Sharing	_____	_____	_____
4. Geophysical Testing and Exploration	_____	_____	_____
5. Ocean Pipelines	_____	_____	_____
6. Alternative Ocean Energy Sources (i.e. wave, thermal)	_____	_____	_____

III. MARINE HARD MINERAL MINING (i.e., all minerals other than oil, gas and sulphur)	_____	_____	_____
IV. MARINE POLLUTION			
1. Oil Spills	_____	_____	_____
2. Offshore Ocean Outfalls	_____	_____	_____
3. Vessel Discharges	_____	_____	_____
4. Ocean Dumping	_____	_____	_____
5. Plastics Pollution	_____	_____	_____
6. Hazardous Substance Transportation	_____	_____	_____
V. MARINE FISHERIES			
1. Commercial Fisheries	_____	_____	_____
2. Recreational fisheries	_____	_____	_____
3. Mariculture (including oysters)	_____	_____	_____
4. Artificial Reefs and Fish Aggregation Devices	_____	_____	_____
VI. MARINE SALVAGE AND FINDS			
1. Protection of Cultural and Archaeological Resources	_____	_____	_____
2. State Salvage Laws	_____	_____	_____
VII. BARRIER ISLANDS			
1. Gulf Islands National Sea Shore	_____	_____	_____
2. Use Conflicts	_____	_____	_____
VIII. PROTECTION OF THE MARINE ENVIRONMENT			
1. Marine Sanctuaries	_____	_____	_____
2. Estuarine Sanctuaries	_____	_____	_____
3. Endangered, Threatened Protected Marine Species	_____	_____	_____
4. Regional Protection Efforts	_____	_____	_____
IX. NAVIGATIONAL SAFETY (i.e., traffic separation schemes, marking of hazards)	_____	_____	_____
X. MARINE RECREATION	_____	_____	_____

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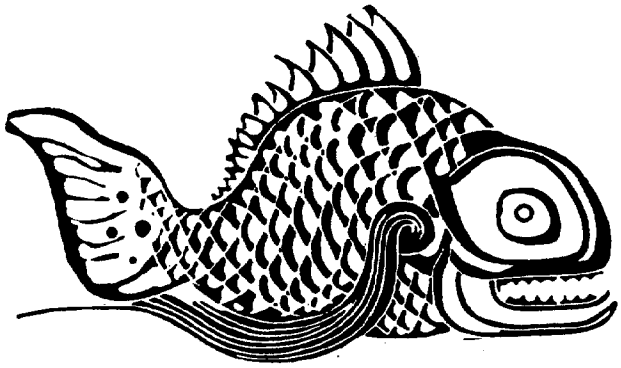

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