

Report To The Mississippi Legislature



An Evaluation of the Effectiveness of the Department of Marine Resources' Marine Resources Management and the Department of Wildlife, Fisheries, and Parks' Marine Law Enforcement

January 11, 1999

The Department of Marine Resources' primary legislated objectives are to protect, propagate, and conserve the state's marine resources (including protection of the state's coastal wetlands) in connection with revitalizing the state's seafood industry.

The Department of Marine Resources (DMR) is generally performing an adequate job of managing the state's major regulated marine fisheries. The department has enacted ordinances and taken management actions designed to restore those fisheries designated as overfished or showing signs of decline. However, declines in coastal water quality, wetlands habitat, and seagrass acreage will affect the long-term viability of the state's marine resources if not properly addressed. With respect to revitalization of the state's seafood industry, while over the long term (since 1950) Mississippi's commercial fisheries landings have been relatively stable, since the 1980s the volume and value of Mississippi commercial fisheries landings have declined.

By having enforcement officers spend the majority of their work time patrolling Mississippi's marine waters and issuing citations to violators, the Department of Wildlife, Fisheries, and Parks' Marine Law Enforcement unit is carrying out its legislated purpose of enforcing laws and regulations for the protection, propagation, and conservation of saltwater aquatic life in the state of Mississippi. However, these officers are not enforcing the state's coastal wetlands protection act as required under a memorandum of agreement with DMR.

The PEER Committee

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The Mississippi Legislature created the Joint Legislative Committee on Performance Evaluation and Expenditure Review (PEER Committee) by statute in 1973. A standing joint committee, the PEER Committee is composed of five members of the House of Representatives appointed by the Speaker and five members of the Senate appointed by the Lieutenant Governor. Appointments are made for four-year terms with one Senator and one Representative appointed from each of the U. S. Congressional Districts. Committee officers are elected by the membership with officers alternating annually between the two houses. All Committee actions by statute require a majority vote of three Representatives and three Senators voting in the affirmative.

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**An Evaluation of the Effectiveness of the Department of Marine
Resources' Marine Resources Management and the Department
of Wildlife, Fisheries, and Parks' Marine Law Enforcement**

January 11, 1999

**The PEER Committee
Mississippi Legislature**

The Mississippi Legislature

Joint Committee on Performance Evaluation and Expenditure Review

PEER Committee

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January 11, 1999

Honorable Kirk Fordice, Governor
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Members of the Mississippi State Legislature

On January 11, 1999, the PEER Committee authorized release of the report entitled **An Evaluation of the Effectiveness of the Department of Marine Resources' Marine Resources Management and the Department of Wildlife, Fisheries, and Parks' Marine Law Enforcement.**

A handwritten signature in cursive script, reading "Tommy Horne", written over a horizontal line.

Representative Tommy Horne, Chairman

**This report does not recommend increased
funding or additional staff.**

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An Evaluation of the Effectiveness of the Department of Marine Resources' Marine Resources Management and the Department of Wildlife, Fisheries, and Parks' Marine Law Enforcement

January 11, 1999

Executive Summary

Introduction

Prior to July 1, 1994, responsibility for management of the state's marine resources rested with the state Department of Wildlife, Fisheries, and Parks' Bureau of Marine Resources. During the 1994 Regular Session, the Legislature created a separate Department of Marine Resources (DMR) to manage the state's marine resources; however, responsibility for marine law enforcement remained with the Department of Wildlife, Fisheries, and Parks (DWFP).

In response to a legislative request, PEER evaluated the effectiveness of the Department of Marine Resources' marine resources management. Also, PEER evaluated the effectiveness of the Department of Wildlife, Fisheries, and Parks' marine law enforcement program.

Overview

Marine Resources Management

DMR is still in the process of developing management tools critical to its organizational effectiveness in meeting legislated objectives. For example, the department has not yet developed adequate measures of its own efficiency and effectiveness. Also, the staff does not always provide commissioners with adequate data necessary to make informed policy decisions.

In the absence of adequate DMR measures of its own effectiveness, PEER relied heavily on ad hoc measures to evaluate the department's effectiveness. Measures used by PEER include external research, reports, and data on the condition of Mississippi's marine resources, coastal wetlands, and seafood industry and federal regulatory reports on DMR's management of the coastal zone and of the state's oyster fishery.

With respect to marine fisheries management, DMR is generally performing an adequate job of managing the state's major regulated marine fisheries. While four fisheries appear to be sustainable at current levels of harvest, two are below historical juvenile abundance population averages, three are overfished in Gulf waters, and one (shrimp) has differing conditions within the fishery. The brown shrimp sub-category appears to be sustainable at current levels of harvest and the white shrimp sub-category is below historical juvenile abundance population averages. There is inadequate data on the remaining three major state fisheries for commenting on the condition of these stocks.

The department has enacted ordinances and has taken other management actions designed to restore those fisheries designated as overfished or showing signs of decline. With respect to the state's oyster fishery, which is heavily regulated by the federal government due to the public health risk associated with consumption of raw oysters, DMR has adequately addressed significant compliance problems by hiring additional staff, repairing broken monitoring gauges, and adhering to reef closure guidelines. Further, with DMR's reported current focus on developing program plans and effectiveness measures, the department, in becoming more proactive, is headed in the right direction to direct future marine fisheries management efforts.

With respect to coastal wetlands management, DMR should conduct significant work to ensure adequate protection of this critical environment. Most of the state's major fisheries utilize the wetlands at some point during their life cycle. The federal government, which oversees Mississippi's management of its coastal wetlands, has cited the department numerous times for serious deficiencies with respect to wetlands management (e.g., failure to monitor and enforce coastal zone plan compliance). The majority of these deficiencies are due to developmental pressure on the coastal area resulting from significant growth on the Gulf Coast during the

1990s associated with legalization of dockside gaming. While the department is in the process of revising its Coastal Zone Management Plan to take into account development associated with the casino industry, it is imperative that this plan adequately address the urgent need for wetlands protection in order to ensure the continued viability of the state's marine fisheries.

With respect to revitalization of the state's seafood industry, while over the long term (since 1950), Mississippi commercial fisheries landings have been relatively stable, since the mid-1980s the volume and value of Mississippi commercial fisheries landings have declined. This decline is primarily attributable to a decline in the state's menhaden and pet food fisheries and a decline in shoreline support for the production sector of the industry. Recent research on the economic impact of dockside gaming on the commercial seafood industry in coastal Mississippi documents a decline in the commercial harvesting and processing sectors of the industry.

Marine Law Enforcement

DWFP's Marine Law Enforcement Unit complies with state law by having enforcement officers spend the majority of their work time patrolling marine waters and issuing citations to violators. From FY 1993 to FY 1998, DWFP marine enforcement officers spent an average of 55% of their work time performing land and water patrols. These patrols serve as a deterrent to overfishing, which is a factor in long-term damage to marine resources.

The state's penalties for violation of seafood laws appear adequate. Financial penalties imposed for most violations are higher than the average value of daily catches and should be sufficient to deter potential violators. However, MISS. CODE ANN. Section 49-15-64.5 (3) allows commercial fishers to change the designated captain of a commercial fishing vessel (and thus avoid receiving subsequent citations), which could limit effectiveness of such penalties because most of the financial and incarceration penalties imposed for violations of the seafood laws increase with each subsequent offense.

While there are 2,373 recreational fisher licenses to each DWFP marine law enforcement officer, surveys conducted by the Department of Marine Resources show that recreational fishers have a high degree of compliance with state marine laws and DMR ordinances. For the period 1994-1998, DMR's

survey results showed an average 95.85% of recreational boat trip fishers and 99.10% of recreational pier fishers interviewed and inspected by DMR had catches that complied with state marine laws and DMR ordinances.

When developing ordinances and regulations to protect the state's marine resources, the Department of Marine Resources solicits and receives input from DWFP's Marine Law Enforcement Unit. The development of these ordinances routinely incorporates comments from officers on the enforceability of the ordinance or regulation.

State law allows DWFP marine enforcement officers to sell seafood seized during illegal harvesting, but DWFP's Marine Enforcement Unit does not provide receipts to boat owners or fishers from whom seafood has been seized. Also, officers do not retain documentation of the bid process which results in the sale of confiscated seafood. As a result, the boat owner or fisher has no proof as to the amount of seafood confiscated and the amount of refund due from DMR should the court order an acquittal.

DWFP and DMR signed a memorandum of understanding in December 1997 which requires marine law enforcement officers to act as the Commission on Marine Resources' agents in inspecting coastal wetlands to detect noncompliance with permitting requirements in wetlands areas. However, marine law enforcement officers have not inspected coastal wetlands and reported permitting law violators to the commission.

Recommendations

Marine Resources Management

1. The Department of Marine Resources should require the collection of relevant fishery dependent data (e.g., age structure, sex ratios, and fishing effort) necessary to develop stock assessment models for major marine fisheries in Mississippi. Currently this data is only available for one major marine fishery in Mississippi, the menhaden fishery.
2. The Department of Marine Resources should consider establishing a task force for each major fishery to identify and discuss emerging issues and problems relative to the fishery. Each task force should include at least one representative from: fisheries management (DMR), fisheries biological research, marine law enforcement, the recreational fishing sector (with the exception of the men-

haden fishery, which has no recreational component), the commercial fishing sector (both harvesting and processing), and any interacting fishery (e.g., the shrimp fishery is an interacting fishery with the crab fishery).

3. The Comprehensive Resource Management Plan currently being developed for the state's coastal zone must take into consideration the warning of marine biologists that the coast is at a critical point in terms of the balance between development and protection of the environment which sustains its marine resources. DMR, in conjunction with GCRL, must establish and monitor on an ongoing basis, indicators of the quantity and quality of the state's coastal wetlands. As part of this effort, DMR should consider documenting coastal wetlands loss from a Geographic Information System (GIS) perspective.
4. The Commission on Marine Resources should require DMR staff to provide adequate data and analysis necessary to make informed marine resource policy decisions before making such decisions.

DMR staff should consider developing a formal decisionmaking process to manage each major fishery which it regulates. For example, with respect to the oyster fishery and the decision of whether to extend the season, critical variables to consider formally could include volume of oysters harvested on each reef, estimation of size and volume of remaining oysters on each reef, estimated water temperatures during the proposed extension period and how these temperatures compare to the level which is considered safe for oyster harvesting (at higher temperatures, the prevalence of vibrio increases), estimated market demand, and, based on historical data showing the average harvest per day at each reef, an estimate of the number of days that the reef should remain open in order to reduce the resource to a minimum sustainable level.

There is already a precedent for this type of decision matrix for closing the state's oyster season and opening the state's shrimp season. With respect to oyster reefs, DMR's oyster management plan requires staff to close certain areas whenever the Pearl River reaches ten feet at the Louisiana gauge, and additional areas when the river reaches twelve feet. Similarly, the plan requires

DMR staff to close certain reef areas when the area receives an inch or two of rain. The opening of the shrimp season is driven by biological data according to a management plan. Specifically, in order to open the season, sampling must show that the shrimp has reached a size of 68 count per pound. Biologists sample the size and growth rate of the juvenile shrimp and project when the majority of the population will likely reach the requisite size in harvestable waters. In the case of opening the shrimp season, the commission gives DMR's Executive Director authority to open the season as soon as the size is appropriate.

5. DMR should develop a performance measurement and reporting system which includes measures of its effectiveness in meeting its primary legislated objectives of: protecting, conserving, and propagating the state's marine resources; protecting the coastal wetlands ecosystem on which the resources depend; and revitalizing the state's seafood industry. The department should develop and report clear and meaningful output and outcome measures for each of these three major objectives. Appendix A on page 65 contains suggestions for fisheries related management performance measures. It is important for the department to develop a performance measurement and reporting system as quickly as possible, in order to provide itself and the Legislature with a historical database which can better inform marine resource management related policy decisions.

Marine Law Enforcement

6. DWFP's Marine Enforcement Division should change its procedures for the handling of seized seafood. Enforcement officers should be required to issue a receipt to the fishers from whom any seafood is taken. The receipt should show the time, date, and place where the seizure took place and both parties should be provided with a copy. Also, DWFP should develop a standard form for selling seized seafood and record the bids of each processor on that form. DWFP should keep a copy of the form with the corresponding receipt issued to the captain of the vessel the seafood was seized from, along with a copy of the receipt from the sale of the seafood to the processor with the highest bid.

7. DWFP's law enforcement officers should record each "stop" of a fisher or boater, even in cases in which the "stop" did not result in a citation. This data will allow for better evaluation of the state's enforcement effort and effectiveness by DWFP management and outside evaluators.
8. DMR and DWFP should resolve the question of whether enforcement officers from DWFP will enforce wetlands laws for DMR. Marine enforcement officers should attend a training class on the wetlands laws of Mississippi, including training on what potential violations might look like. Then, while Marine Enforcement Unit officers are on patrol for other matters, if they observe a potential violation they would note its location and report it to DMR. Beyond the time spent in training this would not be a large additional burden on the Marine Enforcement Unit. However, any additional time spent on wetlands permitting issues beyond routine observation during normal marine enforcement patrols would take marine enforcement officers away from other critical areas. DMR receives fed-

eral funding for the Coastal Program and could provide a small amount to DWFP in exchange for having Marine Enforcement Unit officers add this task to the multitude of tasks they are currently accomplishing.

Proposed Legislation

9. This report contains draft legislation that would make technical changes in the state's seafood regulatory laws. Specifically, this bill would:
 - require revocation of a boat's license when its captain(s) violates provisions of the law three times or more in a three-year period;
 - increase the range of penalties for commercial shrimping out of season to not less than \$1,000 nor more than \$2,000;
 - allow for the private sale of oyster shells under certain circumstances.

Appendix E, page 84 of this report, contains this proposed legislation.

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An Evaluation of the Effectiveness of the Department of Marine Resources' Marine Resources Management and the Department of Wildlife, Fisheries, and Parks' Marine Law Enforcement

Introduction

Authority

The PEER Committee conducted this review pursuant to the authority granted by MISS. CODE ANN. Section 5-3-57 et seq. (1972).

Scope and Purpose

In response to a legislative request, PEER evaluated the effectiveness of the Department of Marine Resources' marine resources management. Also, PEER evaluated the effectiveness of the Department of Wildlife, Fisheries, and Parks' marine law enforcement program.

In its January 1995 report which examined whether the newly created Department of Marine Resources had been established in the most efficient and effective manner (see PEER report #322, ***A Performance Audit of the Establishment of the Mississippi Department of Marine Resources***), PEER recommended that such a review of the effectiveness of the new organizational structure in carrying out statutory missions for state marine resources be conducted.

Method

In conducting this evaluation, PEER:

- reviewed MISS. CODE ANN. Sections 49-15-1 et seq. (1972), 49-27-1 et seq. (1972), and 57-15-1 et seq. (1972), which contain the state's laws relating to marine resources, and evaluated the enforcement of those laws;
- interviewed and obtained relevant documents from staff of the following entities: the Department of Marine Resources (DMR); the Department of Wildlife, Fisheries and Parks (DWFP); the Department of Health; the University of Southern Mississippi Gulf Coast Research Laboratory (GCRL); the Mississippi State University Cooperative Extension Service Coastal Research and Extension Center; the National Marine Fisheries Service; and, the Gulf States Marine Fisheries Commission;

- surveyed state fisheries management agencies in Alabama, Florida, Louisiana, and Texas;
- interviewed and obtained information from numerous marine resource management stakeholders (e.g., representatives of various industry and environmental groups), and;
- conducted a literature search of publications on the topic of state marine resource management.

Overview

Prior to July 1, 1994, responsibility for management of the state's marine resources rested with the state Department of Wildlife, Fisheries, and Parks' Bureau of Marine Resources. During the 1994 Regular Session, the Legislature created a separate Department of Marine Resources to manage the state's marine resources; however, responsibility for marine law enforcement remained with the Department of Wildlife, Fisheries, and Parks.

Marine Resources Management

The Department of Marine Resources is still in the process of developing management tools critical to its organizational effectiveness in meeting legislated objectives. For example, the department has not yet developed adequate measures of its own efficiency and effectiveness. Also, the staff does not always provide commissioners with adequate data necessary to make informed policy decisions.

In the absence of adequate DMR measures of its own effectiveness, PEER relied heavily on ad hoc measures to evaluate the department's effectiveness. Measures used by PEER include external research, reports, and data on the condition of Mississippi's marine resources, coastal wetlands, and seafood industry and federal regulatory reports on DMR's management of the coastal zone and of the state's oyster fishery.

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The department has enacted ordinances and has taken other management actions designed to restore those fisheries designated as overfished or showing signs of decline, in conjunction with other states and federal agencies. With

respect to the state's oyster fishery, which is heavily regulated by the federal government due to the public health risk associated with consumption of raw oysters, DMR has adequately addressed significant compliance problems by hiring additional staff, repairing broken monitoring gauges, and adhering to reef closure guidelines. Further, with DMR's reported current focus on developing program plans and effectiveness measures, the department, in becoming more proactive, is headed in the right direction to direct future marine fisheries management efforts.

With respect to coastal wetlands management, DMR should conduct significant work to ensure adequate protection of this critical environment. Most of the state's major fisheries utilize the wetlands at some point during their life cycle. The federal government, which oversees Mississippi's management of its coastal wetlands, has cited the department numerous times for serious deficiencies with respect to wetlands management (e.g., failure to monitor and enforce Mississippi Coastal Zone Program compliance). The majority of these deficiencies are due to developmental pressure on the coastal area resulting from significant growth on the Gulf Coast during the 1990s associated with legalization of dockside gaming. While the department is in the process of revising the Coastal Zone Program to take into account development associated with the casino industry, it is imperative that this program adequately address the urgent need for wetlands protection in order to ensure the continued viability of the state's marine fisheries.

With respect to revitalization of the state's seafood industry, while over the long term (since 1950), Mississippi commercial fisheries landings have been relatively stable, since the mid 1980s, the volume and value of Mississippi commercial fisheries landings have declined. This decline is primarily attributable to a decline in the state's menhaden and pet food fisheries and a decline in shoreline support for the production sector of the industry. Recent research on the economic impact of dockside gaming on the commercial seafood industry in coastal Mississippi documents a decline in the commercial harvesting and processing sectors of the industry.

Marine Law Enforcement

The Department of Wildlife, Fisheries, and Parks' Marine Law Enforcement unit complies with state law by having enforcement officers spend the majority of their work time patrolling marine waters and issuing citations to violators. From FY 1993 to FY 1998, DWFP marine enforcement officers spent an average of 54% of their work time performing land and water patrols. These patrols serve as a deterrent to overfishing, which is a factor in long-term damage to marine resources.

The state's penalties for violation of seafood laws appear adequate. Financial penalties imposed for most violations are higher than the average value of daily catches and should be sufficient to deter potential violators. However, MISS. CODE ANN. Section 49-15-64.5 (3) allows commercial fishers to change the

designated captain of a commercial fishing vessel (and thus avoid receiving subsequent citations), which could limit effectiveness of such penalties because most of the financial and incarceration penalties imposed for violations of the seafood laws increase with each subsequent offense.

While there are 2,737 recreational fisher licensees to each DWFP marine law enforcement officer, surveys conducted by the Department of Marine Resources show that recreational fishers have a high degree of compliance with state marine laws and DMR ordinances. For the period 1994-1998, DMR's survey results showed an average 95.85% of recreational boat trip fishers and 99.10% of recreational pier fishers interviewed and inspected by DMR had catches that complied with state marine laws and DMR ordinances.

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DWFP and DMR signed a memorandum of understanding in December 1997 which requires marine law enforcement officers to act as the Commission on Marine Resources' agents in inspecting coastal wetlands to detect non-compliance with permitting requirements in wetlands areas. However, marine law enforcement officers have not inspected coastal wetlands and reported permitting law violators to the commission.

Background

Marine Resources Management in Mississippi

Purpose and Organization of the Mississippi Commission on Marine Resources

MISS. CODE ANN. Section 49-15-301 (1972) vests the Mississippi Commission on Marine Resources with full power to “regulate all matters pertaining to all saltwater aquatic life and marine resources.” The Commission on Marine Resources primarily effects marine resource management through passage of ordinances (e.g., setting fishery seasons, establishing fishery catch quotas and size restrictions, restricting gear used to harvest a fishery).

MISS. CODE ANN. Section 49-15-301 (1972) provides that the commission consist of seven members, six appointed by the Governor (two each from the three coastal counties: Jackson, Harrison, and Hancock) and the seventh the member of the Commission on Wildlife, Fisheries, and Parks from the Fifth Congressional District. State law requires that the six coastal county members include a commercial seafood processor, a commercial fisher, a recreational sports fisher, a charter boat operator, a member of an incorporated nonprofit environmental organization, and a member from the nonseafood industry.

Role of the Department of Marine Resources

The Mississippi Legislature established the Department of Marine Resources as an independent state agency in July of 1994, under the direction of the Commission on Marine Resources. The department was previously a bureau of the Department of Wildlife, Fisheries, and Parks.

DMR is responsible for management of all seafood and aquatic life in an area generally extending from I-10 south to the boundaries of state waters--i.e., three miles south of the barrier islands.

Inherent Conflicts in Managing Marine Resources

The Commission on Marine Resources must address allocation of resources among various user groups whose interests are often in conflict. In setting the state's marine fisheries management policy, policymakers must consider a complex array of marine resource, economic, social, cultural, environmental, and political factors. Achieving a balance between often-competing interests is difficult.

For example, the commission must balance the following interests in managing marine resources:

- *Fishers versus non-fishers* (i.e., commercial or recreational fishers versus other water uses such as jet skis).
- *Commercial versus recreational fishers*
- *Conflicts between species fishers* (e.g., crabbers versus shrimpers)
- *Conflicts within species fishers*--(e.g., oyster tongers versus oyster dredgers. The two methods of harvesting are not compatible on the same reef.)

While DMR is responsible for management of all marine resources (there are 250 common marine species in the Gulf of Mexico), there are thirteen major fisheries which the department formally regulates. A “fishery” refers to any marine resource which is harvested, including non-fish species such as shrimp, crabs, and oysters. Of the thirteen major marine fisheries in Mississippi coastal waters: seven are exclusively managed by DMR (blue crab, black drum, flounder, mullet, oysters, sheepshead, and spotted seatrout), five are under joint federal-state management (king mackerel, Spanish mackerel, red drum, red snapper, and shrimp), and one (menhaden) is managed under a joint cooperative Gulf states program (refer to page 22 for a more detailed discussion of management of the state’s menhaden fishery).

In FY 1997, DMR had annual operating expenditures of \$3.1 million and sixty-one positions (forty-four state service employees and seventeen time-limited employees) assigned to three offices: Marine Fisheries, Coastal Ecology, and Management Operations.

From a programmatic standpoint, DMR has assigned responsibility for the legislated public policy objectives of protection, propagation, and conservation of Mississippi’s seafood and aquatic life in connection with the revitalization of the seafood industry and protection and management of the state’s coastal wetlands to its offices of Marine Fisheries and Coastal Ecology.¹

Office of Marine Fisheries

DMR’s Office of Marine Fisheries is responsible for marine fisheries management. MISS. CODE ANN. Section 49-15-1 describes the Legislature’s intent for Mississippi’s marine fisheries management program:

*. . .the public policy of this state shall be to recognize the need for a concerted effort to work toward the **protection, propagation, and conservation of its seafood and aquatic life in connection with the revitalization of the seafood industry of the State of Mississippi**, which is one of the state’s major economic resources and affords a livelihood to thousands of its citizens; and in this connection, it is the intent of the legislature to provide a modern, sound, comprehensive, and workable law to be administered by specialists, who are vested with full and ample authority to take such action as may be necessary in order to help protect, conserve and revitalize seafood life in the State of Mississippi; it being at all times remembered that all of the wild aquatic life found in the waters of*

¹MISS. CODE ANN. Section 49-27-5 defines “coastal wetlands” as “all publicly owned lands subject to the ebb and flow of the tide; which are below the watermark of ordinary high tide; all publicly owned accretions above the watermark of ordinary high tide and all publicly owned submerged water-bottoms below the watermark of ordinary high tide. The term ‘coastal wetlands’ shall be interpreted to include the flora and fauna on the wetlands and in the wetlands.”

the State of Mississippi and on the bottoms of such waters, until taken there from in the manner hereinafter prescribed, is recognized as the property of the State of Mississippi because of its very nature, as well as because of the great value of the state of the aquatic life for food and other necessary purposes.

DMR's Office of Marine Fisheries has twenty-six positions (including fifteen biologists and nine technicians) divided into three marine fisheries resource bureaus: shrimp and crab, finfish, and oysters. Exhibit 1, page 8, lists primary duties and responsibilities of employees of the Office of Marine Fisheries.

In addition to collecting its own fisheries data, DMR has numerous research contracts with various entities including the Gulf Coast Research Laboratory (which MISS. CODE ANN. Section 49-15-15 (1)(m) authorizes the commission to utilize "to the fullest extent possible"), Mississippi State University Coastal Research and Extension Center, the United States Navy, and the United States National Aeronautics and Space Administration, and is actively involved in cooperation and coordination with adjoining state marine fisheries agencies as well as with regional and federal fishing authorities. Examples of the type of research conducted include long-term monitoring of finfish and shellfish populations in territorial waters via trawl, seine, and beam net sampling; population studies; and, life history information on important commercial and recreational fisheries. This type of research is intended to help DMR staff to identify the most appropriate ways to manage the state's marine fisheries resources--e.g., through restrictions on harvesting (catch and size limits, gear restrictions, seasons), habitat enhancement, and educational programs designed to make fishers aware of the need to conserve and protect the state's marine fisheries resources. With respect to multijurisdictional fish stocks (i.e., fisheries which cross state lines, which include all state fisheries with the exception of oysters), good management also requires knowledge of resource management practices in other states and jurisdictions where the fishery exists.

Office of Coastal Ecology

DMR's Office of Coastal Ecology, which has seventeen positions, twelve of whom are biologists, is responsible for protecting Mississippi's coastal wetlands and ecosystems (see discussion of the importance of the state's coastal wetlands to its marine fisheries resources on page 33). The primary ways that DMR attempts to achieve this objective are through development of coastal preserves, coastal zone permitting, and educational efforts designed to inform the public of the need for and methods of conserving the state's marine resources, including the coastal wetlands. These efforts include educating the public on the environmental impact of discharging improperly treated sewage into the environment, the need for restrictions on shoreline modifications, and the consequences of uncontrolled wetlands development.

Exhibit 1

Duties of Office of Marine Fisheries

Employees of this program:

- *monitor and assess the condition of their assigned marine resources, on an ongoing basis.* For example, DMR marine fisheries program staff monitor important commercial and recreational finfish species such as speckled trout, red drum, menhaden, mullet, spotted sea trout, and flounder to update fisheries management plans. DMR's five-year strategic plan calls for DMR to conduct a stock assessment project for a different major fish species each year (e.g., FY 2000 - red drum; FY 2001 - mullet; FY 2002 - black drum; FY 2003 - flounder, FY 2004 - back to red drum). DMR marine biologists also research natural threats to the state's marine resources.
- *conduct creel surveys to estimate recreational catches.* DMR staff interview 700 recreational fishermen each year as they come in with their catches, in order to obtain data on the catch, such as species caught, the size frequency distribution of finfish caught, estimates of total catch, and estimates of catch per unit of effort. DMR also conducts aerial fly-overs to estimate fishing pressure along the coast. DMR also maintains the State Saltwater Fishing Records program, which verifies and records record setting fish catches, by species.
- *collect commercial fishery landing data from over ninety seafood dealers and processors.* DMR collects this data from sales receipts from seafood dealers in Harrison and Hancock counties. National Marine Fisheries Service port agents collect the landing data in Jackson County (site of the state's large menhaden processor, which is a single-owner industry). DMR submits the commercial finfish data which it collects to the National Marine Fisheries Services.
- *provide a voting member to the Gulf of Mexico Fishery Management Council.* DMR provides technical support to the council in developing fishery management plans, stock assessments, and technical analysis.
- *manage oyster-growing waters* by conducting water quality sampling (to ensure that the product is safe for human consumption), measuring relative abundance of oysters, and marking areas for oyster harvesting.
- *develop and maintain fishing reefs.* The purpose of this program is to enhance recreational fishing opportunities in state waters by providing additional habitat for the purpose of attracting and retaining fish. These reefs also provide habitat for other marine resources. Each year, DMR biologists establish new nearshore low-profile fishing reefs utilizing crushed limestone, oyster shell or clamshell. DMR has also developed

Exhibit 1 (continued)

artificial fishing reef sites at most of the coast's major public fishing piers. Four offshore sites north of the barrier islands and several sites south of Ship and Horn islands complete the state's existing reef inventory. \$350,000 was awarded to Mississippi Gulf Fishing Banks, Inc. in a cooperative venture with DMR to site and develop nearshore and offshore reefs using available concrete rubble substrate.

- *develop and revitalize oyster reefs.* DMR's Marine Fisheries Program plans to rehabilitate 200 acres of oyster reef per year by planting 20,000 cubic yards of oyster shells or limestone on or adjacent to existing reefs and cultivating existing reefs.
- *conduct striped bass stock enhancement program.* DMR funds the release of some 150,000 two-inch fingerlings into coastal streams each year.
- *manage oyster, crab, shrimp, and finfish seasons.* Take trawl samples prior to opening of the shrimp season to project the opening date and when shrimp will reach the minimum legal size for harvest.
- *license seafood processors and wholesalers .*
- *inspect and issue certification to seafood processing facilities* to insure 100% are inspected for compliance. Each year DMR staff inspects and permits nearly ninety seafood processing and wholesaling operations along the Gulf Coast to ensure compliance with U. S. Food and Drug Administration regulations. Staff also inspect transport vehicles and ancillary units such as fixed cooler processing facilities for federal compliance.
- *inspect and certify nearly fifty facilities that sell live bait* (e.g., shrimp and minnows).
- *provide technical advice to the seafood industry to maintain high sanitation standards and technical assistance to help it develop and expand;* e.g., to help it to comply with state and federal regulations, to assist in the development and application of new technologies designed to provide added value and new market opportunities, and to provide cultured marine products to help meet market demands for seafood and to help industry compete with imported products.

SOURCE: Department of Marine Resources.

Development of Coastal Preserves: DMR's Office of Coastal Ecology is engaged in cooperative efforts to develop coastal preserves as well as to develop an estuarine research reserve. Developed in 1992 in partnership with the Secretary of State's Office, DMR's Coastal Preserve Program acquires, manages, and protects wetland habitat. Program staff has identified 83,000 acres of critical wetlands habitat that it believes are important for maintaining the natural resources and water quality of Mississippi's Gulf Coast. Some wetlands owners donate the land and receive a tax break, after realizing that they cannot develop the land and still have to pay taxes on it. The program also includes an educational component, the purpose of which is to educate the public on the importance, functions, and value of the wetlands.

Coastal Zone Permitting: The primary tool that DMR uses to protect the state's wetlands is prior permitting of any action affecting the state's wetlands and issuing cease and desist orders to anyone attempting to circumvent the process by conducting any type of construction-related activity in the wetlands without a permit.

In addition to the mandates contained in the state's wetlands protection act (MISS. CODE ANN. Section 49-27-1 [1972] et seq.), the Legislature passed a separate law (MISS. CODE ANN. Section 57-15-6 [1972]) requiring DMR to prepare and implement a "coastal program" pursuant to the federal Coastal Zone Management Act of 1972 (16 U.S.C. §§ 1451 et seq.).

Congress passed the Coastal Zone Management Act of 1972 after finding that population growth and economic development have caused increasing and competing demands upon the lands and waters of the country's coastal zone. For example, the congressional study committee found that requirements for industry, commerce, residential development, recreation, extraction of mineral resources and fossil fuels, transportation and navigation, waste disposal, and harvesting of fish, shellfish and other living marine resources has resulted in a loss of living marine resources, wildlife, and nutrient-rich areas, as well as permanent and adverse changes to ecological systems, such as increasing shoreline erosion. With passage of the 1972 law, Congress established a national policy to "preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations."

The federal Coastal Zone Management Act of 1972 provided incentives to states to develop coastal zone programs to regulate coastal zone development through land use planning. The federal government made grants and technical assistance available to states for development and implementation of such programs. The Administrator of the National Oceanic and Atmospheric Administration (NOAA), U. S. Department of Commerce approved the Coastal Zone Program effective October 1, 1980. From this date forward, DMR agreed that it would only permit wetlands activities "consistent" with the approved plan.

Anyone wishing to alter the coastal zone through such activities as dredging; bulkheading; pier construction; industrial, commercial (including

casinos), and residential development; construction of roads and bridges; offshore oil and gas production; and environmental clean-ups must first obtain a wetlands permit from DMR. DMR issues the following five types of wetlands permits:

- *general*: for minor activities such as construction of a small pier;
- *individual*: any project which is not minor. This process takes much longer than the general permitting process, because it requires approval from other agencies, including the Mississippi Department of Environmental Quality and the U. S. Corps of Engineers, and also requires public notice and hearings. Examples of the types of projects which must go through the individual permitting process are casino construction and big residential projects;
- *consistency*: a wetlands project where DMR is not the lead approval agency. For example, a federal facility could be applying for a permit, in which case the Corps of Engineers may be the lead approval agency;
- *jurisdictional*: DMR is asked to determine the feasibility of a proposed project; or,
- *waiver*: when an entity such as a local governmental port authority obtains special permission from DMR to proceed with a project in order to expedite its completion.

See page 33 for a discussion of DMR wetlands permit activity between FY 1995 and FY 1998.

Marine Law Enforcement in Mississippi

The Marine Law Enforcement unit of the Department of Wildlife, Fisheries, and Parks assists the Department of Marine Resources by enforcing seafood laws and regulations promulgated by the Mississippi Legislature and the Commission on Marine Resources. Presently, DWFP's Marine Law Enforcement unit employs twenty-five sworn law enforcement officers and two administrative personnel. The unit's area of coverage includes all land and water areas in Harrison, Hancock, and Jackson counties, as well as marine waters extending three miles south of Mississippi's barrier islands. The unit maintains a regional office in Biloxi and a branch office in Pass Christian.

DWFP's Marine Law Enforcement unit enforces laws and regulations involving both recreational and commercial licensees. Federal laws require the enforcement unit to provide twenty-four-hour coverage of oyster reefs while oyster season is open and to provide constant patrolling of other areas during various seasons, such as shrimping and mullet, to prevent illegal activities. The Marine Law Enforcement unit divides its personnel and efforts between two zones, with each zone having day and night shifts of officers and supervisors to conduct patrols.

MISS. CODE ANN. § 49-15-21 (2) states that DWFP's marine law enforcement officers "shall diligently enforce all laws and regulations for the protection, propagation, or conservation of all saltwater aquatic life of the State of Mississippi. . . ." Because Section 49-15-21 provides marine law enforcement

officers with broad police powers, marine law enforcement officers perform other tasks, such as enforcing state and federal boat and water safety laws, performing wildlife control on the Gulf Coast (mostly removal of nuisance alligators), searching for overdue vessels, and conducting rescue operations. Marine law enforcement officers also assist local law enforcement agencies by performing various tasks such as enforcing curfew and anti-looting laws during and following hurricanes. To assist its full-time officers, the Marine Law Enforcement Unit has established a voluntary reserve officer unit, whose members receive training and are used in combination with regular officers during special events such as the blessing of the fleet, the Christmas parade of boats, and the first day of the shrimping season.

Effectiveness of the Department of Marine Resources' Marine Resources Management

PEER sought to determine the effectiveness of the Department of Marine Resources in meeting its primary legislated objectives of managing the state's marine resources, protecting the coastal wetlands ecosystem on which the resources depend, and aiding in the revitalization of the state's seafood industry.

In the absence of adequate DMR measures of its own effectiveness, PEER relied on ad hoc indicators of the department's effectiveness in meeting legislated objectives. Based on these indicators, PEER concludes that DMR is performing an adequate job of managing the state's thirteen major marine fisheries, but should do significant work to ensure adequate protection of the coastal wetlands ecosystem upon which these fisheries so heavily depend. Further, economic indicators show that the commercial harvesting and processing sectors of Mississippi's seafood industry are in decline.

DMR Has Not Developed Certain Management Tools Necessary to Meet Legislated Objectives

State Law Contains the Primary Objectives for the Department of Marine Resources

The primary legislated objectives of Mississippi's Department of Marine Resources are found in the state's seafood laws (MISS. CODE ANN. Section 49-15-1 [1972] et seq.), the state's coastal wetlands protection act (MISS. CODE ANN. Section 49-27-1 [1972] et seq.), and the marine resources chapter of state laws pertaining to planning, research, and development (MISS. CODE ANN. Section 57-15-1 [1972] et seq.). In summary, these laws require the Department of Marine Resources to protect, propagate, and conserve the state's marine resources (including protection of the coastal wetlands ecosystem on which these resources depend) in connection with revitalizing the state's seafood industry.

In addition to the department's responsibilities associated with implementation of the state's seafood laws (refer to legislated policy objective of these laws as quoted on page 6), state law also makes DMR responsible for implementing the state's coastal wetlands protection act. This responsibility is in line with the previously stated legal responsibility of the department to conserve and protect the state's marine resources. The coastal wetlands are a critical component in the life cycle of major marine fisheries which the department regulates. According to MISS. CODE ANN. Section 49-27-3 (1972), the policy objective of the state's coastal wetlands protection act is to:

. . .favor the preservation of the natural state of the coastal wetlands and their ecosystems and to prevent the despoliation and destruction of them, except where a specific alteration of specific coastal wetlands would serve a higher public interest in compliance with the public purposes of the public trust in which coastal wetlands are held.

MISS. CODE ANN. Section 57-15-1 (1972) declares that the marine resources chapter of state law:

. . .is being enacted under the state's inherent general welfare and police power authority. . .in an effort to explore, develop, conserve and market the underwater natural resources of this state, particularly those lying offshore in the coastal waters of the State of Mississippi.

This chapter (MISS. CODE ANN. Section 57-15-6 [1972]) also directs the Commission on Marine Resources to prepare and implement a coastal program that establishes guidelines and procedures to provide for reasonable industrial expansion in the coastal area while conserving the resources of the coastal area for “this and succeeding generations.”

These legislated mandates of resource protection and conservation, in conjunction with industry/economic development, are typical of the responsibilities legislatively assigned to natural resource regulatory agencies. While the balancing of resource protection with resource utilization presents a significant challenge for regulatory agencies, the mandate's purpose is to ensure maximum economic utilization of the resource (in this case, marine resources) while ensuring its long-term sustainability (i.e., its viability as an economic resource available for future generations).

State Law Establishes Standards for Managing the State's Marine Resources

MISS. CODE ANN. Section 49-15-2 (1972) sets standards for how DMR is to achieve its marine resource management and seafood industry revitalization objectives. Specifically, this section directs DMR to develop fishery conservation and management measures which:

- are based upon the best scientific information available;
- consider efficiency in the utilization of fishery resources;
- take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches;
- minimize costs and avoid unnecessary duplication;

- consistent with resource conservation, take into account the importance of fishery resources to fishing communities in order to provide for the sustained participation of the communities and to the extent practicable, minimize adverse economic impacts on those communities;
- minimize bycatch and, to the extent bycatch cannot be avoided, minimize the mortality of the bycatch;² and,
- promote the safety of human life at sea.

This section also directs DMR to allocate or assign fishing privileges fairly, equitably, and with due regard to resource conservation, if the department deems such allocation to be necessary.

DMR Does Not Have Adequate Effectiveness Measures in Place

Mississippi's Performance Budget and Strategic Planning Act of 1994 (MISS. CODE ANN. Section 27-103-151 et seq. [1972]) requires the inclusion in state agency appropriation bills of performance target and measurement data for each program. The purpose of this requirement is to provide indicators of whether state budget units are efficiently and effectively using their resources to accomplish their objectives. In the public sector, performance measurement is an important tool for ensuring accountability for the use of public resources. An adequate system of performance measurement includes development of valid and reliable indicators of efficiency and effectiveness, the collection of valid and reliable data on each of these indicators, the analysis and reporting of the data collected, and the use of analysis results to improve efficiency and effectiveness.

Exhibit 2 on page 16 is a copy of the marine fisheries program performance indicators and measures which the Department of Marine Resources reported to the Legislature in its FY 1999 budget request. Ideally, this report would include measures of the department's effectiveness in meeting legislated policy objectives (e.g., preservation, conservation, and propagation of the state's marine resources, revitalization of the state's seafood industry, preservation of the state's coastal wetlands), as well as measures of the department's success in meeting standards for performance set forth in state law. DMR's performance report does not adequately measure the effectiveness of the agency in meeting all of the policy objectives and standards of performance established in state law. In fact, a reader of DMR's marine fisheries performance measurement report would have no idea how efficiently and effectively the department is carrying out its legislated objectives.

Not only are DMR's performance measures inadequate in terms of their breadth of coverage of legislated policy objectives, but those few narrowly focused measures which DMR does report are insufficiently operationalized to be meaningful. For example, DMR chose to report the program output measure

²"Bycatch" is defined as any aquatic organism unintentionally harvested while harvesting a targeted species (e.g., red snapper caught in a shrimp trawler's net).

Exhibit 2

Department of Marine Resources' Program Performance Indicators and Measures for its Marine Fisheries Program

	FY 1997 Actual	FY 1998 Estimated	FY 1999 Projected
Program Outputs			
Stock/habitat enhancement	1.00	1.00	1.00
Monitoring and assessment	5.00	9.00	9.00
Research and development	7.00	9.00	9.00
Program Efficiencies			
Cost per reef developed	\$ 72,633.00	\$ 75,000.00	\$ 80,000.00
Cost per sample (oyster)	15.00	15.00	20.00
Program Outcomes			
(FY 1997 Targeted Outcomes)			
Increase and enhance fishing reefs	6.00	5.00	5.00
Monitor and assess finfish harvest	1.00	1.00	1.00

SOURCE: Department of Marine Resources FY 1999 Budget Request.

“stock/habitat enhancement.” This measure is overly generalized. To be useful, the measure should indicate what type of stock/habitat enhancement DMR performed and the extent of the stock enhancement performed (e.g., the degree to which DMR expanded the state’s oyster reef capacity, based on measurement of capacity). In addition to the overly generalized object of measurement, DMR’s performance report fails to explain the unit of measurement used, which renders the numbers reported meaningless.

Also, DMR’s performance measurement report fails to distinguish between output and outcome objectives. Output objectives measure the degree of success which an entity has achieved in accomplishing processes deemed necessary to achieve program outcomes. Outcome objectives measure the degree of success which an entity has achieved in meeting policy objectives. For example, if it is deemed necessary/desirable to develop certain types of reefs (output) in order to propagate certain marine resources (outcome), an output measure would indicate the extent to which the entity has succeeded in enhancing reef capacity, while an outcome measure would indicate the extent to which the population of a targeted marine species had increased as a result of the reef enhancement. As shown in Exhibit 2, above, no apparent difference exists between DMR’s marine fisheries program output objective of “stock/habitat enhancement” and its outcome objective of “increase and enhance fishing reefs,” nor is there any apparent difference between DMR’s output objective of “monitoring and assessment” and its outcome objective of “monitor and assess finfish harvest.”

Appendix A on page 65 includes suggestions for how DMR could achieve a more comprehensive and meaningful assessment of its own performance.

The Commission on Marine Resources Has Not Always Required Staff to Provide Data Necessary to Make Informed Policy Decisions

As evidenced by the commission's minutes, the Commission on Marine Resources has made significant marine resource management decisions without requiring that DMR staff provide sufficient data with which to make informed policy decisions.

PEER reviewed minutes for Commission on Marine Resources meetings from October 1997 through October 1998 and found instances in which the commission made major marine resource management decisions without the benefit of supporting data. In addition to their effects on the seafood industry, these decisions had the potential for major effects on the marine environment and portions of the state's fisheries.

The following instances in which these types of decisions were made during the commission's deliberations illustrate the need for more data to support the commission's marine resource management decisions. Both of these instances were taken from the official transcript of the April 21, 1998, meeting of the Commission on Marine Resources. Appendix B on page 71 contains the portions of the official transcript of the April 1998 commission meeting in which commission members discussed these issues.

Extension of the Oyster Season

At its April 21, 1998, monthly meeting, DMR staff asked the Commission on Marine Resources to address the marine resource management issue of whether to extend the oyster season past its scheduled close date of April 30, 1998. However, the published agenda provided to the commission by DMR staff prior to the meeting did not include the issue of extending the oyster season. Thus, the commission members had no advance notice that this issue would be addressed at the April meeting and no relevant data or analysis to review prior to making the decision.

Examples of the type of data which would be relevant to such a decision include: volume harvested on each reef, estimation of size and volume of remaining oysters on each reef, estimated water temperatures during the proposed extension period and how these temperatures compare to the level which is considered safe for oyster harvesting (at higher temperatures, the prevalence of vibrio [a microorganism which causes cholera] increases), estimated market demand, and, based on historical data showing the average harvest per day at each reef, an estimate of the number of days that the reef should remain open in order to reduce the resource to a minimum sustainable level.

When asked why the staff did not include the issue on the commission's formal agenda, DMR staff stated that "the staff feels that we should allow the season to continue." This is not a sufficient explanation of why DMR staff did not include the issue as a formal agenda item or provide the commission members with data and analysis in advance relevant to whether good resource management necessitated extending the oyster season.

During the April 1998 commission meeting, DMR staff offered the following justifications for extending the oyster season:

- to compete with other states having higher oyster sack limits;
- because DMR staff had received numerous calls and a letter supporting extension of the season; and,
- the state's oyster areas had been closed during much of the period set aside for legal harvest (see related discussion regarding oyster reef closure on page 39).

The transcript subsequently records one commission member's frustration over the lack of data presented by DMR. He notes that at the same point in previous years, DMR staff had supported not extending the oyster season, putting forth reasons such as increased chance of contamination during warmer water temperatures, insufficient staff, and lack of growth time for oysters to reach optimum size. He ended his comments by asking: "What happened to all of that rationale? Why did it apply last year and not this year?"

DMR staff replied that the season was extended past the schedule April closing date in 1997, and that while it is more work on DMR and law enforcement staff to extend the season, "we feel that there is a resource out there that's available for harvest, and we feel it should be harvested." DMR staff did not support this assertion with any data regarding the oyster population. When another commissioner questioned the status of the oyster population, DMR staff still did not provide data on the oyster population, instead citing an approximate number of days that the reefs had been open during the season.

Despite the lack of data presented, the commission voted to extend the season. The commission did not require the DMR staff to present relevant data prior to taking a vote. Such a decision could have significant impact, either negative or positive, on the state's oyster fishery, but the commission did not make the decision based on scientific data regarding that fishery.

Use of Bycatch Reduction Devices in State Waters

At the April 21, 1998, commission meeting, as part of a discussion on the status of the red snapper fishery, DMR staff informed the commissioners that the National Marine Fisheries Service recommended placement of BRDs (bycatch reduction devices) in shrimp trawls in federal Gulf waters in an effort to reduce unnecessary mortality in the overfished red snapper fishery. In response, one of the commissioners observed that if the BRDs are so useful in federal waters, the commission should consider mandating their use in state waters as well. That commissioner also voiced concern over the lack of information on which to base a decision relative to requiring shrimpers to use BRDs in state waters:

We know we are getting bycatch. I guess my complaint is we don't know how much. We don't have even good numbers on that, as far as I know. We can estimate it, but we don't really monitor. . . .it seems like if we want to really get involved with this, we should get a little more information about it. We should find out how effective these things are. Maybe an experimental or a pilot program where a certain number of fishers would be encouraged to use these and try them out and get some data back would be really useful.

DMR staff responded that there was only one approved BRD device at this time and that the shrimpers were not satisfied with it, because if you “listen to the shrimp industry, they create quite a loss of their shrimp take.” DMR staff did not cite data or conclusions based on data concerning any possible loss in the shrimp catch due to the use of BRDs.

Although the commission did not vote on that date on whether to require shrimpers to use bycatch reduction devices in state waters, the discussion is illustrative of the commission's lack of scientific data during an important policy debate.

Condition of the Stocks of the Thirteen Major Marine Fisheries which DMR Formally Regulates

Based on the best available data for the major fisheries which DMR formally regulates:

- **four (menhaden, oysters, spotted seatrout, and Spanish mackerel) appear to be sustainable at current levels of harvest;**
- **two (blue crabs and striped mullet) are below historical juvenile abundance population averages;**
- **three (red snapper, red drum, and king mackerel) are overfished in Gulf waters, according to federal definitions of overfishing; and,**

- **one (shrimp), has differing conditions within the fishery. The brown shrimp sub-category appears to be sustainable at current levels of harvest and the white shrimp sub-category is below historical juvenile abundance population averages.**

There is inadequate data on the remaining three major state fisheries (sheepshead, flounder, and black drum) for commenting on the condition of these stocks.

Accurate assessment of the condition of fisheries stocks requires specific fishery-dependent data (i.e., data from commercial and recreational harvests) for inclusion in mathematical models. Specific data required from these harvests includes volume, type, age structure, and sex ratio of the catch as well as fishing effort used to make the catch. Scientists use this data to estimate fishing mortality, which is essential to understanding the condition of the stock.

The federal government conducts stock assessments based on fishery-dependent data gulfwide for species under their jurisdiction (i.e., major fisheries found in federal waters). In the National Marine Fisheries Service's October 1998 *Report to Congress: Status of Fisheries of the United States*, the Gulf of Mexico Fishery Management Council identified four jointly federal/state-managed marine fisheries as being overfished³ gulfwide, three of which are major fisheries in Mississippi state waters: red drum, red snapper, and king mackerel. Mississippi, as well as other Gulf states and the National Marine Fisheries Service, has implemented fishery management measures designed to promote rebuilding of these three federal/state managed overfished stocks. With respect to all of the fisheries which the federal government has designated as "overfished," the federal government sets fishing quotas (in pounds of take), monitors when the quotas have been reached, and notifies the states of the projected fishery close data, requesting them to close state waters to this fishery on the projected date. In addition to reporting overfished fisheries, the National Marine Fisheries Service's report also notes that the other two major jointly federal/state-managed marine fisheries found in Mississippi waters for which gulfwide stock assessment data is available, Spanish mackerel and shrimp, are not overfished.

Regional fisheries management plans exist for black drum, mullet, flounder, crab, oyster, menhaden, and spotted seatrout (in progress). Although the Gulf States Marine Fisheries Commission administers these plans, the states retain the authority and responsibility to manage these fisheries. Of these plans, only mullet and menhaden have stock assessments. In the regional stock assessment for mullet, descriptive data for Mississippi's harvests (e.g., age structure, sex ratio) had to be interpolated from other states. The National Marine Fisheries Service directly collects stock assessment data for Mississippi's menhaden fishery.

³The Sustainable Fisheries Act defines "overfished" as a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the maximum sustainable yield on a continuing basis.

As with mullet, Mississippi does not have adequate data for stand-alone stock assessments of other species based on fishery-dependent data. While commercial and recreational catch data are available for all major Mississippi fisheries, data has not been collected for fishing effort (which would have to be collected from harvesters [e.g., through log books, trip tickets]) or age structure and sex ratio of the catch (which would have to be collected by port agents sampling the catch).

Because fishery-dependent data are inadequate for all major Mississippi fisheries with the exception of menhaden, state assessments of stock condition for this report are derived from fishery-independent data. Fishery-independent data are derived from scientific sampling programs designed to collect population parameters (e.g., sex, size, weight, growth, juvenile abundance indices) which can be used to “tune” stock assessment estimates and aid in understanding biology of the organism.

Within the state, the Institute of Marine Sciences, Gulf Coast Research Laboratory has collected fishery-independent monitoring and assessment data for selected species on a monthly basis since 1973. Juvenile data collected by shrimp trawl includes size, weight, and abundance information on the following major state fisheries: blue crab, menhaden, and shrimp (brown and white). The Gulf Coast Research Laboratory, in conjunction with DMR, monitors the condition of Mississippi’s oyster population. Non-trawl monitoring and assessment data are available for mullet, spotted seatrout, and red drum.

In considering the stock condition data which follows, it is important to note that the abundance of marine fisheries populations is cyclical. Spawning success, recruitment, and natural events such as red tide, hurricanes, flooding, fluctuations in water quality parameters (e.g., temperature, salinity), predation, and disease cause natural fluctuations in Mississippi’s marine fishery populations. Because fluctuations in these population levels are inevitable, DMR marine biologists said that downward trends would only cause them concern as to the sustainability of the fishery if these trends continued over long periods (e.g., three to five years) without any sign of a recovery.

A discussion of the condition of each of the state’s major fisheries, based on the best available data, follows.

Fisheries Which Appear to be Sustainable at Current Levels of Harvest

Menhaden

Gulfwide fishery-dependent data shows that relative to long-term trends in the menhaden fishery, the menhaden stock gulfwide is healthy.

Fishery-independent data (refer to Appendix C, page 77) for Mississippi’s menhaden fishery show relatively stable abundance of juvenile fish over a twenty-

four-year period, which is consistent with recent gulfwide menhaden fishery stock assessments.

Menhaden, similar to sardines, are primarily caught for their oil and meal, which is used commercially (e.g., in cosmetics) and for feed (e.g., for livestock and poultry). Menhaden is the only strictly commercial fishery of the state's major marine fisheries. It is the largest volume fishery in Mississippi and in the continental United States. According to DMR staff, in 1997, Mississippi ranked fifth in the nation in menhaden landings. While the state's menhaden fishery has declined since the 1980s (refer to page 22), this decline is due to consolidation within the industry and associated Mississippi menhaden plant closures, not to a decline in the stock.

Mississippi's menhaden fishery is managed by state regulation (e.g., setting of bycatch limits, seasons, and legal areas of harvest) through a gulf regional fisheries management plan, administered through the Gulf States Marine Fisheries Commission. The fishery is co-managed by the industry and government through the Menhaden Advisory Committee of the Gulf States Marine Fisheries Commission, which reviews the plan yearly and reassesses the status of the stock, in conjunction with the National Marine Fisheries Service.

Oysters

Fishery-dependent data show the number of oyster sacks harvested in Mississippi waters for the past five years are at record levels. This data shows that oyster abundance is sufficient to sustain current levels of harvest, providing environmental conditions remain favorable. It is important to note that the condition of oyster fisheries is more dependent upon environmental conditions than fishing activities. A more detailed discussion of Mississippi's oyster fishery is on page 27.

Spotted Seatrout (Speckled Trout)

Preliminary indications from a state-level stock assessment currently in progress are that Mississippi spotted seatrout are not recruitment overfished.⁴

The fishery-dependent stock assessment data for this fishery is supported by fishery-independent data, based on gill net samples taken over the last seven years for year I fish (i.e., fish age 1-1.9 years). This data shows an increasing trend in abundance for year I fish (refer to Appendix C, on page 80).

The Department of Marine Resources documented a condition in the spotted seatrout population which was recognized some ten years later as an

⁴"Recruitment overfished" means that a population is being harvested such that a reduction in subsequent year classes results (i.e., reduction in the abundance of large fish, without a reduction in the progeny).

issue which could potentially affect stock condition. It was not until recent years, through life history studies, that the issue was fully understood. Specifically, DMR data showed that state fishery regulations were allowing spotted seatrout to be taken at a size which was smaller than the average size at which the female of the species reached maturity (i.e., before the fish was able to reproduce). The data collected over that period allowed the DMR to craft regulations that increased the minimum size limit for spotted seatrout without significantly affecting the spawning stock. Also, the Commission on Marine Resources adopted an ordinance which established an annual 40,000-pound commercial harvest limit for spotted seatrout.

Brown Shrimp

Based on fishery-dependent data, the National Marine Fisheries Services has determined that this fishery is not overfished in Gulf waters.

Fishery-independent data for juvenile brown shrimp show that this population is stable or increasing (see Appendix C on page 79).

This fishery is jointly managed with the federal government; however, since the overwhelming majority of shrimp are harvested within state waters, state measures regulating harvest have the most profound impact on the state's shrimp population. In considering the condition of the shrimp fishery, it should be recognized that, like oysters, the most important impact on shrimp stock status is the environmental condition.

Spanish Mackerel

This is a fishery which is jointly managed with the federal government. Based on fishery-dependent data, the National Marine Fisheries Services has determined that this fishery is not overfished in Gulf waters.

Fisheries Below Historical Juvenile Abundance Population Averages

Striped Mullet

A recent gulfwide fishery-dependent stock assessment shows that the stock is in relatively good condition.

However, in Mississippi waters, fishery-independent data shows that juvenile abundance has been below historical averages since 1990 (refer to Appendix C on page 82).

Mississippi's striped mullet fishery developed in response to demand from Asian markets for "roe" (fish eggs). The season for catching roe mullet is short,

usually running from October through mid-December of each year. The primary mode of catching roe mullet is through gill nets. In a recent research report funded by DMR through tidelands trust funds, the author concluded “the practice of targeting the reproductively active portion of the population without restraint is questionable.” Recreational harvesters perceive that the local mullet population has declined in recent years, and they attribute this decline to the extensive harvesting of fish in spawning condition.

Blue Crabs

Fishery-independent data shows that juvenile abundance has been below historical averages for most of the period since 1981. (Refer to Appendix C on page 78.)

Marine biologists at the Gulf Coast Research Laboratory and DMR concluded that the observed trend in Mississippi’s juvenile blue crab population is tied to a loss of coastal wetlands habitat (see related discussion on page 33). In a 1998 article published in the *Journal of Shellfish Research*, the authors (who are all research marine biologists at the Gulf Coast Research Laboratory and DMR) concluded that the primary threat to the blue crab stock is not the harvesting of sponge crabs (i.e., egg-bearing females), but rather the loss of essential habitat which is critical to the long-term stability of the fishery. As one of the authors explained, blue crabs are an environmentally tolerant species, but are subject to high predation, are highly cannibalistic, and are dependent on the wetlands habitat to provide shelter and food. The authors believe that the downward trend in the blue crab juvenile population, as documented by trawl samples, is attributable to a variety of factors, including predation and the quantity and quality of habitat.

According to DMR, it has established a task force to address issues in the state’s blue crab fishery.

White Shrimp

Fishery-independent data shows that juvenile abundance has been below historical averages for most of the period since 1988. (Refer to Appendix C on page 77.)

As noted by a Gulf Coast Research Laboratory marine biologist who studied the annual abundance of white shrimp juveniles collected by shrimp trawl:

Catch was highly variable through 1987. From 1988-1997 there seems to be a general decrease in abundance of juvenile white shrimp in our monitoring trawls. At this time we have not established a clear relationship to any variable that would explain the decrease.

Gulf Coast Research Laboratory staff noted that while they do not believe that any DMR ordinances with respect to the shrimp fishery have caused the decline, the cause of the decline should be studied more closely. While more research should be conducted, the prevailing explanation for the decline in Mississippi's juvenile white shrimp population, according to DMR marine biologists, is the same as the explanation for the decline in Mississippi's blue crab population--i.e., loss of wetlands habitat.

Fisheries Which are Overfished in Gulf Waters According to Federal Definitions

As previously stated, in the National Marine Fisheries Service's October 1998 *Report to Congress: Status of Fisheries of the United States*, the Gulf of Mexico Fishery Management Council identified four species as being overfished, three of which are major jointly federal/state-managed marine fisheries in Mississippi: red drum, red snapper, and king mackerel.

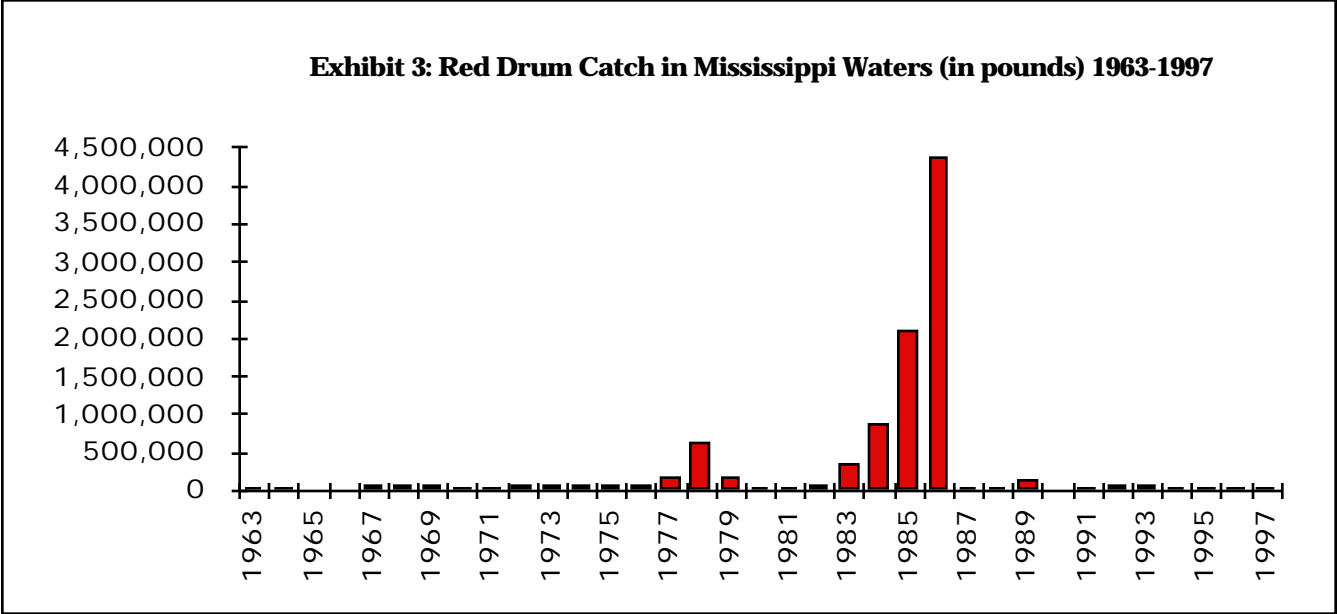
Red Snapper

DMR has implemented ordinances governing the red snapper fishery in state waters in accordance with federal catch limits.

Red Drum

Red drum is a fishery present in both state and federal waters (referred to as "offshore" waters) during different portions of its life cycle. Red drum migrate to and remain in open Gulf waters as they mature. Due in large part to a high demand for the fish as a result of popularization of the dish "blackened redfish," harvesters caught unprecedented quantities of red drum in the late 1970s and mid 1980s, resulting in concerns over the status of the stock (see Exhibit 3 on page 26 which shows historical catch of red drum in Mississippi waters). Subsequent research into the condition of the fish stock revealed fewer than expected numbers of fish in the younger age groups being recruited into federal waters. This research indicated that harvesters were catching many red drum of young age in in-shore waters throughout the gulf states region, which did not allow for adequate escapement to federal waters, thus reducing the offshore spawning stock.

In order to protect the red drum stock, the federal government closed offshore waters to red drum fishing (the legal take of red-drum offshore has been closed since 1986) and requested states to provide for an escapement rate of thirty percent from state to federal waters. The escapement rate is the percentage of fish in state waters which migrate to offshore waters. DMR marine biologists consulted with Gulf Coast Research Laboratory researchers to determine the best way to meet the federally requested escapement rate. While closing the red drum fishery in state waters was an option, DMR felt that it could best meet this request



SOURCE: DMR.

and serve its mandate of revitalizing the state’s seafood industry by restricting the red drum catch in state waters to a certain length and establishing a red drum commercial total allowable catch. DMR based the total allowable catch on a ten-year average of commercial red drum landings in Mississippi, excluding the extremes (i.e., high and low years) in the database. Mississippi is the only Gulf Coast state which has a commercial red drum fishery, which is limited to 35,000 pounds per year.

King Mackerel

DMR has implemented ordinances governing the king mackerel fishery in state waters in accordance with federal catch limits.

Fisheries for Which Data is Inadequate to Evaluate Stock Condition

Sheepshead

Fishery-dependent data is inadequate for this species.

Fishery-independent data is also inadequate, as this species is not routinely caught in statistically significant numbers in Mississippi near-shore waters using conventional scientific sampling gear.

Flounder

Fishery-dependent data is inadequate for this species (there is no stock assessment); however, there is a regional management plan.

Fishery-independent data is also inadequate, as this species is not routinely caught in statistically significant numbers in Mississippi near-shore waters using conventional scientific sampling gear.

Black Drum

Although there is a regional management plan that includes a gulfwide stock assessment, there are little data on this species for Mississippi waters.

Fishery-independent data is also inadequate, as this species is not routinely caught in statistically significant numbers in Mississippi near-shore waters using conventional scientific sampling gear.

DMR Has Corrected Historical Deficiencies in its Regulation of the State's Oyster Fishery

The Federal Food and Drug Administration Regulates the Oyster Industry to Protect Public Health

The United States Department of Health and Human Services' Food and Drug Administration (FDA) established the National Shellfish Sanitation Program to provide for the sanitary harvest and production of fresh and frozen molluscan shellfish (oysters, clams, and mussels). To assist states with program compliance, the FDA developed a National Shellfish Sanitation Program Manual of Operations. FDA actively monitors state compliance with the following major program components relating to oyster harvesting and processing:

- rules requiring oyster reef closure when fecal coliform bacteria counts in the water exceed the maximum level allowed (refer to page 39 for a discussion of water quality as it affects the oyster fishery);
- health and sanitation regulations for oyster processing plants (e.g., requirement for refrigeration of oysters);
- requirements that oyster fishers and processors keep identification tags on all sacks of oysters; and,

- requirements for reporting health problems resulting from oysters harvested in state waters.

DMR's Shellfish Program Manager Has Corrected Historical Oyster Industry Regulatory Problems Cited by the FDA

PEER reviewed the Shellfish Sanitation Act compliance reports which the U. S. Food and Drug Administration issued for Mississippi from November 1995 to October 1998. While the following discussion focuses on deficiencies cited in these reports, by major area of non-compliance, FDA has not cited DMR for major nonconformities since the department hired a full-time oyster program manager in FY 1998.

- *Oyster reef closure when bacteria counts in the water exceed the maximum level allowed*

In its August 1996 report, the FDA noted that DMR had failed to close several oyster growing areas when necessitated by water conditions (specifically, flood waters from area rivers, which raise the bacteria level in marine waters). Additionally, the FDA noted that DMR was not properly monitoring water conditions in certain oyster reef areas. Specifically, three of the rain gauges used by the department as an important indicator of oyster growing water quality had not worked since July 1995. The FDA cited the same nonconformities (i.e., failure to close oyster areas when required or lack of necessary data) in its reports in November 1996, September 1997, and November 1997.

The October 1998 FDA report states that while DMR had one instance of failing to close an area properly in FY 1997, there were no instances of closure failure in FY 1998.

- *Compliance of oyster processing plants with federal health and sanitation regulations*

The FDA requires DMR to inspect each oyster processing plant quarterly for compliance with federal shellfish sanitation regulations. As part of its compliance monitoring efforts, the FDA periodically inspects a random sample of these processors using a forty-seven-item checklist.

From 1995 to 1998, the FDA found nonconformities in many of its inspections of Mississippi's oyster processing plants. Federal regulations mandate that DMR ensure that processors correct cited nonconformities as a condition of permit renewal.

The April 1996 FDA report stated:

Some Mississippi shellfish shippers were noted to be in generally poor condition. . . .There is evidence to suggest that some MDMR [DMR] certified shellfish shipper inspections were not characterized by adequate scrutiny. [April 25, 1996]

Since 1996 the FDA has been satisfied with the quality of DMR inspections, although in both 1997 and 1998 a dealer was reissued a permit by DMR despite not having corrected all deficiencies.

- *Compliance with requirement to keep identification tags on all oyster sacks*

Federal shellfish sanitation regulations require the identification of each sack of oysters harvested with a tag noting the date, time, and place of oyster harvest. Oyster harvesters obtain sack identification tags at DMR “check stations.” Federal regulations require that the identification tag remain with the sack of oysters until it reaches its final retail destination (e.g., a store or restaurant). Tagging allows for the oysters to be traced to their source, which facilitates the recalling of oysters, if necessary, and assists in FDA investigations of illness related to raw oyster consumption.

From 1995 to 1998, FDA found several oyster sacks with illegible tags and one sack of oysters with no tag. In August 1998, the FDA observed roadblocks set up by Department of Wildlife, Fisheries, and Parks marine law enforcement officers for the purpose of inspecting trucks shipping oysters for violations of federal shellfish sanitation regulations. The officers found one oyster shipment with numerous illegible tags and an entire pallet of oyster sacks without tags. The officers seized the entire shipment and issued the driver a citation for transporting untagged oysters.

- *Monitoring and reporting of health problems associated with the consumption of oysters harvested in Mississippi*

FDA did not cite any health problems associated with consumption of oysters tagged as having been harvested in Mississippi waters in any of the ten federal reports reviewed by PEER.

Oyster Shell Collection and Distribution

As noted on page 6, DMR’s legal responsibility includes propagation of seafood and aquatic life. With respect to propagation of the state’s oyster fishery, state law [MISS. CODE ANN. Section 49-15-38] requires DMR to replant oyster shells taken during harvesting, to the maximum extent feasible.

DMR, citing a lack of financial resources, has not collected oyster shells (which are the property of the state) and returned them to coastal water bottoms. Also, DMR did not collect revenues due in lieu of shells, as allowed by state law, from July 1994 through July 1997. The department could have used these revenues to purchase equipment needed to collect and replant the shells.

*State Law Requires DMR to Replant Harvested Oyster Shells
to the Maximum Extent Feasible*

According to MISS. CODE ANN. Section 49-15-38:

*(2) The Commission shall acquire and replant shells, seed oysters and other materials, when funding is available, for the purpose of growing oysters. Except as provided in this section, **all oysters shells produced from oysters taken from the public reefs of the State of Mississippi are the nontransferable property of the State of Mississippi**, and all persons, firms or corporations dealing in or canning oysters taken from the public reefs of the state shall deliver to the commission all oyster shells taken or processed by that person, firm or corporation. The delivery of the oyster shells shall be at the place of business of the oyster processor, dealer or factory. The commission shall order the delivered oyster shells to be spread on the public reefs of this state to improve the oyster beds.*

(3) Any person failing or refusing to deliver the shells or pay the shell retention fee required under Section 49-15-46 to the department when called for by the department, is guilty of a misdemeanor and, upon conviction, shall be fined not more than One Hundred Dollars (\$100) for each barrel of shells they fail or refuse to deliver, or to tender the shell retention fee. In addition to the fine, the violator shall pay the reasonable value of the oyster shells and shall be ineligible to be licensed for any activity set forth in this chapter.

*(4) The collection and planting of oyster shells as provided under this chapter shall be under the direction and supervision of the executive director of the department. Planting and replanting of oyster shells shall be coordinated by the Gulf Coast Research Laboratory. The governing authorities of each county and municipality bordering on the Mississippi Sound may assist the commission and the Gulf Coast Research Laboratory in the planting and replanting of oyster shells. **The commission shall construe this section to require the return of a maximum amount of shells to the reefs, and shall allow the retention of shells only in cases where the collection or return of the shells is impractical or not feasible.** An equal amount of oyster shells shall be planted or replanted to the waters of each county bordering on the Mississippi Sound. [emphasis added]*

MISS. CODE ANN. Section 49-15-46 requires oyster harvesters taking the shells out of state to pay a fifty-cent fee per sack of oysters. This section also requires that all funds so collected shall be paid “into a special fund in the State Treasury to be appropriated by the Legislature for use by the commission to further oyster production in this state.”

The only oyster shells which DMR replanted in the past ten years were to rebuild reefs damaged by hurricanes. In these specific cases, DMR used emergency funds from the United States Department of Commerce to purchase oyster shells from Louisiana and distribute the shells on the damaged Mississippi oyster reefs.

DMR told PEER staff that it did not have the equipment and staff necessary to collect and replant oyster shells. For example, in FY 1998 alone, 27,000 cubic yards of oyster shells were harvested in Mississippi. DMR staff said that its sixty-five-foot boat can only hold approximately 135 cubic yards of oyster shells, which would have required 200 trips to replant the shells in FY 1998. Further, DMR only owns one dump truck and one front-end loader.

Because DMR (and its predecessor, the Bureau of Marine Resources of the Department of Wildlife, Fisheries, and Parks) has not collected state-owned oyster shells from oyster processors, the processors sell the shells to local governments and private individuals.

From July 1994 to July 1997, DMR Did Not Collect \$412,640 in Potential Oyster Shell Fees which the Legislature Had Mandated the Department to Collect in Lieu of Collecting Oyster Shells

From the creation of the Commission on Marine Resources on July 1, 1994, until July 2, 1997, MISS. CODE ANN. Section 49-15-15 mandated the Commission on Marine Resources to collect oyster shell fees if it determined that it was not feasible to collect and replant oyster shells:

*. . .one hundred percent (100%) of the oyster shells produced from oysters taken from the public reefs of the State of Mississippi are hereby declared to be the nontransferable property of the State of Mississippi, and all persons, firms or corporations dealing in or canning oysters taken from the public reefs of the state shall deliver to the commission one hundred percent (100%) of the oyster shells taken or processed by such person, firm, or corporation, delivery of same to be at the place of business of the oyster processor, dealer, or factory. . . Provided, that **in the event the commission determines it is no longer feasible to plant such shells, the commission shall levy a shell retention fee in lieu of planting such shells . . .in the amount of fifty cents (50 cents) per sack** to be paid to it in lieu of demanding a remittance of one hundred percent (100%) of the oyster shells, and upon the option of the commission to exercise the option to accept*

such retention fee, then this option exercised by the commission shall be uniformly applied to all persons, firms, and corporations.

From July 1994 to July 1997, DMR collected \$12,707 for oyster shells taken out of state, but did not collect any revenues for oyster shells remaining in Mississippi.

As shown in Exhibit 4, below, between July 1994 and July 1997 the Commission on Marine Resources could have raised \$412,640 from the shell retention fee provided for in CODE Section 49-15-15. The department could have used these fees to pay the costs of oyster shell redistribution, including the purchase of oyster shell transportation equipment. By forgoing the collection of revenues in lieu of oyster shells during the three-year period when this option was available to DMR, the department deprived itself of the necessary resources to propagate the state's oyster fishery on an ongoing basis.

Exhibit 4

**Uncollected Oyster Shell Fees 1994-1998
Shell Volume and Uncollected Shell Fees**

Year	# of Sacks Harvested	Potential* Shell Fees	Collected Shell Fees	Net Uncollected Fees
1994	220,738	\$110,369	\$7,083	\$103,286
1995	298,109	\$149,055	\$0	\$149,055
1996	326,579	\$163,290	\$2,990	\$160,300
1997	390,332	\$1,383 **	\$1,383	\$0
1998	353,753	\$1,251 **	\$1,251	\$0
Total	1,589,511	\$425,347	\$12,707	\$412,640
Average	317,902	\$85,069	\$2,541	\$82,528

SOURCE: DMR

*Potential shell fees are based on the \$.50 per sack fee in MISS. CODE ANN. 49-15-15 (from 1988-1996). This law was repealed on July 2, 1997, for sale of shells retained in-state.

** This number assumes that DMR collected 100% of the out-of-state shell fees.

Condition of Mississippi's Coastal Wetlands

Marine biologists believe that Mississippi is at a critical point with respect to coastal development and its impact on the coastal environment. The recent surge in Mississippi coastal development has the potential to impact negatively the marine ecosystem in which the state's marine resources exist. This negative impact, evidenced by declines in coastal water quality, wetlands habitat, and seagrass acreage, will affect the long-term viability of the state's marine resources if not properly addressed.

Mississippi's Coastal Wetlands are Vital to Marine Resources

A local marine scientist who has conducted research on the use of Mississippi marsh edge habitats by young fishes and invertebrates summarizes the importance of the coastal wetlands habitat to the sustainability of the state's marine resources:

. . . wetlands are vital. Everyone here knows that. Habitat loss is one of the greatest threats we have to fisheries worldwide today. About 70 percent of commercial fisheries and two-thirds of recreational fisheries utilize wetlands at sometime during their life. And so it is a vital interest across many different scales. . . most of the commercially important fishes and decapods that are harvested in Mississippi waters utilize wetland marsh edge habitat during some part of their life history.

Mississippi's coastal wetlands serve as critical habitat providing food and shelter for many fish, shellfish, bird, and other animal species. Coastal wetlands are the nursery ground for many marine species, including shrimp, spotted seatrout, red drum, and blue crab. Also, the wetlands serve an important role in removing pollutants and toxicants from nonpoint source pollution along the Gulf Coast.

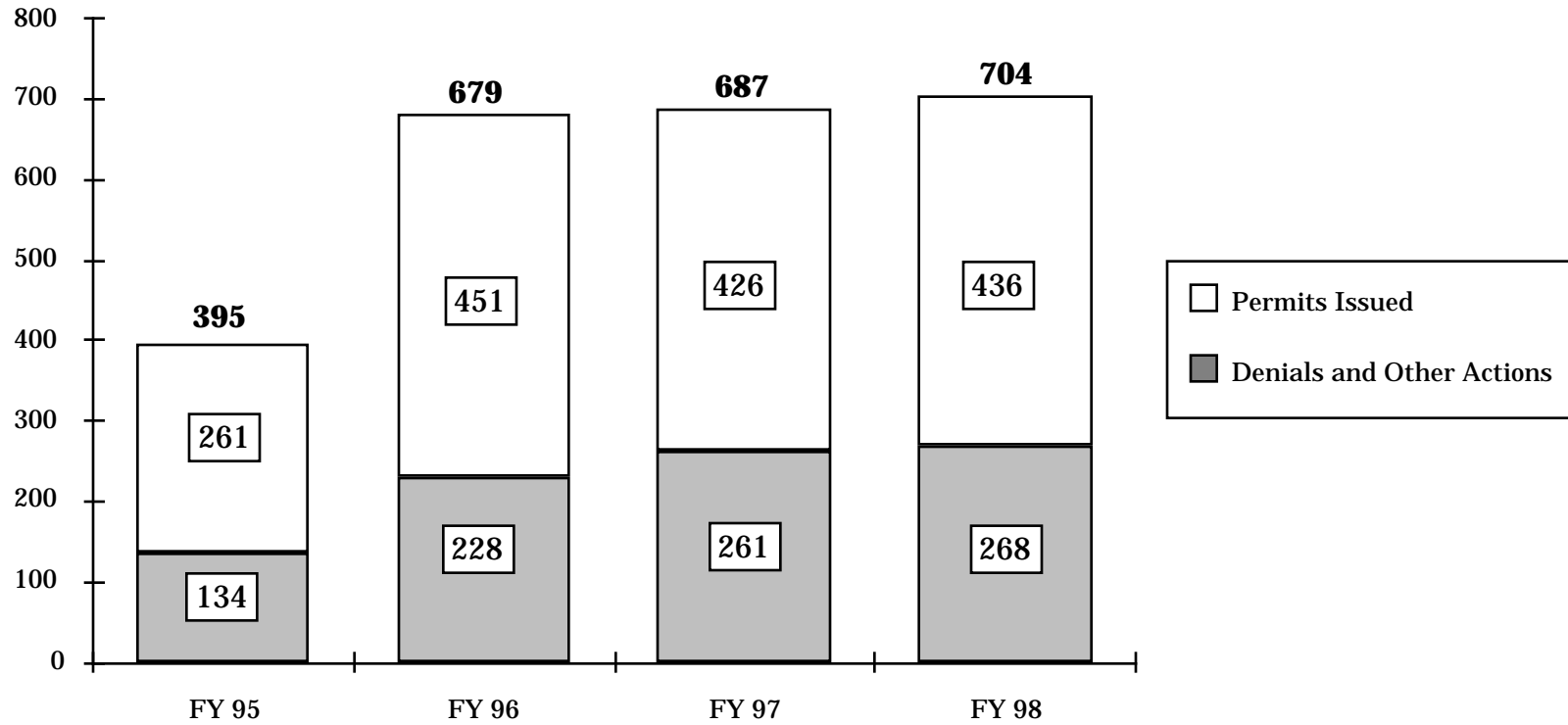
Development Threatens Mississippi's Coastal Wetlands

According to Mississippi's Department of Environmental Quality, prior to 1973, the shorelines and wetlands of Mississippi's Gulf Coast were significantly altered by human activity, resulting in a loss of 10,000 acres of wetlands. While passage of the Coastal Wetlands Protection Law in 1973 has protected Mississippi's coastal zone from outright loss of wetlands (less than twenty acres of coastal wetlands have been lost to development since passage of the law), the quality of the state's wetlands and the ecosystem in which they exist have been negatively impacted by development.

As shown in Exhibit 5 on page 34, since establishment of DMR as a separate agency, the total number of wetlands permit applications which the department has received and issued has increased dramatically, from 395 applications received and 261 issued in FY 1995, to 704 applications received and 436 issued in

Exhibit 5

**Number of Wetlands Permit Applications Received
and Permits Issued, by Year
(Fiscal Years 1995-1998)**



SOURCE: Department of Marine Resources.

FY 1998. Further, the number of individual permit applications received and issued (as discussed on page 11, “individual” permits involve the projects with the greatest potential adverse impact on the wetlands) increased significantly during this period, from five applications received and five issued in FY 1995 to thirty-seven received and twenty-four issued in FY 1998. Among DMR’s recent major individual permitting actions were:

- four casinos: Beau Rivage, Pine Hills, Casino World, and D’Iberville;
- Mississippi Phosphates Corporation;
- Ingalls Shipyard expansion; and,
- Port of Gulfport expansion.

These are major construction projects in the coastal zone.

Aware of this significant increase in permitting activity, DMR noted in its five-year plan that:

Impacts of increased economic activity on Mississippi’s Gulf coast continue to heavily impact DMR’s ability to execute permitting and support planning for permitting. When DMR was created as a separate agency, the permitting functions and requirements to obtain federal consistency in the permitting process was [sic] not considered a major workload. With the development of the casino industry, which is classified as water dependent industry, the amount of permitting has grown rapidly along with increased industrial and residential permitting workloads. Permit requests have increased in complexity due to size and scope of proposed projects. . . .DMR has experienced a high rate of turnover among the permitting staff members because of the increased workload and associated stress.

The Department of Environmental Quality’s most recent assessment of water quality in Mississippi (1996) notes that the problems associated with coastal zone development are not unique to Mississippi:

Coastal wetlands have been lost at a rapid rate along the Gulf of Mexico. Loss has occurred because of agricultural and industrial runoff and dredge and fill activities related to increased urban and residential development. Freshwater diversions have resulted in saltwater intrusion into estuaries. Saltwater intrusion causes a reduction in flushing of pollutants, the decimation of shellfish beds and loss of salt-intolerant wetland vegetation.

DMR staff describe the decline in the quality of the state’s coastal wetlands as a “major threat to the state’s marine resources.”

While, unfortunately, no historical database of coastal habitat quality exists, the negative impact of coastal development is suggested in terms of species

fluctuations such as blue crab and white shrimp (see discussions on pages 24 and 25, which attributes decreased juvenile abundance of these species to loss of qualities promoting these species in wetlands habitats). Other indicators of the negative impact which development has had on the coastal environment include a decline in coastal water quality. Coastal development is also one of a suite of factors implicated in loss of seagrass acreage.

Decline in Coastal Water Quality

Several available indicators show that overall, coastal water quality has declined (e.g., increase in non-point source pollution; high percentage of coastal basin water bodies on the Department of Environmental Quality's top ten statewide impaired water bodies list; decline in sea grass acreage). Also, the state's oyster reefs were closed 76% of the time legally set aside for harvest during the 1997-98 oyster season, primarily due to fecal coliform counts in excess of the federally established maximum level.

Water quality is an extremely important factor in the marine environment, directly affecting the viability of the state's marine resources. Among the aspects of water quality which are particularly relevant to the viability of marine fisheries resources are the levels of dissolved oxygen (i.e., fish cannot survive in waters with very low oxygen levels), nutrient loads (e.g., from fertilizer runoff, which can reduce the dissolved oxygen level in the water through the impact which it has on marine plant life), turbidity (i.e., total suspended solids, which affect the ability of fish to eat and of light to reach aquatic plants), and sediment toxins (e.g., heavy metals and pesticides).

With respect to the commercial viability of the oyster fishery, fecal coliform bacteria counts in the water are important because oysters, as filter feeders, retain the bacteria, which can be passed on to humans through consumption of contaminated raw oysters. Fecal coliform bacteria enter the marine water through malfunctioning sewage systems and other sources of raw sewage such as agricultural runoff. U. S. Food and Drug Administration shellfish sanitation standards require the closure of oyster reefs to harvesting when the fecal coliform count exceeds 14 per 100 ml.

The Recent Surge in Coastal Development has Increased Nonpoint Source Pollution of Mississippi's Coastal Waters

Increased development along the Mississippi Gulf Coast has negatively impacted coastal water quality by increasing nonpoint source pollution. The loss of more and more green space to coastal development diminishes the natural ability of the coastal land to filter pollutants before they reach the marine waters. Scientists with Mississippi State University's Coastal Research and Extension Center have noted that development associated with the gaming industry had increased nonpoint source pollution from:

- *stormwater runoff*, which occurs when impervious surfaces such as parking lots cause rainwater to sheet wash off the property instead of infiltrating into the natural ground, thereby carrying oil, gasoline, grease, and other substances into the coastal waterways and Mississippi Sound; and,
- *failing individual septic systems*, which allow untreated domestic wastewater to enter coastal waters. The scientists noted that in many coastal areas of rapid residential growth, septic systems had been installed in lieu of the construction of centralized sewage collection or treatment facilities. According to the scientists, septic systems are not adequate sewage treatment systems in a coastal environment, because the soil composition and high water table greatly increase the likelihood of raw sewage leakage into the environment. Further, if septic systems are not designed, installed, maintained, or operated properly, they malfunction, leaking raw sewage into the environment.

The Director of DMR's Coastal Ecology Program stated that the failure of on-site sewage disposal systems is a major factor affecting Mississippi's marine water quality.

The Top Ten Impaired Water Bodies Statewide are Coastal Water Bodies

According to the Department of Environmental Quality's most recent (1996) priority ranking of impaired waterbodies statewide, the top ten impaired water bodies are coastal water bodies (refer to Exhibit 6 on page 38). Bayou Cumbest is at the top of the list, followed by four separate listings for the Bay of St. Louis and its coastline. Bayou Cumbest, which is classified for three uses (aquatic life support, shellfishing [i.e., crab and oyster harvesting], and contact recreation) is on the list because of the levels of fecal coliform bacteria and nutrients found in the samples taken. The Bay of St. Louis, which is classified for shellfishing and contact recreation, is on the list because of high fecal coliform bacteria counts. The Department of Environmental Quality, in cooperation with the federal Environmental Protection Agency, is conducting a comprehensive study of the entire Bay of St. Louis watershed to determine the reason for the high fecal coliform bacteria counts.

Declining Water Quality has had a Negative Impact on Mississippi's Seagrass Acreage

Marine biologists at the Gulf Coast Research Laboratory provided the following summary of the importance of seagrasses⁵ to Mississippi's marine fisheries:

⁵"Seagrasses" are submerged aquatic plants found in shallow coastal waters.

Exhibit 6**Top 10 Impaired Waterbodies in Mississippi in 1996**

As Identified by DEQ, Pursuant to Section 303(d) of the Clean Water Act

Rank	Waterbody Name	County	Use
1	Bayou Cumbest	Jackson	Aquatic life support Contact recreational activities Propagation of shellfish, shellfishing, and shellfish consumption
2	St. Louis Bay	Hancock/ Harrison	Contact recreational activities Propagation of shellfish, shellfishing, and shellfish consumption
3	St. Louis Bay Coastline	Hancock/ Harrison	Contact recreational activities Propagation of shellfish, shellfishing, and shellfish consumption
4	St. Louis Bay Coastline near DeLisle	Hancock/ Harrison	Contact recreational activities Propagation of shellfish, shellfishing, and shellfish consumption
5	St. Louis Bay Coastline near Pass Christian	Hancock/ Harrison	Contact recreational activities Propagation of shellfish, shellfishing, and shellfish consumption
6	Escatawpa River	Jackson	Aquatic life support Fishing and fish consumption Secondary contact recreation
7	Biloxi Bay	Harrison/ Jackson	Propagation of shellfish, shellfishing, and shellfish consumption
8	Deer Island Coastline	Harrison	Propagation of shellfish, shellfishing, and shellfish consumption
9	Mississippi Sound Coastline From Ocean Springs to Gautier	Jackson	Propagation of shellfish, shellfishing, and shellfish consumption
10	Mississippi Sound Coastline From Pass Christian to Biloxi	Harrison	Propagation of shellfish, shellfishing, and shellfish consumption

SOURCE: PEER analysis of data presented in Department of Environmental Quality documentation.

Wetlands and seagrasses provide two of the most basic needs of the young of both commercial and non-commercial fishery species: food and shelter from predators. Loss of these habitats and loss of habitat quality will contribute to decreased fishery harvests.

Between 1969 and 1992, Mississippi seagrass acreage declined from 12,982 acres to 1,998 acres, an 85% decline overall. According to Gulf Coast Research Laboratory marine biologists studying seagrass, this decline:

. . . results from cumulative effects of both natural and anthropogenic [human-induced] events. Some of the observed trends in declining seagrass acreage and water quality are thought to be linked. Seagrasses appear to be threatened by the cumulative effects of both natural events and anthropogenic activities in the coastal marine environment. Primary vectors for the disappearance of seagrasses are most likely an overall decline in water quality, extended periods of depressed salinities, and physical disturbances such as tropical storms and hurricanes. Physical loss of habitat and decreased light availability coupled with declining water quality are the most visible features which directly affect seagrass communities.

The primary water quality issues negatively affecting seagrass are elevated nutrient levels, turbidity, sediment in the water from construction projects, runoff and possible contaminants such as pesticides and herbicides. Other explanations cited for a decline in seagrass acreage include propeller and anchor scars left by boaters in seagrass beds. These scars last for four to five years.

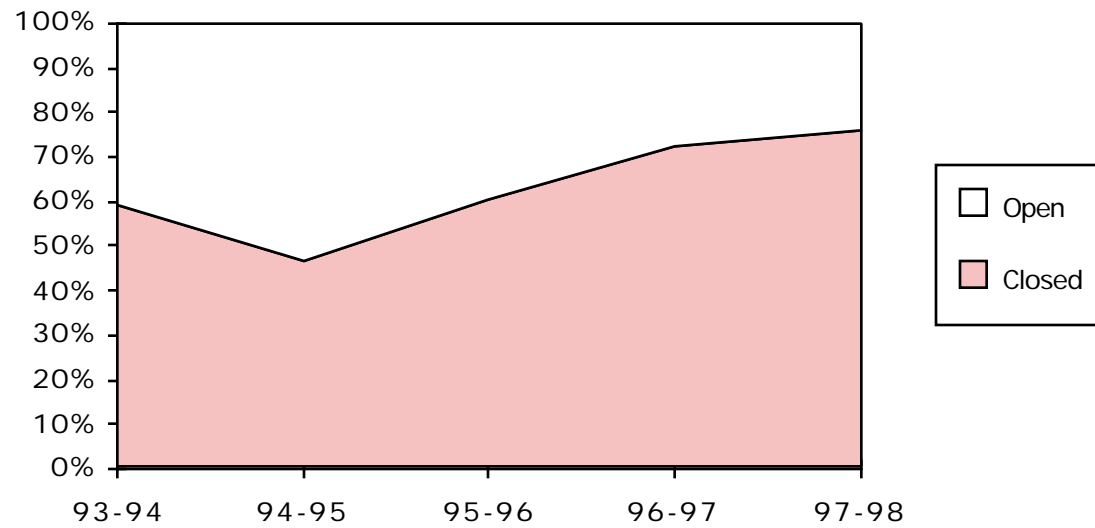
DMR's 1995 Annual Report listed effecting "an increase in Mississippi Gulf Coast seagrass beds" as one of the primary "challenges" of DMR's involvement with the Gulf of Mexico Program.

Higher than Federally Allowed Fecal Coliform Bacteria Counts are the Primary Reason for Closing the State's Oyster Reefs 76% of the Time Set Aside for Harvesting

DMR staff have described poor water quality as a "major threat" to Mississippi's oyster fishery. The primary reason for oyster reef closure is fecal coliform bacteria counts in excess of the federally established maximum. Other reasons for oyster reef closure include algae blooms, hurricanes, and accidents such as barges with hazardous materials going aground at a reef.

As shown in Exhibit 7 on page 40, the state's oyster fisheries were closed over half of the time legally set aside for oyster harvesting in four of the past five oyster seasons. During the 1997-98 oyster season, DMR was only able to open the state's oyster fishery 24% of the total time legally set aside for oyster harvesting (i.e., the reefs were closed 76% of the time).

Exhibit 7: Mississippi Oyster Reefs: Percent of Time Open vs. Closed



SOURCE: DMR

Includes closures from the first day of oyster season to the last day of the open season.

On a positive note, however, historical fecal coliform count data dating back to 1989 shows a general decline in the level of fecal coliform bacteria on days when the oyster reefs were closed due to fecal coliform count. Both landward and seaward sample stations experienced this downward trend, as shown by Exhibit 8 on page 42. Gulf Coast Research Laboratory biologists who collect and analyze this data attribute the decline in the level of fecal coliform bacteria in Mississippi's coastal waters to the sewerage of some coastal areas which were formerly unsewered (i.e., utilizing septic tanks) and recent major sewage plant improvement projects, such as those in west Jackson County and the city of D'Iberville.

Deficiencies in Mississippi's Coastal Zone Program,
as Cited in Federal Regulatory Reports

The National Oceanic and Atmospheric Administration (NOAA), the federal entity charged with oversight of DMR's implementation of Mississippi's Coastal Zone Program, cited DMR in 1996 for serious program non-conformities, including failure to implement and enforce the program adequately.

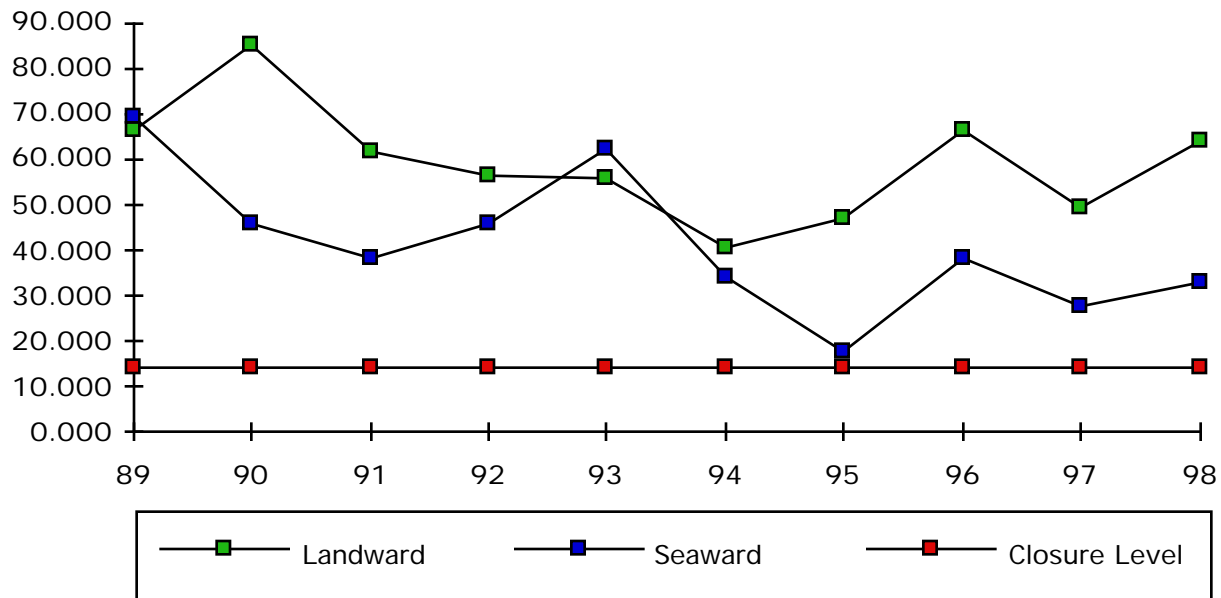
The Coastal Zone Management Act requires NOAA to monitor states for compliance with their coastal zone programs. NOAA's most recent review of Mississippi, completed in November 1996, determined that the state was not in compliance with its federally approved Coastal Zone Program. The types of Coastal Zone Program violations cited by NOAA represent serious threats to the integrity of Mississippi's coastal wetlands.

The NOAA review covered actions taken by DMR and DMR's predecessor, the Bureau of Marine Resources of the Mississippi Department of Wildlife, Fisheries, and Parks, from May 1993 to November 1996. The conclusion section of the report stated: "the State is not fully adhering to its approved coastal management program and implementation and enforcement of the Mississippi Coastal Program is not being conducted in a satisfactory manner." The NOAA review contained six mandatory recommendations. The status of DMR's compliance with each of the six NOAA mandates is discussed below.

- *Add sufficient staff to implement the Mississippi Coastal Zone Program adequately.*

During the time of NOAA's evaluation, DMR's Office of Coastal Ecology consisted of a Director, who was also responsible for other programs relating to ecology, and one field inspector. During the three-year federal review period, these two employees were responsible for processing an average of over four hundred wetlands permit applications per year.

Exhibit 8
Average Annual Fecal Coliform Counts for Mississippi Coastal Waters During Oyster Reef Closures



SOURCE: DMR

With respect to the inadequacy of DMR's Coastal Zone Program staffing level, the NOAA report stated:

DMR is sorely understaffed to implement the MCP [Mississippi Coastal Program] adequately. The current staffing situation makes it impossible for DMR to implement and enforce the Federally approved MCP. Program components not being adequately implemented as a result of inadequate staffing include permitting, permit compliance, monitoring and enforcement, Federal consistency and outreach. The DMR must add new staff resources as soon as possible - whether permanent employees, temporary employees or outside contractors - to meet basic program implementation requirements.

To correct the problem, NOAA recommended that DMR hire additional Coastal Zone Program staff. Using state and federal funds appropriated to the state's Coastal Zone Program, DMR added a secretary, an assistant coastal zone office director, and four field biologists to aid in wetlands permitting (e.g., to review wetland permit proposals, determine the potential environmental impact of the proposals according to specific criteria, and make a recommendation as to disposition of the application). NOAA is satisfied with DMR's progress in increasing staff levels to implement the Coastal Zone Program.

- *Add sufficient staff to process wetlands permit applications on a timely basis.*

The NOAA report stated:

Due to lack of staff, inadequate records are being kept, processing time has been lengthened and a number of applications have yet to be processed. Given this workload, there is a dire need for increased staffing in the program area.

In addition to adding the staff described under the first recommendation above, DMR has improved its wetlands permit oversight capabilities by using a Geographic Information System ([GIS] a computerized mapping system) to map wetlands permit applications and approved permits.

- *Allocate staff and resources to monitor and enforce Coastal Zone Program compliance by routinely checking for unpermitted activities and permitted activities in violation of the conditions and terms of the permit.*

The federal report stated: "Monitoring and enforcement programs continue to be non-existent with regards to unpermitted activities or

permit conditions under the Wetlands Law.” DMR has not taken any action to address this recommendation. [See section on page 60 discussing the Department of Wildlife Fisheries and Parks’ Marine Law Enforcement unit’s failure to abide by the terms of its memorandum of understanding with DMR to enforce the state’s wetlands laws and permits.]

- *Modify Mississippi’s Coastal Zone Program to take into account casino development in the coastal area.*

The NOAA report stated:

The rapid expansion of casino development - particularly into previously undeveloped areas along the Mississippi Coast - has put into jeopardy the integrity of the Mississippi Coastal Wetlands Protection Law and Wetlands Use Plan [which is a portion of the Mississippi Coastal Program]. DMR, hampered by inadequate staff and unprecedented development pressures, has been unable to adequately administer and enforce Mississippi Coastal Plan policies embodied in the Law and Plan.

DMR is in the process of making changes to the Mississippi Coastal Zone Program to address the issue of casino development and siting. This planning effort is part of a much larger DMR effort, which is being jointly funded by NOAA and the state, to develop a Comprehensive Resource Management Plan “to address all major development in the coastal zone.” Participants in this comprehensive planning effort include environmental groups, the general public and federal, state, and local regulatory officials.

- *Develop written guidelines and plans for ensuring compliance of federal coastal zone projects with the state’s Coastal Zone Program.*

Under the terms of the Coastal Zone Program, DMR is responsible for reviewing federal project proposals which might impact the state’s coastal area. This review responsibility includes “direct federal actions, federally funded activities, as well as activities that require a federal permit or license.” Due to the previously discussed DMR Coastal Zone Program staffing shortage, the department had done little toward developing written guidelines or plans for ensuring federal consistency with Mississippi’s Coastal Zone Program.

The updating of DMR’s guidelines and plans to ensure federal compliance with the Coastal Zone Program awaits NOAA’s updating of its own regulations on this subject. Meanwhile, DMR has hired a full-

time employee to oversee federal consistency and this employee has attended NOAA training in this area.

- *Submit all amendments to the state's Coastal Zone Program to NOAA.*

The final finding of NOAA's report is that since 1988, DMR's predecessor, the Bureau of Marine Resources, and DMR had failed to submit to NOAA all amendments to its federally approved Coastal Zone Program. Amendments since 1988 include creation of DMR as a separate agency and inclusion of the new department's legislated mandates.

DMR is in the process of compiling for NOAA all of the amendments to its Coastal Zone Program to officially update it from the 1988 revision. DMR plans to complete a draft version of these changes during FY 1999.

In an interview with PEER, Mississippi's NOAA representative stated that NOAA was satisfied with DMR's compliance effort and that Mississippi was not in danger of losing any federal funding as a result of Coastal Zone Program violations.

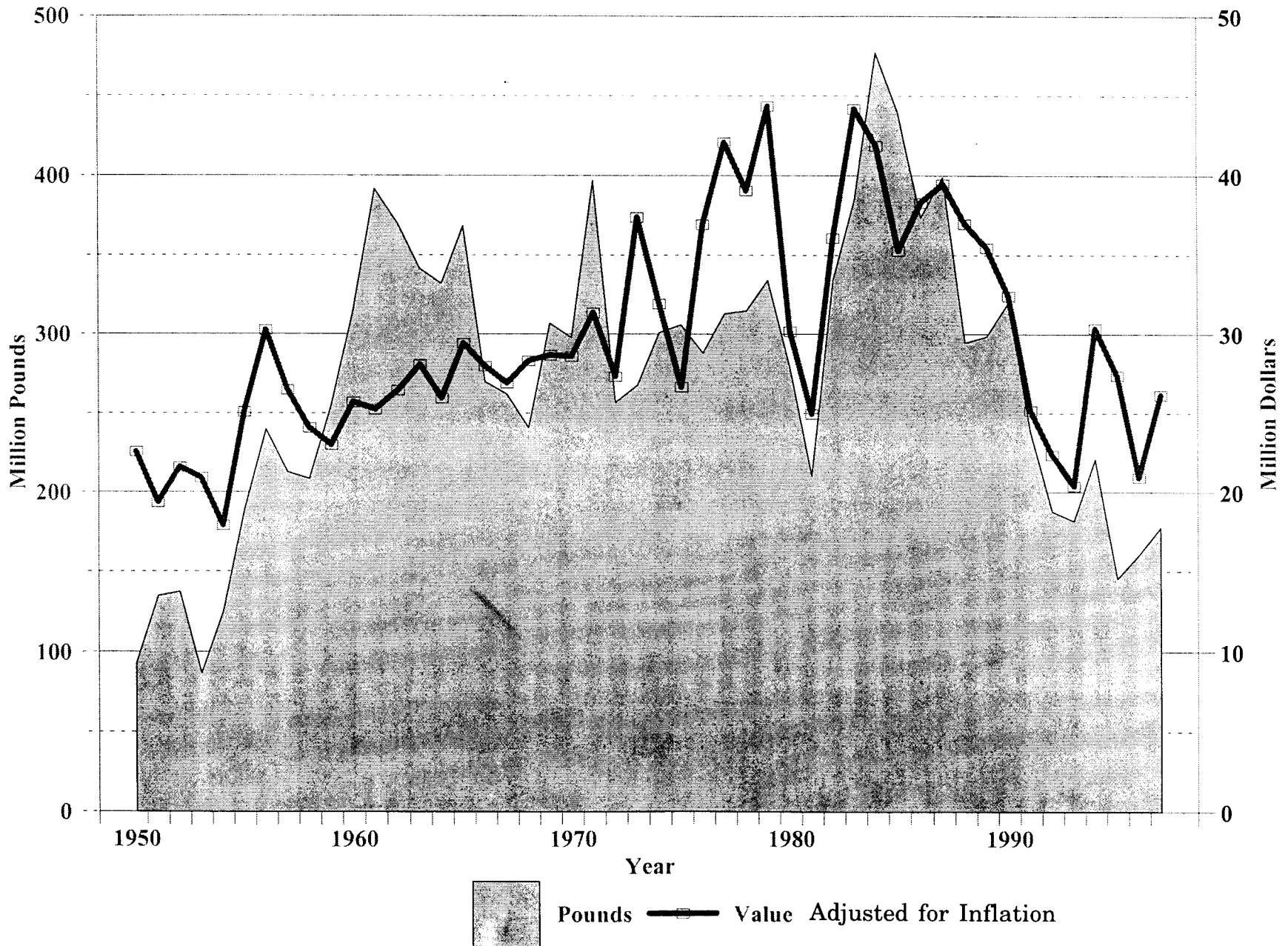
Economic Condition of Mississippi's Seafood Industry

While over the long term (since 1950) Mississippi commercial seafood landings have been relatively stable, since the mid-1980s, Mississippi commercial seafood landings have declined in volume and value. This decline is primarily attributable to a decline in the state's menhaden and pet food fisheries and a decline in shoreline support for the production sector of the industry.

Mississippi has the lowest seafood production of the five Gulf states, with approximately 10% of total commercial gulf landings (in terms of value and volume). The approximate shares of total Gulf landings of the other Gulf states are as follows: Louisiana: 40%, Texas: 25%, Florida: 15%, and Alabama: 10% (although slightly higher than Mississippi). In 1989, the value of Mississippi's seafood industry (including multiplier effects) was estimated at \$350 million. Since then, the value has declined in constant dollars, but economists do not know by how much, since no updates of the 1989 study have been conducted. The estimated value of the state's recreational fishing industry (including multiplier effects) is \$293 million.

While over the long term (since 1950) Mississippi commercial seafood landings have been relatively stable, as shown in Exhibit 9 on page 46, since the mid-1980s, Mississippi commercial seafood landings have declined in volume and value. This decline is attributable primarily to plant closures in Mississippi's menhaden fishery (from approximately 250 million pounds a year in the 1980s to 120-150 million in the 1990s) and pet food fishery (e.g., croaker) and the lack of shoreside support for the production sector of the commercial seafood industry

MS Commercial Fisheries Landings



SOURCE: Mississippi State University Coastal Research and Extension Center.

(e.g., unloading docks, ice plants, fuel docks). (See the following section for a discussion of displacement of shoreside support by the casino industry.)

The top three edible marine species (from the standpoint of value of commercial landings) which DMR regulates are shrimp, oysters, and crabs. These three species represent approximately two-thirds of the overall value of the state's commercial seafood industry. The volume of Mississippi's commercial seafood landings is primarily driven by menhaden, while the value is primarily driven by shrimp.

As shown in Exhibit 10 on page 48, Mississippi's shrimp fishery has remained stable over the past fifty years, at an average annual harvest level of approximately 12 million pounds. As shown in Exhibit 11 on page 49, Mississippi's oyster industry is cyclical, but currently experiencing the best production since 1983. (As shown in Exhibit 4 on page 32, since 1993 the state has been consistently exceeding its management target of 100,000 sacks of oysters per year). As shown in Exhibit 12 on page 50, blue crabs have been in a state of decline in terms of pounds and value since the mid 1980s.

It is significant to note that an individual fisher's perception of the economic condition of the industry may be very different from the condition described by industrywide data. The profitability of individual fishers is related to the number of fishers in the business (i.e., the more fishers, the lower the profits available to the individual, on average). For example, shrimp fleets gulfwide are overcapitalized (i.e., too many boats for the available resource), and therefore inefficient.

Research Shows a Decline in the Commercial Harvesting and Processing Sectors of Mississippi's Seafood Industry as a Result of Displacement by the Casino Industry

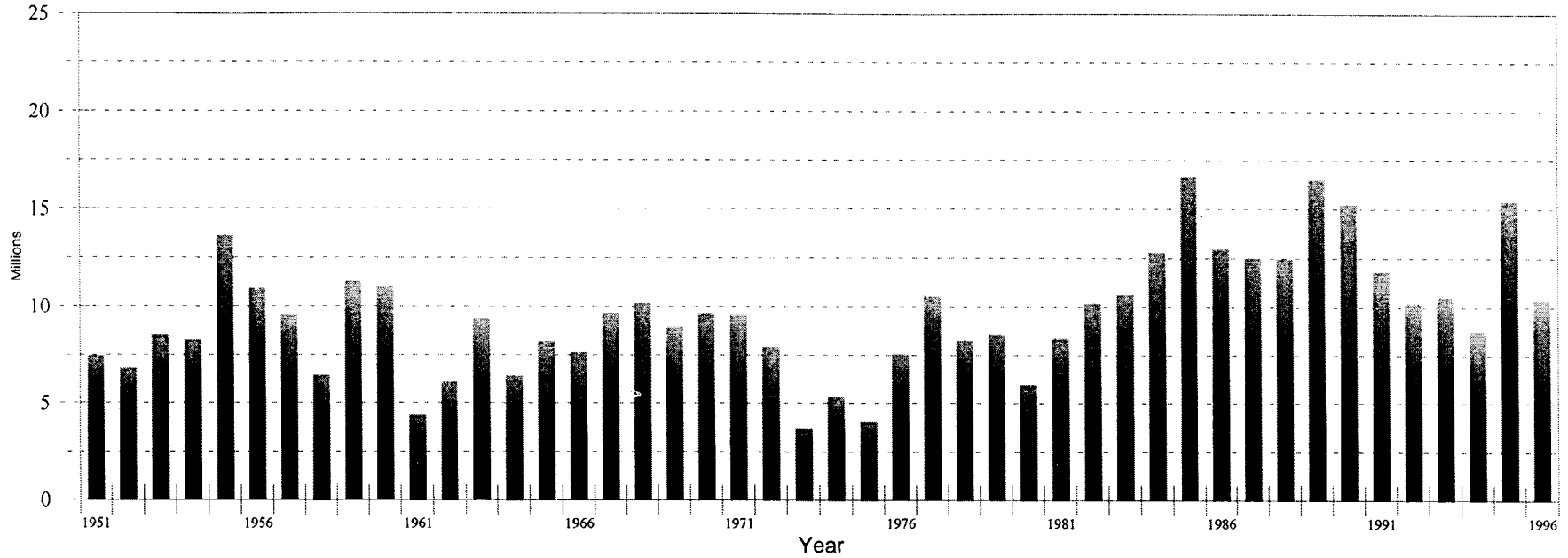
In March 1996, the Coastal Research and Extension Center of Mississippi State University published a report on the economic impact of dockside gaming on the harvesting and processing sectors of the commercial seafood industry in coastal Mississippi. The report evaluated the impact by comparing selected economic indicators of Mississippi's commercial harvesting and processing sectors for a period before (1988-1991) and during (1992-1995) the development of the dockside gaming industry in coastal Mississippi.

The report concluded that the economic expansion associated with dockside gaming was accompanied by:

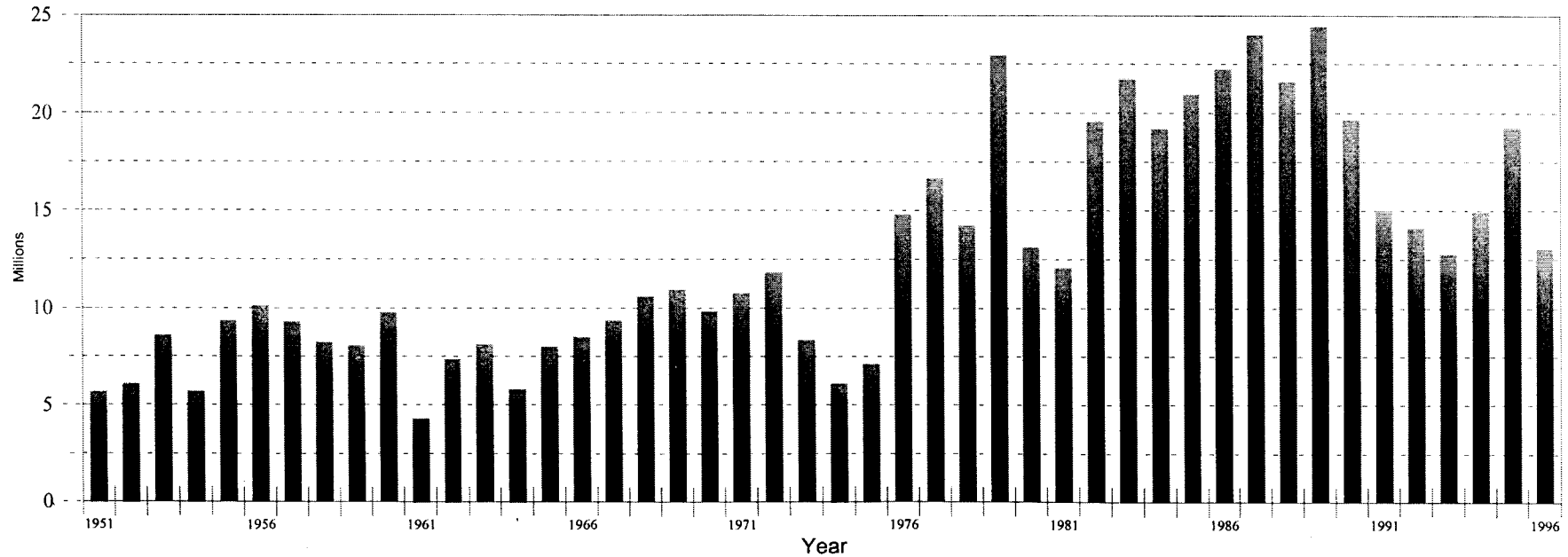
- a decline in the volume and value of the state's commercial seafood landings, resulting from the closure of some industry support services (e.g., seafood processing plants) due to displacement by the casino industry and an accompanying reduction in the size of Mississippi's commercial fishing fleet; and,

Exhibit 10 MS Commercial Shrimp Landings

POUNDS



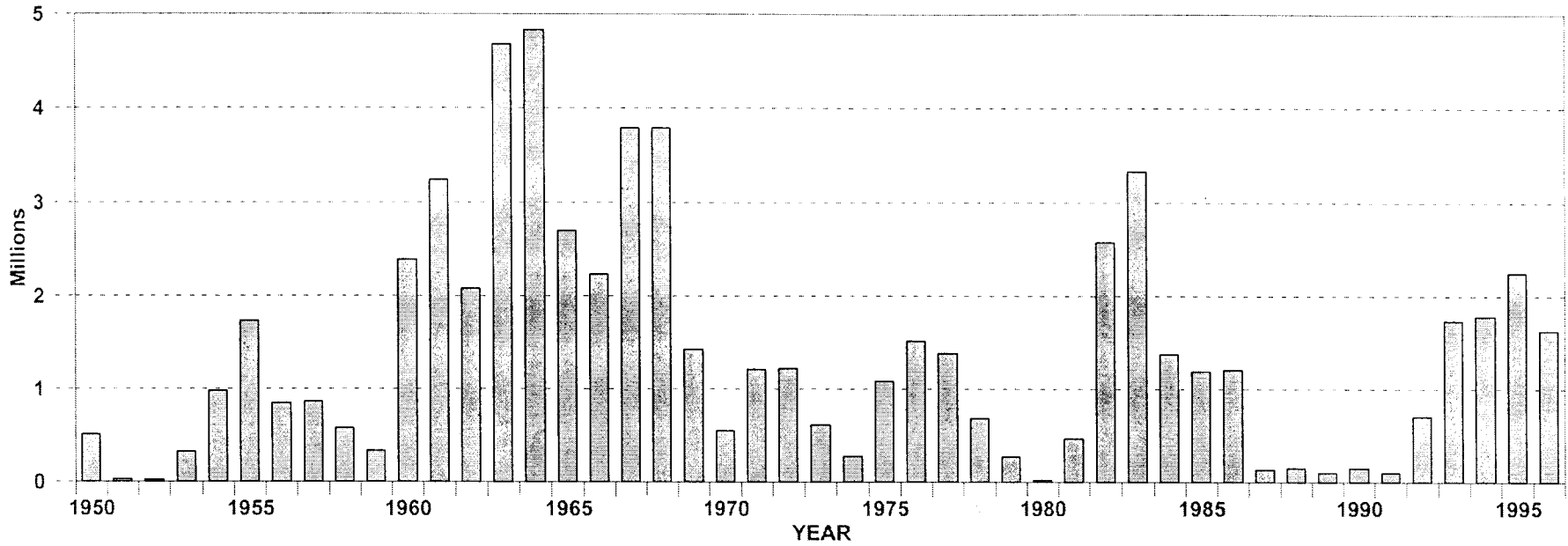
DOLLARS



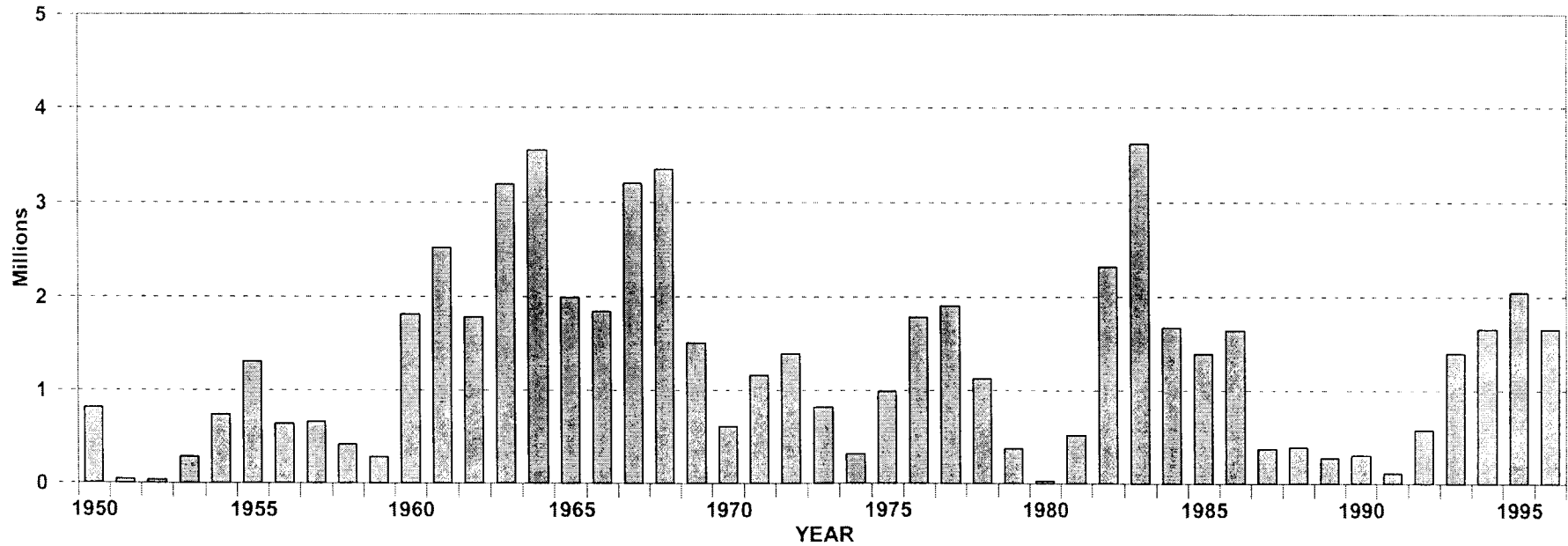
SOURCE: Mississippi State University Coastal Research and Extension Center.

MS COMMERCIAL OYSTER LANDINGS

POUNDS



VALUE

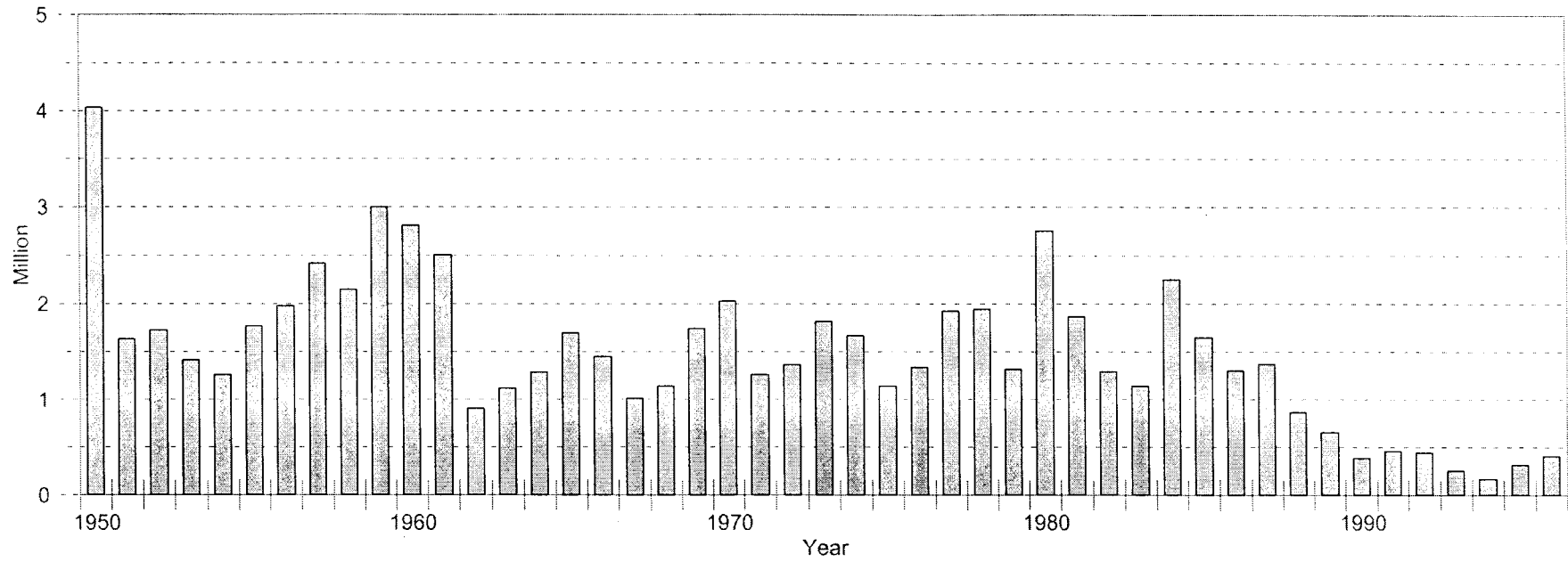


SOURCE: Mississippi State University Coastal Research and Extension Center.

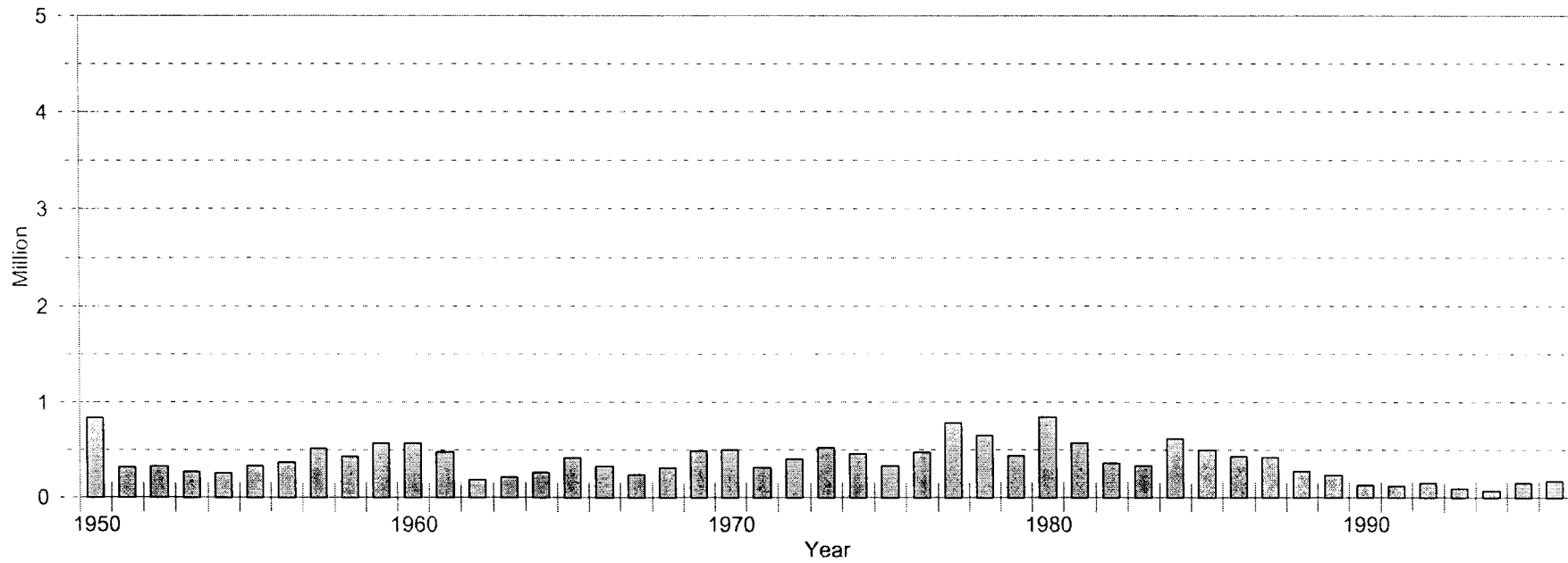
Exhibit 12

Mississippi Commercial Blue Crab Landings

Pounds



Dollars



SOURCE: Mississippi State University Coastal Research and Extension Center.

- substantial shrinkage in both the state's seafood processing capacity and employment, resulting in significant reductions in the volume and value of Mississippi seafood production.

As shown in Exhibit 13 on page 52, the volume and value of Mississippi commercial fisheries landings declined from approximately 288 million pounds with a dockside value of \$41 million in 1988-91 to approximately 184 million pounds with a dockside value of \$37 million in 1992-95. Using the same periods of comparison, as shown in Exhibit 13 on page 52, the number of larger commercial fishing vessels (in excess of five tons) declined from 707 to 650, and the number of smaller commercial fishing boats (less than five tons) declined from 1,206 to 971. Also, the number of commercial fishing licenses declined from 2,869 to 2,533. However, when only commercial foodfish are considered in the comparison (as opposed to all commercial fisheries, including species used for industrial purposes such as menhaden and bait), there were no significant variations in the volume and value landed during the two periods. Specifically, the volume and value of Mississippi commercial foodfish landings during 1988-91 were 2.9 million pounds (plus or minus .8 million) and \$1.8 million (plus or minus .5 million) versus during 1992-95, 2.1 million pounds (plus or minus .8 million) and \$1.9 million (plus or minus .8 million). Also over these two periods, there was a marked improvement in the markets for foodfish landed in Mississippi, with ex-vessel prices rising from 62.8 cents per pound to 87 cents per pound.

The volume and value of fishery products processed by commercial plants in Mississippi declined from approximately 210 million pounds, with an average nominal value of \$201 million in 1988-91, to 169 million pounds, with an average nominal value of \$162 million in 1992-95. Over this same comparison period, the number of seafood processing plants declined from approximately thirty-eight to thirty-two and employment in Mississippi's seafood processing industry declined from approximately 1,687 to 1,134. Over the period observed, four shrimp processing plants closed and three oyster processing plants closed. There was also a decline in the number of seafood wholesaling plants in Mississippi (thirty vs. twenty-four) and the number of workers employed in such plants (142 vs. 109). According to DMR staff, many of these businesses (including several crab processing plants) sold their waterfront access property to casino developers and relocated to neighboring states such as Alabama and Louisiana.

As the number of Mississippi seafood processing, wholesaling, and direct support service businesses has declined, the multiplier effects resulting from these businesses have declined as well. Over the period observed, the annual output of Mississippi's commercial seafood processing sector declined from \$113 million to \$72 million, the annual income generated by this sector declined from \$66 million to \$53 million, and the number of jobs provided by this sector declined from 7,300 to 5,000.

Exhibit 13

**Total Commercial Landings, Fishing Units and Fishers in Mississippi
Before and During Dockside Gaming, 1988-1995**

Item	Description (Units)	1988-1991	1992-1995
Volumes of landings *	million pounds per year	287.71 (34.68)	183.31 (30.88)
Nominal landing values**	million dollars per year	41.09 • (4.58)	36.88 • (7.65)
Deflated landings value ***	million dollars per year	32.51 • (5.24)	25.19 • (4.63)
Nominal ex-vessel price ***	cents per pound	14.3 (0.7)	20.51 (5.7)
Deflated ex-vessel price **	cents per pound	11.3 • (0.1)	14.0 • (3.5)
Number of fishing vessels**	> 5 tons	707 • (55)	650 • (203)
Number of fishing boats*	< 5 tons	1,206 (54)	971 (34)
Number of fishers**	persons	2,869 • (174)	2,533 • (649)

* Significantly different at 1%

** Not significant at 10%

*** Significantly different at 10%

• Means are not significantly different at 5%

() Numbers in parentheses are standard deviations

NOTE: Number of fishers refers to number of commercial fishing licenses sold in 1988-91 and 1992-1994.

SOURCE: Mississippi State University Coastal Research and Extension Center.

Effectiveness of the Department of Wildlife, Fisheries, and Parks' Marine Law Enforcement

PEER sought to determine the effectiveness of the Department of Wildlife, Fisheries, and Parks' Marine Law Enforcement unit in enforcing seafood laws and regulations promulgated by the Mississippi Legislature and Commission on Marine Resources.

Marine Enforcement Patrols

By having enforcement officers spend the majority of their work time patrolling Mississippi's marine waters and issuing citations to violators, DWFP's Marine Law Enforcement unit is carrying out its legislated purpose of enforcing laws and regulations for the protection, propagation, or conservation of saltwater aquatic life in the state of Mississippi.

In order for the state's marine resources to be available for recreational and commercial fishers of this and future generations, DWFP's marine enforcement officers must prevent long-term damage to the resources. By placing officers on patrol, the department provides a deterrent designed to prevent overfishing and other fishery related violations (e.g., harvesting from closed oyster reefs). Presently, each DWFP marine enforcement officer is responsible for patrolling 172 square miles of water, 130 square miles of land, and 11,156 acres of marsh land. DWFP managers determine where to assign the officers to patrol these areas based on the following three criteria:

- season (e.g., oyster, shrimping, mullet);
- day of the week (e.g., during summer weekends there is more recreational fishing and less commercial activity); and,
- time of day or night (e.g., there is less recreational fishing and only certain types of legal commercial fishing take place during night hours).

During the period FY 1995 to FY 1998, DWFP marine law enforcement officers spent an average of 54% of their work time performing land and water patrols. Based on time sheet data for this period, the marine law enforcement unit averaged 19,338 patrol hours each year, the equivalent of nine full-time equivalent marine law enforcement positions which performed only marine patrols. During the period FY 1995 to FY 1998, DWFP's marine law enforcement officers also spent 67% of their work time on seafood-related issues, with 1% of their work time being spent on wildlife-related matters and the remaining 31% of their work time being spent on administrative matters. (See Exhibit 14, page 54.)

Exhibit 14

**DWFP Marine Enforcement Officer Time
by Major Category by Fiscal Year: 1994-1998**

Category	FY95	FY96	FY97	FY98	Average
Administration	17%	26%	36%	47%	31%
Seafood	81%	72%	63%	52%	67%
Wildlife	3%	1%	2%	1%	1%

SOURCE: DWFP.

With regard to the issuance of citations, DWFP marine law enforcement officers issued 316 citations during FY 1997, as listed below.

<u>Type of License</u>	<u># of Licensees</u>	<u># of Citations Issued</u>	<u>% of Total Citations Issued</u>
Shrimp	1,974	52	16%
Crab	232	21	7%
Oyster	409	160	51%
Fish	<u>293</u>	<u>83</u>	<u>26%</u>
	2,908	316	100%

On average, each of DWFP's twenty-five marine law enforcement officers issued thirteen citations during the fiscal year. Each marine enforcement officer in Florida, Texas, and Alabama issued an average of twelve, twenty-eight, and forty-six citations, respectively, during FY 1997. (See Exhibit 15, page 55.)

Although oyster licensees represented only 14% of the total commercial licenses issued by the Department of Marine Resources during FY 1997, the licensees received 51% of all citations written by DWFP marine law enforcement officers during FY 1997. This issuance rate reflects DMR's and DWFP's focus on patrolling marine activities that pose potential health hazards. Because oysters are eaten raw more frequently than other varieties of commercial seafood (crab, shrimp, or fish) and because of the health dangers inherent with tainted oysters, fishers must carefully harvest and store oysters. Federal regulations require the Department of Marine Resources to inspect and monitor closely the harvesting

Exhibit 15				
Survey of other Gulf States: Marine Law Enforcement				
FY97 Data				
Category	Mississippi	Alabama	Texas	Florida
# Officers	25	15	492	354
Miles / Shoreline	90	55	365	8,400
Miles / Officer	4	4	1	24
# Commercial Licenses	3,735	2,356	13,959	40,069
Comm. Licenses / officer	149	157	28	113
# Recreational Licenses	68,434	51,161	506,126	294,160
Rec. Licenses / officer	2,737	3,411	1,029	831
# Citations	318	695	13,959	4,290
Citations / officer	13	46	28	12

Note: Not all marine units have the same responsibilities. Mississippi officers have the widest range of responsibilities of officers in this survey. Alabama and Florida have separate units for boating and wildlife functions. Also mileage numbers are probably rough approximations.

SOURCE: PEER Survey of Gulf Coast states.

and processing of oysters. The Commission on Marine Resources has promulgated specific ordinances and regulations to regulate the state's oyster industry. As evidenced by the high percentage of citations issued to oyster fishers, DFWP enforcement officers pay close attention to compliance with such ordinances and regulations.

Adequacy of Penalties

The state's penalties for violation of seafood laws appear adequate to deter violators. However, MISS. CODE ANN. Section 49-15-64.5 (3) allows commercial fishers to change the designated captain of a commercial fishing vessel and thus avoid receiving subsequent citations. This ability to change captains of a vessel limits the effectiveness of such penalties, because the financial and incarceration penalties imposed for violations increase with each subsequent offense.

As illustrated in Exhibit 16, page 57, the Mississippi Legislature has enacted financial and incarceration penalties for violations of the state's seafood laws. Based on information compiled by the Department of Marine Resources, the financial penalties imposed for most violations are higher than the average

value of daily catches and should be sufficient to deter potential violators. For example, the average value of a catch of oysters taken by dredging is estimated to be \$275. If such oysters were taken from leased lands or closed reefs, the violator could be fined \$2,000, have his equipment confiscated, and be sentenced to one year in jail.

Most of the financial and incarceration penalties imposed for violations of the state's seafood laws increase with each subsequent offense. However, MISS. CODE ANN. 49-15-64.5 limits the intended impact of penalties imposed on repeat violators. This section allows commercial fishers to change the designated "captain" of a vessel by phoning in the request to DMR's licensure office and then penciling in the change on the back of the license. The ability to change the "captain" of a vessel easily allows fishers who receive a citation to designate another crew member as "captain" so that no repeat offender penalties would apply to any future citations received by the vessel. The penalty for first and second offenses for general seafood violations is \$500-\$1,000 and the penalty for subsequent violations is \$2,000-\$4,000, with a possible license revocation and/or thirty-day jail term.

Compliance Among Recreational Fishers

While there are 2,737 licensed recreational fishers per DWFP marine law enforcement officer, surveys conducted by the Department of Marine Resources show that recreational fishers have a high degree of compliance with state marine laws and DMR ordinances.

During FY 1997, the Department of Marine Resources issued 68,434 licenses to recreational fishers. (See Appendix D, page 83.) On average, there were 2,737 licensed recreational fishers in Mississippi for each of DWFP's twenty-five marine law enforcement officers. During FY 1997, Florida, Texas, and Alabama had the following ratios of licensed recreational fishers per enforcement officer, 831:1, 1,029:1, and 3,411:1, respectively. (See Exhibit 14, page 54.)

Exhibit 16

Comparison of Fine Amounts to Average Catch Value

Type	Average Value of Catch	Offenses (fines)	Ratio of Catch / Fine
All Seafood (General)	n/a	First offense: \$100-\$500 First offense (if during a closed season): \$500-\$1000 Second offense: \$500-\$1000, plus seizure of nets and equipment Third and Subsequent offenses: \$2000-\$4000, revoke license, and / or 30 days in jail	
Oyster	\$275 (dredging)	1. Sale or possession of illegal oysters (\$100)	2.75 to 1
	\$140 (tonging)	2. Taking oysters from leased lands or closed reefs - 1st offense (Forfeit all equipment; \$2000 fine and / or 1 year in jail)	.13 to 1
		3. Taking oysters from leased lands or closed reefs - Subsequent offenses Forfeit all equipment incl. boat; \$5000 fine and / or 2 years in jail)	.05 to 1
		4. Commercial fishing by nonresident without license (\$5000)	.05 to 1
		5. Failure to deliver oyster shells or pay retention fee (\$100 / barrel)	2.75 to 1 / barrel
		6. Oystering at night (\$10,000 fine and / or one year in jail) [dredging is harvesting oysters by dragging a dredge on the reef and tonging is harvesting oysters by picking them up with tongs or poles]	.025 to 1
Shrimp	\$4,000	1. Commercial shrimping during closed season. (\$500-\$1000)	8 to 1
		2. Purchasing shrimp from live bait dealer for purposes other than covered in 49-15-64.4 (\$5000 first offense, \$10,000 second offense)	.05 to 1
RedFish	\$1,500	1. Commercial taking of redfish by use of a purse seine. (\$100 per fish) [A purse seine is a type of net.]	15 to 1 / fish
Other finfish	\$1,500	1. Use of gill or trammel net in unauthorized areas. (\$2000-\$4000)	.75 to 1

Notes: Average catch value determined by DMR survey of fishermen. This data is estimated average catch value and not profit. DMR staff felt fish numbers were a gross approximation.

SOURCE: DWFP.

Despite the high fisher-to-officer ratio, DMR surveys show that most recreational fishers in Mississippi comply with fisheries laws and ordinances. Each year the Department of Marine Resources receives a grant from the United States Fish and Wildlife Services to conduct “creel” or dockside surveys of recreational fishers in Mississippi. DMR selects the number of fishers and marinas or boat ramps at which to conduct interviews using a random number weighted based on the volume of use at each marina site. (The interviews are conducted on a voluntary basis with the fishers having the right to refuse to be interviewed or have their catch inspected; thus, potential violators could refuse to be interviewed.) During each interview, DMR staff obtains descriptive information from each fisher, such as fishing location, type, and number of fish caught. Following the interview, DMR staff measures up to ten fish of each species caught by the fisher on that particular trip. DMR staff then compares the interview and survey data to the size and bag limits for each species of fish caught by the fishers. Based on this comparison, DMR staff computes a violation rate for the recreational fishers.

For the period 1994-1998, DMR’s survey results showed an average 95.85% of recreational boat trip fishers and 99.10% of recreational pier fishers interviewed and inspected by DMR had catches that complied with state marine laws and DMR ordinance limits. These high compliance rates indicate that recreational fishers tend to adhere to state marine laws and DMR ordinance limits, despite the likelihood that they may not be stopped by a DWFP marine enforcement officer given the high ratio of fishers to officers.

Development of Marine Ordinances and Regulations

When developing ordinances and regulations to protect and allocate the state’s marine resources, the Department of Marine Resources solicits and receives input from DWFP’s Marine Law Enforcement unit.

The Commission on Marine Resources passes ordinances for the purposes of protecting and allocating the state’s marine resources. Proposed ordinances originate with the Commission on Marine Resources members or with the department staff. Ordinances are developed as follows.

- A commissioner suggests a new ordinance at a commission meeting. A motion is made and a vote is taken on whether to consider the new ordinance.

or

DMR staff present a proposed ordinance at a commission meeting. The commission hears a motion and votes on whether to consider the proposed ordinance.

- Once the ordinance is formally proposed, the staff carries out the “notice of intent” by sending a copy of the proposed ordinance to the Secretary of State’s office and by holding a public meeting. The staff advertises the

date and place of the public meeting to encourage interested members of the public to comment. Any oral or written comments from the public meeting are recorded and presented to the Commission on Marine Resources for its consideration.

- Sixty days after the day the proposed ordinance is voted on by the commission, it goes into effect.

DMR submits a copy of the proposed ordinance to DWFP's Marine Law Enforcement unit for comments on the enforceability of the ordinance. DMR also sends DWFP a notice of the proposed public meeting on the ordinance and a representative from the Marine Law Enforcement unit usually attends these meetings. A review of the commission's FY 1998 minutes shows that DWFP marine enforcement officers routinely provide input to the commission relative to the development of ordinances and the commission routinely incorporates such comments into the final ordinances.

Sale of Confiscated Seafood

DWFP's Marine Law Enforcement unit does not provide receipts to boatowners or fishers from whom seafood has been seized.

MISS. CODE ANN. 49-15-21 (2) provides that DWFP marine enforcement officers may “. . .seize at any time aquatic life caught, taken or transported in a manner contrary to the laws of this state.” Once seafood has been seized, DWFP obtains bids and sells the seafood to the highest bidder. Funds from the sale of confiscated seafood are deposited in the Department of Marine Resources' Seafood Fund. If the fisher is acquitted, the boat owner or fisher may present a copy of the court's decision to DMR and receive a check for the amount of sale of confiscated seafood. If the court finds the fisher guilty, the funds remain in the Seafood Fund and can be used by DMR for fisheries management programs.

DWFP's current seizure procedures do not require enforcement officers to provide the boat owner or fishers with a written receipt documenting the type and amount of confiscated seafood. Also, the department's bid process for the sale of confiscated seafood is informal, with officers obtaining price quotes from only a few processors and no requirement that the officers retain documentation of such prices. As a result, the boat owner or fisher has no proof as to the amount of seafood confiscated and the amount of refund due from DMR should the court order an acquittal.

Detection of Unpermitted Activities in Wetlands Areas

DWFP's Marine Law Enforcement unit does not assist the Department of Marine Resources in the detection of unpermitted activities in wetlands areas, as required by the memorandum of understanding between the departments.

MISS. CODE ANN. § 49-27-9 provides authority to the Commission on Marine Resources for the permitting of regulated activities, such as construction or dredging, in Mississippi's coastal wetlands. MISS. CODE ANN. § 49-27-51 allows the Commission on Marine Resources to request the Attorney General, district attorney, or county attorney to initiate civil or criminal actions against individuals who violate the statutory permitting requirements.

To determine compliance with the state's wetlands permitting laws, MISS. CODE ANN. § 49-27-63 provides that the Commission on Marine Resources shall, from time to time, inspect the coastal wetlands to determine whether permitting violations have been or are being committed. As part of a December 22, 1997, memorandum of understanding between the Commission on Marine Resources and DWFP, marine law enforcement officers are required to “. . .provide law enforcement support and oversight of Coastal Wetlands development compliance with wetlands permitting laws.” Under the memorandum, DWFP's marine law enforcement officers are to act as the commission's agents in inspecting coastal wetlands to detect noncompliance with permitting requirements.

Since the signing of the memorandum of understanding between the commission and DWFP, marine law enforcement officers have not performed inspections of coastal wetlands and reported permitting law violators to the commission. DWFP managers contend that the marine law enforcement officers have other priorities, such as water patrols and marine enforcement, and do not have the personnel to conduct the wetlands inspections as required by the memorandum of understanding. As a result, the Commission on Marine Resources has relied on citizen complaints and informal inspections conducted by DMR staff to notify them of permitting law violators, who are then prosecuted at the commission's request if the violation cannot be resolved administratively by the commission.

Recommendations

Marine Resources Management

1. The Department of Marine Resources should require the collection of relevant fishery-dependent data (e.g., age structure, sex ratios, and fishing effort) necessary to develop stock assessment models for major marine fisheries in Mississippi. Currently this data is only available for one of the state's thirteen major marine fisheries, the menhaden fishery.
2. The Department of Marine Resources should consider establishing a task force for each major fishery to identify and discuss emerging issues and problems relative to the fishery. Each task force should include at least one representative from: fisheries management (DMR), fisheries biological research, marine law enforcement, the recreational fishing sector (with the exception of the menhaden fishery, which has no recreational component), the commercial fishing sector (both harvesting and processing), and any interacting fishery (e.g., the shrimp fishery is an interacting fishery with the crab fishery).
3. The Comprehensive Resource Management Plan currently being developed for the state's coastal zone, as well as Mississippi's Coastal Zone Program, must take into consideration the warning of marine biologists that the coast is at a critical point in terms of the balance between development and protection of the environment which sustains its marine resources. DMR, in conjunction with GCRL, must establish and monitor on an ongoing basis indicators of the quantity and quality of the state's coastal wetlands. As part of this effort, DMR should consider documenting coastal wetlands loss from a GIS perspective.
4. The Commission on Marine Resources should require DMR staff to provide adequate data and analysis necessary to make informed marine resource policy decisions before making such decisions.

DMR staff should consider developing a formal decisionmaking process to manage each major fishery which the department regulates. For example, with respect to the oyster fishery and the decision of whether to extend the season, critical variables to consider formally could include volume of oysters harvested on each reef, estimation of size and volume of remaining oysters on each reef, estimated water temperatures during the proposed extension period and how these temperatures compare to the level which is considered safe for oyster harvesting (at higher temperatures, the prevalence of vibrio increases), estimated market demand, and, based on historical data showing the average harvest per day at each reef, an estimate of the number of days that the reef should remain open in order to reduce the resource to a minimum sustainable level.

There is already a precedent for this type of formal decisionmaking process for closing oyster reefs and opening the state's shrimp season. With respect to oyster reefs, DMR's oyster management plan requires staff to close certain areas whenever the Pearl River reaches ten feet at the Louisiana gauge, and additional areas when the river reaches twelve feet. Similarly, the plan requires DMR staff to close certain reef areas when the area receives an inch or two of rain. The opening of the shrimp season is driven by biological data according to a management plan. Specifically, in order to open the season, sampling must show that the shrimp has reached a size of 68 count per pound. Biologists sample the size and growth rate of the juvenile shrimp and project when the majority of the population will likely reach the requisite size in harvestable waters. In the case of opening the shrimp season, the commission gives DMR's Executive Director authority to open the season as soon as the size is appropriate.

5. DMR should develop a performance measurement and reporting system which includes measures of its effectiveness in meeting its primary legislated objectives of: protecting, conserving, and propagating the state's marine resources; protecting the coastal wetlands ecosystem on which the resources depend; and revitalizing the state's seafood industry. The department should develop and report clear and meaningful output and outcome measures for each of these three major objectives. Appendix A, page 65, contains suggestions for fisheries-related management performance measures. It is important for the department to develop a performance measurement and reporting system as quickly as possible, in order to provide itself and the Legislature with a historical database which can better inform marine resource management-related policy decisions.

Marine Law Enforcement

6. DWFP's Marine Law Enforcement unit should change its procedures for the handling of seized seafood. Enforcement officers should be required to issue a receipt to the fishers from whom any seafood is taken. The receipt should show the time, date, and place where the seizure took place and both parties should be provided with a copy. Also, DWFP should develop a standard form for selling seized seafood and record the bids of each processor on that form. DWFP should keep a copy of the form with the corresponding receipt issued to the captain of the vessel the seafood was seized from, along with a copy of the receipt from the sale of the seafood to the processor with the highest bid.
7. DWFP's law enforcement officers should record each "stop" of a fisher or boater, even in cases in which the "stop" did not result in a citation. This data will allow for better evaluation of the state's enforcement effort and effectiveness by DWFP management and outside evaluators.
8. DMR and DWFP should resolve the question of whether enforcement officers from DWFP will enforce wetlands laws for DMR. Marine enforcement officers should attend a training class on the wetlands laws of Mississippi,

including training on what potential violations might look like. Then, while Marine Law Enforcement unit officers are on patrol for other matters, if they observe a potential violation they would note its location and report it to DMR. Beyond the time spent in training this would not be a large additional burden on the Marine Law Enforcement unit. However, any additional time spent on wetlands permitting issues beyond routine observation during normal marine law enforcement patrols would take marine law enforcement officers away from other critical areas. DMR receives federal funding for the Coastal Zone Program and could provide a small amount to DWFP in exchange for having Marine Law Enforcement unit officers add this task to the tasks for which they are currently responsible.

Proposed Legislation

9. This report contains draft legislation that would make technical changes in the state's seafood regulatory laws. Specifically, this bill would:
 - require revocation of a boat's license when its captain(s) violates provisions of the law three times or more in a three-year period;
 - increase the range of penalties for commercial shrimping out of season to not less than \$1,000 nor more than \$2,000; and,
 - allow for the private sale of oyster shells under certain circumstances.

Appendix E, page 84, contains this proposed legislation.

Appendix A

Recommendation for Improvement of DMR Performance Measurement and Reporting

Most of the observations and recommendations which follow are taken from a June 1996 performance audit of the Australian Fisheries Management Authority undertaken by the Australian National Audit Office. Many of the observations and recommendations contained in this audit report readily transfer to DMR because both agencies serve the same basic function with respect to marine fisheries management; i.e., to ensure the sustainable use of fishery resources.

One objective of the National Audit Office's audit was to determine whether the Australian Fisheries Management Authority was gathering and reporting to the Parliament appropriate accountability information on its fisheries management performance. The audit report concluded that the performance data which the Authority is reporting to Parliament is, in the main, "work flow-related and does not provide an indication of level of achievement of legislative objectives," and that "there is insufficient information on fishing stock levels, available fishing effort and catch statistics to enable a realistic assessment of the Authority's efficiency and effectiveness."

The Australian National Audit Office suggested that the Australian Fisheries Management Authority develop a standard format that could be used to report a performance assessment for each major fishery, including:

- the Authority's management strategies for achievement of the ecologically sustainable development objective. These strategies would be based on the best scientific and industrial knowledge available on each fishery, including: condition of the fishery relative to its biological reference point (a fishery harvest level which is tied to the population characteristics of the stock, based on an understanding of the biological dynamics of a stock and its response to fishing mortality), catch per unit of effort, level of bycatch, and environmental issues affecting the fishery. Another possible measure of the sustainability of a given fishery is the spawning potential ratio. The spawning potential ratio is the standard for measuring whether a fish stock is in an overfished state or not. Generally, if the spawning potential ratio is less than 20 to 30 percent, the stock is considered overfished.
- annual performance standards developed as a measure of the effectiveness of the strategies;
- actual performance at the end of the financial year; and,
- mitigating factors affecting performance, including matters not under the Authority's control.

The Australian National Audit Office also suggested that the summary comment on:

- the level of confidence in the performance standards, e.g., with respect to biological reference points, whether the data available is reliable or accurate;
- the level of confidence in the data used to measure performance; e.g., catch statistics
- whether input controls have been successful in ensuring that catches are kept at a sustainable level; and,
- environmental impact assessments.

To assist in this effort, the Australian Fisheries Management Authority has established a Stock Assessment Group for each major fishery, whose responsibility is to produce reports on the status of the species in the fishery based on the best available scientific and industry knowledge.

Pages 67 through 70 of this Appendix present examples of how this information could be publicly reported for each major fishery. At the time of the Australian National Audit Office's review, the Australian Fisheries Management Authority was working on a three year rolling program of assessments of Commonwealth fisheries providing integrated information on, and assessments against, biological, economic, social and management indicators for each Commonwealth fishery annually.

In addition to the conservation objective of marine fisheries management which the performance measures discussed above address, state laws establishing the Department of Marine Resources contain several other important objectives related to marine resource management (refer to pages 13 through 15, which contain discussions of the primary legislated objectives of DMR as well as related legislated standards for marine resource management). For each of these legislated objectives, DMR should develop performance measures which indicate how efficiently and effectively the department is achieving targeted outcomes. These measures should be tied to each of the specific actions which the department undertakes to achieve each objective, the resources committed to each activity, and the success of each action in achieving targeted outcomes within a given time frame.

Northern prawn fishery

Summary

- Stock assessment reports indicate that stocks not currently adequately protected due to improvements in technology which the input controls have not kept pace with;
- the status of stocks is reasonably well known due to frequent stock assessments, however, no environmental impact assessment has been conducted;
- the industry is not as efficient as it could be due to the use of input controls. Although the fishery uses 'units of fishing capacity' (a function of hull and engine capacity) to determine individual fishing rights these have not yet become 'tradable';
- no environmental impact assessment has been carried out; however, research is underway to minimise by-catch dumping and studies of the possible nursery areas have occurred.

ESD objective:

Performance standard and level of achievement as at 30 June 1995

- Maintain the status quo. The status quo is regarded as a catch of approximately 8 000 tonnes sustainable at the current level of effort. Over the previous period the catch of Banana Prawns has increased significantly due to better environmental conditions and the catch of tiger prawns has also improved, giving a total catch of approximately 10000 tonnes. The level of effort has not, however increased by the same proportion. There is no TAC
- protection of nursery areas. Permanent closures occurred, i.e. spawning period by seasonal closure.

AFMA's management strategy

- Maintain effort at a sustainable level thought to be approximately 8000 tonnes annually.

Factors affecting performance not in AFMA's control, mitigating circumstances and other factors

- Effort creep, due to improvements in the fishing operations, is considered to be a factor in this fishery. The last stock assessment flagged the need to consider further restrictions on effort.
- External factors in terms of habitat: large mining developments which have the potential to degrade habitat, concern in regard to barge loads of ore. Strategy - assess the environmental impact and make necessary representations.
- Large amount of by-catch: In the NPF prawns make up only around 7% of the weight of the catch. In 1993 the prawn catch was approximately 7800 tonnes; therefore approximately 100 000 tonnes of by-catch was thrown back (mostly dead). Not only is this inefficient for the commercial fishers but there is concern that the discarded by-catch is increasing the population of animals that prey on prawns during the closed season. Strategy - research methods for reducing by-catch.

Maximising economic efficiency objective:

Performance standard and level of achievement as at 30 June 1995

- Maintain effort at sustainable level on catch per unit of effort. Both the level of effort and the catch per unit of effort has increased, but the catch per unit of effort has increased by a greater proportion.

AFMA's management strategy

- Increase economic viability.

Factors affecting performance not in AFMA's control, mitigating circumstances and other factors

- Continual creep in technical efficiency has led to increased effort.
- The compulsory reduction in 1993 increased the economic viability of those operators who

remain in the fishery.

- There are now 132 entitlements as compared with 292 ten years ago.
- The MAC is looking at input controls on gear rather than current A unit system, as this may allow for more flexible, across-the-board adjustment of fishing effort.
- MAC is looking strategically at where it should be in five years.

Accountability objective:

Summary

- Regular meetings of the MAC and an Annual Conference open to all entitlement holders where government agencies report on research and management, catch and effort statistics. Workshop held most years and one is planned for 1996.

Southern shark fishery

Summary

- The fishery is administratively inefficient due to the current range of different jurisdictions involved. The renegotiation of the OCS arrangements for this fishery is addressing this issue;
- the stocks are not adequately protected due to the lack of control over latent effort and technology creep;
- there is a high probability that school shark is being overfished;
- the economic viability of the gummy shark fishery appears to be positive;
- the industry is inefficient due to the use of input controls;
- no environmental impact assessment has been carried out.

ESD objective:

Performance Standard and level of achievement as at 30 June 1995

- Gummy Shark: status quo; Stock assessment says notional TAC should be 1500 tonnes. This was achieved in Bass Strait and S.A.
- School shark: keep catches stable - status quo. 1991 Stock assessment says notional TAC should be 550 tonnes. This was not achieved.

AFMA's management strategy

- Input controls: gear limits; limited entry, size restrictions, seasonal closures.
- Restructure: implement measures necessary to reduce the catch of school shark (when stock assessment is completed); implement transferability and let operators adjust to efficient levels.
- Develop Joint Authority
- Introduce market forces (transferrability for all sectors).

Factors affecting performance not in AFMA's control, mitigating circumstances and other factors

Impediments:

- information is proving that the 1991 school shark stock assessment had made invalid assumptions. The 1996 school shark assessment is now available;
- OCS arrangements have not been finalised due to the need to amend Commonwealth legislation; and
- leads to duplication and inefficiencies in the same species being managed by several different agencies.

Maximising economic efficiency objective:

Performance standard and level of achievement as at 30 June 1995

- Reduce total effort; reduce number of active participants and eliminate latent effort. None of these was achieved. However, it is worth noting that the level of effort and the number of participants has been reduced by more than 45% over the years since management arrangements were implemented.

AFMA's management strategy

- The Federal Government has offered a \$2 million grant to restructure the industry, i.e. buy operators out. However, this grant is conditional and the Commonwealth Government has not yet approved expenditure.

Factors affecting performance not in AFMA's control, mitigating circumstances and other factors

Impediments: entitlements (both net and hook) are not transferable.

Accountability objective:

Summary

Meetings held with various State agencies and industry groups.

Annual public meeting of MAC and bi-annual public conferences are held.

The annual fisheries assessment report was published.

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1 this lease and make sure that it meets all the
2 requirements of Attachment E and of the state law, and
3 then we would have to advertise it in the paper for two
4 weeks, advertise for bids, and then open up the bids,
5 bring this back to the Commission, and he would have to
6 apply for a general wetlands permit for his lease
7 application. And there's a lot of other requirements. I
8 think if you could look at Attachment E you can see all
9 the things that it has to go through. Right now all I'm
10 asking is for authorization to proceed with that.
11 MR. LEE: I so move, Mr. Chairman.
12 MR. ROSS: I'd like to make a motion to have
13 that granted.
14 MR. MITCHELL: Motion made, and seconded by Mr.
15 Lee; right? Did you make a motion? Mr. Lee made the
16 motion.
17 MR. ROSS: Second.
18 MR. MITCHELL: Mr. Eley seconded the motion.
19 I'm sorry. Those in favor signify by saying aye.
20 Opposed. Motion carried unanimously.
21 MR. PERRET: Thank you, Mr. Chairman. That
22 concludes the items that we had on the agenda. Now we
23 have several things added. Whichever way you want to
24 proceed, of course.
25 MR. MITCHELL: Let's take a five-minute break,

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1 insofar as resource. They've got a half a million acres
2 of public ground just on one side of the river. We have
3 maybe eighteen, twenty thousand acres. There's very good
4 reasons for limits that we have to have that this other
5 state doesn't have to have. And one of the reasons --
6 I've had a number of calls -- some people want to
7 increase the sack limit is to get the limit higher so if
8 that state opens next year that our guys that fish over
9 there will have to have a higher limit.
10 Again, out of a possible 156 days of fishing,
11 the approved areas where most of the oyster activity was
12 taking place was open for 76 days. We have got that
13 closed now, and I don't intend to open it even if all the
14 conditional areas would have to be closed because that
15 area was hit fairly substantially because that's the only
16 area we had, where the vessels and boats are fishing
17 today, and it's the conditional opened areas that have
18 been open out of a possible 156 days, as few as 29 days
19 to as many as 75 in one of the areas.
20 I have probably received 20 phone calls on this
21 issue. We all received one letter of support for
22 extending the season. Of the 20 or so calls I have
23 taken, I had one individual that was against any type of
24 extension. Our thought was that we'll take this issue up
25 again at the next Commission meeting, and depending on

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1 something like this? And I've listened to both arguments
2 about extending the season out. Is there something you
3 can tell me that might help me from another perspective?
4 MR. PERRET: Traditionally, historically, the
5 best market is your Thanksgiving-Christmas market.
6 Unfortunately, we had a lot of our areas closed during
7 that time. One of the things to our advantage now is we
8 in the Gulf have kind of got a corner on the market right
9 now. Unfortunately, again, historically, traditionally,
10 it's a soft market this time of year. The price
11 currently is not what it was during Thanksgiving and
12 Christmas.
13 But some of the other areas are closed. So our
14 people are having an opportunity to harvest these
15 oysters. And they're being put on the market, again, at
16 a lower price than they would normally be getting in the
17 fall. But I've been here two oyster seasons, and
18 unfortunately environmental conditions have been such
19 that we haven't been able to be open for the most part
20 during that particular time of the year.
21 MR. GUSA: If I could make one comment, Philip,
22 just to bring you up to speed. I believe it was two
23 months ago or so we initiated the double days where it
24 gave the Executive Director the opportunity at his
25 discretion to initiate double days which took some of the

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1 then I'll be ready.
2 (A break was taken.)
3 MR. MITCHELL: Mr. Perret. Back where we were.
4 MR. PERRET: Thank you very much, Mr. Chairman.
5 Again, there were three items added, as well as comments
6 about the oyster season. And how would you gentlemen
7 like to proceed?
8 DR. MARTINOLICH: Alphabetically,
9 chronologically. Just proceed.
10 5. Comments on the Oyster Season
11 MR. PERRET: Okay. Well, comments on the
12 oyster season, if you will. Well, let me make comments
13 for the Department technical staff, if I may. The reason
14 that was not a formal agenda item was the staff feels
15 that we should allow the season to continue. We say that
16 for a number of reasons. Biology is one factor, and
17 again I'll say there are a lot of reasons why there's
18 certain limits on these fishermen.
19 There's speculation that another state may do
20 something insofar as allowing Mississippi residents that
21 fish that state to have that sack limit. We can't, you
22 know, it's difficult to try and plan your management
23 based on what another entity or government may or may not
24 do.
25 Secondly, we can't compete with that state

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1 what the factors are between now and then, give you a
2 recommendation on whether it should go any longer or
3 should be closed at about that time.
4 Now, you've heard other people's opinions
5 today, and, of course, that's why you gentlemen are
6 sitting up there to make those decisions.
7 MR. GUSA: Corky, would you comment on the
8 overall harvest, I mean, in terms of the volume?
9 MR. PERRET: Approximately 290,000 sacks were
10 taken as of last week. And last year total harvest was
11 390,000 or so sacks. Last year was a very good year.
12 Very good year in spite of the red tide, in spite of the
13 long closure we have had this year, we've having a good
14 year because we do have a resource out there.
15 MR. HORN: Corky, just for some background
16 information for myself, not having been that close to it,
17 talk about the raising the sack limit because of the
18 other states issue, which I don't agree with anything
19 because someone might do something, but we have a 20-sack
20 limit now.
21 MR. PERRET: 25.
22 MR. HORN: And so what would dictate -- Is
23 there some point in time in the season that you can
24 determine whether or not you might should raise the sack
25 limit before the end of the season as opposed to doing

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1 pressure about increasing the quotas up so that we didn't
2 get such an influx of out-of-state fishermen. And it was
3 just his random discretion, and that was the way to
4 increase the harvest without actually increasing the sack
5 limit.
6 MR. PERRET: That's a good point. I forgot
7 about the double days. We still have that option.
8 However, I have not recommended -- we haven't really
9 exercised it recently, and again, it's a soft market
10 condition this time of year.
11 MR. LEE: Mr. Chairman.
12 MR. ROSS: I'd like to make a comment. The
13 reason why the oyster sack limit was set down was to keep
14 the oyster price per sack up. The other reason was every
15 time that the oyster sack limit was increased or a double
16 day, two or three days a fisherman worked, three or four
17 days no one worked. The market was saturated by double
18 day and that's what happened just recently. Now last
19 year it was just the opposite. You know, you could do
20 it, the market took care of it. But this year it could
21 not. There was one company that had 800 sacks in a
22 trailer they couldn't use.
23 MR. LEE: Mr. Chairman, I'd like to ask Mr.
24 Perret a question if I might, please. Is it my
25 understanding that you intend to do nothing today? I was

1 prepared to make a motion we extend it through May giving
2 the agency authorization to close it down if the water
3 temperatures reached such that they felt like it was --
4 they might need to close it down, which doesn't look like
5 it's going to happen, at least through the month of May,
6 because water temperature is much cooler today than it
7 was a year ago today. So, I just didn't know if you need
8 a motion to extend it or allow it to remain until the
9 next meeting, or what do we need?

10 MR. PERRET: Well, if I had my druthers, I
11 wouldn't put a date on it now. I would even consider
12 going into June if the rain started and we have to shut
13 things down, if we knew what the weather was going to do.
14 But if we make a motion at this time with a specific date
15 and it starts raining and we can't fish for two or three
16 weeks, then we have to shut down on that date when
17 possibly we may want to consider some additional.

18 MR. LEE: Do you want a motion giving the
19 Executive Director authorization to close at his
20 discretion whenever y'all deem necessary but to leave it
21 open until such time? Because normally it closes down at
22 the end of the month, so we need to do something. We
23 need to either extend it and give y'all the authorization
24 to close it when you feel like it's necessary or either
25 we need to make a decision. What type of motion do you

1 need?

2 MR. WOODS: I think what we've done in the past
3 few years, we've extended it certainly through the month
4 of May which would take you beyond the next Commission
5 meeting if we do need to extend it into June. As Corky
6 says, if the water temperatures are down and the
7 conditions right, and depending on a lot of
8 circumstances, it may go into the first week of June,
9 also. But as a minimum, I think it would be appropriate
10 where we don't get into a situation of say closing down
11 at the end of April to give the Department the
12 authorization to continue at least through May, and if
13 you want to revisit it in the May meeting to extend it
14 into June, you can certainly do so at that time.

15 MR. LEE: Mr. Chairman, I make a motion at this
16 time that we extend the season through the month of May
17 with the understanding that a study by the agency may
18 extend it beyond that date if the water temperatures are
19 proper.

20 MR. MITCHELL: You've heard the motion. Is
21 there a second?

22 MR. ROSS: Second.

23 MR. MITCHELL: Seconded by Mr. Eley.

24 DR. ASPER: Mr. Chairman, I have a couple
25 questions probably similar to Mikel. I'm a little

1 confused because it seems every year when we get to this
2 point staff is usually saying we don't want to extend it.
3 And they list all of these reasons, such as vibrio.
4 They say, well, you know, we're getting into warmer water
5 temperatures, and now we've even had a vibrio case in
6 April. I'm sure it was not a Mississippi oyster, but
7 we're getting vibrio in cool waters like this; it's even
8 more of a concern. Then they talk about staff problems.
9 We don't have the staff to put at the checkout stations.
10 We need to be working on the reefs and so on. And we
11 talk about enforcement because we need to have
12 Enforcement there to handle all of this. We've got all
13 of the increase in boating coming up, recreational
14 fishing. Then we talk about the fact that the oysters
15 are getting smaller and smaller out there; that's why the
16 dredgers are on the tonging reefs. We're going to have
17 small oysters in the fall. We want to have good oysters
18 in the fall. We need to close it now so they can grow.
19 What happened to all of that rationale? Why did it apply
20 last year and not this year?

21 MR. PERRET: We recommended an extension last
22 year. We recommended into June and the Commission made a
23 motion and actually extended it, but they didn't go with
24 our recommendation to the mid-June date, which, of
25 course, is your prerogative.

1 Yes, insofar as the staff and law enforcement,
2 they probably wish it would close tomorrow. It's a lot
3 more work for us, it certainly is. But we feel there is
4 a resource out there that's available for harvest, and we
5 feel it should be harvested. We don't know what Mother
6 Nature is going to do. If we have a hurricane that
7 comes, unfortunately it's going to create all sorts of
8 damages, not only to life and property, but that oyster
9 reef may be covered with silt and so on. We've got a
10 resource today. Obviously, there's a market for it or
11 there wouldn't have been a hundred or whatever number of
12 boats out there yesterday. I wish the price were a lot
13 higher for the oysters, but they're not.

14 Vibrio normally is in the warmer waters, you're
15 right. Vibrio is a bacterium that occurs naturally in
16 warmer water. It has nothing to do with pollution or
17 anything like that. And we did have an unfortunate
18 incident of a case, but it's been there. Hopefully,
19 certainly, we don't know what may or may not happen with
20 that. Again, it's a natural occurring bacterium.
21 Someone can go swimming with a cut and get infected with
22 vibrio. There's a lot of possibilities on that.

23 MR. GUSA: Corky, we've heard a lot of
24 discussion about the status of the resource. And we've
25 heard from some people to the effect that they think the

1 resource has gotten to the point where it's in need of a
2 reasonable closure time. Why do you believe there's a
3 substantial resource out there, what are you basing that
4 upon?

5 MR. PERRET: The area that I feel where it was
6 hit pretty hard was that approved area which is the only
7 area we were able to open. We had a number of boats
8 fishing out there. We were able to open the conditional
9 area. We did close it. Unfortunately, we had some more
10 rain and we had to close conditional and open approved
11 again. That's simply all we had. And that's the area
12 that I feel and the staff feels was worked over pretty
13 good. These areas that are now open, like I said, we
14 feel there's a resource there and some of them have only
15 been open as few as 20 plus days. One of them has been
16 70 something days out of a possible 156 days.

17 MR. GUSA: This is a speculative question, but
18 why would the dredgers be coming upon the tonging reef if
19 there was such a substantial resource out there to be
20 harvested?

21 MR. PERRET: Well, I guess I could say they
22 don't quite know where they are, would be the best way to
23 answer that.

24 MR. ROSS: I'd like to make a comment, if you
25 will. Mr. Gusa wants to know why they do it. I'll tell

1 you why. I'm out there every day. It takes them about
2 an hour to get 25 sacks. If they go out a little bit
3 further it takes them two and a half, three hours. At
4 one time, the Commissioners asked me if you could keep
5 the fishermen off the reef with opening the tonging
6 grounds. There ain't no way in this world possible.
7 That's your answer.

8 MR. LEE: Mr. Chairman, I call for a vote of
9 the issue, please.

10 MR. MITCHELL: Motion has been made and
11 seconded. Those in favor signify by saying aye.
12 Opposed. ~~Ayes have it.~~

13 5. Limit Jackson County Purse Seines

14 MR. PERRET: Thank you very much, Mr. Chairman.
15 Alphabetically. Well, I wrote down the next issue was
16 Dr. Martinolich's, the Jackson County issue.

17 DR. MARTINOLICH: You had my only copy of it
18 there. It was a motion to limit the Jackson County purse
19 seines the same as Harrison and Hancock County. Ever
20 since I've been on the Commission, I wondered why Jackson
21 County had a shorter boundary. I'll put that in the form
22 of a motion.

23 MR. MITCHELL: Mr. Horn, go ahead.

24 MR. HORN: Jackson County does not have the
25 manmade beaches and all the residential and commercial

1 industry on beachfront that Harrison and Hancock has.
 2 That's why it was always left like it was.
 3 DR. MARTINOLICH: Looks to me like it's all one
 4 body of water.
 5 MR. HORN: That's true. But there are other
 6 activities that Harrison and Hancock County have that
 7 Jackson County does not have, and that's recreational.
 8 MR. MITCHELL: Corky, do you have a question?
 9 MR. PERRET: Just a comment. I'm advised that
 10 it had something to do with the request from -- the Board
 11 of Supervisors in Jackson County had never requested it.
 12 That's what I was just told, so I don't know obviously if
 13 that's correct. That may play a part in this, also.
 14 DR. MARTINOLICH: Nevertheless, I would like to
 15 modify that a little bit. Instead of going directly to
 16 public hearing that we refer this matter to the staff for
 17 a month, one month, bring it back to answer all these
 18 questions. That's the motion, to modify it to refer it
 19 to staff rather than to take it to public hearing.
 20 MR. MITCHELL: Okay. Does everybody understand
 21 the motion? Is there a second?
 22 DR. ASPER: Second.
 23 MR. MITCHELL: Any discussion?
 24 MR. ASPER: I'd like to make a couple of quick
 25 comments on this. There are a couple of other side

1 issues. One of them has to do with gill nets and what
 2 has been passed off as a purse seine, and the question we
 3 discussed about that. And another, of course, is the
 4 fact that Hancock County has lots of salt marshes, also.
 5 I agree with Dr. Martinolich that we need to understand
 6 why we have this restriction in place and get to the
 7 bottom of it and an equitable need to revise it.
 8 MR. MITCHELL: Does everybody understand the
 9 motion? Motion made and seconded. Those in favor --
 10 MR. LEE: Mr. Chairman, I want to know exactly
 11 what's in the motion before we vote on that issue, if I
 12 could, please. I didn't understand it totally. I need
 13 to know what we're looking into.
 14 DR. ASPER: Go ahead and read the motion into
 15 the record, Dr. Martinolich.
 16 MR. LEE: Please.
 17 MR. MITCHELL: Mr. Woods?
 18 MR. WOODS: I was going to say I believe Dr.
 19 Martinolich -- he can correct me -- wants to refer the
 20 matter of looking into the one mile offshore in Jackson
 21 County for the purse seine application and he's referring
 22 that to the staff to come back and report, as I
 23 understand it, why it evolved that way to begin with and
 24 what's the basis of having one mile versus a half mile.
 25 Is that correct, Dr. Martinolich?

1 DR. MARTINOLICH: Right.
 2 MR. LEE: Okay. I understand. Thank you.
 3 DR. MARTINOLICH: I'm not just looking for
 4 information. I'm looking for action next month.
 5 MR. MITCHELL: You need to make a motion to
 6 take action. Why should we put the staff through this,
 7 or you think it would be better?
 8 DR. MARTINOLICH: I think it would be better.
 9 MR. MITCHELL: Motion made and seconded.
 10 MR. HORN: Dr. Asper's concerns about a
 11 modified gill net or something of that nature, what is
 12 your concern? I'm not quite clear on that.
 13 DR. ASPER: We still have -- enforcement people
 14 can correct me if I'm wrong -- but we still have a
 15 situation where some of the gill netters are simply
 16 putting a pursing line through their gill nets and
 17 calling it a purse seine. And the definitions that we
 18 attempted to enact did not pass. So we still do not have
 19 a really good definition. This would be one way of
 20 addressing several issues all at once, and that is it
 21 makes it equitable on the counties, rather than address
 22 the total (inaudible).
 23 MR. HORN: Something like this is going to
 24 tremendously adversely affect the menhaden industry which
 25 we have in Jackson County. For someone to -- I know that

1 there have been attempts to circumvent the law. In
 2 Jackson County, I'm certainly not aware of a whole lot of
 3 that happening today at all. I don't think you're going
 4 to find a whole lot of netting at all. I think they're
 5 all over in Jackson County. I hear everybody complaining
 6 about Enforcement. Jackson County has all of it.
 7 DR. ASPER: If that's the case, then the staff
 8 will report that back to us and the status on the
 9 enforcement before we get a chance to take it up.
 10 DR. MARTINOLICH: Give them a month and then go
 11 to public hearing. That's what I intended, if I didn't
 12 say it.
 13 MR. MITCHELL: We are going to ask for a public
 14 hearing. He wants a public hearing included in his
 15 motion.
 16 DR. MARTINOLICH: Give the staff a month, then
 17 we'll --
 18 DR. ASPER: We will decide whether we'll have a
 19 public hearing or not at the next meeting.
 20 MR. MITCHELL: Well, we don't need a motion.
 21 Okay.
 22 DR. ASPER: Need a motion to refer it to staff.
 23 MR. MITCHELL: Okay. Those in favor signify by
 24 saying aye. Opposed. Ayes have it. Horn voted no.
 25 MR. PERRET: So I understand, are we to have a

1 public hearing within this month?
 2 MR. WOODS: No.
 3 6. Red Snapper and Spanish Mackerel
 4 MR. GUSA: To help it along, I think I have the
 5 last two issues. Number one, could you give us an update
 6 on the current happenings associated with the red snapper
 7 fishery as most recently announced by the National Marine
 8 Fisheries Service, please?
 9 MR. PERRET: Yes, sir. Thank you. The red
 10 snapper is currently under total allowable catch for the
 11 Gulf of 9.123 million pounds. That is split 4.65 or 51
 12 percent for the commercial fishery and 49 percent or 4.47
 13 million pounds for the recreational fishery. The
 14 recreational fishery is constrained with 15-inch size
 15 limit fish and five fish bag. The commercial fishery is
 16 contained by two seasons, one January through August, the
 17 second to open September through December.
 18 The commercial season opened on February 1st,
 19 and I think in 39 days they took their quota. National
 20 Marine Fisheries Service has come out with an interim
 21 rule to only release six million pounds of that 9.12 that
 22 was recommended to them by the Gulf of Mexico Fishery
 23 Management Council.
 24 Effective April 29, I think is the date, yes,
 25 they're recommending that the bag limit on recreational

1 go from five to four fish and that BYRDS or bycatch
 2 reduction devices be placed in shrimp trawls in the EEZ
 3 or federal waters of the Gulf of Mexico. If the BYRDS
 4 are 60 percent efficient, they will release for the
 5 September season the remaining 3.12 million pounds. If
 6 the BYRDS are only 50 to 59 percent effective, they will
 7 release a like percentage. I assume that means if
 8 they're 55 percent effective, they're going to take five
 9 million pounds off that 3.12. If they're under 50
 10 percent effective, they plan on not releasing those
 11 remaining fish. In this BYRD implementation which is due
 12 to start in May, they plan on 2,000 observer days at sea
 13 studying this thing and evaluating these bycatch devices.
 14 Now, what this means is there's a possibility
 15 of the recreational season being shut down as early as
 16 possibly July if indeed these BYRDS are in that
 17 efficiency range. If they are, then the season would go
 18 at the four-fish bag limit, should continue through
 19 December. And that is the reason they are proposing the
 20 five to four on the recreational sector.
 21 We, each of the states, have been asked to
 22 consider and implement a reduction of five to four fish
 23 bag limit. I am not recommending that at this meeting
 24 for a number of reasons. There's some ongoing activities
 25 on red snapper. One of which there will be a meeting

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1 Friday in Washington with the Secretary of Commerce on
 2 red snapper to try and work something out to maintain the
 3 bag limit and so on, as well as at the mid-May council
 4 meeting the state (inaudible) the records of the National
 5 Marine Fisheries Services and get a little bit more
 6 explanation of what's going on or not going on with red
 7 snapper. But effective April 29 in the federal waters,
 8 the bag is being reduced from five to four fish, and the
 9 commercial fishery is closed at this time, and may not
 10 reopen depending on again the efficiency of this bycatch
 11 device.
 12 So, that's as I know it, Mr. Gusa, last week I
 13 got a stack of papers that big on red snapper.
 14 MR. GUSA: One question if I might. Was there
 15 any discussion associated with the closure of particular
 16 zones to shrimping as a mechanism to eliminate some of
 17 this bycatch problem, such as seasonal closures like we
 18 know that off of Chandeleur we have a substantial
 19 migration of juvenile snapper that occurs there from
 20 August to September, and should we look at a closure of
 21 that area to shrimping as a means to eliminate this
 22 bycatch problem?
 23 MR. PERRET: I've always accused the federal
 24 agency of taking the easy way out. One of my complaints
 25 with TEDS was, hey, look, pinpoint the hot areas with

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1 anywhere else. And it seems like that if it's a good
 2 idea and if they work, and they don't have a serious
 3 impact on the shrimping industry, which I assume is all
 4 true otherwise they would not have been put in place,
 5 then should we not consider them here?
 6 MR. PERRET: Well, that's one of the problems
 7 with them is there's only one approved BYRD device at
 8 this time, and I'm trying to remember how the federal
 9 regulation reads. Something that wouldn't have a
 10 substantial effect on shrimp loss or something to that
 11 effect.
 12 However, if you talk to the shrimp industry,
 13 they are not satisfied with that one BYRD that they're
 14 going to be mandated to use.
 15 The driving force in the federal waters is red
 16 snapper. In state waters, of course, we generally with a
 17 three mile zone and in Florida and Texas have a nine mile
 18 territorial season. So, for the most part of the year, I
 19 would not think we would have a lot of these snapper
 20 which is the driving mechanism.
 21 Currently in Mississippi, there's no commercial
 22 shrimping allowed in back bays. We have the closure a
 23 half mile from shore and a mile or so around the islands.
 24 I'm not sure if we have any particular species that
 25 really detrimentally impacted in the long run, on a

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1 fluctuation on these different animals. But we have
 2 taken a look at some of that, yes.
 3 But you're absolutely right, it is a social
 4 issue. When the season opens and the wind's right,
 5 things wash up on the beach. Whether or not the shrimp
 6 boats are the sole source of it or not, it's still an
 7 issue.
 8 DR. ASPER: And that's one that we keep
 9 skirting because we know it's a tough issue. We've got
 10 the TEDS that the shrimpers have to pull. We know they
 11 don't like them. (Inaudible) They get snagged. They
 12 get hung up by crab pots. All the problems with them.
 13 And if you add one more thing, it's going to be
 14 difficult. And, yet, if this is going to protect the
 15 shrimping industry in the long run because it increases
 16 the public support for the industry, and if it helps out
 17 in terms of the recreational and commercial fishing by
 18 minimizing the needless mortality here, it seems like
 19 it's going to be a good thing.
 20 My point in terms of the efficiency, let's
 21 suppose you do lose some shrimp because of a BYRD, let's
 22 suppose, yeah, we do lose some shrimp, you are going to
 23 catch all those shrimp anyway. We catch all the shrimp
 24 every year. Rather than do it all the first week, let's
 25 spread it out a little bit and save all those fish. I

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1 turtles and let's keep shrimpers out of there at those
 2 times of the year. It was easier to broad brush approach
 3 everywhere and so on. And that's sort of the way with
 4 the BYRDS right now. Again, this is federal waters only.
 5 I'm not sure if the area you're talking about is state or
 6 federal. But this is federal waters in there. It's in
 7 place from Cape Sandblast, Florida, westward, because it
 8 doesn't seem to have a problem with the shrimping east of
 9 that particular point.
 10 DR. ASPER: Two quick questions. First of all,
 11 let me make sure I understand this correctly. If the
 12 BYRDS are effective, the commercial season still will not
 13 reopen?
 14 MR. PERRET: No. If the BYRDS are effective 60
 15 percent or more, then the season would open, I think it's
 16 September 1. If the BYRDS are 50 to 59 percent
 17 effective, that remaining quota will be affected by
 18 whatever that percent is. If they're under 50 percent
 19 effective, it would not reopen. And they're going to put
 20 2,000 days on shrimp boats to observe it.
 21 DR. ASPER: The other question I would ask is
 22 if BYRDS are useful in federal waters, it seems like they
 23 would be even more useful in state waters. Are we giving
 24 any consideration to requiring them in our shallow
 25 waters? We have as much of a bycatch problem here as

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1 historical basis, to require such a thing, if there is a
 2 driving force, on one particular species, although that
 3 may be something we should take a look at.
 4 DR. ASPER: We have a social problem in that if
 5 the wind is right on opening day, we get lots of dead
 6 fish on the beach. We know we are getting bycatch. I
 7 guess my complaint is we don't know how much. We don't
 8 have even good numbers on that, as far as I know. We can
 9 estimate it, but we don't really monitor.
 10 The second thing is the ratio of bycatch goes
 11 up as the season goes on. So it seems like if we want to
 12 really get involved with this, we should get a little bit
 13 more information about it. We should find out how
 14 effective these things are. Maybe an experimental or a
 15 pilot program where a certain number of fishermen would
 16 be encouraged to use these and try them out and get some
 17 data back would be really useful.
 18 MR. PERRET: One of the things that I did a
 19 year or so ago was ask some of the staff at Gulf Coast
 20 Research Lab to take a look at catch per effort in some
 21 of that sampling, historical catch per effort over the
 22 years, just looking at some of the more common species,
 23 you know, the ups and downs each year and the slope of
 24 the line, long-term trends. I haven't looked at it in
 25 sometime, but as you would expect, there's very wide

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1 can't think of any reason why not to use these things
 2 even in our waters. If we can save a few million fish,
 3 why would we not do it?
 4 MR. PERRET: Well, most of those fish are very
 5 short-lived animals. I don't consider --
 6 DR. ASPER: Now, wait. We're catching
 7 juveniles, though. You look at the bycatch. These are
 8 not fish that are mature adults.
 9 MR. PERRET: Again, what is waste? It goes
 10 into the food chain, bacteria, there's a whole cycle of
 11 things.
 12 Yes, if you want to consider an animal that's
 13 dead and washed up on the beach, there's not a whole lot
 14 of use for that type of animal. Again, one of my
 15 problems with the BYRD situation now is it's only one
 16 approved BYRD. If you listen to the shrimp industry, two
 17 of them. One may have just been certified. You listen
 18 to the shrimp industry, they create quite a loss of their
 19 shrimp take.
 20 DR. ASPER: How much? Do we know how much?
 21 And, again, even if they do create a loss they're going
 22 to catch those shrimp. Maybe a couple of days later, it
 23 may take a little more effort to catch those shrimp
 24 because it will take a little bit longer, but that's
 25 going to help the processors anyway if they spread that

1 out a little bit.
 2 We have, what we called it this morning, a
 3 derby situation on the opening day. And this would help
 4 to spread it out a little bit. And anything we can do to
 5 buffer that is a good thing. And if we save a few
 6 million fish. Anyway --
 7 MR. MITCHELL: Thank you, Dr. Asper. We've got
 8 to move on, Mr. Perret.
 9 MR. PERRET: I think the last one was Spanish
 10 mackerel.
 11 MR. GUSA: Yes, sir. I'll be brief since we've
 12 kind of elongated this agenda.
 13 Recent reports that I've read indicate that
 14 there is an increase in the stock of Spanish mackerel in
 15 the Gulf of Mexico, and there is less pressure associated
 16 with that harvest. And what I'd like to do is make a
 17 motion that the staff investigate the potential of
 18 increasing the creel limit from what it is now ten to 15
 19 and bring back that recommendation at the next meeting,
 20 please, sir.
 21 MR. MITCHELL: You've heard the motion. Is
 22 there a second?
 23 MR. LEE: Second.
 24 MR. MITCHELL: Motion made and seconded. Those
 25 in favor signify by saying aye. Opposed. Unanimous.

1 to that is, of course, the loss of one-quarter acres of
 2 wetlands.
 3 We looked at the -- and will not present any
 4 navigation problems. It will have some effect on water
 5 quality within Bayou Cassote with the filling and
 6 installation of a proposed culvert connecting to the
 7 roadway.
 8 The other issue would certainly be leased
 9 waterbottoms. We understand the Mid-Stream Fuels has
 10 made application to the Secretary of State's Office for a
 11 public trust tidelands lease and that issue will be
 12 resolved before we issue a permit.
 13 We did mention that there's going to be some
 14 impacts on the waterbottoms as this filling occurs.
 15 Mitigation, I think, is a good opportunity.
 16 The Mid-Stream has proposed to buy a credit in the Old
 17 Fort Bayou Mitigation Bank that's operated by the Nature
 18 Conservancy on Fort Bayou to compensate for this quarter
 19 acre of vegetated wetlands loss.
 20 We understand that should this be allowed, the
 21 applicant will increase his -- further utilize his
 22 property by increasing yard storage and other open space.
 23 We went to the comments. There was no negative
 24 comments received on this effort. It occurred in
 25 Mississippi -- the notices were in Mississippi Press

1 in Pass Christian.
 2 Mr. Doussan had previous knowledge of the
 3 permit requirements, having made a permit application to
 4 this office. We contacted Mr. Doussan and suggested we
 5 were going to recommend that a penalty of \$250 be
 6 assessed for him, and he indicated to the staff he would
 7 be out of the state during this meeting.
 8 And I can't do anything other than with Mr.
 9 Doussan only that we would recommend that an after-the-
 10 fact permit be issued and with that \$250 be assessed to
 11 Mr. Doussan, and the permit be issued to him after
 12 receipt of the \$250 fee.
 13 We brought a copy of our penalty of matrix.
 14 And this falls in within the second line. I think you
 15 can see this, that the type of violation, the intent,
 16 violation type of project meets the guidelines, the
 17 intent and the second column with intentional prior
 18 knowledge, the recommended penalty there is between \$250
 19 to \$1,000. So we recommend that Mr. Doussan be assessed
 20 the \$250 penalty plus given an after-the-fact permit.
 21 MR. LEE: Mr. Chairman, I recommend that we
 22 issue an after-the-fact permit and fine Mr. Doussan
 23 \$1,000 due to the fact that he had prior knowledge.
 24 MR. MITCHELL: You've heard the motion. Is
 25 there a second?

1 MR. PERRET: Thank you. I think that's it.
 2 G. Coastal Ecology
 3 MR. MITCHELL: Next item is Coastal Ecology,
 4 Mr. Jerry Mitchell.
 5 MR. JERRY MITCHELL: Good morning, gentlemen.
 6 I have three items. Each item is requiring a specific
 7 action by the Commission.
 8 The first is Mid-Stream Fuel Services
 9 Corporation's operation on Bayou Cassote in Jackson
 10 County. The second effort would be an after-the-fact
 11 permit for Mr. Warren Doussan in Pass Christian, that we
 12 are recommending an after-the-fact-permit on Mr. Doussan,
 13 applied for taking the work --
 14 MR. MITCHELL: Jerry, excuse me. Hold the
 15 microphone closer. She can hardly hear you.
 16 MR. JERRY MITCHELL: Oh, she can't hear me?
 17 All right. I really have a difficult time with this.
 18 And the third effort would be a permit
 19 modification for Crossroads Joint Venture, and that's an
 20 action item, as well.
 21 1. Mid-Stream Fuel Services, Inc. Permit - Action
 22 MR. JERRY MITCHELL: My first Tab G-1 is the
 23 Mid-Stream Fuel Services. Mid-Stream Fuel Services
 24 proposes to fill about a quarter acre of coastal wetlands
 25 in the Bayou Cassote area. Some of the issues relating

1 Register February 13, 20 and 27, 1998.
 2 It is our recommendation, gentlemen, that the
 3 project will not have an adverse impact on coastal
 4 resources and alteration of the coastal wetlands and the
 5 site will serve a higher public interest. It is our
 6 recommendation that the permit be given.
 7 MR. MITCHELL: You've heard the recommendation.
 8 Any discussion?
 9 MR. LEE: Mr. Chairman, based on staff's
 10 recommendation, I move it be approved.
 11 MR. MITCHELL: Motion by Mr. Lee. Is there a
 12 second?
 13 MR. GUSA: Second.
 14 MR. MITCHELL: Seconded by Mr. Gusa. Those in
 15 favor signify by saying aye. Opposed. Unanimous.
 16 2. Warren Doussan After-the-Fact Permit - Action
 17 MR. JERRY MITCHELL: The second item Tab G-2
 18 which several months ago I reported on violation -- this
 19 violation to the Commission on Warren Doussan, Jr. He
 20 made application to the Department for a Coastal Wetlands
 21 Permit. Upon investigation and doing our regular staff
 22 routine inspection prior to issuing a permit, we
 23 discovered that Mr. Doussan had made some really major
 24 modification to his permit request. In doing so, he
 25 covered a two-story covered facility on the Johnson Bayou

1 MR. GUSA: Second.
 2 MR. MITCHELL: Motion made and seconded, made
 3 by Mr. Lee, seconded by Mr. Gusa. Is there any
 4 discussion?
 5 MR. HORN: Is there any history that would
 6 justify a fine of this amount? Has there been anything
 7 done like this in the past, or have they all been
 8 minimum, or have there been various amounts charged
 9 individuals for after-the-fact?
 10 MR. JERRY MITCHELL: Mr. Commissioner, it's
 11 been varied. We have some fines up to a thousand
 12 dollars. Of course, some of those are going back to our
 13 casino violations, what have you, some of them have been
 14 the minimum. Some of them have been \$250, some of them
 15 have been \$500. So we have a various history about the
 16 length of it. Usually it's on the magnitude of the
 17 violation, the assessment is passed.
 18 MR. HORN: You said there were some thousand
 19 dollar fines for casino violations. Were those
 20 substantially more detrimental to the habitat or
 21 environment as opposed to the one we have here?
 22 MR. JERRY MITCHELL: That's correct. Yes, sir,
 23 it would be.
 24 MR. GUSA: One comment, if I could. We have
 25 had a lot of discussion about this. The only deterrent

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1 to this thing is to have a fine significant enough to
 2 make it to get people's attention. And we've struggled
 3 with this issue continuously that people who are
 4 knowledgeable of the process move forward either without
 5 a permit or expand the scope of their permit fairly
 6 freely. And it's becoming real awkward to the point that
 7 I think people have now realized the easiest thing to do
 8 is to take the risk and maybe you pay \$250 and get an
 9 after-the-fact permit. And the only way to encourage
 10 people to come forward with these permit applications is
 11 to up the ante on their part of the risk associated with
 12 that. Because right now people take the chance, and if
 13 they don't get caught, they just continue to develop and
 14 didn't even have to file for a permit and away they go.

15 DR. MARTINOLICH: Also, this fellow is a
 16 previous offender, did you say that? Does Mr. Doussan
 17 have some previous --

18 MR. JERRY MITCHELL: He had prior knowledge to
 19 the permit requirements, having made permit application
 20 to this office, which resulted for our people inspecting
 21 the site for a normal permit processing activity, we
 22 discovered that not only -- he just built more than what
 23 he had made application for. So he did have knowledge of
 24 the permitting requirement.

25 MR. MITCHELL: Okay. You've heard the motion

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1 watershed.

2 The applicant is proposing a substitute
 3 mitigation plan which is going to be a total 118 acres of
 4 forestry wetlands in the 16th Section land off of the
 5 County Farm Road. This is a portion of a 640-acre tract
 6 that the Harrison County School District is proposing to
 7 use for mitigation.

8 We have looked at the mitigation plan itself,
 9 and it's quite comprehensive. I think it's certainly a
 10 better plan than we had initially with the efforts on
 11 Wolf River. The plan as you can see has a stated
 12 purpose. It has management values. It has goals and has
 13 included access provisions and management schedule and
 14 included inventory of the monitoring effects.

15 A lot of the efforts will be joined by the
 16 Mississippi Forestry Commission and has actually taken
 17 some of the major responsibilities of management
 18 operations.

19 The staff's recommendation that the permit
 20 issue to Crossroads Joint Venture be amended to recognize
 21 to incorporate this new mitigation proposal.

22 MR. MITCHELL: Any discussion?

23 MR. GUSA: Based upon staff's recommendation,
 24 motion to modify the permit.

25 MR. MITCHELL: Motion by Mr. Gusa. Is there a

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1 Marine Resources has an ordinance that deals with a
 2 number of no wake zones, but this provision provided for
 3 special no wake zones and this is a manner in which they
 4 are processed.

5 The point is that these requests do originate
 6 at the local body, where an ordinance is adopted setting
 7 out the special rules and so forth relating to the
 8 vessels and the safety associated with it, in that
 9 concern.

10 That ordinance along with the resolution then
 11 comes to this body, and we are here today looking at two
 12 such requests from Harrison County. And we will be
 13 seeking permission from you to go to public hearing with
 14 these two items.

15 As I say, I'm going to just leave this sequence
 16 for you to read and save time. But what we do want to
 17 point out is that we have two requests, one of which did
 18 not come in time enough to get into your packet, but I
 19 believe it was presented to you this morning, has to do
 20 with three locations over in -- one in Pass Christian,
 21 and two around the Gulfport area. There's the Pass
 22 Christian area that they're requesting a special no wake
 23 zone for the Least Tern Nesting Area. They want this to
 24 be a temporary seasonal no wake zone.

25 And the second one, this particular request

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1 made and seconded. Those in favor signify by saying aye.
 2 Opposed. Ayes have it. Unanimous.

3 3. Crossroads Joint Venture Permit Modification -
 4 Action

5 MR. JERRY MITCHELL: My last item, gentlemen,
 6 will be Tab G-3 a permit modification for Crossroads
 7 Joint Venture. Some background: On February 17, 1998,
 8 the Commission approved the wetlands permit application.
 9 Part of the wetlands permit application was a mitigation
 10 plan that compensated for the impacts on 26.9 acres of
 11 jurisdictional wetlands. At that time, the mitigation
 12 plan included a stormwater management plan for the
 13 facility itself, in addition to 160 acres holding on the
 14 Wolf River watershed which would involve the mitigation.

15 The applicant had difficulty with the Fish &
 16 Wildlife Service in this mitigation proposal, so he has
 17 come back to us and I think has worked out the concerns
 18 with Fish & Wildlife Service. He has come back to us and
 19 asked us if we could substitute or modify his permit with
 20 this mitigation plan.

21 The concerns by the Fish & Wildlife Service is
 22 actually his initial mitigation proposal was in the Wolf
 23 River watershed. They're concerned with let's see if
 24 they could get this back into the watershed where this
 25 impact is occurring, Bayou Bernard and Turkey Creek

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1 second?

2 DR. MARTINOLICH: Second.

3 MR. MITCHELL: Seconded by Dr. Martinolich.
 4 Those in favor signify by saying aye. Opposed.
 5 Unanimous.

6 MR. JERRY MITCHELL: Thank you, gentlemen.
 7 MR. MITCHELL: Thank you, Mr. Mitchell.
 8 Next item on the agenda is Management
 9 Operations, Mr. Russell.

10 H. Management Operations - Aaron Russell

11 1. Harrison County No-Wake Zone Requests
 12 for Public Hearing - Action

13 MR. RUSSELL: Mr. Chairman, members of the
 14 Commission, we have an item dealing with boat and water
 15 safety, a request from Harrison County Board of
 16 Supervisors, and we want to present this to you for
 17 action.

18 I believe you have a handout here that is about
 19 11 items that deals with procedure. And I'd like to call
 20 your attention to the fact that these procedures deal
 21 with special no wake zone designations that might --
 22 requests that might originate with county and municipal
 23 government. I'm not going to read these in their
 24 entirety. You can review them at a later time.

25 The distinction here is that the Commission on

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1 which goes from I believe from Cowan to DeBuys, came to
 2 us in two separate segments, but Major Laird with the
 3 Department of Wildlife, Fisheries & Parks looked at
 4 these. His suggestion was that this be put into one
 5 area, much easier to enforce. And so this came to us in
 6 the form of a resolution that asked this body to adopt
 7 their ordinance.

8 Now, we are going to -- before this is finally
 9 adopted, we need to get the language straight because the
 10 procedures that I gave you stems from the fact that they
 11 are to originate the request. It is their ordinance, and
 12 carrying along with that, the enforcement -- while
 13 Enforcement -- Wildlife, Fisheries & Parks -- does have
 14 jurisdiction to deal with that, we look at these special
 15 no wake zones to be enforced and looked upon to be
 16 enforced by the originating local body because of the
 17 work load on Enforcement, as we have heard this morning.
 18 So they can't get in there and do the enforcement work,
 19 so the local bodies understand that it's basically going
 20 to be their responsibility to post the no wake signs and
 21 to see that it's enforced.

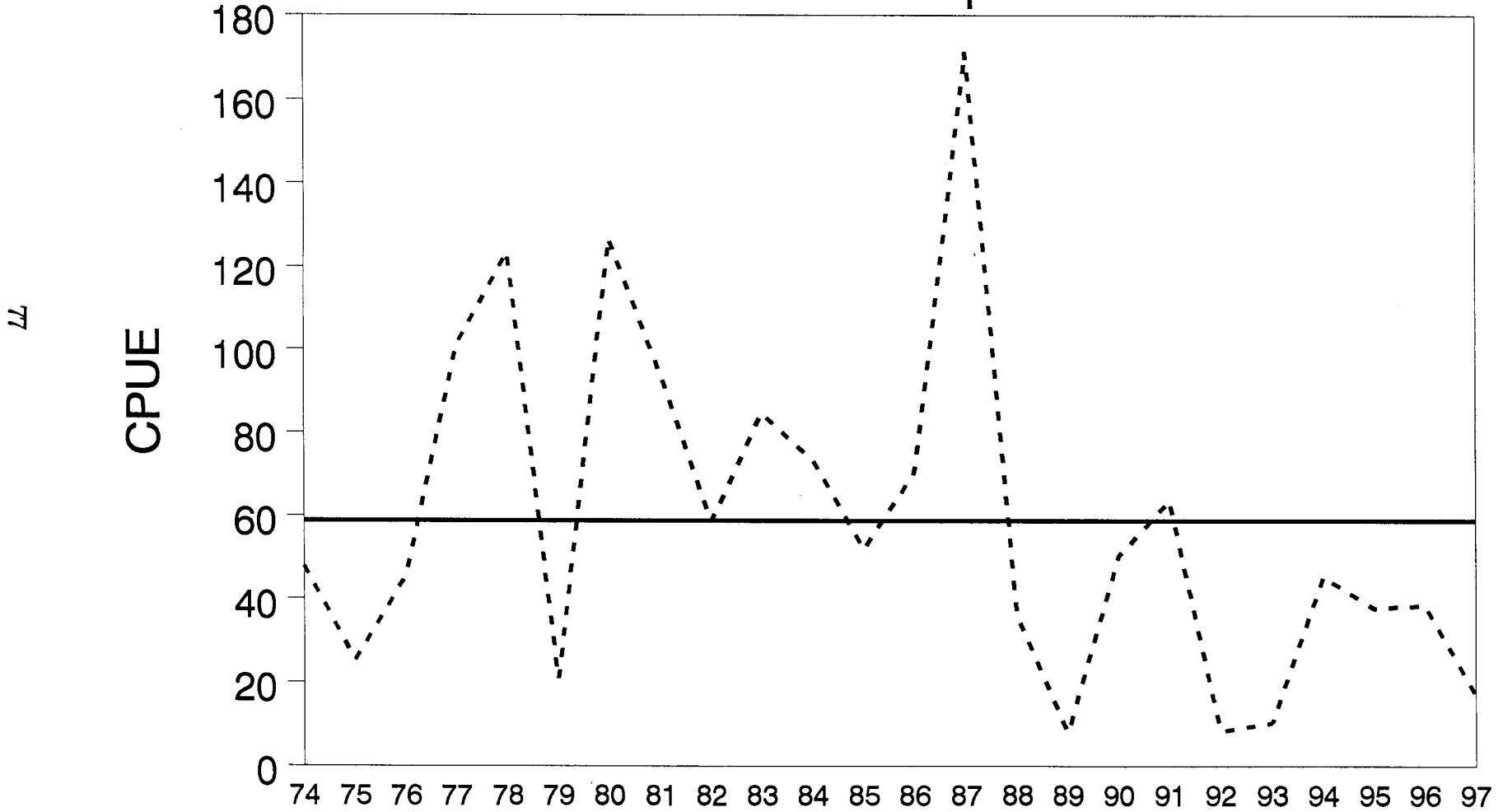
22 That deals with the resolution that was in your
 23 handouts this morning. The handout that was mailed out
 24 to you did contain another resolution, an ordinance, and
 25 it dealt with three separate locations. You will note

Appendix C

Fishery-Independent Data on Mississippi Fisheries

White Shrimp CPUE

16ft. Trawl Samples



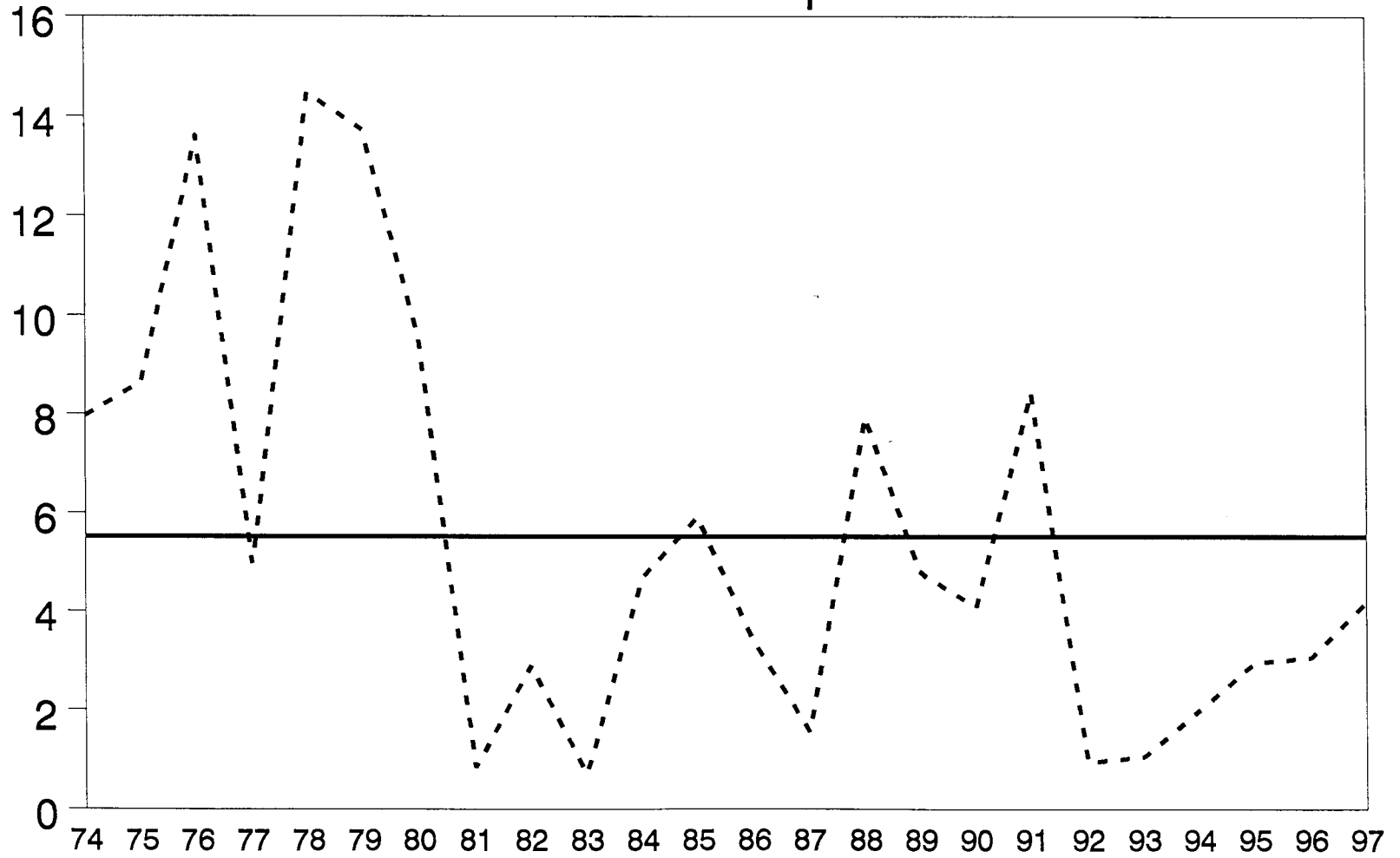
SOURCE: Mississippi State University Coastal Research and Extension Center.

Blue Crab CPUE

16ft. Trawl Samples

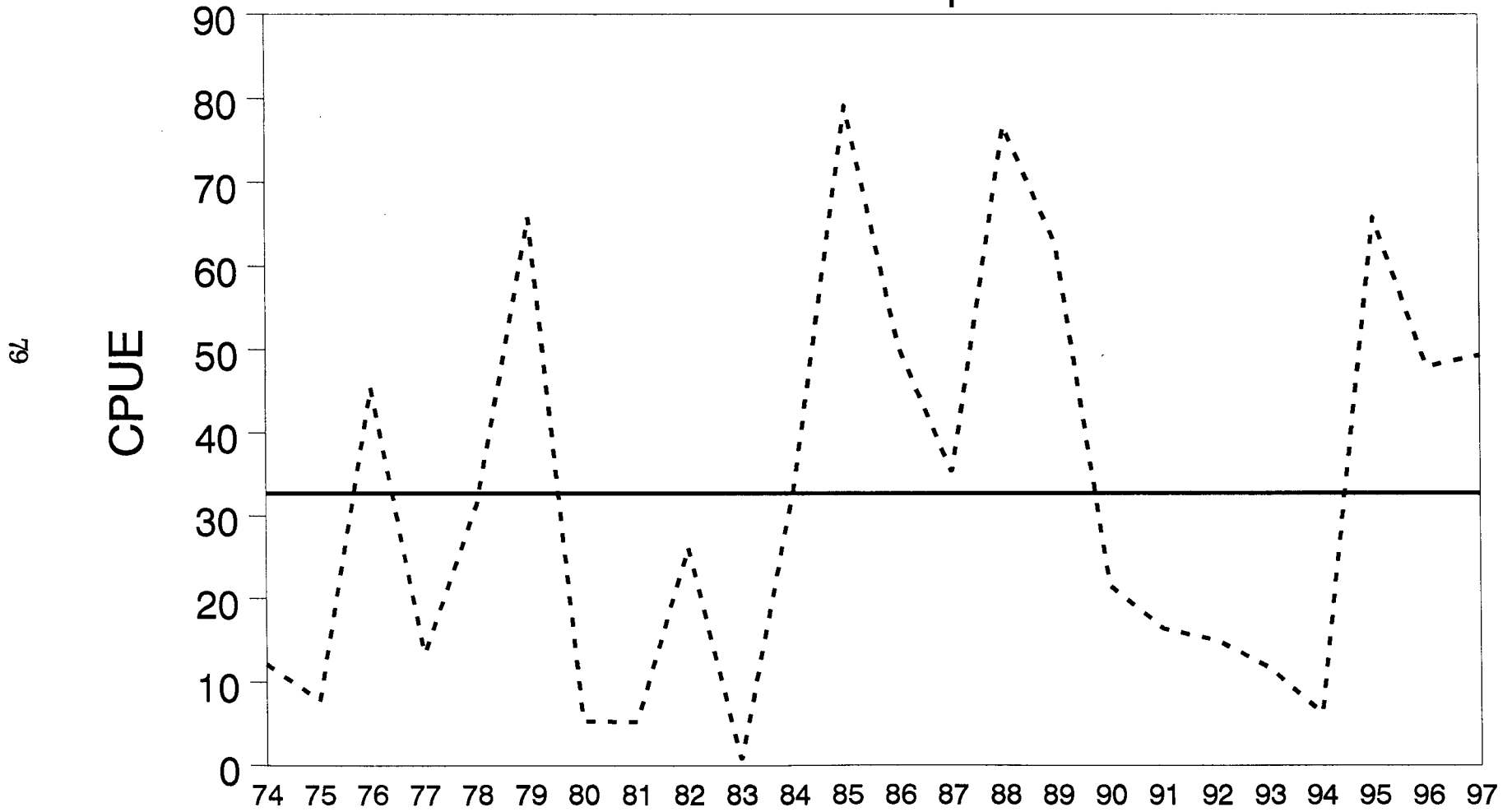
78

CPUE



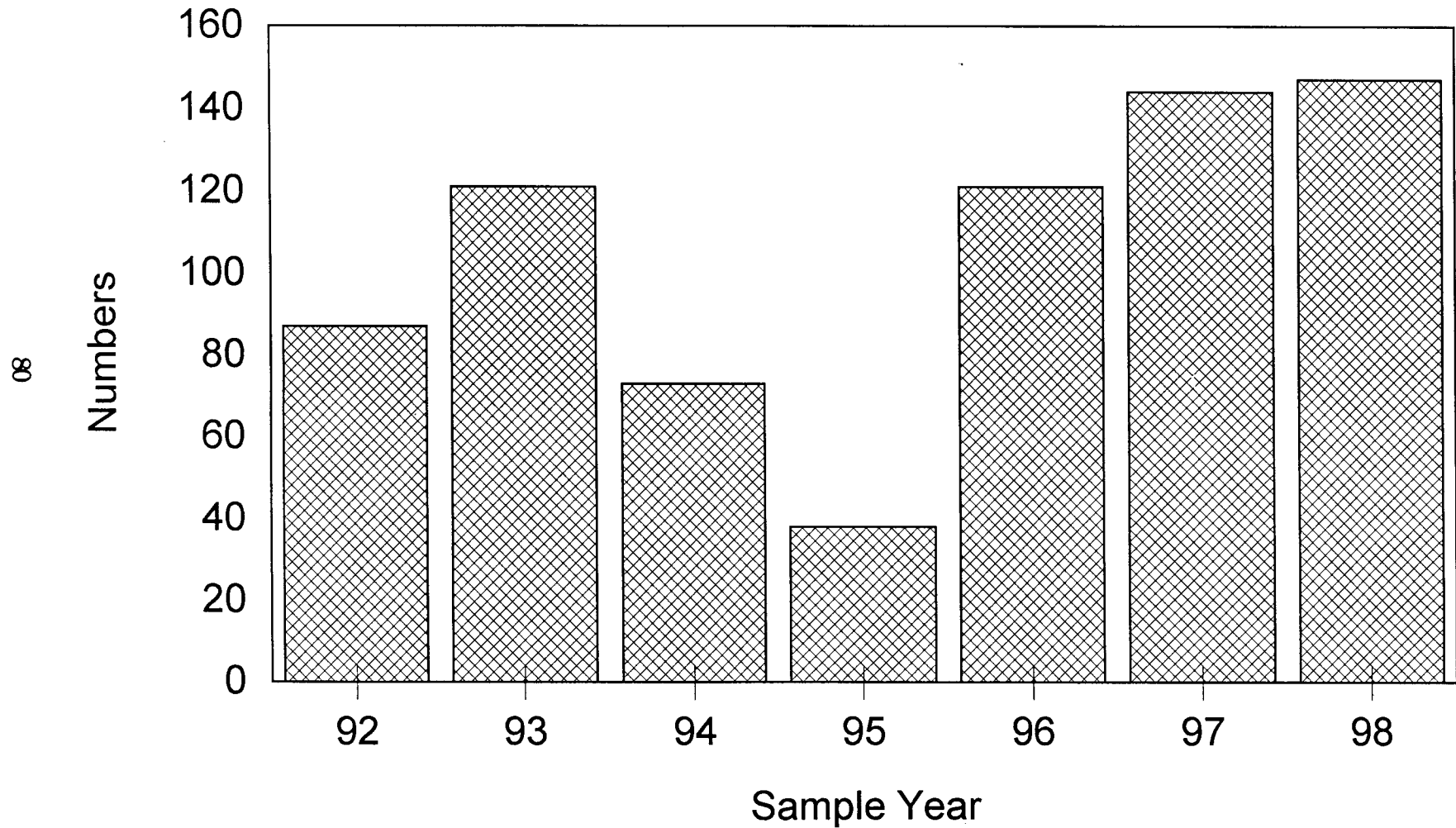
Brown Shrimp CPUE

16ft. Trawl Samples



Annual Index of Abundance

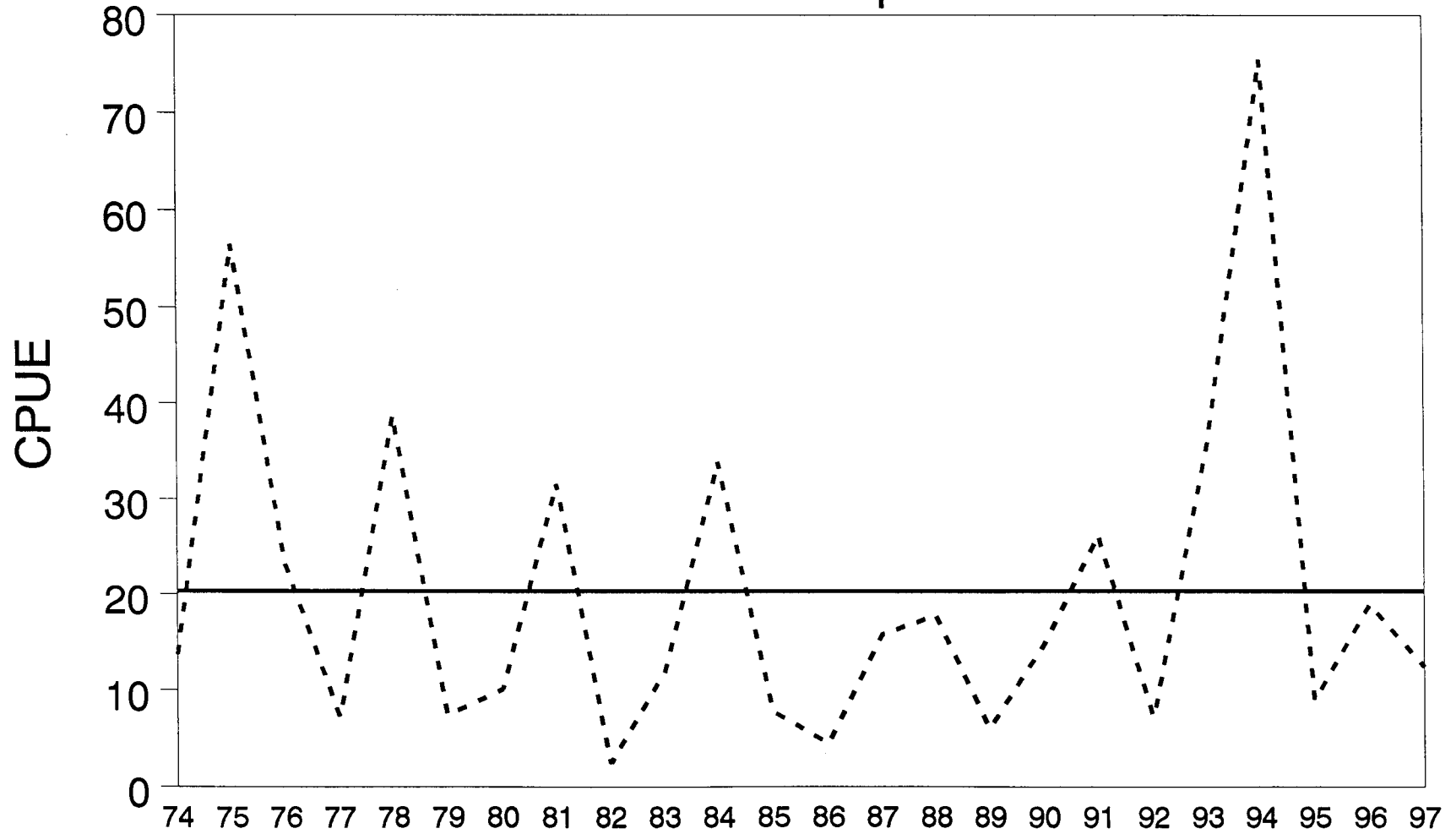
1-1.9 Year Old Spotted Seatrout



Gulf Menhaden CPUE

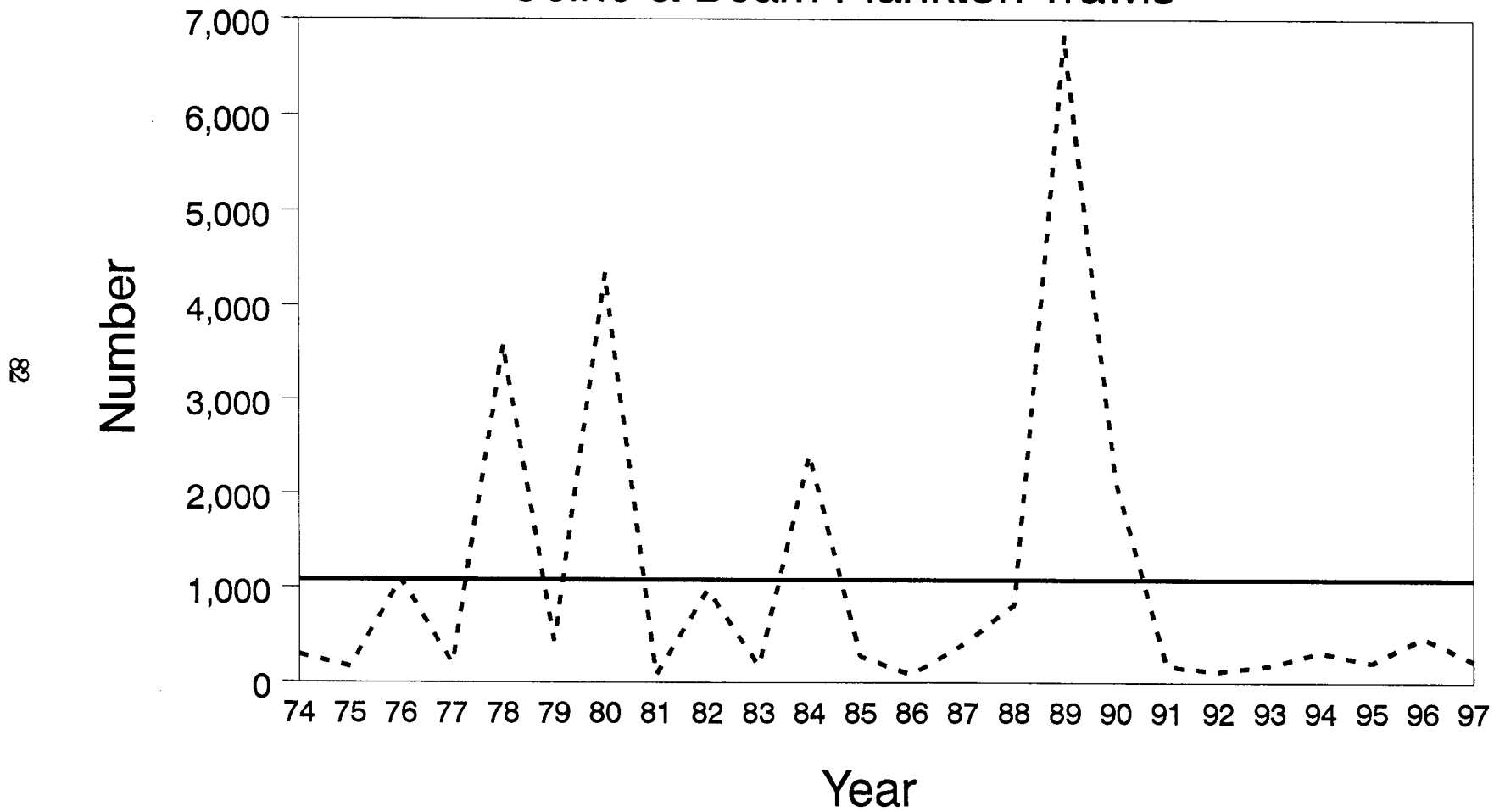
16ft. Trawl Samples

81



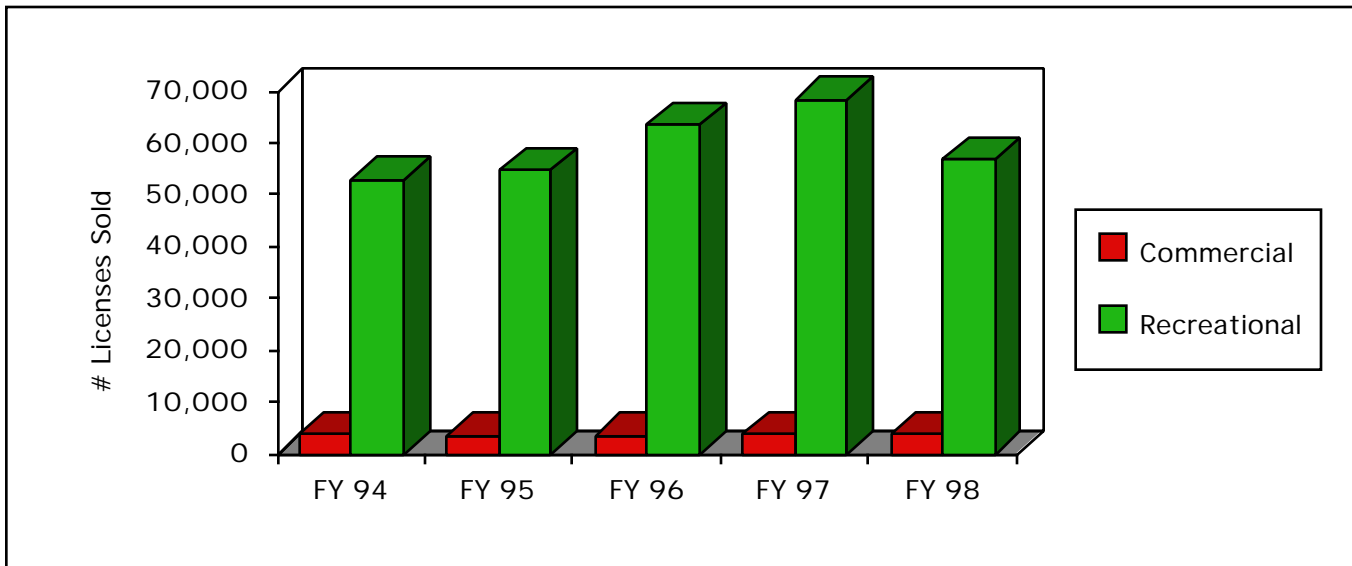
Striped Mullet

Seine & Beam Plankton Trawls



**APPENDIX D
FISHING LICENSE SALES AND LICENSES PER OFFICER
FY1990-FY1998**

LICENSE TYPE	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	TOTAL
Commercial	5,847	5,339	4,211	3,897	3,766	3,503	3,510	3,735	3,728	37,536
Recreational	N/A	N/A	N/A	N/A	53,029	55,006	63,451	68,434	56,844	296,764
TOTAL	5,847	5,339	4,211	3,897	56,795	58,509	66,961	72,169	60,572	334,300
										AVERAGE
# of Officers	25	25	25	25	27	31	29	25	35	27
Comm Lic / Officer	234	214	168	156	139	113	121	149	107	156
Rec. Lic. / Officer	N/A	N/A	N/A	N/A	1,964	1,774	2,188	2,737	1,624	2,058



SOURCE: Data from DMR license sales figures.
Recreational licenses were not sold until FY94.

Appendix E

Proposed Legislation Concerning the Department of Marine Resources

Mississippi Legislature

Regular Session, 1999

BY:

BILL

AN ACT TO AMEND SECTION 49-15-63, MISSISSIPPI CODE OF 1972, TO PROVIDE FOR THE REVOCATION OF LICENSES FOR FISHING BOATS WHOSE CAPTAINS, IN THE AGGREGATE, VIOLATE PROVISIONS OF COMMISSION ON MARINE RESOURCES REGULATIONS AND CHAPTER 15, TITLE 49, DURING A THREE-YEAR PERIOD; TO AMEND SECTION 49-15-38, MISSISSIPPI CODE OF 1972, TO REQUIRE THE DEPARTMENT OF MARINE RESOURCES TO SET THE AMOUNT OF SHELLS IT INTENDS TO USE TO RESTORE OYSTER REEFS ON AN ANNUAL BASIS, AND TO ALLOW THE SALE OF UNNECESSARY SHELLS BY OYSTER PROCESSORS, FACTORIES, AND DEALERS; TO AMEND SECTION 49-15-64 TO INCREASE THE PENALTY FOR COMMERCIAL SHRIMPING DURING CLOSED SEASON TO A FINE OF NOT LESS THAN ONE THOUSAND DOLLARS (\$1,000) NOR MORE THAN TWO THOUSAND DOLLARS (\$2,000); AND FOR RELATED PURPOSES.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF MISSISSIPPI:

Section 1. Section 49-15-63, Mississippi Code of 1972, is amended as follows:

~~§ 49-15-63. General penalty.~~

(1) Any person, firm or corporation violating any of the provisions of this chapter or any ordinance duly adopted by the commission, unless otherwise specifically provided for herein, shall, on conviction, be fined not less than One Hundred Dollars (\$100.00), nor more than Five Hundred Dollars (\$500.00), for the first offense, unless the first offense is committed during a closed season, in which case the fine shall be not less than Five Hundred Dollars (\$500.00), nor more than One Thousand Dollars (\$1,000.00); and not less than Five Hundred Dollars (\$500.00), nor more than One Thousand Dollars (\$1,000.00), for the second offense when such offense is committed within a period of three (3) years from the first offense; and not less than Two Thousand Dollars (\$2,000.00) nor more than Four Thousand Dollars (\$4,000.00), or imprisonment in the county jail for a period not exceeding thirty (30) days for any third or subsequent offense when such offense is committed within a period of three (3) years from the first offense and also upon conviction of such third or subsequent offense, it shall be the duty of

the court to revoke the license of the convicted party and of the boat or vessel used in such offense, and no further license shall issue to such person or for said boat to engage in catching or taking of any seafoods from the waters of the State of Mississippi for a period of one (1) year following such conviction. Forfeiture of any equipment or nets used in a second or subsequent offense may be instituted pursuant to Sections 49-7-251 through 49-7-257. If the person in possession of or using the nets in the violation is not the owner or licensee of the nets, the department shall notify the owner or licensee of the nets. The nets shall be subject to forfeiture unless the nets were stolen and prosecution for the theft is initiated. Equipment as used in this section shall not mean boats or vessels. Any person convicted and sentenced under this section for a second or subsequent offense shall not be considered for suspension or other reduction of sentence. Except as provided under subsection (5) of Section 49-15-45, any fines collected under this section shall be paid into the Seafood Fund.

(2) (a) The court shall revoke the license of any boat captained by any person or persons who, in the aggregate, violate the provisions of this chapter, or any rule of the Commission three (3) times or more in any three-year period. The period of revocation shall last for one (1) year.

(b) Any person, firm, or corporation owning a boat captained by a person who is convicted and penalized in accordance with subsection (1) of this section shall be subject to the same penalties provided for boat captains. This paragraph shall not apply to persons who own and operate boats and do not use substitute captains.

(3) All citations issued to boat operators for not possessing the boat's registration card shall be dismissed, along with all related court costs, upon the presentment of the boat's proper registration card to the court or magistrate holding the trial or hearing.

SOURCES: Laws 1993, ch. 532, § 2; 1993, ch. 521, § 2; 1994, ch. 578, § 22; 1997, ch. 601, § 1, eff from and after July 1, 1997.

Section 2. Section 49-15-38, Mississippi Code of 1972, is amended as follows;

~~§ 49-15-38. Culling requirements; collection and planting of shells; penalties and fees for failure to deliver shells.~~

(1)(a) Unless otherwise permitted by the commission, no oysters shall be taken from the reefs of this state unless culled upon the natural reefs, and all oysters less than three (3) inches from end to end, and all dead shells, shall be replaced, scattered and broadcast immediately on the natural reefs from which they are taken. It is unlawful for any captain or person in charge of any vessel, or any canner, packer, commission man, dealer or other person to purchase, sell or to have in that person's possession or

under that person's control any oysters off the public reefs or private bedding grounds not culled according to this section, or any oysters under the legal size. A ten percent (10%) tolerance shall be allowed in relation to any culling.

(b) The commission may authorize the culling of oysters of a lesser measure. That authorization shall be in response to special circumstances or extreme natural conditions affecting the habitat, including, but not limited to, flooding. The department may establish checkpoints in any area within its jurisdiction to conduct inspections in the enforcement of regulations under this chapter.

(2) The commission shall acquire and replant shells, seed oysters and other materials, when funding is available, for the purpose of growing oysters. Except as provided in this section, all oyster shells produced from oysters taken from the public reefs of the State of Mississippi are the nontransferable property of the State of Mississippi, except for sales provided for in sub-section 3 of this section, and all persons, firms or corporations dealing in or canning oysters taken from the public reefs of the state shall deliver to the commission all oyster shells taken or processed by that person, firm or corporation. The delivery of the oyster shells shall be at the place of business of the oyster processor, dealer or factory. The commission shall order the delivered oyster shells to be spread on the public reefs of this state to improve the oyster beds.

(3) By June 1 of each year, the Department of Marine Resources shall notify all interested parties by a newspaper of general circulation on the Mississippi Gulf Coast of the total percentage of oyster shells from the upcoming fiscal year's catch it intends to return to the oyster reefs in the upcoming fiscal year. Further, the department shall convert this percentage to an estimated number based on the previous year's catch and inform all processors, factories, and dealers of the number of shells each must deliver to the department during the upcoming fiscal year. All dealers, factories, and processors may sell the remainder of shells into which they come into possession, but shall remit to the Department of Marine Resources an amount equal to 50% of the sale price for such shells. Remittances shall be made to the department at the end of each month. The department may audit the records of any dealer, factory, or processor to insure compliance with this section.

(4) Any person failing or refusing to deliver the shells or pay the shell retention fee required under Section 49-15-46 to the department when called for by the department, is guilty of a misdemeanor and, upon conviction, shall be fined not more than One Hundred Dollars (\$100.00) for each barrel of shells they fail or refuse to deliver, or to tender the shell retention fee. In addition to the fine, the violator shall pay the reasonable value of the oyster shells and shall be ineligible to be licensed for any activity set forth in this chapter. Any person who fails to remit to the department the proper

monthly payment for the sale of shells shall be guilty of a misdemeanor and shall be fined an amount of not more than five hundred dollars (\$500.00).

(5) The collection and planting of oyster shells as provided under this chapter shall be under the direction and supervision of the executive director of the department. Planting and replanting of oyster shells shall be coordinated by the Gulf Coast Research Laboratory. The governing authorities of each county and municipality bordering upon the Mississippi Sound may assist the commission and the Gulf Coast Research Laboratory in the planting and replanting of oyster shells. The commission shall construe this section to require the return of a maximum amount of shells to the reefs, and shall allow the retention of shells only in cases where the collection or return of the shells is impractical or not feasible.

SOURCES: Laws, 1997, ch. 579, § 5, eff from and after July 2, 1997; 1998, ch. 480, § 1, eff from and after July 1, 1998.

Section 3. Section 49-15-64, Mississippi Code of 1972, is amended as follows:

~~§ 49-15-64. Shrimping during closed season prohibited; penalties; promulgation of rules and regulations.~~

Any operator, firm or corporation engaged in commercial shrimping during the closed season shall be guilty of a misdemeanor and, upon conviction, shall be punished by a fine of not less than one thousand dollars (\$1,000.00) nor more than two thousand dollars (\$2,000.00)

Upon an arrest for a violation of this section, catch and nets may be confiscated. Any catch may be sold by the law enforcement agency making the arrest at the average wholesale price being paid for shrimp. The monies derived from the sale shall be held in escrow pending disposition of the charge. If a conviction is obtained, the monies held in escrow shall be forfeited. The monies so forfeited shall be paid to the department, to be paid into the seafood fund. If the operator, firm or corporation is acquitted of the charge or if the charge is dismissed, then the monies obtained from the sale shall be paid to the proper operator, firm or corporation. Forfeiture of confiscated nets and paraphernalia shall be instituted pursuant to Sections 49-7-251 through 49-7-257. If the person in possession of or using the nets in the violation is not the owner or licensee of the nets, the department shall notify the owner or licensee of the nets. The nets shall be subject to forfeiture unless the nets were stolen and prosecution for the theft is initiated.

The commission may issue special permits for the purpose of catching shrimp prior to the official opening of shrimp season, to those nonprofit organizations that are tax exempt under Section 501(c) of the United States Internal Revenue Code and which have on file with the State Tax Commission a tax exemption letter issued by the United States Internal Revenue Service. However, until January 1, 1992, the requirement that a

nonprofit organization have on file with the State Tax Commission a tax exemption letter issued by the United States Internal Revenue Service shall be considered as having been met if the organization has actually made application for such exemption and has on file with the State Tax Commission a copy of its application.

The commission shall promulgate rules and regulations governing the taking of shrimp by the nonprofit organization and shall issue such regulations to all organizations upon request and at the issuance of the special permit.

SOURCES: ~~Laws, 1991, ch. 514, § 1; 1993, ch. 532, § 3; 1994, ch. 578, § 19; 1997, ch. 601, § 2, eff from and after July 1, 1997.~~

Section 4. This act shall take effect and be in force from and after, July 1, 1999.

Agency Response



**MISSISSIPPI
DEPARTMENT OF MARINE RESOURCES**

January 14, 1999

Dr. Max K. Arinder, Executive Director
Joint Committee on PEER
P. O. Box 1204
Jackson, MS 39215-1204

Dear Dr. Arinder:

The Department of Marine Resources appreciates being given the opportunity, albeit on short notice, to provide comments on your recent draft report titled "An Evaluation of the Effectiveness of the Department of Marine Resources Marine Resources Management and the Department of Wildlife, Fisheries and Parks Marine Law Enforcement". Your staff is also to be commended for their diligent efforts over the past nine months in developing this report and the resulting recommendations.

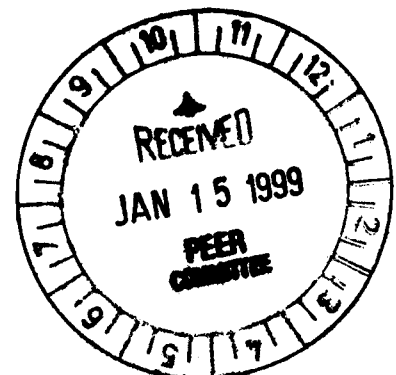
The findings of the report were presented to us today by Mr. John Ringer and Mrs. Linda Triplett of your staff, and it is our understanding that our response must be received by Monday, January 18. Our responses to your nine recommendations are attached. Generally speaking, the Department concurs with the recommendations presented in the Executive Summary report.

I hope that this letter is sufficiently responsive to your immediate needs, but if you should require any additional information, please do not hesitate to contact me at (228) 374-5000, extension 5010.

Sincerely,

A handwritten signature in cursive script that reads "E. G. Woods".

E. G. Woods
Executive Director



DMR Response to the Peer Report Dated January 14, 1999

Marine Resources Management

1. The Peer Report stated that the Department of Marine Resources (DMR) should require the collection of relevant fishery dependent data (e.g., age structure, sex ratios, and fishing effort) necessary to develop stock assessment models for major marine fisheries in Mississippi. Currently this data is available only on one major marine fishery in Mississippi – the menhaden fishery.

Response: The Department agrees that this data is necessary for stock assessment. This type of marine resource data and analysis requires extensive resources to collect and analyze. A proposed program plan will be prepared to present to the Legislature to fund and staff this recommendation.

2. The Peer Report stated that the DMR should consider establishing a task force for each major fishery to identify and discuss emerging issues and problems relative to the fishery. Each task force should include at least one representative from: fisheries management (DMR), fisheries biological research, marine law enforcement, the recreational fishing sector (with the exception of the menhaden fishery, which has no recreational component), the commercial fishing sector (both harvesting and processing), and any interacting fishery (e.g., the shrimp fishery is an interacting fishery with the crab fishery).

Response: The Department has already accomplished this for the blue crab fishery and participates in the artificial reef, flounder, striped mullet, black drum, oyster and spotted sea trout task forces of the Gulf States Marine Fisheries Commission. These efforts will be expanded.

3. The Peer Report stated that the Comprehensive Resource Management Plan currently being developed for the state's coastal zone must take into consideration the warning of marine biologists that the coast is at a critical point in terms of the balance between development and protection of the environment which sustains its marine resources. DMR, in conjunction with GCRL, must establish and monitor on an ongoing basis, indicators of the quantity and quality of the state's coastal wetlands. As part of this effort, DMR should consider documenting coastal wetlands loss from a Geographic Information System (GIS) perspective.

Response: This effort will be worked using GCRL and other Gulf Coast research organizations. The use of GIS is currently being applied using NASA and Navy databases as well.

4. The Peer Report stated that the Commission on Marine Resources should require DMR staff to provide adequate data and analysis necessary to make informed marine resources policy decisions before making such decisions.

DMR staff should consider developing a formal decision-making process to manage each major fishery it regulates. For example, with respect to the oyster fishery and the decision of whether to extend the season, critical variables to consider formally could include volume of oysters harvested on each reef, estimation of size and volume of remaining oysters harvested on each reef, estimated water temperatures during the proposed extension period and how these temperatures compare to the level which is considered safe for oyster harvesting (at higher temperatures, the prevalence of vibrio increases), estimated market demand, and, based on historical data showing the average harvest per day at each reef, an estimate of the number of days that the reef should remain open in order to reduce the resources to a minimum sustainable level.

Response: This area will continue to improve with additional expertise in analysis. Many of these processes are very complex and require higher-level computer programming and analytical skills. The Department currently provides the best data available, with current resources, to the CMR for decision making.

5. The Peer report stated that the DMR should develop a performance measurement and reporting system which includes measures of its effectiveness in meeting its primary legislated objectives of protecting, conserving, and propagating the state's marine resources; protecting the coastal wetlands ecosystem on which the resources depend; and revitalizing the state's seafood industry. The department should develop and report clear and meaningful output and outcome measures for each of these three major objectives.

Response: The Department will compile better measures for use in the next fiscal year.

Marine Law Enforcement

6. The Peer Report stated that the Department of Wildlife, Fisheries and Park's (DWFP) Marine Enforcement Division should change its procedures for the handling of siezed seafood. Enforcement officers should be required to issue a receipt to the fishers from whom any seafood is taken. The receipt should show the time, date, and place where the seizure took place and both parties should be provided with a copy. Also, DWFP should develop a standard form for selling seized seafood and record the bids of each processor on that form.

Response: The Department concurs with this finding.

7. The Peer report stated that DWFP's law enforcement officers should record each "stop" of a fisher or boater, even in cases in which the "stop" did not result in a citation. This data will allow for better evaluation of the state's enforcement effort and effectiveness by DWFP management and outside evaluators.

Response: The Department concurs with this finding.

8. The Peer report stated that DMR and DWFP should resolve the question of whether enforcement officers from DWFP will enforce wetlands laws for DMR. Marine enforcement officers should attend a training class on the wetlands laws of Mississippi, including training on what potential violations might look like. Then, while Marine Enforcement Unit officers are on patrol for other matters, if they observe a potential violation they would note its location and report it to DMR. Beyond the time spent in training this would not be a large additional burden on the Marine Enforcement Unit. However, any additional time spent on wetlands permitting issues beyond routine observation during normal marine enforcement patrols would take marine enforcement officers away from other critical areas. DMR receives federal funding for the Coastal Program and could provide a small amount to DWFP in exchange for having Marine Enforcement Unit officers add this task to the multitude of tasks they are currently accomplishing.

Response: The Department concurs with this finding. DWFP Marine Enforcement resources are required to address this effort.

Proposed Legislation

9. This report contains draft legislation that would make technical changes in the state's seafood regulatory laws. Specifically, this bill would:
 - require revocation of a boat's license when its captain(s) violates provisions of the law three times or more in a three-year period;
 - increase the range of penalties for commercial shrimping out of season to not less than \$1,000 nor more than \$2,000
 - allow for the private sale of oyster shells under certain circumstances

Response: The Department concurs with this finding. Action has been taken on this in the 1999 Legislative Session.



**MISSISSIPPI
DEPARTMENT OF WILDLIFE, FISHERIES AND PARKS**

**SAM POLLES, Ph.D.
Executive Director**

January 8, 1999

Mr. John Ringer, Evaluator
PEER Committee
P. O. Box 1204
Jackson, MS 39215-1204

RE: Confidential Draft-Executive Summary-Evaluation of the Effectiveness of the Department of Marine Resources' Marine Resources Management and the Department of Wildlife, Fisheries and Parks' Marine Law Enforcement

Dear Mr. Ringer:

The Department of Wildlife, Fisheries and Parks appreciates the opportunity to comment on the referenced confidential draft.

Marine Enforcement Staff believes the finding that DWFP Marine Enforcement Officers spent an average of 55% of their work time performing land and water patrols is low. Approximately 55% of enforcement effort is related to water patrol. When land related, enforcement activity is added, the percentage of time on patrol is in the range of seventy-five (75) per cent.

Marine Enforcement agrees that penalties for salt water recreational violations are adequate. However, in the experience of Marine Officers, fines levied for commercial seafood violations are skewed toward the minimum allowable. For first offense violations this represents an average fine of one-hundred (\$100.00) dollars. The daily average value of seafood caught by commercial fishermen often exceeds the fines actually levied.

Again, in the experience of Marine Law Enforcement Officers, saltwater sport fishing violations are more prevalent than reported by DMR survey results. In addition, the ratio of 2.373 sport fishermen per marine enforcement officer appears to be based on 1996 data. License sales for FY98 include 63,306 annual residents, 2,040 annual nonresident and 10,107 three (3) day nonresident licenses or a total of 75,453 sport saltwater licenses sold. Thus, the current ratio of license holders per marine enforcement officer is considerable higher than noted in the PEER report.

In regard to the law allowing marine officers to sell seafood seized during illegal harvesting activity, the following procedure is used. At the time of arrest officers issue a citation, which is a sworn affidavit, that indicates the nature and amount of seafood seized. It is impossible to determine the market value of seafood seized at the time of seizure. At the time of sale, a check in the amount of the value of the contraband seafood is forwarded to the DMR which places the money in an escrow account. A copy of the check and invoice are kept on file at the marine enforcement field office. Also, a copy of the invoice and check are kept by the arresting officer to be included in the case file for court. In the event that the court should order an acquittal and a refund is due, upon notification by the Court DMR refunds the money to the appropriate party.

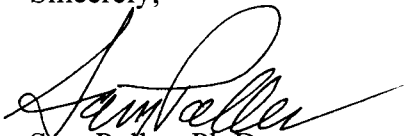
In the event contraband cannot be sold due to a lack of commercial market availability or when fair market value cannot be obtained, the contraband is donated to charity. A signed receipt is given to the recipient and another copy is kept by the arresting officer for court purposes.

The PEER recommendation that marine officers should record each "stop" of a fisherman or boater, even in cases in which the "stop" did not result in a citation is ideal and could provide information to help manage marine resources but is not very practical. PEER acknowledges that the marine enforcement unit is already burdened and the time required to document and process each "stop" could be better utilized doing other assigned tasks. The DWFP is not aware of any law enforcement arm that has implemented such recommendation.

While there has been some effort made for marine officers to report possible violations of state wetland laws, the DWFP recognizes and supports the PEER recommendation to fully implement the Memorandum of Understanding executed between MDWFP and DMR in December 1997. To that end DWFP staff will initiate discussions with DMR staff to revisit this issue, work out the details of attending training classes on wetland permitting issues and be better prepared to report possible violations as a part of routine patrol functions.

Thank you again for the opportunity to comment about the contents of the confidential draft.

Sincerely,



Sam Polles, Ph.D.
Executive Director

SP/mb

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