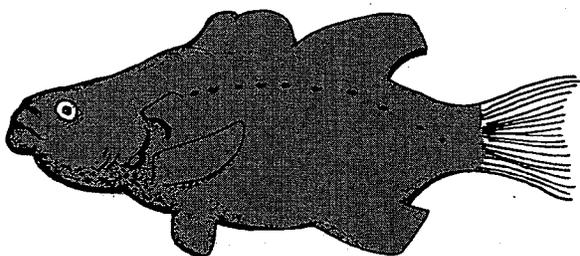


# Gulf States Marine Fisheries Commission

OFFICE COPY ONLY



## THIRTY-THIRD ANNUAL REPORT



### MEMBER STATES

ALABAMA  
FLORIDA  
LOUISIANA  
MISSISSIPPI  
TEXAS

The GULF STATES MARINE FISHERIES COMMISSION is an organization of the five states, whose coastal waters are the Gulf of Mexico. This compact, authorized under Public Law 81-66, was signed by the representatives of the Governors of the five Gulf states on July 16, 1949, at Mobile, Alabama. It has as its principal objective the conservation, development, and full utilization of the fishery resources of the Gulf of Mexico, to provide food, employment, income, and recreation to the people of these United States.

GULF STATES MARINE FISHERIES COMMISSION  
THIRTY-THIRD ANNUAL REPORT (1981-1982)

*To the*

CONGRESS OF THE UNITED STATES

*And to the*

GOVERNORS AND LEGISLATORS

*of Alabama, Florida, Louisiana, Mississippi, and Texas*

Presented in compliance with the terms of the Compact and  
the State enabling Acts creating such Commission and  
Public Law 66 - 81st Congress assenting thereto.

GULF STATES MARINE FISHERIES COMMISSION  
P.O. Box 726  
Ocean Springs, Mississippi 39564

(601) 875-5912

## ACKNOWLEDGMENT

In submitting this Thirty-third Annual Report, the Commissioners wish to express their most sincere appreciation for the splendid cooperation of the Members of Congress and the Governors and Legislators of the compact states. The Commission fully appreciates that such measure of success as has been attained in the past thirty-three years could not have been possible without such valued assistance. This acknowledgment is also extended to the directorates and staffs of federal, state and interstate agencies, and to representatives of all organizations and individuals who have contributed toward the realization of the objectives of the *GULF STATES MARINE FISHERIES COMMISSION*.

Respectfully submitted,

Jesse J. Guidry, Chairman  
Taylor F. Harper, Vice Chairman  
Charles H. Lyles, Executive Director

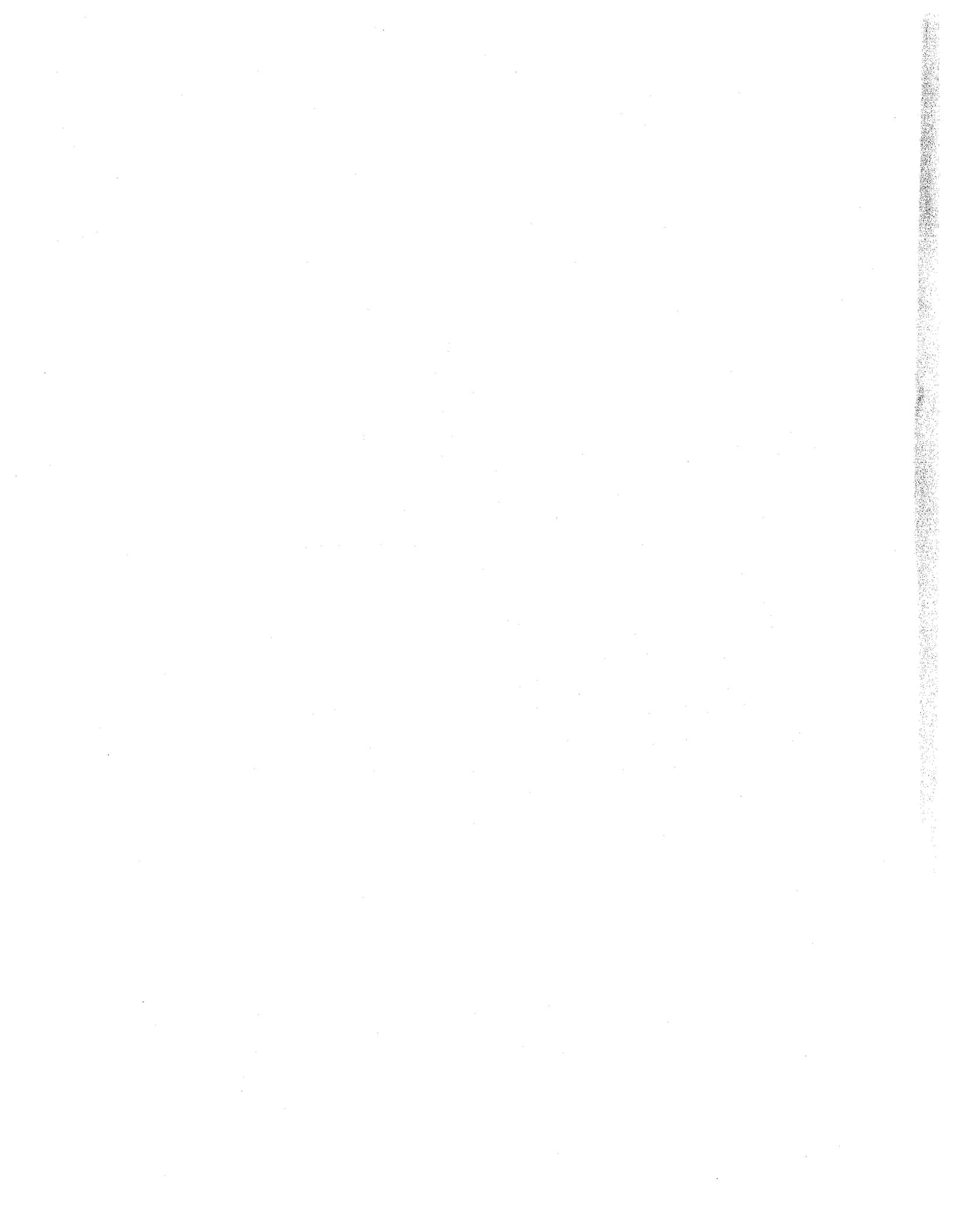
Published August 1983

# GULF STATES MARINE FISHERIES COMMISSION

Thirty-third Annual Report (1981-1982)

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*Roster of the*

GULF STATES MARINE FISHERIES COMMISSION

October 1, 1981 - September 30, 1982

Chairman: Jesse J. Guidry

Vice-Chairman: Taylor F. Harper

COMMISSIONERS

(order of listing-Administrator, Legislator, Governor's appointee)

ALABAMA

John M. McMillian, Jr. Commissioner  
Alabama Department of Conservation  
and Natural Resources  
Montgomery, AL

Taylor F. Harper, Representative  
State of Alabama  
Grand Bay, AL

John Ray Nelson  
Bon Secour Fisheries, Inc.  
Bon Secour, AL

FLORIDA

Elton J. Gissendanner  
Executive Director  
Florida Department of Natural  
Resources  
Tallahassee, FL

Joseph B. Allen, Jr., Representative  
State of Florida  
Key West, FL

Clyde Richbourg  
American Seafood Company  
Pensacola, FL

LOUISIANA

Jesse J. Guidry, Executive Secretary  
Louisiana Department of Wildlife  
and Fisheries  
New Orleans, LA

Sam Theriot, Representative  
State of Louisiana  
Abbeville, LA  
Leroy Kiffe  
Tom Kiffe & Son Boats  
Lockport, LA

MISSISSIPPI

Lon Strong, Executive Director  
Mississippi Department of  
Wildlife Conservation  
Jackson, MS

Ted Millette, Representative  
State of Mississippi  
Pascagoula, MS

Dr. Michael Carron  
U.S. Naval Oceanographic  
Office  
NSTL Station, MS

TEXAS

Charles D. Travis  
Executive Director  
Texas Parks and Wildlife  
Austin, TX

Leroy J. Wieting, Representative  
State of Texas  
Portland, TX

John A. Mehos  
Liberty Fish & Oyster Co.  
Galveston, TX

GULF STATES MARINE FISHERIES COMMISSION STAFF

Charles H. Lyles  
Executive Director

Larry B. Simpson  
Assistant to the Director

Virginia K. Herring  
Administrative Assistant

Anita S. Grant  
Secretary

COMMISSION OFFICERS ELECTED FOR  
YEAR 1981-1982

Chairman: Jesse J. Guidry succeeding Elton J. Gissendanner  
Vice-Chairman: Taylor Harper succeeding Jesse J. Guidry

*STANDING COMMITTEES*

Executive Committee.....Jesse J. Guidry, Chairman  
Technical Coordinating Committee.....Ted Ford, Chairman  
Industry Advisory Committee.....Walter Zimmerman, Chairman  
Recreational Fisheries Committee.....Michael Carron, Chairman  
Sea Grant Committee.....Willis Clarke, Chairman  
Enforcement Committee.....Ray Montet

## COMMISSION ACTIVITIES

OCTOBER 1981 - SEPTEMBER 1982

A number of very serious problems confronted the fishing community around the Gulf of Mexico during the 1981-82 fiscal year. The most serious of these was the plight of the shrimp industry caused by high operating costs such as fuel, ice, etc., and a declining exvessel price for shrimp. A strong push by the Reagan administration to abolish the Grant-in-Aid programs under P.L. 88-309 and 89-304 caused serious concern among the state resource agencies. Activities of the Executive Director were largely centered around mitigating these two very serious problems. Because of the long association with industry problems dating back before World War II, the Executive Director was called upon to attend meetings and offer suggestions for possible solutions to the very serious problems in the shrimp industry.

A push by the Reagan administration to abolish the Grant-in-Aid programs to the states and to further reduce research activities in the shrimp industry, including closing the Galveston Laboratory, required a great deal of the Director's time and effort. Much of the development of professional staff in the Gulf States over the past two decades came about as a result of the Grant-in-Aid programs. Coastal zone legislation in some of the Gulf States was a direct outgrowth of research under the Grant-in-Aid program. Much of the scientific data going into the shrimp management plan prepared by the Gulf of Mexico Fishery Management Council came from research under the Grant-in-Aid programs. Data to guide season setting in the shrimp fishery has been provided by these programs.

The thrust of the Executive Director's effort was directed towards getting the trade associations and recreational interests to actively push for a continuation of these programs. The effort were largely successful as recreational interests as well as commercial interests joined in an effort to save our research programs. Thus far, it appears we have been successful.

A substantial amount of the Executive Director's time was utilized in such activities as planning for the State Director's meeting in Washington, D.C., attending various trade association and recreational fishery meetings, and preparing and delivering speeches at various meetings.

## MEETINGS/ACTIVITIES OF EXECUTIVE DIRECTOR

### *Gulf States Marine Fisheries Commission Meetings and Activities*

32nd Annual Fall Meeting, New Orleans, Louisiana - October 1981  
SEAMAP organizational meeting, Ocean Springs, Mississippi - October 1981  
Planning meeting with Ted B. Ford regarding GSMFC Spring Meeting  
New Orleans, Louisiana - January 1982  
32nd Annual Spring Meeting, Biloxi, Mississippi - March 1982  
Meeting with Ted Ford regarding Commission budget, New Orleans, Louisiana - July 1982

### *Gulf State-Federal Fisheries Management Board Meetings and Activities*

Meeting with blue crab fishermen and processors regarding history for Blue Crab  
Profile, Lafitte, Louisiana - October 1981  
GS-FFMB Meeting, New Orleans, Louisiana - October 1981  
MAFAC Meeting, Washington, D.C. - January 1982  
Organizational Meeting for State Directors Meeting, Washinton, D.C. - January 1982  
Site inspection with Buck Byrd regarding S-F Contracts, Ocean Springs, Mississippi  
- February 1982  
State Fish and Wildlife Directors Meeting, Washington, D.C. - April 1982  
MAFAC Meeting, Seattle, Washington - June 1982  
Menhaden Advisory Committee Call Meeting, Austin, Texas - July 1982

### *Industry Meetings and Activities*

Louisiana Shrimp Association Meeting, New Orleans, Louisiana - November 1981  
Presentation on Title IV of the OCS Act to Shrimp Harvesters Coalition,  
Thibodeaux, Louisiana - January 1982  
Louisiana Shrimp Association Annual Convention, New Orleans, Louisiana - March 1982  
Texas Shrimp Association Annual Convention, San Antonio, Texas - March 1982  
Meeting with Leroy Kiffe regarding soliciting Louisiana Shrimp Association  
support of P.L. 88-309, Lockport, Louisiana - April 1982  
Presentation on shrimp legislation to Aransas Pass Shrimp Association,  
Corpus Christi, Texas - May 1982  
Texas Shrimp Association Meeting, Harlingen, Texas - September 1982

### *Congressional Meetings and Activities*

Meeting with Congressman Breaux's staff regarding H.R. 4041, New Orleans, Louisiana  
- October 1981  
Testimony before House Subcommittee on State, Justice, Commerce and the Judiciary  
(field hearing), New Orleans, Louisiana - October 1981  
Meetings with Gulf Congressional representatives regarding cuts in Federal budget  
and support for Gulf fishing interest, Washington, D.C. - November 1982  
Meeting with Senator Tower regarding shrimp legislation, Austin, Texas  
- February 1982  
Testimony in support of P.L. 88-309 and P.L. 89-304 before House  
Appropriation Committee, Washington, D.C. - April 1982  
Meetings with Gulf Congressional representatives regarding support of P.L. 88-309  
and P.L. 89-304, Washington, D.C. - April 1982

Meetings with Gulf Congressional representatives regarding support of Gulf fishing interest, Washington, D.C. - May 1982

Meetings with fishermen regarding support of Congressman Breaux's shrimp legislation Golden Meadow, Louisiana - May 1982

### *Other Meetings and Activities*

Meeting with Compact Commission Directors and Bill Gordon, NMFS regarding strategy to be used in spring to prevent further federal budget cuts in fishery programs, Portland, Oregon - November 1981

Meeting with Compact Commission Directors regarding State Fish and Wildlife Directors meeting to be held April 1982, Washington, D.C. - December 1981

Presentation at Boat Show Meeting, New Orleans, Louisiana - April 1982

Sea Grant Advisory Symposium regarding fuel conservation in the fishing industry, Biloxi, Mississippi - April 1982

Meeting with Ted Ford and Harry Schafer regarding reciprocal agreement between Alabama and Louisiana, New Orleans, Louisiana - April 1982

Louisiana Department of Wildlife and Fisheries regarding setting of shrimp season in Louisiana, New Orleans, Louisiana - April 1982

Meeting with Melvin Waters (NMFS) and Mike Voison regarding microbiological work going on at NMFS Charleston Laboratory, Houma, Louisiana - June 1982

Southeastern Fisheries Association Meeting, New Orleans, Louisiana - June 1982

Meeting at the Galveston Laboratory, NMFS, regarding laboratory projects, Galveston, Texas - August 1982

Meeting with Minerals Management Service regarding technology transfer conference, New Orleans, Louisiana - August 1982

International Association of Fish and Wildlife Agencies, Hilton Head, South Carolina - September 1982

## MEETINGS/ACTIVITIES OF ASSISTANT TO THE DIRECTOR

### *Gulf States Marine Fisheries Commission Meetings (GSMFC)*

- 32nd Annual Fall Meeting, New Orleans, Louisiana - October 1981
- 32nd Annual Spring Meeting, Biloxi, Mississippi - March 1982
- Shrimp Workshop Jointly held by Commission, NMFS and FAO, Key West, Florida -  
- November 1981
- Technical Coordinating Committee Call Meeting regarding SEAMAP Program, New Orleans,  
Louisiana - December 1981
- SEAMAP Subcommittee Meeting, New Orleans, Louisiana - January 1982
- Meeting with Cathe Campbell regarding Commission slide show, Ocean Springs,  
Mississippi - February 1982
- SEAMAP Subcommittee Meeting, New Orleans, Louisiana - February 1982
- Meeting with Commissioner Harper regarding October GSMFC Meeting, Grand Bay, Alabama  
- August 1982
- SEAMAP Subcommittee Meeting, Mobile, Alabama - September 1982
- Presented Testimony regarding Dredge and Fill in Nueces Bay, Corpus Christi, Texas  
- September 1982

### *Gulf of Mexico Fishery Management Council (GMFMC)*

- |                |                        |
|----------------|------------------------|
| October 1981   | Panama City, Florida   |
| December 1981  | Biloxi, Mississippi    |
| January 1982   | Savannah, Georgia      |
| March 1982     | Montgomery, Alabama    |
| June 1982      | Baton Rouge, Louisiana |
| August 1982    | Key West, Florida      |
| September 1982 | Tampa, Florida         |

### *Gulf State-Federal Fisheries Management Board (GS-FFMB)*

- Site Inspection with Buck Byrd regarding State/Federal Contracts,  
Ocean Springs, Mississippi - February 1982
- GS-FFMB Meeting, New Orleans, Louisiana - October 1981
- GS-FFMB Meeting, Biloxi, Mississippi - March 1982

### *Industry Meetings*

- Louisiana Shrimp Association Meeting, New Orleans, Louisiana - November 1981
- Louisiana Shrimp Association Annual Convention, New Orleans, Louisiana - March 1982

### *Congressional Meetings*

- Meeting with Congressman Breaux and Staff regarding H.R. 4041,  
New Orleans, Louisiana - October 1981
- Testimony before House Subcommittee on State, Justice, Commerce and the Judiciary  
(field hearings), New Orleans, Louisiana - October 1981

### *Other Meetings and Activities*

- Sea Grant Advisory Committee Meeting, Biloxi, Mississippi - October, 1981
- United States Fish and Wildlife Service Regional Fisheries Research Meeting,  
Biloxi, Mississippi - February 1982

Sea Grant Advisory Symposium regarding energy conservation, Biloxi, Mississippi -  
April - 1982

Louisiana Department of Wildlife and Fisheries regarding setting shrimp season,  
New Orleans, Louisiana - April 1982

Bureau of Land Management regarding marine research and SEAMAP Presentation, New  
Orleans, Louisiana - August 1982

# ALABAMA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

## Marine Resources Division

The Marine Resources Division (MRD) is responsible for management, production and enhancement of the state's marine fishery resources. The MRD conducts fisheries research aimed at increasing and protecting fishery resources, increasing the accessibility of fishery stocks to resource users and provides protection of these resources through enforcement of laws and regulations promulgated by the Commissioner.

The MRD contains the Administrative, Research and Management, and Enforcement Sections and had 32 full-time and two part-time employees during FY 1981-82.

### ACCOMPLISHMENTS

Accomplishments for the MRD during FY 81-82 exceeded enumerated goals established in all areas and reached into areas of accomplishments which were not cited goals. The creation of artificial fishing reefs from donated and discarded materials continue to receive major emphasis as it not only represents a habitat expansion program for reef fishes but also serves as an economical method for disposing of worthless material (see significant events).

One million dollars was obligated from monies generated from the lease of mineral rights in Mobile Bay, Mississippi Sound and territorial Alabama waters to provide oyster management funding. The MRD established a five-year management program in which \$200,000 per year would be utilized in capital outlay. One hundred and eleven oystermen were paid \$61,800.00 to move 15,450 barrels of oysters from polluted areas in Mississippi Sound to depuration areas.

Efforts continued during 1981-82 to develop early forecasts and predictive mathematical models for obtaining pertinent management data for the shrimp fishery. Laws and regulations pertaining to shrimp management are directed at protecting small shrimp (less than 68/pound) by area closures and maximizing shrimp catch by area openings prior to shrimp emigration in the Gulf of Mexico. The 1982 shrimping season was quite unusual in that the upper one third of Mobile Bay and portions of both Mississippi Sound and Perdido Bay contained on opening day and periodically throughout the shrimping season large numbers of shrimp which were smaller than 68/pound. Conservation officers responded to this unusual year by strictly enforcing the Alabama count law, thus discouraging shrimping activity in areas containing undersized shrimp.

Remarkably accurate mathematical models produced by the Alabama Shrimp Management Team in previous years, even though produced from assessment and monitoring information gathered at key stations in Mobile Bay and Mississippi Sound, demonstrated a need for further refinement in this area for the 1983 season. Growth models particularly will be established in key areas along a north-south axis in Mobile Bay, Mississippi Sound and the Perdido Bay systems to enable partial openings of areas within individual systems should the need arise.

In June 1982, the Alabama/National Marine Fisheries Service Cooperative Statistical Program, Project Number SF-9 was initiated. This project is 100% funded by the National Marine Fisheries Service and is designed to enhance data collections for both commercial and recreational fish and shellfish landed in Alabama. MRD is currently collecting catch statistics from processors in Mobile and Baldwin counties, the production from whom is essentially taken from inside or territorial waters of the State of Alabama. Catch data is transmitted to Southeast Fisheries Center in Miami where it is condensed, edited and stored on microcomputers at the Center, as well as being computerized in Seattle, Washington.

The MRD's Fishery Assessment and Monitoring Program is designed to provide a relative appraisal of marine and estuarine fish and shellfish stocks in Alabama. The programming, although designed to gather data from inside waters and main passes, meshes very nicely with other management agencies in the Gulf of Mexico (state and federal) during key periods to provide Gulf-wide assessment of fishery stocks.

MRD is now going into the third season of our assessment and monitoring program. This year several species were collected for the first time by our personnel, including frillfin goby, striped burrfish, bluntnose jack, bandtail searobin, bluespotted searobin, blackwing searobin, cobia, longnose anchovy, spinycheek sleeper, clown goby, black crappie, lined sole, bluegill sunfish, spotted sunfish, bank cusk-eel, ocellated flounder, and singlespot frogfish. Additionally, MRD's assessment and monitoring team collected several species for the first time in Alabama waters. These species included offshore lizardfish (tentative identification), yellow jack, striated bass, longnose anchovy, shoal flounder and houndfish.

Experiments at Claude Peteet Mariculture Center (CPMC) were conducted on spawning and culturing commercially and recreationally important marine fish and shellfish. Vermilion snapper (beeliners) spawned by MRD personnel in June 1982 represents the first recorded induced spawning of the species. Spawning was induced by both temperature manipulation and hormone injection. A bulletin describing culture techniques for producing bull minnows (a live bait used in marine waters) was published and distributed to national and international interests during the spring quarter of 1982.

All striped bass produced at CPMC were either tagged prior to release, held in ponds until cultured to a taggable size, given to the G & F Division, or stocked into Little Lagoon (a semi-isolated body of water in south Baldwin County). The reason for this procedure was to provide information on the movement of coastal stocked fishes and particularly their contribution to spawning populations in the Alabama River. Approximately 140,000 striped bass fingerlings were given to the G & F Division in a cooperative gesture for their assistance in brood collection and their monitoring efforts for juvenile striped bass on the upper Alabama River.

#### LAW ENFORCEMENT ACTIVITIES

MRD enforcement officers worked a total of 22,081 boat and shore patrol hours. Fifty-one search and rescue missions were made. Officers issued 273 citations for violations of Marine Resources law, with shrimping in closed waters being the major violation (29%) followed by net fishing in closed waters (14%). Citations were also issued for 86 water safety violations and 71 game and fish violations. Eighty-eight percent of the citations resulted in convictions.

## COMMERCIAL FISHERIES LANDING

Landings at Alabama ports during 1981 increased by 28% in volume and 39% in value over 1980 largely because of increased catches of shrimp, oysters and crabs. A total of 25.9 million pounds with a dockside value of \$33 million was landed in Mobile County and 11.2 million pounds with a dockside value of \$11 million was landed in Baldwin County.

Oyster landings during 1981 were the highest since 1977. Only 55,000 pounds of meats were landed in 1980 because of the losses from Hurricane Frederic and the 1979 flood while 1,330,000 pounds were landed in 1981 as a result of the Division's oyster rehabilitation program.

## COMMERCIAL FISHERIES RESEARCH AND DEVELOPMENT P.L. 88-309

During the 1981-82 fiscal year, Commercial Fisheries Research and Development funds were obligated for (a) assessment and monitoring of fishery stocks, (b) mariculture research, and (c) environmental assessment. A total of 309,456 fish was collected during this fiscal year. Fish taken from the various sampling stations in coastal Alabama are measured, recorded and the data entered on Apple mini-computer at Dauphin Island. From this entered data, a CPUE (catch per unit effort) can be derived for key species for which relative abundance comparisons from previous years is desired. Experiments on the culture of bull minnows continued at the Claude Peteet Mariculture Center. Bull minnows raised at the Center were marketed through Gulf Shores live bait dealers with revenue produced from sales placed back into operating funds of the R & D program. Similarly, local outlets were utilized to market shrimp, pompano and rainbow trout produced in pond culture experiments. The total sale of pond raised products was \$3,389.30 during the 1981-82 fiscal year.

Environmental assessment received increased emphasis during this reporting period. MRD personnel contacted applicants for Department of Army permits pursuant to Section 10 of the Rivers and Harbor Act (1898) and Section 404 of the Clean Water Act to review with the applicant proposed construction. During the review process alternative procedures were suggested when construction projects jeopardized essential fishery habitat. The MRD has worked closely with the Coastal Area Board (now called Department of Environmental Management, Coastal Programs) in the development of a workable wetlands mitigation program.

Table 1

### A SUMMARY OF COMMERCIAL FISHES LANDED IN ALABAMA

Quantity - Thousands of Pounds and Thousands of Dollars											
Year	Shrimp	Oysters	Crabs	Red Snapper	Mullet	Flounder	Others	Total	% Inc.	Value	% Inc.
1979	20,500	455	1,300	535	624	671	5,845	29,955	0.7	\$52,000	47.0
1980	15,030	55	1,600	418	622	501	6,574	24,800	-17.3	31,800	-38.8
1981	21,100	1,330	2,462	503	524	585	6,396	32,900	27.7	44,200	39.0

Table 2

FISH KILLS

FY 1981-82

Only three fish kills were reported to the Division during FY 81-82. One apparently resulted from a "jubilee" in Bon Secour Bay and the other two were also associated with localized low dissolved oxygen.

Location	County	Date	Total Killed	
			Number	Weight
Gulf State Pier	Baldwin	10 July	750	31
Bon Secour Bay	Baldwin	19 July	20,012	1006
Terry Cove	Baldwin	5 & 6 Aug	1,600	430
			22,362 <sup>1</sup> /	1467

<sup>1</sup>/Menhaden except 20,000 eels and 12 flounder from Bon Secour Bay.

ANADROMOUS FISH PROJECT - P.L. 89-304

During the past fiscal year 12,400 advanced striped bass fingerlings (5-8 inch total length) were tagged with internal anchor tags and released into the tidal streams in coastal Alabama. Additionally 25,000 small fingerlings (2-inch in length) were stocked in Little Lagoon, a semi-enclosed body of water in south Baldwin County and 140,000 fingerlings (2-inch) transferred to the Game and Fish Division for release into the freshwater areas of Alabama. Emphasis has been placed this year on the evaluation of the success of the striped bass program. Attempts were made to confirm natural spawning by delaying striped bass stocking in the state until after intense seining efforts were conducted on the Alabama River to confirm natural reproduction. No natural reproduction was found.

## ARTICLES AND PAPERS

Eckmayer, W.J. In Press. Growth and Survival of Hatchery-Reared American Oysters (*Crassostrea virginica*) in Alabama. North American Journal Fisheries Management.

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Hawke, J.P. 1982. Spawning and Pond Production of Selected Marine Species. Federal Aid Annual Progress Report 2-380-R-1. Mimeograph File Report.

Hawke, J.P. 1982. The Gulf Killifish: A Prime Candidate for Aquaculture in Coastal Alabama. Alabama Conservation Magazine. March/April 1982.

- Heath, Steven R. 1982. Shrimp Fishery Vital to Alabama's Economy. Alabama Conservation Magazine. Vol. L11, No. 4. 8-9 pp.
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- Tatum, Walter M., J.P. Hawke, R. Vernon Minton, W.C. Timble. 1982. Production of Bull Minnows (Fundulus grandis) for the Live Bait Market in Coastal Alabama. Alabama Marine Resources Bulletin No. 13. Hugh Swingle Editor.
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- Wade, C.W. 1982. Age and Growth of Alabama Spotted Seatrout and Red Snapper. Proceedings Southeastern Assoc. of Fish and Wildlife Agencies. In Press.
- Wade, C.W. 1982. Fishing Alabama's Coastal Waters (Part One Inshore). Alabama Conservation Magazine. Vol. 52(3):12-13.
- Wade, C.W. 1982. Fishing Alabama's Coastal Waters (Part Two Offshore). Alabama Conservation Magazine. In Press.

## FLORIDA DEPARTMENT OF NATURAL RESOURCES

Division of Marine Resources  
Bureau of Marine Science & Technology  
Bureau of Marine Resource Regulation and Development

### BUREAU OF MARINE SCIENCE & TECHNOLOGY

The Florida Department of Natural Resources' Bureau of Marine Science & Technology activities in Gulf and Atlantic fisheries management plans included supplying research data and critiques for coral, lobster, mackerel, stone crab, shrimp, red drum, reef fish and swordfish. Other assistance was afforded at the international, federal and state levels. Staff has been extensively involved in advising the Governor's Office on Outer Continental Shelf exploratory oil drilling environmental impact statements. A summary of faunal zonation of the West Florida Shelf was compiled using data from the Hourglass Cruises. Analysis of this information for the Governor's Office showed three faunal zones by depth off Central West Florida. Staff provided testimony in the Manatee County et al. vs. Anne Gorsuch (EPA) et al. case. The resulting court ruling was an injunction against disposal of dredge spoil offshore of Tampa Bay on a live hard bottom community. Personnel assisted federal and state offices in developing and reviewing management plans for several proposed and existing marine sanctuaries. This included evaluating proposed sites, reviewing research proposals, and evaluating ongoing research projects. The World Bank requested assistance in an environmental study of the Roatan, Honduras, reefs and marine communities for land use planning. The expertise provided by the Bureau was part of an international team of engineers, economists, agronomists, biologists and others.

#### FINFISH

Length frequency monitoring of the king mackerel commercial fishery has been ongoing since 1975. Analysis of the resulting data suggests that annual recruitment is variable with dominant year classes evident in the fishery for several years. Fluctuations in recruitment affect year class strength and probably affect yield. This monitoring is part of a program that involves tagging (14,000 fish tagged), migration analyses, mortality, population abundance and stock identification.

Further analysis of snook tagging in the Collier County area since 1975 has verified a continued decline in young fish. This year the Florida Governor and Cabinet imposed a moratorium on snook fishing during June and July. These two months mark the peak of snook spawning and the height of recreational fishing pressure on snook. Additionally, the Governor and Cabinet placed a ban on snook fishing in January and February to afford greater protection to snook during cold weather. The legal fishery takes very few snook during this time. Snook are, however, the object of a large illegal fishery when they become lethargic from cold water. This emergency measure will aid enforcement.

Major life history studies on red drum continued this year to determine age, growth, mortality, reproduction characteristics, spawning times and areas, larval recruitment, and juvenile habitat requirements. Initial otolith analyses indicate that most red drum captured from both Tampa Bay and Mosquito Lagoon are less than three years old, although

their longevity probably exceeds twenty years. Studies of the chromosomes of red drum juveniles collected from these areas show differences in banding patterns, indicating distinct population differences. Field collections of eggs and larvae revealed that red drum begin spawning in August. Red drum gonads are being examined to determine spawning times and the areas and sizes at which spawning begins. Laboratory studies of red drum reproductive characteristics are being conducted to investigate the correlation of hormonal levels with gonadal condition. Stomach contents from field collections of larvae and juveniles show that larvae feed primarily on copepods; juveniles on mysids, amphipods, shrimp and crabs.

Life history studies for gag grouper, scamp and yellowedge grouper continued. Gag grouper were successfully spawned in the laboratory using temperatures, photoperiods, and hormones. Development of larvae was variable and survival was low. Eggs and larvae were used for detailed descriptive analyses. Methods for sex reversal using hormones are being studied. Analysis of reproduction strategies in yellowedge grouper and scamp continued. Gonadal analysis of both species was completed. Methods for age analysis using otoliths continued for yellowedge and scamp.

Studies on occurrence and distribution of selected larval and juvenile fishes in Lake Worth and Loxahatchee River have been initiated.

Age and growth studies of silvermullet continued. East coast migration studies have been initiated.

The finfish reference collection is being computerized.

#### INVERTEBRATES

Florida spiny lobster population differences and fishing methods were investigated. Field studies on the rates of escape and mortality among sublegal lobsters used to bait traps were completed. Design of lobster trap escape gaps were investigated and field tests were initiated. A cooperative program with the University of Florida and Florida Sea Grant is nearing completion on testing the success of artificial bait over sublegal lobsters as bait. A study contracted to the University of South Florida to evaluate the origin of Florida lobster successfully isolated mitochondrial circular DNA. Preliminary analyses indicate that there are at least three genetically different groups in the Florida Keys.

Experiments to test and evaluate current and potential stone crab fishery practices on claw removal and on-board handling initial processing were continued.

A two-year survey of the Tampa Bay blue crab population was completed. Analysis of the data show a March spawn with a minor September spawn. Data on size, sex, presence of eggs, injuries, parasites, and seasonal and long-term fluctuations were collected. An east coast site was also surveyed for data set comparison. This is the second year of east coast trapping. A tagging program in Tampa Bay initiated in 1982 will continue to gather most of the aforementioned data, migration information and identify possible selectivity of the fishery. To date, greater than 1,300 crabs have been tagged; 10,000 will be tagged by the conclusion of the field work.

#### HABITAT

Geo-Based Information System: A real habitat loss for estuarine and coastal bottoms is being documented through time series evaluations of aerial photographs and maps. Such

losses will eventually be compared to fisheries data to study trends and impacts. Under contract with the Florida Department of Environmental Regulation, the Bureau has begun work on developing an assessment of fisheries habitat loss, creating a geographic digital data base, and establishing a geographical information system to analyze and house the data. This is federally funded through the Office of Coastal Zone Management. Three Florida coast sites were selected as pilot study areas: Charlotte Harbor, Lake Worth, and Tampa Bay. Data have been compiled for Charlotte Harbor. Once data are computerized, they can be statistically manipulated to ascertain the total amount of habitat loss and the amount of loss of each habitat type, as well as changes in adjacent land use. This will be helpful because there is no current inventory of coastal destruction and alteration and its quantitative relationship to recreational and commercial fisheries resources. The geobased information system (GIS) is capable of processing satellite and aerial imagery and integrating this with other data bases to provide an effective tool in the management of natural resources. Eventually, it is believed, loss of habitat or habitat change can be cost effectively monitored in subsequent years.

#### COOPERATIVE PROGRAMS

Further applications of GIS may include using this system to correlate the distribution of ichthyoplankton with ocean currents and fronts in the Gulf of Mexico. Acquisition of ichthyoplankton samples will be a cooperative effort with five Gulf states and the National Marine Fisheries Service under the SEAMAP program. The first data set in this program, including oceanographic environmental ground truth data, has been collected.

Additionally, GIS can use satellite imagery from the Coast Zone Color Scanner. This will provide a method of predicting and monitoring Florida red tides caused by the dinoflagellate, Ptychodiscus brevis. Prediction is now impossible due to the large hydrographic boundaries in which either initiating oceanic fronts develop or in which the red tide blooms may be transported. Shipboard data have been collected and continue to be collected which can now be effectively analysed in conjunction with satellite imagery in order to develop a conclusive method for predicting and monitoring these blooms. Other cooperative programs in red tide research primarily involve toxicology. The University of Miami, School of Medicine, is studying the toxicity of shellfish affected by red tides. Currently, the work is focused on developing assay methods.

During a "bloom" of red tide in the Fort Myers area in the winter of 1982, there was a concurrent "bloom" of tunicates and a die-off of 39 manatees. It has been suggested that the tunicates incidentally ingested by the manatees had concentrated the red tide toxin, resulting in loss of equilibrium of the manatees leading to death by drowning. This Bureau worked with U.S. Fish and Wildlife Service on tunicate/red tide toxicity research and also tested manatee tissue for red tide toxicity.

This Bureau also worked with the University of Miami to identify macroalgae and dinoflagellates collected from ciguateric areas in the Caribbean.

Analysis of data collected during the five-year cooperative program with the National Park Service at Biscayne National Park is ongoing. Similar research on population dynamics, natural and human impacts, and resulting changes in coral reefs was initiated this year as a cooperative pilot project at Looe Key and Key Largo Marine Sanctuaries.

#### PLANKTON, PLANTS, AND MARICULTURE

Life history and ecological studies of Prorocentrum, a dinoflagellate implicated in ciguatera poison, were initiated.

Mass culture of five algae for larval fish food continued; four algae cultures were initiated. Culture of nematodes, rotifers, and Artemia continued.

Suggested techniques for pruning mangroves were discussed with Florida Sea Grant. As a result, pruning guidelines have been developed and are available to the general public. Airlayering experiments were concluded. It was found that the present technique was successful for white mangroves.

The seagrass mitigation/restoration technique of planting turtle grass seeds in peat pellets was unsuccessful in dynamic areas. Work on transplant techniques continues. Sediments analysis and bacteria-free culture research continues. Male/female plant locations in seagrass beds seem to be related to soil chemistry. Other work found that warm winters correlate with early reproduction levels.

Turtles tagged and released this year totaled 1,023 (1981 hatchlings). Nest sighting recorded in 1981 were 13,498; this included loggerhead, green and leatherback turtles. Greater than 375 km of beach were surveyed.

#### SHELLFISH ENVIRONMENTAL ASSESSMENT

Almost 11,300 sea water and meat samples were tested for fecal coliform contamination to monitor Florida's shellfish growing waters. Florida has, as of 1980, 512,277 acres of Approved waters, 110,281 acres of Conditionally Approved waters, 292,484 acres of Prohibited waters, and 1,352,635 acres of Unclassified waters as calculated by the Food and Drug Administration's Northeast Technical Unit. Six environmental specialists routinely monitor open and prohibited areas. In addition to routine water monitoring, personnel are responsible for red tide sampling and comprehensive shellfish area surveys or reappraisals. A comprehensive survey for Ochlockonee Bay was updated, completed, and approved resulting in the reclassification and opening of 2,259 acres to shellfish harvesting. Potential use of aerial photographs and land use maps has been encouraging; these data will be incorporated into shoreline surveys when applicable. The newly formed shellfish growing water survey team is conducting a survey of the eastern portion of Choctawhatchee Bay. Shellfish Harvesting Area Atlas maps should be completely updated and revised in 1983.

Staff has continued to assist and support federal and university research on the occurrence of pathogenic Vibrio bacteria in Florida coastal water and shellfish. This research is designed to evaluate sources, reservoirs, and significance of such bacteria in estuaries.

#### BUREAU OF MARINE RESOURCE REGULATION AND DEVELOPMENT

A primary responsibility of the Bureau is the inspection of Shellfish and Blue Crab Processing Plants to insure that shellfish and blue crabs are processed in a sanitary manner. Other programs included in this Bureau are the Oyster Culture Program, Shellfish Leasing Program, Derelict Vessel Program and the Artificial Fishing Reef Program.

The Processing Plant Inspection Program has a staff of five sanitarians responsible for ensuring that the oyster, clam and blue crab processing plants throughout Florida maintain strict adherence to sanitary standards as provided by Florida law in the harvesting and processing of shellfish/blue crabs for consumer use. During the 1982-83

period a total of 230 Oyster Processing Plants and a total of 39 Blue Crab Processing Plants were certified to process shellfish and blue crabs.

One full-time staff member is utilized in the Shellfish Leasing Program, and is responsible for inspection of existing shellfish leases for compliance with state law in the cultivation of oysters and clams in state waters, and for investigation of applications for new leases in an effort to ensure that the requested lease areas are compatible with those conditions favorable for oyster and clam cultivation. During the fiscal year 1982, sixteen new shellfish leases were issued for a total of 44.19 acres. This brings the total shellfish leased acreage to 2,174.052 acres for a total revenue of \$10,548.50.

The Artificial Reef Program implemented August 7, 1979, by the Governor and Cabinet, had 12 projects funded between the first year and 1981. By June 1982, that figure jumped to 27.

The success of the Exxon Corporation's donated oil/gas platform as an artificial fishing reef 35 miles offshore of Carrabelle in 1980 led to another in 1982. The newer reef, a gas platform from Tenneco, went down 22 miles south of Pensacola in September 1982.

A number of boats and vessels were sunk at reef sites by governmental agencies with the aid of grants as the result of the state's derelict vessel program. The "Derelict Vessel Removal and Disposal Program" makes use of one full-time staff member and assistance of the Division of Law Enforcement Marine Patrol to accomplish the program goals. The program is responsible for the cleanup of junked, abandoned and dismantled vessels in state waters. Many of these were used for the construction of artificial fishing reefs. A total of 88 vessels are presently being let out for bid.

Eight staff members are assigned to the Oyster Culture Program and are responsible for the construction of artificial oyster reefs to enhance the production of oysters in selected areas around the state. They also collect shucked oyster shells from selected oyster shucking establishments, to stockpile and "cure" before using as cultch in "planting" these reefs. During the fiscal year 1982 approximately 37 acres of oyster reefs were planted by the oyster culture staff, utilizing 133,728 bushels of cultch. All of these were planted in Apalachicola Bay at pre-selected locations. During this period the oyster culture staff collected 589,884 bushels of oyster shells from shucking houses.

Removal of oysters from polluted areas to areas of good water quality for purification is justifiable in terms of public health considerations and wise resource management. Likewise, removal of small intertidal oysters to areas more hospitable for growth and survival is a good management practice. In the last decade, five public oyster relaying projects have received legislative approval, and appropriation, for the Cedar Key--Horseshoe Area in Dixie and Levy Counties near the mouth of the Suwanee River. Participants were paid a per-bushel wage to move oysters from polluted areas and/or tops of intertidal reefs to gaps of deeper water throughout the reefs. A study of that year's planting, concluded that: "From a biological standpoint the planting has been highly successful, and there is no reason why the planting would not be commercially successful also." From these modestly-funded (\$25,000 - \$50,000) projects, came the 1982-83 appropriation of \$300,000 for relaying oysters in Apalachicola Bay, and adjacent Wakulla County; \$250,000 was allocated for Apalachicola Bay and the remainder for Wakulla County. The Department contracted with the Wakulla County Commercial Fisherman's Association and the Franklin County Seafood Workers' Association to assist in informing the local industry of the project, to assist in selecting harvest and relay areas, and be responsible for

paying project participants. Participants were encouraged, but not required, to use "standard" fish boxes for measuring and transporting oysters. The "standard" fish box holds two "bushels" of shellstock. In Florida a "bushel" of oysters is not necessarily the 2,150.42 cubic inch Winchester bushel in common usage, but consists of approximately 60 pounds of shellstock. Loads of oysters were brought to the relaying site and number of bushels were counted by Department personnel. After oysters were spread on the bottom, participants were issued a receipt. The Associations each received a copy of individual receipts to develop a weekly billing statement, and the Department retained a copy for verification of billing statements. Each Association was paid \$1.07 per bushel delivered; \$1.00 per bushel was paid to project participants and the Associations retained \$0.07 per bushel for their services.

In Wakulla County, oysters were removed from two Prohibited areas, the mouth of Spring Creek and the Purify Creek vicinity. Transplanting sites included gaps in and around Carter Bar, and the north tip of Piney Island. Approximately 13,200 bushels were removed from the Spring Creek area and placed in gaps around Carter Bay; the remainder, about 31,300 bushels, were transplanted at the Piney Island site. This project was completed on July 22, 1982.

In Franklin County, about 41,000 bushels were moved from the Prohibited area adjacent to Eastpoint and transplanted to an Approved area approximately one-half mile offshore. Enough money remains to transplant an additional 181,000 bushels in Franklin County. The project will not recommence until the late winter/early spring episodes of high river stage and resultant elevated fecal coliform abundances force temporary closure of the Apalachicola Bay harvesting areas. The relaying project will temper the economic effects of such temporary closures. The contract between the Franklin County Seafood Workers' Association has been subsequently amended to allow transplanting of intertidal oysters from Approved areas. Preliminary observations indicate abundant oyster resources near Rattlesnake Cove to the east and the 13-Mile area to the west.

## LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES

### Seafood Division

The Office of Coastal and Marine Resources manages the renewable seafood resources of the state. Its Seafood Division traces its roots back to a program initiated in 1879 in recognition of the value of Louisiana's renewable oyster resources. Subsequent programs were later developed to protect, manage, study and effectively utilize all commercially valuable seafood resources of the State of Louisiana, which have an annual dockside value in excess of \$100,000,000. This division is divided into nine distinct sections: administration, fisheries management, research at the Lyle S. St. Amant Marine Laboratory, oyster lease survey, statewide monitoring of seismographic activities, monitoring of hydrological conditions along the coast, evaluation of coastal use permits issued by the Army Corps of Engineers, Loop monitoring activities, and fish kill investigations.

#### ADMINISTRATION

The administrative section controls the budgetary, personnel, and policy functions of the division. Its technical and administrative personnel also perform in various management and research activities.

The division provided fisheries expertise for fishery management task forces to assist in the preparation of Fishery Management Plans. The department was represented on the Gulf of Mexico Fishery Management Council (GMFMC), and on the Gulf States Marine Fisheries Commission (GSMFC).

The section administers various permits issued to individuals who engage in marine fisheries activities not specifically sanctioned by law; 53 Scientific Collecting Permits were issued to collect fish and other marine organisms in the course of research projects or academic studies; 20 baitfishing permits to commercial fishermen wishing to market bait shrimp between the spring and fall inshore shrimp seasons. In addition, 66 experimental fishery permits were issued to fishermen to harvest underutilized species or to assess the use of experimental gear (see Fisheries Management Section).

#### SEISMIC SECTION

No company is allowed to conduct seismographic work in Louisiana without first securing a permit from the department. Seismic agents are assigned to one or more crews, and reports on the activities of the crew are filed weekly by the agents. The seismic agent's duties are to inspect the work of field survey crews engaged in searching for oil formations in order to prevent the destruction of, or injury to, fish, oysters or other natural resources; he checks the discharge of explosives and other energy sources for compliance with the rules and regulations governing seismic operations set by the department. He observes that no lettering occurs, and no pipes or other materials are discarded or left standing in the water or land without being properly lighted and marked. He keeps records and makes daily reports on the number of charges fired, hole depths, effects on wildlife, and other matters relating to the activities of seismic crews.

There were 60 inshore seismic crews and 12 offshore crews permitted to work in Louisiana in 1982.

#### OYSTER LEASE SURVEY SECTION

A moratorium on the taking of applications for waterbottoms to culture oysters had been imposed by the Wildlife and Fisheries Commission in April 1978, because there was a large backlog of applications not yet processed into leases. In 1982, the moratorium was lifted conditionally for those applicants who agreed to hire a private surveyor to survey the lease application.

As a result 714 applications were taken; added to this number were 301 applications received as a result of 15 year expiration and automatic renewal of existing leases. The number of surveys made was 596; section surveyors made 327 of these surveys, private surveyors made 269. A total of 709 leases were calculated, plotted, drawn and issued (440 made by department surveyors; 269 made by private surveyors). The following number of licenses were sold: 94 shop and resale, 1095 tonnage and 481 dredging. In addition, 43 undersize dredge permits were issued. Revenues collected were \$175,781 in application fees, and \$544,613 in lease rental.

The federally funded (P.L. 88-309) "Permanent Monuments for Oyster Lease Surveying" development project is placing and maintaining a network of permanent monuments were established and plotted, adding approximately 150 square miles of coast to monument control.

#### FISHERIES MANAGEMENT SECTION

Shrimp: Total shrimp landings for Louisiana in 1982 were reported to be 57,248,000 pounds (heads off); as a result of small cold storage holdings price structure for the brown shrimp stock was exceptionally strong with record prices reported for all counts of brown shrimp. In spite of the average production level, price levels resulted in the spring season being a most profitable one for the fishermen.

Hydrological and biological sampling indicated the 1982 spring shrimp season would produce less shrimp than the record 1981 season. Recruitment of shrimp postlarvae into the estuary was sporadic; growth of existing juveniles was slow. High river stages and spring rains reduced salinities in the nursery areas. In 1981, there were nearly 3 million acres with salinities above 10 ppt; in 1982 only about 1.5 million acres were available. The cold water from melting snow and spring rains, along with the persistent passage of cool fronts, reduced water temperatures to below the range for maximum growth. In 1981, there were 0 hours in which water temperatures were below 20°C after April 8, in 1982 there were approximately 80 hours below 20°C.

The state's inside waters were opened by zones. At 12:01 am on May 17, Zone 2 (the area from Southwest Pass of the Mississippi River to the westernmost shore of Vermilion Bay) was opened to shrimping; and on May 24, Zone 1 (the area from Southwest Pass to the Mississippi State Line) and Zone 3 (the area from the western shore of Vermilion Bay to the Texas State Line) were opened to shrimping.

Surveys of fishermen and commercial docks during the opening week of the season in Zone 2 indicated the season was off to an average start. Many of the docks on opening day were pleased with the amount of shrimp being landed, and some even reported the season's

start to be better than 1981. The commercial catch varied significantly from boat to boat in both catch and grade of shrimp over a very short distance. During the last two weeks of May, hydrological conditions all across Louisiana's coast improved and some late recruitment occurred. The commercial catch of brown shrimp offshore and white shrimp both inshore and offshore during the summer and fall was well below that of 1981.

Dockside shrimp prices remained relatively stable were significantly higher than 1981; prices for shrimp were, by the end of the year, as much as 100 percent above 1981 levels.

Oysters: The Bay Gardene oyster seed ground was closed in 1982. Oyster production on the public reefs east of the Mississippi River was 691,172 sacks of oysters larger than 3" and 198,481 barrels of seed oysters. A special shell plant consisting of 2400 cubic yards of clam shell was made in Bay Gardene. This shellplant was funded by Gulf Oil to replace reef damaged while laying a 6 inch pipe line through Black Bay.

Both Bay Junop and Sister Lake oyster seed grounds located in Terrebonne Parish were open to commercial oyster fishing. As a result of shell plantings in 1979 and near optimum hydrological conditions, oyster production was the highest in recent years.

Production from Bay Junop during that portion of the season occurring in calendar year was 3,575 sacks of commercial oysters and 62 barrels of seed oysters. This raised the production total from Bay Junop for the 1981-82 season to 15,641 sacks of commercial oysters and 1,701 barrels of seed oysters; this was a record.

Square meter samples in Sister Lake in June, indicated there were in excess of 150,000 barrels of oysters available for harvest. From September 8, when the season opened, through November 20, when Sister Lake was closed by the Health Department, a total of 69,652 sacks and 45,467 barrels (combined total of 80,293 barrels) of oysters were harvested. This is the largest amount of oysters taken out of the lake since the 1953-54 season when 90,000 barrels were harvested. When Sister Lake was closed, due to high bacteria counts in water samples, there were still substantial quantities of oysters remaining in the lake.

There were three significant events with regard to oysters west of the Mississippi River, including the oyster seed grounds located in Terrebonne Parish which occurred during the year. First, was a record number of oysters available for harvest as indicated by the square meter samples and subsequent commercial harvest. Second, on September 14, the State of North Carolina placed an embargo on Louisiana oysters as a result of elevated fecal coliform levels in the oyster meat. This embargo lasted for six weeks and it was estimated to have cost Louisiana oyster fishermen approximately \$500,000 worth of business. The third, and probably most significant event pertaining to oysters, began during the first week of November. As a result of over 400 cases of gastroenteritis during the first two weeks of November, the Sister Lake oyster seed ground was closed on November 19. On November 22, large areas of Terrebonne Parish and Barataria Bay were closed to oyster harvesting by the Departments of Health and Human Resources and Wildlife and Fisheries, as a result of shellfish-implicated illness.

Subsequent cooperative water sampling by the Department of Health and Human Resources and the Department of Wildlife and Fisheries indicated coliform counts exceeded the National Shellfish Sanitation Guidelines throughout most of western Terrebonne Parish. The source of the contamination in this area appears to be coming from two areas: the City of Houma and the Atchafalaya River. By the end of December, an intense cooperative investigation was being conducted by the Departments of Natural Resources, Health and Human Resources, and Wildlife and Fisheries.

Environmental conditions for Southwest Louisiana, in particular the Calcasieu Lake system, were not conducive to oyster survival and growth. As a result of near drought conditions that prevailed during the year, considerable mortality resulted from high salinity conditions. The reported production was 100,000 sacks for Calcasieu Lake (One million pounds of meat). Sport production was significant, however, the actual figure is not available.

Crabs: Catches of blue crab during the first six months of the year, by both commercial crab fishermen and shrimp trawlers, was significantly below that of past years. The dockside price of blue crabs ranged from 19¢ to 55¢ per pound.

In Terrebonne Parish, as a result of increased salinities during 1981 and 1982, the catch of stone crabs by commercial crab fishermen increased significantly. By September, some of the fishermen had found a market for the claws and were selling them to restaurants for \$2.50/pound. The production of soft shell crab has been increasing over the past several years. This is a seasonal operation, primarily during April and May. Some fishermen were shedding as many as 150-200 crabs a day and selling them to the restaurants for \$1.00 to \$1.50 per crab.

Crab production in Lake Pontchartrain was down from previous years and seemed to follow a coastwide cyclic phenomena.

Research: The completion report was prepared for a federally funded (PL 88-309) project entitled "A Study of Gulf Menhaden, Brevoortia patronus, in Louisiana". A portion of the completion report will be published as a Louisiana Department of Wildlife & Fisheries (LDWF) Technical Bulletin during 1983. PL 88-309 Project 3-43-R, "An Evaluation of Gill Nets of Various Mesh Sizes" was completed and published.

The second year of field sampling for the "Wing Net Study" was completed. This project involves sampling with two 6' x 6' stationary wing nets during the entire ebb phase of the tidal cycle. Samples were taken on randomly selected days, on each (new and full) moon phase. The nets were constructed of 5/8" bar mesh (1½" stretched) webbing, and ten-minute samples were taken hourly. Shrimp and blue crab catch in the wing net samples were significantly below that recorded in 1981. This is in direct contrast to the brown shrimp catches that were observed in the the trawl samples.

Field work on the federally funded P.L. 88-309 "Territorial Sea Project" was begun. Objectives of this project were (1) to monitor shrimp and groundfish populations in Louisiana's inshore and territorial waters, (2) to monitor hydrological conditions in the inshore and territorial waters with biological data collected in the trawl samples.

A total of 3,330 biological (shrimp monitoring) samples were taken for this project. These included 546 plankton samples, 1,343 6' trawl samples, 1082 16' inshore trawl samples, and 359 16' offshore trawl samples. The plankton nets used were 1/2 meter circular nets which were conical shaped and had a 505 micron mesh opening. The 6' trawl was a flat otter trawl that had a body constructed of 3/8" bar (3/4" stretched) mesh and a tail which had 1/4" bar ( 1/2" stretched) mesh. The 16' trawl used for both inshore and offshore sampling had 3/4" bar (1 1/2" stretched) mesh body and a 1/4" bar (1/2" stretched) mesh tail. Each gear was towed for ten minutes when taking the samples.

SEAMAP: Louisiana's role in SEAMAP's survey was to sample the shallow Gulf waters off Louisiana from the beach out to 5 fathoms. Biologists collected weekly 16-ft trawl samples at one fathom increments along a transect extending gulfward from the coastline;

zooplankton was also sampled at the 1 and 5 fathom stations. Concurrent measurements of conductivity, salinity and temperature were made along with top and bottom oxygen measurements. Samples were collected from June 15 - July 15. The data collected were coded and forwarded to National Marine Fisheries Service (NMFS) in Pascagoula, Mississippi.

Underutilized Species: The center of experimental fishing activity east of the Mississippi River was the Hopedale and Yscloskey area of St. Bernard Parish. Approximately 937,000 pounds of striped mullet were caught by permitted purse seines east of the Mississippi River. Nearly all of these fish were trucked to processing plants in Florida where they were prepared for overseas markets.

Renewed interest in eel fishing occurred, and four permits were issued for the fishery. Catch reports show over 12,000 pounds caught in the last three months of the year.

Shell Dredging: Shell dredging leases in Lakes Pontchartrain and Maurepas expired in 1982 and were renewed by the department until 1997. The U.S. Army Corps of Engineers and the Louisiana Department of Natural Resources issued dredging permits until 1987. Prior to the issuance of the permits, controversial and much debated public hearings were held in October in Jefferson and Iberia Parishes. The pros and cons of shell dredging were voiced by 35 individuals or group representatives at the public hearing.

The three shell leasing companies in Lakes Pontchartrain and Maurepas: Louisiana Materials, Radcliff Materials, and Pontchartrain Materials, produced 2,604,151 cubic yards of shell that provided the State with \$708,452 of revenue. The renegotiation for leases increased the revenue to be paid by the shell industry to the State from 21.5¢ a cubic yard to 30.5¢ a cubic yard minimum, with subsequent annual increases to be based on the All Urban Consumer Price Index.

## LOOP MONITORING SECTION

Environmental monitoring of the Louisiana Offshore Oil Port (LOOP) by the department's Seafood Division began in 1978 and will continue as long as LOOP is in operation (an estimated 30 years), as mandated by state and federal license issued to LOOP. LOOP is a common carrier of crude oil designed to accept oil from supertankers and distribute it to refineries. Facilities consist of an offshore pumping platform, pipelines and an inshore salt dome storage complex. The first supertanker offloaded oil at the offshore platform in May 1981. As LOOP made the transition from the construction phases to the operational phase, the monitoring effort shifted to place more emphasis on the offshore environment. Some of the inshore stations were reduced while new techniques were initiated and additional sampling sites designated for the offshore area.

During March a suit was filed by concerned fishermen from Lafourche Parish who claimed that the discharge of brine solution into the Gulf was detrimental to the environment, in particular the commercial species of fish and shrimp, and that the department was unable to detect any adverse impacts because of an inadequate monitoring program. The trial lasted 2 weeks; the data collected from the monitoring program was presented and it was proved to the satisfaction of the court that the department's monitoring program was adequate and that there was no adverse environmental impact from the discharge of brine at that time. The ruling of the court was in favor of the department.

## COASTAL USE PERMITS SECTION

The department is presently under contract with the Department of Natural Resources (DNR) in a project for "Implementation of Procedures for Evaluation, Enforcement, Monitoring and Coordination of Coastal Use Permits." This section has the primary responsibility for conducting field investigations and coordinating other permit activities with DNR. A total of 380 field investigations were made on permit applications. The majority of these were related to petroleum development, including dredging for access canals and pipelines. The parishes with the highest number of field investigations were Cameron, Plaquemines, and Terrebonne. During this time, DNR received approximately 1900 permit applications.

In addition to the DNR permits reviewed and investigated, permit applications from the U.S. Army Corps of Engineers were reviewed and department comments were prepared considering comments by other staff biologists, as well as the impact on oyster leases and other wildlife and fisheries resources.

## LYLE S. ST. AMANT MARINE LABORATORY SECTION

The Marine Lab facility on Grand Terre has been in existence since the early 1960's. The main function of the Marine Lab staff is to conduct applied research on economically important fish and invertebrates and on other pertinent marine ecological studies.

Both long-range and short-term research projects are conducted to furnish applied data necessary for management, policy formation, and protection of our important marine species. Approximately 30 individual research projects are presently under investigation on such species as stone crab, blue crab, oyster, clam, gulf menhaden, Atlantic croaker, spot, red drum, speckled trout, sand seatrout and black drum.

Oysters: Further refinements were made in the model describing the relationship between seed oyster production and salinities. Using this model, a successful prediction was made of seed production east of the River. This will be instrumental in determining optimum salinity regimes for the estuarine areas to be impacted by freshwater diversions from the Mississippi River.

A study was begun to determine when and where cultch plants should be made on the Hackberry seed reservation as to maximize benefits.

Also initiated was a study in which oyster growth and survival is monitored throughout the Barataria Bay system. It is hoped that relationships between oyster performance and the diverse environmental conditions in the system can be determined.

Clams: The shellfish hatchery at the Marine Lab was used to successfully spawn and rear the Southern Quahog (Mercenaria campechiensis). Further refinements in our technique will be made and the feasibility of a large scale commercial hatchery operation will be assessed.

Shrimp: A study to determine the effects of the opening of the brown shrimp season on inshore brown shrimp populations was continued for a second year. Data collected were supportive of 1981's preliminary findings which indicate that the opening date has an important bearing on total shrimp landings.

Spotted Seatrout/Red Drum: Tagging and subsequent recapture of fishes can give valuable migratory and growth data on the target species. Several hundred red drum are being caught; tagged, measured and released. Several returns have been recorded to date.

Age and growth data are essential in making many management related policies in that it provides information on the vital population statistics of the species in question. In one study, adult red drum are being collected with various gears in an effort to obtain a wide range of sizes. The fish are weighed and measured, and scale samples and otoliths are removed from each specimen. The hard parts will be analysed for annual growth checks and each fish will be assigned to a year class. Yearly growth estimates will be calculated through integration of the age and size data.

The spawning season for red drum in southeast Louisiana, as determined by gonadosomatic indices, was found to be in mid-September. Further proof of the September spawn was substantiated by the presence of juvenile red drum in October.

The spawning period was determined to last approximately 20 days. Food habit studies provide pertinent information about a fish's relationship with its environment and co-existing organisms. Stomach contents of red drum and spotted seatrout have been collected and identified. Data are currently undergoing statistical analysis to better quality food selection trends or patterns.

Menhaden: The abundance of juvenile menhaden and pertinent environmental conditions was monitored. The ultimate purpose of this study is to make annual forecasts of the menhaden harvest. This past year, using knowledge obtained in two studies ("Influence of Environmental Parameters on Gulf Menhaden Year Class Strength" and "Evaluation of Juvenile Menhaden Abundance Data for Prediction of Commercial Harvest"), 1981 juvenile menhaden data and 1981 environmental data were used to project catches of age-1 fish in the 1982 menhaden fishery. A projection of above average catches was made; the actual catch-per-unit-effort generated in the models was one of the top 3 ever recorded. Actual commercial harvest data indicated that 1982 catches were the second highest on record. Data is presently being analyzed to make harvest forecasts for the 1983 fishery season.

## FISH KILL SECTION

A total of 25 kills, 22 affecting fish, 2 affecting crabs and 1 affecting oysters were investigated. Of these, 40% were due to natural low dissolved oxygen (D.O.) causes, 24% to low D.O. as a result of sewage, 8% were trawl discards, 8% were caused by chemicals or oil spills, and 4% each were caused by disease, low pH, predation, accumulation of toxic metabolites or high salinity (concerning freshwater fish).

## HYDROLOGICAL MANAGEMENT SECTION

Constant monitoring of conductivity, salinity and water temperature continued at 16 locations along the coast; rainfall and windspeed are also monitored at some of these stations. This data is useful in the prediction of the annual shrimp harvest and oyster production.

MISSISSIPPI DEPARTMENT OF WILDLIFE CONSERVATION

Bureau of Marine Resources  
Saltwater Fisheries Management Division

The Bureau of Marine Resources (BMR) is responsible for the management of saltwater fisheries, coastal wetlands and the Outer Continental Shelf (OCS) oil and gas program. The Bureau is also involved in addressing oil and gas related activities in Mississippi coastal waters, coastal aquaculture projects, developmental and technical assistance to the processing industry and implementing the state's coastal resources management program called the Mississippi Coastal Program. The Bureau is responsible for marine enforcement and fund projects in the three coastal counties under the Coastal Energy Impact Program (CEIP).

In addition to these duties, the Bureau administers grants and contracts which are designed to help in the management of Mississippi's coastal and marine resources for the benefit of the citizens of Mississippi. More detail about these contracts and programs is given in the following section.

FY 1981-82 Receipts

Interstate Commerce License	\$ 6,750.00
Shrimp Boat	54,980.50
Shrimp Processor	250.00
Live Bait Dealer	255.00
Seafood Dealer	9,400.00
Oyster Boat	9,015.00
Oyster Shop	175.00
Oyster Cannery	-0-
Crab Boat	8,358.00
Fish Boat	2,400.00
Fish Cannery	-0-
Commercial Hook & Line	63.00
Menhaden Boat & Net	1,700.00
Menhaden Processor	1,000.00
Shrimp Tax	7,522.34
Oyster Tax	278.35
Oyster Leases	1,872.07
Fines	15,049.00
Permit & Dredge Spoil Fees	3,250.07
Miscellaneous	5,681.81
*Unposted License Fees	<u>3,888.00</u>
TOTAL REVENUE COLLECTED (to general fund)	\$ 131,888.14
Lieu-of-Shells	4,897.17
State Appropriations	\$1,415,239.00
Federal Grants	<u>740,767.00</u>
TOTAL GROSS REVENUE	\$2,292,791.31

\*License fees turned in by Bureau License Agents. Books have not been completed and turned in to be posted in the various license categories.

## SALTWATER FISHERIES

In the past year, saltwater fisheries division personnel have continued to provide technical support to the Commission in all areas of marine fisheries science. In order that the division's recommendations, and hence the Commission's actions, can be based upon sound scientific information, fisheries staff members conduct a weekly survey of recently published scientific literature, extracting and cataloging any information that might be relevant to the activities of the Bureau. Additionally, division scientists maintain close liaison with their counterparts at the Gulf Coast Research Laboratory, the Southeast Fisheries Center, and the National Marine Fisheries Service Pascagoula Laboratories.

In other related work, the staff has continued its program of shrimp sampling, monitoring, and assessment; oyster reef monitoring and enhancement through cultch planting and reef building; and other aspects of data collection to provide a basis for making sound management decisions.

Among the new work initiated in this fiscal year, the Division of Saltwater Fisheries was awarded a federal grant for the cooperative landings data. This is a companion project to the Division's Coastal Zone Management grant to collect similar statistics on the recreational sector of the fishery. Continuation of these projects is expected to result in the collection of considerable data that will further enhance Mississippi's saltwater fisheries management practices. The recreational statistics grant will also result in a saltwater sportfishing brochure that should be completed late in the fiscal year and made available to the general public.

In April, the Fisheries Division acquired a small microcomputing system to assist with the problem of data storage and retrieval as well as with the development of fish population models which are used in the evaluation of specific management measures and recommendations. To date, this system has been used to develop a storage/retrieval program for the state's seafood licenses and also has resulted in a program to assist with the determination of seasonal shrimp opening dates. The acquisition of this data processing equipment has considerably improved the timeliness and accuracy of the Division's management recommendations.

### DESCRIPTION OF FISHERIES

Landings of commercial saltwater fish and shellfish in Mississippi during fiscal year 1982 amounted to 271.3 million pounds valued at \$31.1 million. This represents a 10.9 percent increase in volume and a 7.3 percent increase in value over the landings of the previous fiscal year. The following synopsis represents status reports for each of the state's major fisheries for which data are available and which are publishable in accordance with applicable confidentiality laws.

#### SHRIMP

Commercial Fleet: Shrimp remained Mississippi's most valuable marine fishery resource in fiscal year 1982 based upon reported commercial landings. Heads-off landings of 5.8 million pounds represented a 14 percent increase over landings in FY 81 and were worth \$17.3 million dockside, a 9.4 percent increase in value over the previous year. Due to the increased supply, the average price-per-pound for the 12-month period declined to \$2.98.

The 1982 shrimp season opened on June 9 after analysis of a series of weekly population samples taken by Fisheries Division biologists indicated that the minimum legal size (68 whole shrimp/lb.) would be reached by a majority of the shrimp population during early June. Environmental conditions on Mississippi's inshore nursery grounds were near optimal throughout the spring, as evidenced by the record 3.2 million pounds of shrimp landed in the month of June.

Mississippi Shrimp Landings for Fiscal Year 1982 by Month

Month	Landings (lbs.)	Value
July, 1981	558,000	\$ 1,662,840
August, 1981	410,000	1,221,800
September, 1981	199,000	593,020
October, 1981	265,000	789,700
November, 1981	202,000	601,960
December, 1981	84,000	250,320
January, 1982	36,000	107,280
February, 1982	26,000	77,480
March, 1982	15,000	44,700
April, 1982	41,000	122,180
May, 1982	695,000	2,071,100
June, 1982	3,282,000	9,780,360
TOTAL FY82	5,813,000	\$17,322,740

Bait Shrimping: Reported catches of live shrimp by coastal bait dealers totalled over 2.4 million shrimp during fiscal year 1982. Peak months of bait shrimp catches coincided with peak production in the commercial fishery and also with peak recreational fishing activity. The combined sales of live and dead bait shrimp totalled over \$200,000. Live bait shrimp averaged \$.09 each or \$1.00/dozen for the fiscal year.

OYSTERS

The Mississippi oyster season in FY 1982 was opened on October 15, 1981 and closed on April 30, 1982. A daily possession limit of 18 sacks per tonging vessel and 30 sacks per dredge boat was imposed. Landings of Mississippi oysters during fiscal year 1982 totalled over 118,000 pounds of oyster meats; this represents a 30-fold increase over the landings of the previous fiscal year. An estimated dockside value of \$1.44 million in FY 82 represents a rather significant increase of \$1.37 million over the value of the very poor harvest in the previous fiscal year.

The dramatic increase in Mississippi oyster landings is largely attributable to the Fisheries Division's continuing reef rehabilitation efforts. Since the last opening of the Bonnet Carre Spillway in 1979, over 100,000 cubic yards of clamshells have been planted over some 700 acres of Mississippi Sound waterbottoms. Sampling results have shown that the majority of oysters harvested in the 1981-82 season had developed on shell material from these planting operations. In addition to the rehabilitation of existing oyster reefs, Fisheries Division biologists planted some 10,000 cubic yards of clamshells to create a new reef off Long Beach. While the harvest from this newly created reef has not been spectacular to date, it is expected to produce well in the coming season. Such

future plantings of shell stock should ultimately prove most beneficial towards aiding in the recovery of Mississippi's oyster industry.

Mississippi Oyster Landings for Fiscal Year 1982 by Month

Month	Landings(sacks)	Value
October/November	18,956	\$ 151,648
December	30,903	247,224
January	35,742	285,932
February	35,970	269,779
March	32,741	245,558
April	28,351	212,632
TOTAL	182,663	\$1,412,773

Hand tongs and oyster dredges are the primary gears used in oyster harvesting during the public season which usually extends from October through March. Dredges may only be used in certain areas within a limited season as determined by the Commission. The quantity and value of Mississippi's oyster harvest is determined by a monthly trip ticket system. These reports contain information vital to monitoring the use of various gears and harvest by reef area.

In FY 1983, the Division of Saltwater Fisheries will monitor oyster catch using a system of sequential tags; this new methodology should improve both the quality and timeliness of oyster harvest data. In addition, the monitoring and control of the sanitary conditions of the oyster harvest should be greatly facilitated.

The outlook for the oyster industry in Mississippi depends upon several factors. Of major influence are the unpredictable effects of weather, principally rainfall and tropical storm activity, and also the ever-increasing costs associated with replenishment activities - the transfer of seed oysters and the planting of shells to enhance production on public reefs. Many private leaseholders are faced with less than acceptable returns on their investment dollar due to the high cost of shell planting operations. For this and other reasons, lessee interest has turned towards the relaying of oysters from closed waters to their respective ease sites. The early returns on this type of activity appear promising though in FY 82 only three leaseholders engaged in this practice. The current integrated and collective approach involving cultch planting, reef creation, oyster leasing, relaying and depuration may ultimately prove to be essential to the revitalization of the industry.

BLUE CRABS

Landings of hard, blue crabs increased to 1,560,600 pounds in FY 82, up 18 percent over the previous year. Processed crab eats were reported at 203,400 pounds from the principal ports of Pascagoula and Biloxi. Trawl catches of blue crabs were reported to be considerably fewer than in previous years, although no quantifier is available for this comparison.

The adoption of Ordinance No. 106 in May of 1981 permitted the taking of sponge crabs in waters of the sound where previously this activity was prohibited. It is speculated that this action may have accounted for a marginal increase in FY 82 blue crab landings.

## EDIBLE FINFISH

Reported landings of edible finfish amounted to 3.96 million pounds, down 27 percent from last year's 5.46 million pounds. The principal cause of this decline appears to be due to the considerable decrease in black drum landings and other purse-seine caught species. It is speculated that this decline may be the result of possible excessive fishing pressure since 1978 when purse-seining for this species was first popularized.

The following listing summarizes the landings trends for each of the major edible finfish species over the past five years (in 1,000 pounds):

	1978	1979	1980	1981	1982
Black Drum	52.9	783.0	2103.0	2813.2	1059.9
Mullet	840.8	1355.9	1603.0	1064.4	940.1
Red Snapper	1372.4	1125.2	889.0	725.8	747.9
Red Drum	105.2	516.2	90.7	30.0	4.7
Flounder	77.0	85.0	44.9	21.5	11.7
Kingfish	131.0	235.0	137.0	63.5	63.5
Sheepshead	41.0	76.0	50.4	95.2	90.9
Spanish Mackerel	268.0	48.0	69.8	17.0	8.6
Pompano	2.0	7.0	22.7	16.9	26.3

Once again, as in FY 81, many of these indicator species were reported at their lowest levels in five years. Only red snapper and pompano were reportedly landed in quantities greater than in the previous fiscal year. As was speculated last year, an increasing amount of the fish caught in Mississippi waters is landed in Bayou La Batre, Alabama, where a large finfish processing sector exists. These fish would, therefore, not be included in the reported landings for Mississippi although they might actually have been harvested from the waters of this state.

## INDUSTRIAL BOTTOMFISH

Landings data for the industrial bottomfish fishery are not available for publication because of confidential agreements between the Bureau of Marine Resources/National Marine Fisheries Service and the industry which presently consists of only two processors. However, industry representatives and National Marine Fisheries Service port agents indicate that the declining trend in landings exhibited by the fishery in the past three years may have begun to change. Although the total bottomfish landings may be somewhat lower than in the previous fiscal year, this is largely due to the fact that one of the two processors was inoperative for a part of the year, and in no way is believed to reflect an actual decline in groundfish stocks.

More bottomfish are currently being processed from independent shrimpers than has been the case in past years. The sale of the shrimp by catch of groundfish is a desirable turn of events from a fisheries perspective since it promotes the use of a valuable resource that might otherwise have been discarded.

Menhaden landings for fiscal year 1982 totalled 260,100,600 pounds, up 11.8 percent from the previous year. The monthly landings of menhaden are as follows:

Monthly Menhaden Landings - FY 81-82

Month	Pounds	Value
July	37,906,600	\$ 1,671,487
August	32,290,700	1,416,207
September	40,624,100	1,914,978
October	9,016,900	448,812
April	11,345,100	446,676
May	43,515,600	1,584,402
June	85,401,600	2,821,604
TOTAL	260,100,600	\$10,304,164

SALTWATER SPORTFISHING

The recreational fishery in FY 82 followed the usual seasonal trends, exhibiting an increase in the reported landings of certain popular species towards the close of the year. Charter catches consisted typically of spanish mackerels, which proved to be the most frequently caught species, bonitos, and other migratory pelagic species (blue runners, jack crevalles, etc.). Reported catches of red drum were conspicuously up over those reported last year. The spring run of lemonfish resulted in a number of good catches, with a reported 98-pound specimen being the largest. A number of cobia in the 80-pound-plus category were reportedly caught as well.

Inshore fishing varied from good to excellent. Spotted seatrout which comprise the most sought-after species in Mississippi's coastal waters were once again at lower than average densities, based upon reported catches of these fish. As was the case last year, catches consisted mostly of small fish averaging around a pound or so in size. The largest reported speckled trout were in the 6-pound class, although several unconfirmed reports of larger trout were received.

In June 1982, the National Marine Fisheries Service released the results of the most recent study on big game fishing in the Northern Gulf of Mexico. The total recorded trolling effort for big game fishes (blue marlin, white marlin, sailfishes) in the Gulf for 1981 amounted to 34,881 hours. Of this, 85 percent of the effort originated from the ports of Panama City, Destin, Pensacola, Mobile, South Pass, Grand Isle and Port Aransas, while 15 percent was recorded at the expansion ports which include Biloxi.

The results of a recently published National Marine Fisheries Service Sportfishing report indicated that some 500,000 spotted seatrout are annually caught by Mississippi sportfishermen. The study further reported the total number of saltwater anglers to be about 155,000. A total of 19,824 pleasure boats were registered in the three coastal counties for this fiscal year: 9,479 were registered in Jackson County; 8,355 are accounted for in Harrison County; and 1,990 indicated Hancock County registry.

These figures indicate the substantial growth that marine sportsfishing has experienced in recent years. Nationwide estimates indicate that 15 to 20 million

recreational fishermen harvest quantities of foodfish approximating one-third of total U.S. foodfish landings. Passage of the Fishery Conservation and Management of 1976, and the subsequent formation of the Gulf of Mexico Fisheries Management Council has prompted considerable research on recreational fishing.

In Mississippi, as in most other states, funds are allocated primarily for the collection of data on commercial fisheries. Relatively speaking, the recreational fishing sector has been neglected in terms of biological analysis, maintenance of a continuous and systematic statistical base and valuation of the economic impact of this industry, locally, regionally and nationally.

The Division of Saltwater Fisheries conducted an in-house survey of saltwater sportfishermen at this year's Mississippi Deep Sea Fishing Rodeo. The results of this study showed that 23 percent of the respondents fished an average of once weekly; 21 percent fished twice weekly, and 19 percent fished no more than once monthly. Sixty-four percent of the respondents indicated that spotted seatrout was their favorite species with red drum next in popularity. Of those items in the questionnaire receiving the strongest response, the development of a red drum stocking facility received the support of 82 percent of the participants.

Fishing rodeos constitute one of the best forums for interfacing with recreational fishing sector. In recent years, the Bureau has actively participated in the Mississippi Deep Sea Fishing Rodeo, and the Division of Saltwater Fisheries has played an important role in that participation. Since last year, the Division has sponsored a saltwater aquarium display at the rodeo. This display has been a great success, and the endeavor will be continued in the future. The 1982 rodeo season resulted in a number of new fishing records for Mississippi. An unofficial listing of these new records follows:

New Record Fish (Unofficial)

Species	Weight	Fisherman	Hometown	Date
Dolphin	62 lbs.	D.L. Siegel Gulfport	Louisiana	1981
Jack Crevalle	42 lbs.	Roland Simnicht Ocean Springs	Ocean Springs	1982
White Marlin	74 lbs.	Chris Moran Gulfport	Ocean Springs	1981
Black Drum	42 lbs.	Michael Fournier Ocean Springs	North Biloxi	1982
Ground Mullet	1 lb. 11 oz.	Butch Thompson Ocean Springs	Biloxi	1982
Amberjack	35 lbs. 8 oz.	S.L. Richardson Gautier	Pascagoula	1981

Management decisions affect both commercial and recreational fisheries to varying degrees, and such decisions should be based upon several factors: the life history of the species, appreciation of the sportfisherman's concerns and competing interests with commercial fishermen, and analyses of landings and effort data detailing the relative significance (biologically and economically) of the commercial and recreational sectors. In the coming fiscal year, it is the intent of the Division of Saltwater Fisheries to pursue the continued collection of data in an attempt to further elucidate these matters and to ultimately improve the fishing prospects for all concerned.

The total commercial landings for the State of Mississippi are given in the following table:

Mississippi Landings Fiscal Year 1982

Species	Pounds	Value
Bluefish	---	---
Blue Runner	332,200	\$ 46,508
Cobia	---	---
Crevalle, Jack	41,200	6,150
Croaker	428,100	149,835
Drum, Black	1,059,900	169,584
Drum, Red	4,700	2,538
Flounders	11,700	4,680
Groupers	51,400	29,008
Kingfish	63,500	19,050
Menhaden	260,100,600	10,304,164
Mullet	940,100	197,421
Pompano	26,300	87,316
Sea Catfish	1,000	150
Seatrout, spotted	1,300	1,157
Seatrout, white	13,100	2,882
Sharks	---	---
Sheepshead	90,900	14,544
Snapper, red	747,900	904,959
Spanish Mackerel	8,600	2,580
Spot	---	---
Unclassified	<u>88,600</u>	<u>17,712</u>
Total Finfish	264,011,100	\$11,960,238
Crabs, blue	1,317,000	355,590
Oysters	1,589,000	1,412,700
Shrimp	5,813,000	17,322.740
Total Shellfish	<u>8,719,000</u>	<u>\$19,091,030</u>
TOTAL LANDINGS	<u>272,730,100</u>	<u>\$31,051,268</u>

ORDINANCES ADOPTED IN FY 82 BY THE COMMISSION ON WILDLIFE CONSERVATION

October 6, 1981 - No. 107: An Ordinance amending Ordinance No. 105 decreasing the required frequency of fee payment.

March 9, 1982 - No. 108: An Ordinance to ban the use of purse seines within one (1) mile of the shoreline of Hancock and Harrison Counties.

March 30, 1982 - No. 109: An Ordinance amending Ordinance No. 100, Section 4(a) establishing deadlines for live bait dealer license applications.

OTHER ACTIVITIES

GULF STATES MARINE FISHERIES COMMISSION

The Gulf States Marine Fisheries Commission is an organization of the five states bordering the Gulf of Mexico. This compact, authorized under Public Law 81-66 was signed by representatives of each of the five states on July 19, 1949, at Mobile, Alabama. The principal objective of the Commission is the conservation, development, and full utilization of the fishery resources of the Gulf of Mexico and to provide food, employment, income and recreation to the people of the United States.

Mississippi continued its membership in the Gulf States Marine Fisheries Commission in FY 1982 through active participation in many of the Commission's committees and advisory boards. The Bureau Director, Dr. Richard L. Leard, is an active member of both the Gulf State-Federal Fisheries Management Board and the Gulf States Technical Coordinating Committee. Dr. Frederick Deegen, Chief of the Division of Saltwater Fisheries, actively participates in the Commission's Recreational Fisheries Committee, while J. Ron Herring, staff fisheries biologist, sits on the Blue Crab Subcommittee which is currently developing a Gulf States Blue Crab Fishery Management Planning Profile.

The Gulf States Marine Fisheries Commission functions as a clearinghouse and coordinating agency for the exchange of information and ideas concerning marine fisheries management among the Gulf states, particularly in regard to those species which commonly occur and migrate across interjurisdictional waters. The Commission also funds numerous projects and conducts symposia and workshops, all of which are of common interest to the affiliated states' resource management agencies.

GULF OF MEXICO FISHERIES MANAGEMENT COUNCIL

Fiscal year 1982 marked the fifth year in which the Magnuson Act has been in full operation. Implementation of the act by the Gulf Council has resulted in the development of 12 draft fisheries management plans (FMP's) or management profiles. Of these, the shrimp and stone crab plans have been fully implemented and are currently in force. The mackerel (migratory pelagic) and spiny lobster plans have been approved for implementation in the coming year. Another, the reef fish plan was submitted for review by the Secretary of Commerce in FY 82, and two others (billfish and coral) are scheduled for submission as well. Only three plans - groundfish, sharks, and coastal herring - have been withdrawn because of an apparent lack of evidence for the need of management at the present time.

Under a new program, the Gulf Council now publishes a monthly newsletter summarizing Council activities. The circulation of this document includes some 2,000 fisheries organizations and members of the fishing constituency.

Two newly-created Council committees are the Habitat and Environmental Protection and the Artificial Reef Committee. Drs. Leard and Deegen of the Bureau of Marine Resources are members of the H & E Committee. Tom VanDevender, staff fisheries biologist, serves on the Council's Special Shrimp Committee; this Committee reviews and recommends revisions to the Gulf's Shrimp Fisheries Management Plan.

Among the other major fisheries management activities of the Gulf Council, direct negotiations with the Japanese tuna fishing industry to reduce fishing pressure on the Gulf's billfish stocks mark a major accomplishment. The Council also actively participated in the MEXUS-Gulf Cooperative research and development program with Mexico and in the planning sessions of the Food and Agriculture Organizations (FAO) Western Atlantic and Caribbean Fishery Development Programs.

In the coming year, it is expected that management plans for additional fisheries in the Fisheries Conservation Zone will be developed and implemented. It is the goal and projection of the Council to have developed FMP's for all major fisheries occurring in the Gulf FCZ by the end of the 80's. The cooperative management of transboundary stocks by the states is also anticipated for those species which are largely confined to the territorial seas.

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With the enhancement of Public Law 94-265, the Fisheries Conservation and Management Act of 1976, the Gulf of Mexico Fisheries Management Council was created, and the State of Mississippi has actively participated in the Council's work. For these liaison activities, the state annually receives \$25,000 in federal funds in addition to reimbursement of expenses incurred by Fisheries Division personnel while engaged in official Council activity.

## ENFORCEMENT

In FY 1982, the Enforcement Division of the Bureau of Marine Resources was involved in the following arrests and incidents. Incidents include such things as rescue missions, distress investigations, tow-ins, boat and water safety related matters, drownings, assistance to other agencies, and miscellaneous other activities.

Seafood-related arrests were down some 16 percent over the previous fiscal year, while game and fish-related arrests increased by 32 percent. The incident reports also indicated a 12 percent increase in the number of incidents requiring enforcement division assistance over this figure for the previous fiscal year.

Enforcement Division personnel have become increasingly more involved with assisting federal officers and other state agencies in other public assistance duties. Enforcement officers routinely conduct public relations talks, provide information on laws, licensing and the like, assist owners of waterfront property and other similar activities. Also, because they are the only enforcement operation in coastal waters, enforcement officers routinely assist local sheriff's officers, police departments, civil defense, narcotics

officers and others. They are also present at water-related functions such as fishing rodeos, regattas, and the traditional blessings of the fleet.

Arrest & Incident Summary - FY 1981-82

Month	ARRESTS				Incidents
	Seafood	Boat & Water	Game & Fish	Other	
June	133	60	1	1	109
July	15	16	0	0	110
August	8	18	4	0	110
September	14	21	2	1	71
October	2	3	0	0	42
November	8	2	6	2	41
December	12	3	4	0	33
January	32	5	0	0	63
February	10	3	0	0	53
March	12	22	11	9	72
April	5	8	4	0	54
May	31	109	26	0	99
TOTAL	282	270	58	13	857

The Enforcement Division additionally coordinates its activities with the federal enforcement officers of the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, the United States Coast Guard, and the National Park Service. This mutual cooperation is intended to ensure effective enforcement of all applicable regulations.

WETLANDS

In 1973, the Mississippi Legislature enacted the Coastal Wetlands Protection Law. The purpose of the law was to protect the State's coastal wetlands.

Mississippi's coastal area is made up of approximately 66,000 acres of tidal marsh and approximately 370,000 acres of submerged waterbottoms. These public trust wetlands serve as a valuable and irreplaceable natural resource of great economic and aesthetic value to the State of Mississippi.

The tidal marshes serve as a natural habitat and nursery area for approximately two-thirds of the state's commercial and recreational fish and shellfish. Additionally, these areas provide shelter and habitat for numerous species of waterfowl and mammals. Tidal wetlands produce large quantities of plant material annually which serve as a source of organic materials which are in turn consumed by finfish and shellfish. These species make up a significant commercial crop. Furthermore, these marshes serve as a buffer in protecting the shoreline against erosion and help reduce the damages as a result of floods. Perhaps more importantly, they protect the public health and welfare by absorbing silt and certain types of pollutants in our estuarine waters. The overall value of wetlands is well documented in the scientific literature and has an estimated capital value of \$82,000 per acre.

Prior to the passage of the Coastal Wetlands Protection Law, the rapidly growing coastal region suffered a loss in total acreage of wetlands. Uncontrolled use and destruction of valuable wetlands areas resulted in losses of over 10,000 acres of tidally-influenced wetland.

With the passage of the Wetlands Law, the State of Mississippi, working through the Bureau of Marine Resources, has been able to limit the alterations in the coastal area to projects that were in the public's interest and environmentally acceptable.

Under provisions of the Wetlands law, persons wishing to perform dredge and fill operations in the wetlands or to undertake major construction in the wetlands must first obtain a permit from the Commission of Wildlife Conservation. Personnel of the Bureau of Marine Resources evaluate all proposed activities in the coastal area and make reports of their findings to the Commission.

During FY 82 the Bureau of Marine Resources processed 254 cases and a total of 13 permits were issued during FY 82.

As part of its responsibility to protect the coastal wetlands, the Bureau works closely with the Department of Natural Resources, the Bureau of Pollution Control and the Mobile District U.S. Army Corps of Engineers. These agencies have similar responsibilities and regulatory programs in the State of Mississippi. During FY 82 the Bureau of Marine Resources worked closely with BPC and the COE to streamline the regulatory program in the coastal area. Due to a realignment of Corps of Engineers' districts during FY 82, the Bureau of Marine Resources began to work with the Vicksburg District, U.S. Army Corps of Engineers which was given authority in the western portion of Hancock County.

#### MISSISSIPPI COASTAL PROGRAM

The Mississippi Coastal Program (MCP) was approved by Governor Winter, the Commission on Wildlife Conservation, and the Federal Office of Coastal Zone Management, NOAA, Department of Commerce during August and September of 1980. The provisions of the Coastal Program apply to Hancock, Harrison and Jackson Counties.

In FY 82 the Bureau received a grant from the Office of Coastal Zone Management in the amount of \$675,000 to fund part of the MCP for a twelve-month period starting October 1, 1981.

In addition to the financial support of the coastal program, federal approval maintains the federal consistency provisions of the Coastal Zone Management Act, P.L. 92-583. The consistency provisions require that all federal activities that may affect land and water uses in the coastal area including Federal Licenses and Permits, Direct Federal Activities and Development Projects, Outer Continental Shelf (OCS) Exploration Development and Production Activities and any federal assistance to state and local governments, be compatible with the guidelines of the Program.

The responsibilities of the Bureau of Marine Resources in program implementation can be divided into five areas. These are:

The Wetlands Management function which includes wetlands permitting as well as regulatory authority over designated waterfront industrial sites.

For eligibility of federal funding and coordination purposes, Fisheries Management is incorporated into the coastal program; however, the program makes no change to the state's existing fisheries management efforts.

The ten broad goals on which the coastal program was established necessitated a procedure for Policy Coordination in wetlands management, industrial development, waterfront conservation, fisheries management, pollution control, water conservation, archaeological and historical preservation, preservation of natural scenic qualities, national interest, assistance to local government and the coordinated implementation of public policy. The legislation on which this function was based requires that all state agencies comply with the program and these ten goals. In addition to compliance by state agencies, activities proposed by federal agencies are also required to comply under "federal consistency" provisions of the coastal program.

Because of their localized development problems and opportunities, many areas on the coast require site-specific planning and management. Such areas are designated as Special Management Area. The coastal program recognizes three such areas: industrial and port areas, urban waterfronts and shorefront access areas. Just as the general provisions of the program govern activities in the coastal area in general, special management plans govern in the specific areas for which they are adopted.

To complement the regulatory provisions of the coastal program, Affirmative Management Activities were developed and include areas such as energy facility planning, shoreline erosion work, designation of preservation/restoration areas, the Coastal Energy Impact Program, marine research, one-stop permitting and public education on marine and coastal resources.

From July 1, 1981 through June 30, 1982, approximately 110 actions were subject to policy coordination procedures and submitted to the state A-95 Clearinghouse Office, the instrument used in state agency reviews of policy coordination activities.

Of these 110 actions, 45 were for activities requiring a wetlands permit or were subject to formal wetlands review. Three activities were determined to be inconsistent with the Coastal Program and three actions were issued a conditional consistency, meaning that additional conditions had to be met before a full consistency finding could be issued. Some 39 wetlands actions were determined to be consistent with the program and received either a wetlands permit or were issued a waiver of permit requirements.

The remaining 65 actions (of the 110 actions) consisted of actions submitted by state agencies such as Coastal Energy Impact Program projects from the Bureau of Marine Resources; federal assistance to local and city government through such programs as community development block grants; and direct federal actions, such as Outer Continental Shelf (OCS) oil and gas drilling applications submitted by the Minerals Management Service and Corps of Engineers federally authorized channel maintenance dredging. Each of these actions were determined to be consistent with the Mississippi Coastal Program.

At the request of a local governmental entity, BMR may begin Special Management Area (SMA) planning. The Bureau provides grants to the participating entities for planning in their respective areas. The advance planning in the SMA's insures that development will occur in an orderly manner avoiding the problems of piece-meal decisions.

For FY 82, BMR has added the Port Bienville and Pass Christian Industrial Parks to SMA planning. These new SMA's, along with the ongoing Pascagoula Urban Waterfront and Port of Pascagoula SMA's, represent BMR's SMA planning efforts.

Two significant achievements have been made in SMA planning. One was the retaining of a planning consultant to facilitate SMA planning and the other was the establishment of an SMA Task Force. The SMA Task Force is composed of representatives from the U.S. Army Corps of Engineers, Environmental Protection Agency, National Marine Fisheries Service, Fish and Wildlife Service, Bureau of Marine Resources, Bureau of Pollution Control, Department of Archives and History and the local entity.

BMR's SMA consultant convened three Task Force meetings in FY 82. In these meetings the Task Force began reviewing and compiling information which would be necessary to complete a development plan, a spoil disposal plan and a mitigation plan. These plans are the three components of the larger SMA plan. As a result of these meetings a Draft SMA plan for the Port of Pascagoula is anticipated for September, 1982. Progress has also been made on the other SMA's.

In FY 82, the Bureau developed a Restoration and Preservation Plan for wetlands and shorefront access areas as part of its Affirmative Management Activities. This plan makes available funding for low-cost construction projects such as restoration of boat ramps, piers, bulkheads, stabilization of beaches, and improvements to shorefront facilities, cultural sites and waterways. Two grants totaling \$33,000 have been awarded to local governments. The projects funded are the Harrison County Beach Stabilization and Public Access Project and the Ocean Springs Inner Harbor Pier Restoration. Four access ramps for the beach project have been completed while the pier project is not yet underway.

Affirmative management efforts of the Bureau also include public information/education activities. The publication of a periodic newsletter continued, with circulation increasing from 405 to 472. News releases, public speaking engagements, stories and photographs published in MS Outdoors, updating of two brochures and the writing of a third, participation in the Mississippi Deep Sea Fishing Rodeo, and the distribution of DWC education material were also part of BMR's public information/education efforts.

Two grants were approved by the Commission on Wildlife Conservation (CWC) for education projects. The writing of the Mississippi Coastal Program Guide was completed, photos were taken, and printing and delivery of 5,000 copies of the 32-page booklet occurred during this fiscal year. Distribution of the Guide to the public began. The second grant was used to produce 2,000 sets of a five-booklet series entitled "Marine Discovery Series." The booklets are intended to educate young people regarding Mississippi's marine resources and the importance of these resources to the state's economy, ecology and heritage. All work, except the final printing and distribution of the booklets, was completed during FY 82.

Three revisions to the MCP were requested during this reporting period. All were revisions to the Coastal Wetlands Use Plan (CWUP). The CWUP establishes use districts where only certain activities are allowed. The CWUP is a dynamic document and is utilized as a management tool when a developer proposes activities not allowed in a specific use district. The revision procedures allow for a close examination of the proposed activities to determine if significant impacts to surrounding uses and to the environment will occur.

The revisions requested are to allow a navigation channel through Krebs Lake, the leasing of portions of the Mississippi Sound and Gulf of Mexico for mineral extraction, and the siting of a 44-boatslip marine in Biloxi Bay.

COASTAL ENERGY IMPACT PROGRAM

In FY 82, the Mississippi Coastal Energy Impact Program (CEIP) was awarded a federal planning allotment totalling \$136,000. In addition, \$26,000 in construction funds formerly held in escrow in Washington, D.C. were released to the state. Both allotments were distributed to the 1982 CEIP funding cycle completed in June. Projects chosen for funding include:

PLANNING PROJECTS

Port Bienville Siting Forecast.....	\$24,000
Mississippi Gulf Coast Endangered Bird Study.....	\$10,000
Harrison County Drainage Study.....	\$48,000
Pascagoula Park Design Documents.....	\$21,600
GRPC Population Forecast.....	\$ 6,000
Mississippi Rail Corridor Study.....	\$11,000

CONSTRUCTION PROJECTS

Harrison County Boat Launch.....	\$ 9,328
Pascagoula Park Nature Center.....	\$ 8,795
Biloxi Fifth Avenue Repaving.....	\$ 8,529

The Bureau of Marine Resources also requested that \$15,000 from the planning grant allotment be earmarked for in-house audit purposes.

OUTER CONTINENTAL SHELF PROGRAM

The Outer Continental Shelf (OCS) begins at the seaward boundary of the coastal territorial waters of each state and extends seaward to the limits of the federal waters. The development of oil and gas resources in the Gulf of Mexico OCS Region significantly impacts the coastal states in this region. The impacts, many of them indirect, affect the socio-economic and environmental conditions of the states whose coastal areas adjoin the Gulf of Mexico.

During the latter part of FY 82, the federal government reorganized and developed a new agency to manage OCS oil and gas exploration, development and production activities. The U.S. Minerals Management Service is the new agency. It has a regional office in New Orleans, Louisiana. For management purposes, OCS activities are divided into three categories: (1) oil and gas leasing, (2) oil and gas transportation, and (3) environmental studies.

Since OCS oil and gas development and production in the Gulf of Mexico Region have an influence on the states in the region, it becomes important for the affected states to have an avenue to participate in the formulation of decisions pertaining to management of the oil and gas resources of the OCS. State participation is in an advisory role through the Intergovernmental Planning Program. The value of the program is that it provides the State of Mississippi the opportunity for input into OCS management matters. This participation provides the opportunity for the state to receive maximum benefits from oil and gas activities that affect it socio-economically and that have the potential to impact its living coastal resources.

It should be noted that 80 percent of the leased OCS acreage and 90 percent of the entire OCS production have been in the Gulf of Mexico. Currently, the unleased portion of

the Gulf of Mexico OCS totals 23,000 blocks with each block consisting of approximately 5,760 acres.

During FY 82 there were three oil and gas lease sales (A66, 66 and 67) in federal waters in the Gulf of Mexico. One OCS tract which was leased (sale 67) adjoins the boundary of the State of Mississippi and two are in close proximity to it. FY 82 OCS lease sales in the Gulf Region generated \$5 billion for the federal government.

During FY 82, federal preparations and state reviews were made for four OCS sales which will occur in FY 83 in the Gulf Region.

During FY 82, the staff of the Scientific-Statistical Division participated in 13 OCS-related technical meetings and developed 8 OCS-related written responses. In response to the Governor's request, a report was prepared and entitled "Comments and Information Pertaining to Multisale Regional Environmental Impact Statement for the Gulf of Mexico." The staff of the Division provided the lead role in the work required to prepare the report. The Bureau of Land Management requested the report to assist them in the preparation of a detailed statement. The purpose of the statement was to describe the environmental impact of, and the alternatives to, a proposed sale of leases for oil and gas development and production for the entire OCS area of the Gulf of Mexico. The Mississippi response contained environmental and socio-economic information applicable to the State of Mississippi.

In addition to the above-described activities, the staff reviewed a number of documents to maintain an awareness of OCS oil and gas activities in the Gulf of Mexico Region. These activities may have an influence on Mississippi.

A new five-year OCS Leasing Program was approved during FY 82. For management purposes, the Gulf Region has been divided into the western, central and eastern planning sub-regions. The central planning region includes OCS waters south of the State of Mississippi.

#### OIL AND GAS RELATED ACTIVITIES IN MISSISSIPPI'S COASTAL WATERS

During FY 82, interest increased in oil and gas development in Mississippi's public trust lands located in its coastal waters. To determine the extent of the interest by oil and gas companies, the Department of Natural Resources decided to offer for sale oil and gas development leases for a selected number of tracts.

Eighty-six tracts, generally located in the southern half of the state's territorial waters, were offered for bids. Bids on eight tracts were received. Because of the relatively low bid prices, the Commission on Natural Resources accepted bids for the two tracts receiving the highest bids and rejected the other bids. The two tracts leased are located just northwest of Cat Island.

Prior to the lease sale, the Governor's office requested that the Department of Wildlife Conservation prepare an environmental assessment of the proposed leasing. The Bureau of Marine Resources was assigned the responsibility of developing the assessment information. Within a relatively short time (approximately 32 official working days), the Bureau developed the assessment document entitled "Mississippi Coastal Waters, Mineral Lease Sale Area Number 1, Environmental Profile and Generic Environmental Guidelines for Activities Associated with Oil and Gas Drilling Rigs and Production Platforms". The staff of the Scientific-Statistical Division provided the lead role in the work required to prepare the document. The document addresses environmental, socio-economic and management aspects related to oil and gas operations in the Lease Sale Area 1.

## GRANTS AND CONTRACTS

### RESEARCH GRANTS AND CONTRACTS UTILIZING STATE FUNDS

The goal of these grants and contracts is to develop, through BMR-sponsored efforts and research projects, valuable information which is applicable to protecting, enhancing and utilizing Mississippi's coastal and marine resources to benefit the citizens of Mississippi. The developed information is utilized by the BMR staff to enhance existing business opportunities and to create new ones, to manage the coastal and marine resources and address problems related to them and to aid in preparing recommendations to the Commission on Wildlife Conservation who renders the management decisions.

Under the Grants and Contracts Program, the staff of BMR prepares detailed budget and technical specifications for each project. Through the duration of each project, the staff monitors project progress through progress reports required from the principal investigators. During FY 82, the Commission on Wildlife Conservation approved the following projects which were supported with state funds. Following each new project title is descriptive information about the project.

#### Municipal Wastewater Utilization Through the Production of Saleable Aquaculture Organisms or Products Derived from Them. City of Biloxi, Mississippi - \$75,000.00

The purpose of the proposed project is several fold: to demonstrate that potential pollutants to coastal waters can be biologically converted into saleable products, to provide for technical training pertaining to the conversion process, to create job opportunities based upon the conversion process, and to enhance water quality by reducing pollutants to coastal waters. All of these benefits will be demonstrated through the employment of suitable aquaculture organisms which feed low on the food chain utilizing algae and small invertebrates as their food supply.

#### Production of Nematodes for Use as a Food for Larval Marine Organisms Having Commercial Aquaculture Potential. Mississippi State University - \$8,000 (A continuation of the project initially funded in FY 81.)

#### As Assessment of Penaeid Shrimp Heads as a Source of a Flavor Enhancer and a Food Supplement. Mississippi State University - \$12,300 (A continuation of the project initially funded in FY 81.)

## INDUSTRY AND PRIVATE ENTERPRISE ASSISTANCE

The purpose of this activity is to provide technical advice and assistance to industries and individuals involved and interested in the appropriate development and utilization of Mississippi's coastal and marine resources. The technical advice and assistance is aimed at enhancing the quality and marketability of seafood (including underutilized species), encouraging intensive cultured production of aquatic organisms in the coastal area to supplement the harvest of food from the natural marine environment, reducing pollution to the coastal marine environment by transforming waste waters into saleable products, and for Mississippi citizens, enhancing their income and maintaining consistent, profitable income from the sale of products derived directly or indirectly from coastal and marine resources.

During FY 82 the staff of the Scientific-Statistical Division continued to work with the seafood processors in addressing methods and means for managing solid waste produced during the processing of shrimp. During FY 82, most of the seafood processors purchased and installed a compactor which the Division staff helped to design and test. The compactor reduces the volume of shrimp waste solids and removes excessive moisture.

One processor continues to dry shrimp shells by an infra-red head drying system. Others have indicated an interest in the system. The idea for the system was provided by the Division staff as one of several possible drying systems and the staff contributed toward the design of the system. During 1982, for the processor involved in drying shrimp waste, the staff aided him in developing ideas for packaging and marketing the dried shrimp waste solids. As shown by BMR-sponsored research, the dried shrimp shells when incorporated into plant potting material negatively impacts the fungi and nematodes which are harmful to economically valuable plants.

The BMR-sponsored research efforts provided enough basic information to stimulate a large corporation to provide research funds to a Mississippi university to expand research based upon the ideas and efforts begun by the BMR. Additionally, during the latter part of FY 82, at the encouragement of the staff of the Scientific-Statistical Division, a large Mississippi horticulture operation pursued the idea of packaging and marketing dried shrimp waste solids for beneficial applications to the horticulture industry.

Assistance was provided by the staff of the Scientific-Statistical Division to persons interested in becoming involved in aquaculture in the coastal area of Mississippi. Aquaculture is the controlled cultivation of aquatic animals and plants.

The Bureau's aquaculture program efforts continue to be aimed at developing aquaculture operations which diversify and supplement an existing income base. For the coastal area, organisms other than catfish are emphasized in the aquaculture program. Highly technical information developed by research organizations has been reviewed, evaluated and is being transformed by the Division's staff into information which can be readily understood and applied by aquaculturists located in the coastal region of Mississippi.

Requests for aquaculture assistance from the Bureau during FY 82 increased considerably over the FY 81 requests for assistance. Assistance through the Scientific-Statistical Division was provided to private individuals, private businesses and a large corporation in order to enhance linkages between the coastal resources and the production of aquaculture organisms. All the aquaculture assistance was rendered with the aim of enhancing job and income opportunities in the coastal area of Mississippi.

#### INTERAGENCY COORDINATION AND ASSISTANCE

During the course of a given fiscal year, the Bureau staff becomes involved in a number of special projects and services. Some of these projects and services occur routinely each year while others are one-time events.

During FY 82, The Bureau participated in coordinated efforts involving the State of Mississippi - The Office of the Governor, the Department of Natural Resources and the State Oil and Gas Board. The efforts pertained to the development of oil and gas activities in the coastal territorial waters of the state.

The Bureau staff participated in the Mississippi-Alabama Sea Grant Consortium Program during FY 82 by serving on the Consortium's Advisory Committee. Assigned by the Bureau Director to serve on the Committee, the staff provided advice for program direction and reviewed and commented on research proposals which were submitted to the Consortium for funding.

In addition to the previously mentioned special activities, the Bureau staff conducted numerous other reviews and provided comments on a variety of special topics, proposals and papers as responses were needed.

## TEXAS PARKS AND WILDLIFE DEPARTMENT

### Texas Parks and Wildlife Coastal Fisheries Research Management Programs

There were three major projects during fiscal year 1982 dealing with finfish resources. These included: (1) monitoring the availability of adult and juvenile finfishes; (2) monitoring the commercial and recreational harvest of finfish; and, (3) the enhancement of red drum in Texas bays.

Monitoring of the relative abundance of adult finfishes in eight Texas bay systems continued using 600-foot-long gill nets with individual 150-foot sections of 3-, 4-, 5-, and 6-inch stretched mesh. Bay seines (60 feet long) and 20- or 40-foot trawls were used to determine the abundance of juvenile finfishes. Assessment of the success of House Bill 1000 (67th Texas Legislature) in reducing overfishing on red drum and spotted seatrout is continuing through routine monitoring and special studies. A spotted seatrout tagging program using rod and reel was initiated to supplement mortality, growth and movement data of this recreationally important species. Approximately 4800 spotted seatrout were tagged in 1982. Approximately eight percent of the tags have been returned to date. Tagging and handling mortality studies on this species caught by rod and reel were also conducted in 1982. No differences were found between tagging and handling mortalities or handling mortality alone. Total mortality (handling and tagging) of rod and reel caught spotted seatrout was approximately 25%.

Catch rates and minimum finfish harvest by commercial fishermen were determined from Monthly Marine Products Reports. A cooperative agreement between the National Marine Fisheries Service and this department provided for the gathering of complementary catch rate and harvest information of the recreational fisheries. Texas Parks & Wildlife Dept. obtained sport boat and charter fleet catch rate and harvest data, and NMFS obtained wade bank, pier, surf and jetty catch rate and harvest data. When these data are combined, it will be possible to estimate the total harvest of the sport fishery.

Red drum pond production exceeded 800,000 fish in 1982. Approximately 300,000 were stocked in St. Charles Bay, 100,000 were provided to Alabama in support of their red drum work, approximately 300,000 were provided to freshwater stockings, and the remainder were provided to other states, research organizations and a private company. Age and growth studies using scales were completed on red drum and spotted seatrout. Pond fertilization studies were conducted to assess optimum fertilizer and salinity levels for the successful support of marine phyto- and zooplankton populations (critical food for young fish). Work on a manual detailing the procedural methods for the culture of red drum was initiated.

The shellfish program consisted of five major projects including: (1) penaeid shrimp population monitoring in bays for availability, size and movements; (2) penaeid shrimp population monitoring in the Gulf of Mexico; (3) oyster population monitoring and enhancement; (4) blue crab population monitoring; and (5) monitoring of mud-shell operations to ensure that damage to fish and wildlife does not occur. Population monitoring of valuable commercial and sport species was carried out to determine trends in relative abundance, and to determine the factors that affect abundance in order to

recommend closed seasons and other management options. Shrimp, crabs and associated organisms were monitored with bay seines along shorelines; with 20' wide otter trawls in deeper (+ 3 ft) portions of bays and passes leading from the bays to the Gulf of Mexico; and with 40' otter trawls in the Gulf of Mexico.

For many years Texas has closed its Gulf territorial waters (9 nautical miles) in the Gulf of Mexico to shrimping during June 1-July 15 to allow small shrimp leaving the bays to grow to a larger size before harvest and minimize waste from discarding. These season dates may be changed if biologists find that there may be an earlier, later or prolonged emigration of brown shrimp. In 1982, an early emigration occurred and the season was set for 30 minutes after sunset on May 25 to 30 minutes after sunset July 14.

Biological monitoring of oyster reefs in Galveston Bay in 1982 indicated that pre-season abundance of market oysters was the highest in recent years. Preliminary reports from oystermen after the season opened also indicated the highest production in several years. In 1978, biological samples revealed the lowest abundance since 1956 and the Parks and Wildlife Commission closed the November 1-April 30 season on December 15. Mortality from flooding in 1979 exacerbated the problem and the season was delayed for 45 days. Recovery of oysters in 1982 is attributed to favorable weather conditions and the spreading of oyster shell for cultch over approximately 700 acres of bay bottom. It is estimated that spat setting was increased by 1.5 million per acre. Funds for spreading the shell were derived through P.L. 88-309, Project 2-352-D-1 (4b).

Approximately 20 acres of new oyster shell reefs were constructed from shell dredged from San Antonio Bay. Department rules require that 3% of shell dredged be returned to the Department for reef enhancement. Since 1978, only one shell dredge has been working in Texas waters. In November 1982, the company ceased operations.

Reported blue crab landings have fluctuated between 7 and 9 million pounds since 1977. Preliminary landings indicate that landings will be about 8 million pounds in 1982. No statistical differences have been detected in population abundance in recent years.

A total of 23 technical reports, 5 scientific journal articles and 6 newspaper/magazine articles about various aspects of the Texas coastal fishery resources were completed.

## GULF STATE-FEDERAL FISHERIES MANAGEMENT BOARD

During the period October 1, 1981, to September 30, 1982, two (2) meetings were held by the Gulf State-Federal Fisheries Management Board (GS-FFMB): New Orleans, Louisiana - October 1981 and Biloxi, Mississippi - March 1982.

The GS-FFMB is comprised of Gulf States Marine Fisheries Commissioners, two from each of the five Gulf States. The Board members vote as a state with a single vote per state. The Regional Director of the National Marine Fisheries Service (or his designee), and the Executive Director of the Gulf States Marine Fisheries Commission (GSMFC) are nonvoting members of the Board. The Board is advised on technical, scientific matters, and industry views by the same advisory groups as the Commission. Among these groups are the Technical Coordinating Committee (scientific), the Menhaden Advisory and Management Committee, the Shrimp Management Committee, as well as the National Marine Fisheries Service.

The Gulf States Marine Fisheries Commission is the prime contractor for all management plan development and support in the Gulf of Mexico for the Board. This has resulted in coordinated involvement by the Commission in State-Federal management and information in the territorial seas. The activities of the Board and the Commission complement those of the Gulf of Mexico Regional Fishery Management Council, thereby providing an effective system for advising the management of the fisheries throughout the extent of their range.

The major activities and accomplishments of the Board are described in the following summary:

Final reports for the following studies were distributed to the states, the fishing community and interested individuals (all research and data collection was done within this report period, final reports may have been distributed after September 30, 1982):

- 1) "Population Models Applied to Selected Management Questions in the U.S. Gulf of Mexico Fisheries."
- 2) "Profile of the Blue Crab Fishery of the Gulf of Mexico."
- 3) "Morphological Characteristics of Blue Crab Larvae, Callinectes Sapidus Rathbun, from the Northern Gulf of Mexico."

In addition to the above activities, the Board supported a new State-Federal initiative for coordinated monitoring and assessment in the Southeast Region. The initiative is reviewed by the Technical Coordinating Committee (TCC) Southeastern Area Monitoring and Assessment Program (SEAMAP) Subcommittee, which met at least twice with the Board in this report period. A more complete report on the TCC SEAMAP Subcommittee activities is included in this annual report.

The Commission again supplied the administrative support for all the GS-FFMB actions including meeting arrangements, travel payments, contract development, contract monitoring

and information distribution from meetings and the contracts as well as other necessary functions as prime contractor for the GS-FFMB.

The Board elected Mr. Leroy Wieting (Texas) Chairman, and Mr. I.B. Byrd (NMFS, St. Petersburg, Florida) Vice-Chairman to serve in 1982-83.

## SOUTHEAST REGION

### NATIONAL MARINE FISHERIES SERVICE

National Oceanic and Atmospheric Administration (NOAA)  
U.S. Department of Commerce

#### INTRODUCTION

This consolidated report of the Southeast Regional Office and the Southeast Fisheries Center highlights the year's activities and accomplishments of the National Marine Fisheries Service (NMFS) organizations located in the Southeastern United States.

#### SOUTHEAST REGIONAL OFFICE

In fiscal year 1982, the activities of the Southeast Regional Office were carried out through four principal divisions: Fisheries Development Division, Fisheries Management Division, Environmental and Technical Services Division, and Law Enforcement Division. In March 1982, Jack T. Brawner was named Regional Director, Southeast Region. He began his tenure with a new reorganization proposal which was approved for implementation on October 1, 1982, and finalized on January 23, 1983. Our report this year is by the new organization nomenclature: Habitat Conservation Division; Fisheries Management Division; Fisheries Development Division; and the Law Enforcement Group which is now a part of the Directorate.

#### HABITAT CONSERVATION DIVISION

During the past year, the Environmental Assessment Branch (EAB) received for review 5,635 applications for permits to perform work in navigable waters, 24 environmental impact statements, and 52 Federal water development projects. The Branch also reviewed and commented on 10 documents concerning Coastal Zone Management and Marine Sanctuary plans being developed by the coastal states, Puerto Rico, and the Virgin Islands. The permit applications represented 23,300 acres of fishery habitat proposed for alteration or destruction. Of this total, EAB did not object to altering 8,800 acres. If our recommendations are followed, 14,500 acres will be conserved and over 7,000 acres will be restored.

The Technical Services Branch is in the final process of completing a transfer of system information files from the computer located in Macon, Georgia, to the new National Marine Fisheries Service Burroughs computer located in Seattle, Washington. This transfer to the new host system is part of a regional system update and improvement. We will have a more reliable, easier to operate information system when this transfer is completed. We are working on expanding communications with the fishing community through the use of the Apple computers. The flexibility of these microcomputers allow for additional tasks which can facilitate information flow.

The Branch is working on the design of an information system to aid the fishing industry in assessing its technological status in processing techniques and identifying new approaches which may be of benefit. The program plan for this effort is being developed and will be coordinated with the industry.

## FISHERIES MANAGEMENT DIVISION

### MAGNUSON FISHERIES CONSERVATION AND MANAGEMENT ACT (MFCMA)

During FY 82, Fishery Management Plans (FMPs) for the Coral Resources and Spiny Lobster Resources of the Gulf of Mexico and South Atlantic were approved. FMPs for the Reef Fish Resources of the Gulf and the Coastal Migratory Pelagic Resources (mackerel) of the Gulf and South Atlantic continued under Secretarial review.

Amendments were approved for the Stone Crab FMP to change the size of degradable panels, provide authorization for research activities, modify the line of separation between shrimpers and stone crabbers, modify reporting requirements, and prohibit bait shrimping shoreward of the line of separation. The Shrimp FMP was amended to provide for the use of regulatory amendment procedures in making future modifications, and to update the economics sections of the plan.

Monitoring activities on the Shrimp FMP continued and indications were that there were no appreciable changes in production as a result of the closure off Texas. Environmental conditions were not optimal for production, and resulted in lower shrimp abundance and less migration into offshore waters. Landings were down considerably from 1981 when record production occurred and an increase of 3.9 million pounds valued at \$9.4 million were ascribable to the closure.

### FOREIGN FISHING PERMITS

The U.S./Mexican Fishing Agreement expired on December 29, 1981, and consequently there have been no permit applications for foreign fishing.

### ENDANGERED SPECIES AND MARINE MAMMAL PERMITS

Twenty-five permit applications for endangered species and marine mammals were reviewed and recommended for approval during the past year. All have been granted.

The State/Federal and Grants Branch assisted states with the execution of grants and cooperative agreements funded under the Commercial Fisheries Research and Development Act (P.L. 88-309), the Anadromous Fish Conservation Act (P.L. 89-304), the State/Federal Cooperative Statistics Program (P.L. 94-265), and the State/Federal Fisheries Program. The ten Gulf, South Atlantic, and Caribbean states and territories obligated \$1,416,900 in Federal funds for seventeen P.L. 88-309 projects; \$232,150 for eight P.L. 89-304 projects, and \$497,577 for seven cooperative statistics projects with the states of Alabama, Georgia, Mississippi, North Carolina, South Carolina, Puerto Rico and the U.S. Virgin Islands.

A State/Federal Cooperative Agreement was initiated through the South Atlantic State/Federal Board with North Carolina to develop a planning profile for principle sciaenids of the Atlantic coast. A State/Federal cooperative program continued with the Gulf States Marine Fisheries Commission to develop a shrimp population dynamics model, prepare a blue crab planning profile, determine the morphological characteristics of blue crab larvae, and coordinate the SEAMAP Cooperative Gulf of Mexico monitoring program.

Activities in the Protected Species Management Branch centered around transferring the technology of the Trawling Efficiency Device (TED) to the shrimping industry. Two hundred TEDs were constructed and distributed under contract by Desco Marine of St. Augustine, Florida, to shrimpers. Workshops were conducted for Sea Grant marine advisory agents on the TED so that they could assist with the technology transfer.

A marine turtle recovery plan was completed.

A poster depicting the sea turtles of the world was produced and over 10,000 copies were distributed to the public.

## FISHERIES DEVELOPMENT DIVISION

The Fisheries Development Division coordinated and participated in a major effort to reemphasize the needs of the fishing industry in all Regional Fishery Development Programs. The solicitation, review and monitoring of S-K grants to industry and other participants continued with major successes in surimi, export marketing, domestic marketing, exploratory fishing and harvesting gear demonstrations.

The Financial Services Branch completed the processing of its 733rd Fishing Vessel Obligation Guarantee (FVOG) application by the year's end. New FVOG case activity and new commercial fishing vessel construction continued at a very slow pace during 1982 due to continued economic dislocations affecting the southern commercial fishing industry. The Branch completed the processing of 17 new Capital Construction Fund agreements during FY 82. The Region presently has 433 active Capital Construction Fund agreements with total objectives of \$229 million. There were five Section 10 claims during the period requesting \$26,000; and 47 cases were processed under Title IV requesting \$199,000 in gear damages.

On December 23, 1982, final rules were published in the Federal Register fully implementing the Fisheries Obligation Guarantee program. The program provides a Federal guarantee of the debt portion of the cost of constructing, reconstructing, reconditioning, or (under limited circumstances) purchasing fishing vessels (including charter, headboat, and drift vessels), and fisheries shoreside facilities. Under this Act, the National Marine Fisheries Service is authorized to guarantee financing of up to 87 1/2 percent of the cost of such vessels or shoreside facilities. Guaranteed debt maturities may be up to 25 years. In order to secure its guarantee, the Federal government holds and services (as mortgagee) a mortgage on the property financed and such other collateral as the National Marine Fisheries Service deems necessary. The security for the private obligee (the lender or investor) who funds the guaranteed financing is the Federal guarantee of the debt obligation held and serviced by that private obligee.

By the year's end, Congress had authorized the expenditure of \$10 million for the Fisheries Loan Fund programs. Once these funds have been appropriated, the agency will move forward in processing acceptable applications from eligible commercial fishing operators. It is anticipated that due to the limited amount of Fisheries Loan Fund monies, approximately 60 percent of those funds may be allocated to general fishermen not financed under the FVOG program and the remainder made available for Federally financed vessels. The agency will most likely announce an open season for applications during the first quarter of calendar year 1983. The legislative authority authorizing the Fisheries Loan Fund program is scheduled to terminate on September 30, 1983, unless extended by Congress.

The Commercial Development Services Branch revised the Directory of Southeast Region Exporters, the Southeast Region Foreign Fact Sheet Booklet, and the Directory of Southeast Region Seafood Companies--all three publications were published by the Gulf and South Atlantic Fisheries Development Foundation. The Market Opportunities Newsletter was published throughout the year. A "Best Southeast Region Seafood Buys" report was published monthly. Personnel participated in international food shows in Cologne, West Germany, and New Orleans and the National Restaurant Association Convention in Chicago.

The Fisheries Development Analysis Branch has been actively providing economic analyses of fisheries development projects conducted by NMFS. The Branch was able to secure several important changes in Fishery Management Plans that benefitted the development of fisheries without harming the management process. The Branch also conducted the Fishery Market News Service in the southeast, administered provisions of the Fishermen's Contingency Fund, and conducted the S-K Grants program including S-K reports.

#### LAW ENFORCEMENT GROUP

During 1982, the Law Enforcement Group has documented 87 violations of the (MFCMA); 14 violations of the Marine Mammal Protection Act of 1972 (MMPA); 20 bluefin tuna violations, with proposed penalties of \$51,188; and 101 violations of the Endangered Species Act of 1973 (ESA), with proposed penalties amounting to \$5,350 and \$22,587 worth of property forfeited.

#### SIGNIFICANT MAGNUSON FISHERY CONSERVATION AND MANAGEMENT ACT CASES

Of the 87 MFCMA cases, there were 60 violations of the Shrimp Fishery Management Plan and seven violations of the Stone Crab Fishery Management Plan detected, with proposed penalties amounting to \$204,811 and \$3,500 respectively.

United States vs Choy Tai Lai: On April 1, 1982, Choy Tai Lai pled guilty to conspiring to violate the MFCMA and to two counts of fishing in violation of the MFCMA. He was sentenced by the U.S. District Court to eight years of supervised probation and to pay a fine of \$30,000.

United States vs Highly Enterprises Corporation: On December 3, 1982, Highly Enterprises Corporation pled guilty to conspiring to violate the MFCMA and to two counts of fishing in violation of the MFCMA. The U.S. District Court imposed a \$50,000 fine on the corporation.

The United States currently has three outstanding felony arrest warrants on principals alleged to be involved in the conspiracy. The U.S. District Court in Tampa, Florida, also has an outstanding criminal case against Fei Long Ocean Company LTD.

#### SIGNIFICANT LACEY ACT CASES

During October and November of 1982, 30 shrimpers were charged with taking shrimp in violation of Mexican law, in violation of 16 USC 3372 (a) (2) (A). Fines in these cases amounted to \$17,800. In addition, 17 of these individuals received suspended jail sentences and probation.

## SIGNIFICANT ENDANGERED SPECIES ACT CASES

Two men pled guilty in U.S. District Court in St. Thomas, Virgin Islands, for the unlawful taking of endangered species parts. Each individual was sentenced to six months probation and six days imprisonment.

One individual was sentenced in U.S. District Court in the Western District of Texas for receiving ES parts in interstate commerce. This individual was fined \$2,500 and received one year imprisonment (suspended) and one year probation.

## SOUTHEAST INSPECTION OFFICE

The Southeast Inspection Office provides a voluntary fee-for-service inspection for brokers, wholesalers, importers, exporters, distributors, transporters, processors, military, schools and institutions.

Inspections are made in warehouse and processing establishments. Sanitation inspections are performed and examinations are made on fishery products including shrimp, scallops, oysters, lobsters, finfish, canned or smoked fishery products, and farm raised catfish.

Forty-two fishery establishments, located throughout the southeastern region and Puerto Rico, participate in the inspection program.

Federally inspected plants in the southeast region produced 190 million pounds of which 72 million pounds were federally inspected. Inspectors inspected 23 million pounds of product located in warehouses and cold storage facilities throughout the United States to Europe, Africa and South America.

## SOUTHEAST FISHERIES CENTER

The NMFS Southeast Fisheries Center (SEFC) conducts research in support of federal laws and international agreements relating to living marine resources in the Gulf of Mexico, Caribbean Sea and Atlantic Ocean. Center Headquarters offices are located in Miami, Florida, and research is conducted at laboratories in Beaufort, North Carolina; Charleston, South Carolina; Miami, Florida; Panama City, Florida; Pascagoula, Mississippi; Bay St. Louis, Mississippi; and Galveston, Texas. Research is also conducted from the 170-foot FRS OREGON II berthed at Pascagoula and the 155-foot DELAWARE II which operates from Woods Hole, Massachusetts. Commercial fishing and oceanographic vessels are used as needed through contracts and cooperative research projects. Fishery data are collected throughout the Southeast Region by Center agents located at numerous sites between North Carolina and Texas and through cooperative agreements with 8 coastal states, Puerto Rico, and the Virgin Islands.

The permanent staff comprises 286 full-time scientific, technical and support people. As many as 100 additional people provide support on a less than full-time basis. The total budget from all sources in fiscal year 1982 was \$17.7 million. Other federal agencies provided \$1.3 million of the total for research of mutual interest.

Each SEFC laboratory is responsible for conducting research in specific subject areas and for providing services to facilitate the work of other Center units. Annual research plans and resource allocations to the laboratories are based on priorities determined at national and regional levels. Extensive consultation and coordination to identify priorities of user groups is a continuing process. Likewise, results of the Center's research are distributed continually to interested groups through periodic newsletters, oral and written reports, publications, and personal contacts.

#### FISHERY MANAGEMENT PROGRAM

During the past year, the program monitored the activities of Fishery Management Councils and represented the Center as required at Council meetings. A five-year socio-economic data collection and research plan was scheduled. The plan scheduled economic research projects through FY 85. A list of research information needs was prepared in March and proposed program plans for FY 83 were reviewed. As in previous years, the program reviewed draft fishery management plans, proposed regulations, regulatory impact reviews, and environmental impact statements. The program prepared a National Correspondent's Report for and participated in a meeting of Western Central Atlantic Fisheries Commission Working Party on Assessment of Marine Fishery Resources.

#### NATIONAL FISHERIES ENGINEERING PROGRAM

During 1982 the program began development of an energetics and economics decision model for the Gulf shrimp fishery. A study was conducted in conjunction with the Sea Fish Industry Authority and Sea Grant to evaluate hydrodynamics of shrimp trawls. Field tests were conducted on the engineering performance of selected shrimp trawl designs. Data from more than 193 research vessel cruises were evaluated and placed on a computer for future research.

Research was directed to use Landsat data to monitor changes in Barataria Bay, Louisiana. The area was chosen because of existing groundtruth data and the importance of the Bay as a nursery area for shrimp and other species.

A project was implemented to evaluate the potential of SeaSat satellite data for estimating wind driven surface layer transport and to determine if this potential could be used to enhance predictions of fishery yield.

A data and voice communication terminal was installed aboard the FRS OREGON II. Biological and environmental data from the research vessel were transmitted daily in the summer through the satellite link and to an onshore computer system.

A data base containing over 250,000 records of hydrological, chemical and biological information from Louisiana estuaries was initiated in cooperation with the Louisiana Department of Wildlife and Fisheries.

#### REGIONAL FISHERY STATISTICS AND DATA MANAGEMENT PROGRAMS

As in previous years, information was collected from dealer monthly landing reports, sales receipts, dockside interviews, and logbooks. Compatible data collection, data entry, and data management procedures were established for fishery statistical information. A computer network was provided to link all state, territorial and federal

management agencies into a common statistical information system. Seven agencies entered into cooperative agreements and are collecting commercial statistics. The agreements provide for expanded statistical programs in North Carolina, South Carolina and Georgia, with new programs in Mississippi, Alabama, U.S. Virgin Islands, and Puerto Rico. A conversion was begun of programs and data from the currently used Honeywell 6680 computer to a Burroughs 7800 computer.

#### MENHADEN PROGRAM

During 1982 biologists sampled the Atlantic and Gulf coasts for juvenile menhaden, tagging and releasing 25,300 juveniles in about 15 streams from Massachusetts to North Florida and 21,200 juveniles in about 15 streams from West Florida to Texas. Estuarine surveys of pre-recruit juveniles were conducted along the Atlantic coast to complete a 3 year data base.

Estimates of fishing rates and natural losses to the stocks were updated using population analyses. A report summarizing stock assessment activities and present status of both the Atlantic and Gulf menhaden resources was prepared in conjunction with a workshop held in August at the Miami Laboratory.

Computer programs to simulate the Atlantic menhaden population were completed under contract to the University of North Carolina. The model interprets population behavior in response to fishing effort and season and also calculates the quantities and values of fishmeal, oil and solubles produced in the five fishing areas.

#### SHRIMP AND BOTTOMFISH PROGRAM

During 1982 research ranged from improving annual forecasts of abundance to finding ways to reduce or better utilize discards from the shrimp fishery. The biological and economic impacts of the Texas and Tortugas management measures required major efforts and new thrusts are underway to document the habitat requirement of early life stages in estuaries.

The Southeast Area Monitoring and Assessment Program (SEAMAP) was begun in June 1982. A trawl survey was conducted to monitor penaeid shrimp size and distribution, delineate bottomfish stocks and collect environmental data.

Data on shrimp densities were collected throughout the spring from the salt marsh in the Galveston State Park area of West Bay, using a circular drop sampler. The nutritional role of Spartina was studied to determine if shrimp obtain their carbon from Spartina. Experiments were also conducted to determine whether Spartina protects juvenile shrimp from predators.

#### REEF RESOURCES PROGRAM

Experiments were conducted during 1982 to clarify a wide range of unknown associated with reef fishes and wire fish traps.

A survey of the headboat fishery from North Carolina through the Florida Keys was conducted as well as a comprehensive survey of the emerging bottom longline snapper and grouper fishery in the Gulf of Mexico.

Contracts were given to two firms to establish artificial reefs off Fort Lauderdale, Jacksonville, Panama City, and Clearwater, Florida. Personnel from the Miami Laboratory monitored the progress and success of the structures.

#### COASTAL PELAGICS PROGRAM

During the past year the Center's research was designed to investigate life history characteristics that are required for management decisions.

A stock assessment workshop on coastal pelagics was held in Miami in August 1982. The workshop concluded that there was a need for better and more complete data on catch and effort in the commercial and a recreational caught fish, the discreteness of stocks, validation of age estimates, reexamination of mortality estimates, and identification of recruitment patterns by size and age of fish.

A charterboat survey began in April at the beginning of the fishing season. Geographic expansion of the survey is planned for the future.

Spanish mackerel gill-net catches were sampled in three areas of South Florida to determine the portion of king mackerel taken. In all, a catch of less than 1,000 king mackerel and only one cero were observed in over 150,000 mackerel examined from total landings of more than 1.1 million.

The fishery management plan for coastal pelagics required observers on all purse seine vessels fishing for mackerels. Data was collected on species, size, age and sex composition of mackerel schools.

#### OCEAN PELAGICS PROGRAM

A plan was developed in December 1981 to allocate tonnage of bluefin catch and to increase scientific data collection. This plan was given to the commissioners of the ICCAT Advisory Panel in Washington, D.C. in January 1982 and provided analytical support for U.S.-Canada-Japan negotiations held in Miami in February 1982.

An international workshop on age determination of oceanic pelagics was held at the Center in February. The proceedings of the workshop are planned for publication as a special scientific report early in 1983.

The 1981 Atlantic Bluefin Tuna/Billfish Sport Fishery Survey was completed and an expanded survey was initiated for 1982.

An ichthyoplankton survey for estimating the size of bluefin tuna spawning population was conducted in the Gulf of Mexico.

Assessments of Atlantic bluefin tuna, blue marlin, white marlin and sailfish were prepared for 1982 ICCAT meetings.

#### THE HERRINGS PROGRAM

In 1982, 2,200 round scad, 1,269 Spanish sardine, 1,300 Atlantic thread herring, 300 scad mackerel and 348 scaled sardine were collected. These will be studied to determine reproductive biology, stock identification and food habits.

Observers were placed on herring boats to record fishing activities in the northern Gulf of Mexico. Purse seining data and biological samples were obtained.

#### ENDANGERED SPECIES PROGRAM

Aerial surveys were begun in 1982 to obtain a reliable estimate of the number of each species of sea turtle. These data with ground truth surveys of selected nesting beaches were used to prepare a 1982 population estimate of the number of nesting female sea turtles in the southeastern United States. Pelagic aerial surveys were conducted to count swimming sea turtles on the ocean surface. These data will be used with other factors to obtain estimates of seasonal distribution and population size. Vessel surveys using standard fish trawls were conducted in six channel areas along the east coast of Florida. Measurements on size and sex compositions were taken. Two radio tracking experiments at Cape Canaveral produced data on short-term movements of sea turtles and on surface/submergence times. These data will be factored into aerial survey records to refine population estimates.

Research on Kemp's ridley sea turtles, the most endangered turtle species, continued with 6,694 ridleys released into the Gulf, from 5 to 10 months after rearing.

In a continuing attempt to assess the extent of the sea turtles found dead or injured along the beaches of the southeast, a Sea Turtle Salvage Network was in operation. Several thousand posters that advertise the 14-hour-toll-free hotline were distributed.

A Sea Turtle Manual on Research and Conservation Techniques was published in a cooperative effort with the International Oceanographic Organization for the Caribbean.

In a continuing effort to reduce catch and mortality of sea turtles, the program provided assistance to more than 100 fishermen who agreed to use Turtle Excluder Devices (TED) in their shrimp trawls.

#### MARINE MAMMALS PROGRAM

During 1982 the abundance of bottlenose dolphin was estimated from aerial sampling surveys in five areas of the southeast. Aerial surveys were also conducted to study herds of bottlenose dolphin in localized, inshore waters to determine the dynamics of association and define the discreteness of local dolphin populations. Tagging was used to examine the dynamics of herd associations and to help define the discreteness of local populations of the bottlenose dolphin. The potential effects of commercial fishing, industrial development, population growth and recreational activities in the southeast on marine mammals in general, and on bottlenose dolphin in particular, were examined. Potential effects of pollution, coastal zone development, and fishing activities were evaluated.

The Southeast Marine Mammal Stranding and Salvage Operation has expanded considerably since inception and includes collaborating professional State and Federal biologists, law enforcement agents, private aquaria personnel, as well as other interested persons. In 1982, a total of 157 cetaceans representing at least 15 species were reported to the Network.

## HABITAT PROGRAM

During the past year research on the effects of freshwater inflow and salinity on fish production was carried out in South Florida with funding by the Army Corps of Engineers.

Larval fish research was conducted cooperatively with NOAA's Atlantic Oceanographic and Meteorological Laboratory to show how ecological factors control survival and growth of fish larvae in the northern Gulf of Mexico.

Research into the influence of trace metals on fish production continued to be investigated in oceanic and coastal waters through a combination of field and laboratory research.

The Center cooperated with the Environmental Protection Agency, NOAA Environmental Data Information Service, and the Bureau of Land Management to complete studies on the impact of drilling operations on reef fish, ichthyoplankton, and benthic populations in the Texas Flower Garden Banks.

Studies on the impact of brine disposal along the Texas and Louisiana coasts were completed for the Department of Energy.

## AQUACULTURE PROGRAM

This year, maturation and spawning of white shrimp were initiated, using the technique of unilateral eyestalk ablation and variable temperatures.

Data on growth of postlarval and juvenile shrimp in laboratory experiments under varying conditions of salinity, temperature and feeding were keypunched and verified.

The Galveston Laboratory took part in the 5th Annual Gulf Coast Aquaculture Conference held in January at the Florida Department of Natural Resources' Marine Research Laboratory.

Under a NOAA cooperative agreement, the Texas A & M University's Texas Agricultural Extension Service operated the shrimp hatchery at the Galveston Laboratory during 1982.

## FISHERIES UTILIZATION PROGRAM

During 1982 an experimental processing laboratory was completed at the Charleston facility. Mechanical scaling, heading, gutting, filleting, and mincing were demonstrated to the South Atlantic Fisheries Management Council and to current and potential seafood processors in the South Carolina area.

Research was conducted on refrigerated seawater and chilled seawater systems for cooling bulk quantities of fish caught in trawlings or seining operations.

A preliminary study of the use of microwave processing as an alternative to the traditional hot water tank method for pasturizing crab meat and fish flakes was carried out.

Studies on processes to make sardine-type products from thread herring and Spanish sardines were conducted.

#### NATIONAL MICROCONSTITUENTS PROGRAM

Important information on cadmium metabolism and toxicity in mammals was obtained through a series of studies in which mice or rats were fed cadmium in oysters. A better understanding of the complex biological processes that regulate the toxicity of mercury and other heavy metals in a living system was gained through a study of the effects of mercury and selenium on metabolic interactions.

The acquisition of baseline data on petroleum hydrocarbon (pH) residues in fish and shellfish of the mid- and south Atlantic areas continued during 1982. Four research contracts providing data on the amounts and types of pH residues in the edible tissues of commercially important seafoods were completed. The inhouse analytical capability was strengthened by establishment of a gas chromatograph/mass spectrometry facility. Inhouse research initiated during the year was designed to shed light on the synergistic/antagonistic effects of petroleum hydrocarbon pollution on the assimilation, bioaccumulation, and metabolism of PCB and trace metals in fish and shellfish species.

New methodology for extracting and enumerating enteric viruses from oysters was developed by three university laboratories during the year. The South Carolina and Florida health departments received training in these laboratory procedures.

A specific, sensitive test for ciguatoxin in seafood was brought closer by the development of an immunoassay that distinguishes between toxic and non-toxic fish.

## GULF OF MEXICO FISHERY MANAGEMENT COUNCIL

### ACTIVITIES OF THE GULF COUNCIL DURING 1982

During 1982 the Spiny Lobster FMP was finally implemented for the jurisdictions of the Gulf and South Atlantic Councils. Final revised FMPs were submitted to the Secretary of Commerce for implementation for mackerel, reef fish and coral resources. The mackerel FMP was approved in July, but implementation of final regulations was still pending at the end of the year. The Reef Fish and Coral FMPs were approved by NMFS in midsummer, but secretarial approval and implementation were still pending.

Four amendments to the Shrimp and Stone Crab FMPs, submitted in 1981, were approved and implemented. Following a fact-finding hearing in September, an additional draft amendment to the Shrimp and Stone Crab FMPs was drafted for Council review. This amendment addresses a conflict between shrimp and stone crab fishermen in federal waters off Citrus County, Florida.

The Council continued to work cooperatively with the South Atlantic Council on completion of the FMPs for billfish, swordfish and calico scallops. The Council recommended major revisions to the 1983 Atlantic Billfish and Shark PMP to protect Gulf billfish stocks until such time as the FMP was implemented. The Council evaluated the monitoring information collected by NMFS on the stone crab and shrimp fisheries under the FMPs. After review of monitoring information, the Council invoked a framework measure provision of the Shrimp FMP to institute a temporary change in the boundary of the Tortugas Shrimp Sanctuary. This change would allow fishing by the industry in a portion of the Sanctuary while the size composition and migration of shrimp were being evaluated by NMFS. Implementation of this change by regulatory amendment is still pending.

A representative of the Council participated in the deliberations of U.S. delegation to ICCAT on bluefin tuna.

The Council reviewed several proposed development projects that had the potential for adversely affecting fisheries managed by the Council. The Council suggested modifications in the proposed projects to alleviate the adverse impacts. The Council held a public fact-finding hearing on a proposed Corps of Engineers (COE) project that would deposit spoil on 1,200 acres of shrimp nursery grounds in Nueces Bay, Texas, resulting in significant irreversible losses in shrimp productivity. Subsequent to the hearing the COE announced that another alternative site would be utilized (which would not adversely affect the shrimp resource).

The Council continued to keep the public informed of its activities through news releases and its newsletters. In order to keep the state legislative leaders informed of Council activities, Council meetings were held in two state capitals with invitations extended to state officials.

## THE MAGNUSON ACT AND ITS IMPACTS ON THE GULF REGION

During the period of national deliberation prior to enactment of the Magnuson Act, its proposed provisions were received with mixed reaction by the fishery constituency of the Gulf region. A large segment of the Gulf's commercial industry was opposed to the concept of a 200-mile fishery zone because of fear of establishment of similar fishing zones in the adjacent water of other nations where U.S. distant water fleets operated. Other elements of the commercial industry favored enactment of the Act due to the protection from foreign fishing it would provide.

Most of the recreational fishing constituency appeared to be largely uninvolved in the national debate over a 200-mile fishing zone. Participants in the billfish fishery who believed themselves to be adversely impacted by foreign fleet activities favored exclusion of the foreign vessels.

Prior to and after the Magnuson Act many of the Western hemisphere nations did establish similar national fishing zones and restrictions on foreign fishing that affected the distant water operations of the U.S. shrimp and reef fish fleets. It is likely these foreign unilateral actions would have been taken even if the United States had not enacted the Magnuson Act.

The Magnuson Act excluded management authority over highly migratory tuna thereby complicating effective management of foreign fishing effort adversely affecting Gulf billfish stock availability to U.S. recreational fishermen. However, the Act did provide the political leverage whereby reductions in foreign tuna fishing (and incidental bycatch of billfish) was achieved by the Council.

Passage of the Magnuson Act was timely for the Gulf region in that domestic fishing effort and participants had continually increased over the postwar period and, consequently, many of the stocks appeared to require management in the offshore waters beyond the states' regulatory jurisdiction. The Act, through the requirements set forth by Congress, resulted in closer scrutiny of the status of the fishery stocks throughout their range and an evaluation of the need for coordinated state and federal management of the stocks. The Act has also tended to refocus research efforts on studies to provide the information needed for management.

Under the provisions of the Act the Gulf Council began the laborious task of evaluating the Gulf fisheries as to their need for management and of developing fishery management plans (FMPs) for management of certain of these stocks. The Council identified twelve major fisheries for which information was compiled, through informational profiles or draft FMPs to assess the need for management of ultimately, to provide for management of the stocks. In this process the Council relied heavily on the advice of its advisory panels and scientific committee members.

The establishment of the advisory panels (one for each fishery) under the Act had the beneficial effect of bringing together the leaders of the recreational and commercial fishing communities to address the current management problems in each fishery, to review the information available on the fishery and to recommend corrective actions for management of the fisheries. Approximately 160 members of the fishing constituency, recognized for their expertise, provided the Council with a broad forum of knowledge upon which to base its decisions. Similarly, the establishment of a Scientific and Statistical Committee focused the attention and expertise of 56 of the Gulf region's most prominent fishery scientists on management of these stocks, thereby providing the Council with the best expert scientific advice.

From the fisheries evaluated, the Council completed six management plans for implementation by the Secretary of Commerce, some of which were completed jointly with the South Atlantic Council for common stocks. The Council is currently in the process of completing three additional FMPs cooperatively with other Councils. Management information was compiled for three other fisheries and used to assess the need for management resulting in the conclusion that management is not currently appropriate.

All of the nine FMPs implemented, or to be implemented, will provide biological, economic and/or social benefits to the nation. The benefits (or expected benefits) of these FMPs were described in detail in the Annual Report for 1981 and are, therefore, not reiterated here. These benefits far outweigh the cost to the nation of implementing the management systems.

The Magnuson Act created a regional management system for the Gulf that is both accepted by the fishing constituency and is responsive to their needs, as well as to that of the fishery resources. The system has resulted in cooperative management by the state and federal entities for common stocks. The system will insure that the stocks are not overfished and has provided for institution of measures for increasing the productivity of stocks, for resolving sociological issues and for insuring fair and equitable access to the available stocks by all user groups.

## 1983 SEAMAP MARINE DIRECTORY

In March of 1982 the SEAMAP Subcommittee recommended to the Technical Coordinating Committee of the Gulf State Marine Fisheries Commission that a SEAMAP Marine Directory be developed. This Directory would describe survey activities, on going programs, vessel schedules, etc., carried on by state/federal/university marine agencies and be published in the 1983 Gulf States Marine Fisheries Commission Annual Report. The objective of the Directory was to inform state/federal/university marine agencies of the ongoing research, in order to prevent redundant and wasteful data collection in the Gulf.

A questionnaire was developed and distributed to a large number of marine agencies throughout the Gulf. Tables 1, 2 and 3 are condensed summaries of information provided by the participating agencies and tabulated recordings to state agencies, federal agencies, and universities, respectively.

Table 1. Summary of Information Provided by Federal Agencies

Agencies	Target Species	Life Stages Sampled	TYPES OF FISHERY INDEPENDENT SAMPLING		Types of Platforms	ANNUAL EFFORT DEVOTED TO FISHERY IND. SAMPLING BY ACTIVITY IN:		TYPES OF GEAR		Sample Strategy for Data Collection	Anticipated Changes in Direction of Fishery Ind. Activities Over Next 5 Years	High Priority and/or Species That are Presently Unable To Sample
			Area Sampled	Geographic Areas of Importance		No. of Days	No. of Samples	Fishing, Trawling	Plankton			
NOAA, NMFS/SEFC Miss. Labs. Pascagoula, MS	All penaeid shrimp, croaker, spot, trout, catfish	Subadult-adult	U.S. Gulf of Mexico	Territorial, open ocean (FCZ)	170' R/V NOAA Ship OREGON II	135/yr toward target species. 243/yr total sea days	1644/yr trawl stations, 180 ichthyo/yr 80 neustons/yr	Standard 40' semiballon trawl	Bongo array w/ .333 $\mu$ mesh nets 15 cm neuston net .947 mm mesh	Random (stratified)	None	Coastal & midwater pelagics Cannot adequately sample reef fish
NOAA, NMFS/SEFC Miami Lab. Miami, FL	All recreationally & commercially important species	Larval stages	U.S. Gulf of Mexico	Internal, territorial (FCZ)	170' R/V OREGON II & various small boats	35/yr	1500/yr	No fishing or trawling gear	Bongo nets 60 & 20 cm w/.333 $\mu$ m mesh neuston nets 1 x 2 m 0.547 $\mu$ m mesh	Systematic, grid basis, long-term station selection	Continuation of SEAMAP, continuation of S.E. FL National Park monitoring	None
NOAA, NMFS/SEFC Panama City, FL*												
NOAA, NMFS/SEFC Galveston, TX	All penaeid shrimp, ocellated flounder, rock sea bass, dwarf sand perch, red snapper, lane snapper, southern kingfish, blackfin sea robin, bighead sea robin, inshore lizard fish	Post larval-adult	U.S. Gulf of Mexico	Internal, (FCZ)	170' R/V OREGON II (Texas Closure). Charter vessels, CAPT. EDDIE & MISS VIRGINIA, for Tortugas Sanctuary	117 days total Texas Closure & Tortugas Sanctuary		(Texas Closure) Same as OREGON II  (CAPT. EDDIE & MISS VIRGINIA) 4 x 40' flat net	Same as OREGON II  No plankton nets	Random (stratified) for Texas Closure & Tortugas Sanctuary. Short-term special studies for estuarine ecology	None	None
U.S. Dept. of Interior Fish & Wildlife, LSU Baton Rouge, LA	All economically estuarine-dependent fishes & crustaceans	Larval-juvenile	S.W. Louisiana	Estuarine	(1) mudboat 275 hp (1) airboat 250 hp (1) outboard 35 hp	365/yr	Varies w/ project	16' flat otter trawl	0.5 m 0000 plankton 6' beam trawl 0000 mesh	Systematic, long-term station selection, short-term special studies	In 2 years work will be decreased considerably	None
U.S. Army COE Mobile, AL	All commercial & recreational benthic species	All stages	Mobile Bay, MS Sound, U.S. Gulf of Mexico to the 20 fm contour	Internal, territorial	Charter research vessel	Varies w/ project	Varies w/ project	--	--	Systematic, random, short-term special studies	None	None
U.S. Dept. Interior Mineral Mgmt. Service, Metairie, LA (2 programs)												
(1) Endangered Species Program FY79-82	Marine turtles, mammals, and manatees	Adult, juvenile (hatchlings for turtles)	U.S. Gulf of Mexico	Coastal & open ocean	Airplane, twin engine Boeacraft AT-11	25/yr	Aerial sightings	--	--	Over flight transects (grid basis)	Synthesis of data complete. Report due 1983.	All species dive, accurate counts difficult
(2) S.W. FL Regional Biological Communities Survey FY82	Finfish, invertebrates, infauna, epifauna & flora	All stages	U.S. Gulf of Mexico	Coastal & open ocean	Contract research vessels	50/yr (in 1982)	1000 trawling & dredging stations/yr	40' semi-ballon trawl	--	Systematic (seasonal) (stations chosen on basis of depth)	End of program in 1985	None
U.S. Dept. Interior Fish & Wildlife Corpus Christi, TX**												

\*No fishery independent survey activities done in 1982 and none planned in 1983. All work is fishery dependent.

\*\*No fishery independent survey activities done in 1982, none planned for 1983.

Table 2. Summary of Information Provided by State Agencies

			TYPES OF FISHERY INDEPENDENT SAMPLING		ANNUAL EFFORT DEVOTED TO FISHERY IND. SAMPLING BY ACTIVITY IN:			TYPES OF GEAR				
Agencies	Target Species	Life Stages Sampled	Area Sampled	Geographic Areas of Importance	Types of Platforms	No. of Days	No. of Samples	Fishing, Trawling	Plankton	Sample Strategy for Data Collection	Anticipated Changes in Direction of Fishery Ind. Activities Over Next 5 Years	High Priority and/or Species That are Presently Unable To Sample
Texas Parks & Wildlife	All penaeid shrimp, all other species	Juvenile-adult	TX internal coastal waters	Internal, territorial	72' R/V WESTERN GULF 30' inboard, 18' outboard skiffs	365/yr	840/yr 1440/yr 480/yr 280/yr 666/yr	60' bag seines (shoreline) 20' trawl (bay, open water) 20' trawl (bay to Gulf Pass) 40' trawl (Gulf waters) Gill nets for adult finfish (along shoreline)	--	Random	None	More sampling in state territorial sea (Gulf waters)
Louisiana Dept. Wildlife & Fisheries	All penaeid shrimp and groundfish	Post-larval-adult	LA territorial sea	Internal, territorial	13-17' Boston whalers for 6' trawl 30' inboards for 16' trawl 85' vessel (LOOP) for 50' trawl	137/yr 92/yr LOOP	Plankton 819/yr; 2829/yr trawling; 708/yr LOOP	6' otter trawl 16' otter trawl 50' otter trawl	1/2-m 505-µm mesh plankton net	Long-term station selection	Reorganization of territorial sea sampling Anticipate in-shore sampling approx. the same	Most of the important commercial and recreational finfish
Mississippi GCRL	All penaeid shrimp, blue crab, croaker, spot, seatrout, catfish, Gulf menhaden, At. bumper, sea mullet, butterfish, cutlass fish	Larval-adult	MS territorial sea	Internal, territorial (FC2)	96' R/V TOMMY MUNRO (5) 24' skiffs (1) 30' R/V CANNET (1) 35' R/V HERMES	Semimonthly at 2-wk intervals	216 trawl stations/yr	50' bag seine 36' otter trawl 16' otter trawl 6' renfro beam trawl	Clark bumpers samplers w/3 nets microneuston sampling net	Long-term station selection	Fishery Div. anticipates its program of monitoring & assessment over the long term with appropriate increases in intensity & scope if funds become available	The adult phases of most species (both finfish & shrimp) occur offshore where coherent long-term sampling is difficult due to current funding restrictions. These same restrictions preclude adequate in-shore sampling of the adults of some species such as the striped mullet
Alabama Dept. of Conservation & Nat. Resources	All penaeid shrimp, bay anchovy, Gulf menhaden, croaker, spot, seatrout, red drum	Larval-adult	AL marshes to territorial sea	Internal, territorial	(1) 18' Sea-craft 115 hp (1) 23' Sea-craft 115 hp	108/yr	960/yr	50' bag seine 16' otter trawl	6' beam plankton trawl	Long-term station selection	None	Increase level of sampling in Alabama territorial sea. This is prevented due to lack of an appropriate vessel
FL Dept. of Natural Resources	Red drum spotted trout snook, king mackerel, mullets, gag grouper, tarpon, fish larvae, stone crab, blue crab, spiny lobster, oysters, hard clam	All stages, larval-adult	FL waters & offshore	Internal, territorial	72' R/V HERNAN CORTEZ 37' R/V BONNIE "E"  Small out-board used for inshore sampling	Monthly intervals (annually)  Weekly intervals (annually)	Varies with project	100' bag seine Benthic sled w/net Trammel net 600' x 8' lobster & crab traps	--	Systematic, random (stratified), grid basis Long-term station selection, short-term special studies	None unless specifically legislated	Mainly applies to implementation of research phases on current species or topics w/ additional personnel and increased funding

Table 3. Summary of Information Provided by Universities

			TYPES OF FISHERY INDEPENDENT SAMPLING			ANNUAL EFFORT DEVOTED TO FISHERY IND. SAMPLING BY ACTIVITY IN:		TYPES OF GEAR				
Universities	Target Species	Life Stages Sampled	Area Sampled	Geographic Areas of Importance	Types of Platforms	No. of Days	No. of Samples	Fishing, Trawling	Plankton	Sample Strategy for Data Collection	Anticipated Changes in Direction of Fishery Ind. Activities Over Next 5 Years	High Priority and/or Species That are Presently Unable To Sample
FLORIDA SCHOOLS												
Florida State Tallahassee	Benthic in-fauna Epibenthic fishes & in-vertebrates	Larval-adult	N.E. Gulf of Mexico	Internal, territorial	(3) 55 hp 25' skiffs, outboard	48/yr	Monthly samples; both trawl & environ.	Standard 5-m otter trawl	80 .m plankton net	Systematic, random long-term station sel., short-term special studies	More environmental experimentation	Areas: Apalachicola Bay system & Apalachee Bay; species: all species in those areas
Univ. West FL Pensacola	Snappers groupers triggerfish	Subadult-adult	N.E. Gulf of Mexico	Internal	(1) 28' R/V ARGONAUT	7/yr trawling, 14/yr plankton neuston	50/yr 140/yr	16' otter trawl	2 (1-m) nets 3 (1-m) neustons	Systematic, random (stratified)	None	None
Univ. Florida Gainesville***												
Univ. South FL Tampa***												
Florida Sea Grant Gainesville	Oysters, spiny lobster, sword fish, tile fish, snowy grouper, shark	All stages	FL waters	Estuarine, coastal	F.I.O. contract vessels	Varies w/ project	Varies w/ project			Varies w/project	None	None
FL Institute of Oceanography St. Petersburg	All species	All stages	Eastern Gulf Caribbean	Internal, territorial (FCZ)	R/V SUNCOASTER R/V BELLOWS	20-30/project	Varies	40' otter trawl, Tucker Trawl	Various plankton nets	Random, long term station sel., short term special studies	To continue w/SEAMAP	None
ALABAMA SCHOOLS												
Univ. So. AL Mobile	All finfish	Egg & larvae	Mobile Bay	Internal, territorial	40' R/V DEBORAN "B"	15/yr	200/yr			Systematic, grid basis, long term station selection	None	None
AL Marine Environ. Sciences Consortium Dauphin Island	All species are treated equal	All stages	AL MS estuarine shelf	Internal, territorial	41' R/V DEBORAH "B"	Varies w/ each project	Varies w/ each project	20 25' otter trawls	0.25 m 500 .m plankton nets, Wisconsin style plankton net	Systematic, random short term special studies	Decrease due to funding limitation	Inshore work in adjacent offshore waters Offshore sport fisheries Improve sampling on all reefs All species & more work in bay & delta waters
MISSISSIPPI SCHOOLS												
Univ. So. MS Hattiesburg**	American eels, freshwater prawns, sea-trout, croaker, spot	All stages	MS estuarine Northern Gulf	Estuarine, territorial	Various small skiffs (outboard)	Varies	Varies	Standard basic equipment	Standard basic equipment	Short term special studies	Increase development of a marine science program	None

\*Fishery independent survey activities are not a routine function for UT.

\*\*No fishery survey work was done in 1982 due to lack of funds. Some is planned in 1983.

\*\*\*No fishery independent research was done in 1982; none planned for 1983.

Table 3. Summary of Information Provided by Universities (Continued)

			TYPES OF FISHERY INDEPENDENT SAMPLING			ANNUAL EFFORT DEVOTED TO FISHERY IND. SAMPLING BY ACTIVITY IN:		TYPES OF GEAR					
Universities	Target Species	Life Stages Sampled	Area Sampled	Geographic Areas of Importance	Types of Platforms	No. of Days	No. of Samples	Fishing, Trawling	Plankton	Sample Strategy for Data Collection	Anticipated Changes in Direction of Fishery Ind. Activities Over Next 5 Years	High Priority and/or Species That are Presently Unable To Sample	
LOUISIANA SCHOOLS													
Univ. New Orleans New Orleans	Blue crab, Oysters, Marine commercial finfish	All stages	Lake Pontchar train	Internal		(Varies)				Short-term special studies	To analyze commercial fish pops. by use of protein electrophoresis & multi-variant analysis of morphometric characters	None	
Univ. S.W. LA Lafayette***													
McNeese St. University Lake Charles	All penaeid sp., Gulf menhaden, red drum	All stages	Nearshore Gulf off Cameron/ Holly Beach, LA., Calcasieu Lake, Calcasieu Pass	Estuarine, coastal	65' R/V CAPT. BRADY JOSEPH	12-24/yr for 4 disciplines, 75/yr total		Benthic- nekton Phyto- plankton Zoo- plankton	15-m ballon otter trawl, 5-m flat otter trawl	3-liter Van Dorn bottle, 67 cc bongo array, 0.333 mm & 0.505 mm mesh nitex nets, Ring net 1.0 m w/ .353 mesh	Grid basis Long-term station selection Short-term special studies	Scale down of sampling activities from monthly to quarterly. Direction will remain essentially unchanged.	None
Nicholls St. University Thibodaux	Oysters	All stages	Terrebonne Bay Barataria Bay	Estuarine	21' skiff 30' oyster dredge boat	48/yr	144/yr		Oyster dredge		Random, long-term station selection	Three more yrs. w/oyster project before it ends	None
Louisiana State University Baton Rouge (4 projects)▲													
(1) [R/RRE-3]▲	Shrimp Oysters Crab	All stages	LA waters	Estuarine	NA	NA	NA				NA	None	None
(2) [R/MPE-12]▲▲	Benthic invertebrates	All stages	LA waters	Coastal, estuarine	{3} Boston whalers (1) 19' Monark (1) 16' John Boat	100/yr	300/yr			80' siene (1/4" mesh, 4' depth), Trammel net	Stratified random, Long-term station selection, Short-term station studies	None	None
(3) [R/MPE-16]▲▲▲	Gulf menhaden Groundfish	All stages	LA Cont. Shelf	Internal territorial (FCZ)	(1) 44' coastal vessel (1) R/V 80' LONGHORN (U.T. Austin) (2) Boston whalers R/V OREGON II	20 40/yr					Long term station selection Short-term special studies	None	None
(4) Impact of brine disposal operations on menhaden fisheries near Lake Charles, LA, Offshore TX-LA border	Gulf menhaden	Egg & Larvae	Cont. Shelf & coastal waters of west. LA	Internal territorial (FCZ)	80' R/V LONGHORN (U.T. Austin)	20/yr				60 cm bongo type plankton sampler w/500 & 335. m mesh	Transect grid system	None	None
TEXAS SCHOOLS													
Univ. of TX Austin* Marine Science Laboratory Port Aransas Texas A & I Kingsville	All larval fishes Ecosystem/ benthic All inshore bay species	Larvae stages All stages	TX internal & territorial waters Corpus Christi to Brownsville, TX	Internal, territorial (FCZ) Internal, coastal	80' R/V LONGHORN 57' R/V KATY	100/yr 24/yr		Varies w/ project 150/yr	42' semiballon shrimp trawl, 40' otter semi ballon trawl	12' x 24" plankton net	Short term special studies Short term special studies	Institute expansion on all present programs None	None None
Pan American University Edinburg***													
Texas A & M College Station	All penaeid shrimp, all finfish	All stages	Bryan Mound, Freeport, TX	Internal territorial (FCZ)	Shrimp vessel	40/yr		Monthly samples	40' shrimp trawl		Long-term station selection, short term special studies, systematic, grid basis	Reduced effort	Groundfish species

\*Fishery independent survey activities are not a routine function for UT.  
 \*\*No fishery survey work was done in 1982 due to lack of funds. Some is planned in 1983.  
 \*\*\*No fishery independent research was done in 1982; none planned for 1983.  
 ▲ Economics of fisheries utilization for use in management extension programs.  
 ▲▲ Benthos & Nekton dynamics with habitat characterization.  
 ▲▲▲ The coastal nearshore zone of the Atchafalaya Delta: A biological filter.

*FINANCIAL REPORT*

GULF STATES MARINE FISHERIES COMMISSION

Ocean Springs, Mississippi

For the Fiscal Year Ended September 30, 1982

Roberts and Rasor  
Certified Public Accountants  
Biloxi, Mississippi

GRAVES, ROBERTS, COOPER & RASOR

CERTIFIED PUBLIC ACCOUNTANTS

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MEMBERS:  
AMERICAN INSTITUTE OF CPA'S  
MISSISSIPPI SOCIETY OF CPA'S

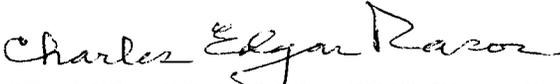
To The Commissioners  
Gulf States Marine Fisheries Commission  
c/o Mr. Charles H. Lyles, Executive Director  
P. O. Box 726  
Ocean Springs, MS 39564

Gentlemen:

We have examined the balance sheet of Gulf States Marine Fisheries Commission as of September 30, 1982, and the related statement of revenues, expenses and changes in fund balances for the fiscal year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion the accompanying financial statements present fairly the financial position of Gulf States Marine Fisheries Commission at September 30, 1982 and the results of its operations and changes in fund balances for the twelve months then ended, in conformity with generally accepted accounting principles applied on a consistent basis.

A separate management letter containing our observations pertaining to the internal administration of the Commission's financial affairs will be furnished to the Executive Director.

  
GRAVES, ROBERTS, COOPER & RASOR  
Certified Public Accountants

December 28, 1982

GULF STATES MARINE FISHERIES COMMISSION  
BALANCE SHEET  
September 30, 1982

ASSETS

Cash		\$ 65,595.95
Furniture, fixtures and equipment	\$ 30,853.66	
Automotive equipment	5,570.43	
Total	\$ <u>36,424.09</u>	
Less: Accumulated depreciation	<u>14,300.38</u>	<u>22,123.81</u>
Total		\$ <u><u>87,719.76</u></u>

LIABILITY

Payroll taxes withheld and accrued		\$ 2,315.88
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FUND BALANCES (page 3)

Operating Fund	\$ 71,245.22	
State-Federal Fisheries -		
Management Funds	17,863.60	
Administrative Support Funds	[ 7,959.05]	
Programmatic Funds	[ 3,067.50]	
Council Funds	<u>7,321.61</u>	<u>85,403.88</u>
Total		\$ <u><u>87,719.76</u></u>

See the accompanying Notes to Financial Statements (page 4 & 5).

GULF STATES MARINE FISHERIES COMMISSION  
STATEMENT OF REVENUES, EXPENSES AND CHANGES IN FUND BALANCES  
Fiscal Year Ended Spetember 30, 1982

	<u>Operating Fund</u>	<u>State-Federal Management Funds</u>
<u>REVENUES:</u>		
Member states appropriations:		
Alabama	\$ 11,250.00	\$
Florida	-0-	
Louisiana	22,500.00*	
Mississippi	1,000.00	
Texas	15,000.00	
Grants		7,520.81
SEAMAP reimbursement	4,840.00	
Interest earned	<u>13,724.01</u>	
 Total revenues	 \$ <u>68,314.01</u>	 \$ <u>7,520.81</u>
 <u>EXPENSES:</u>		
Salaries	\$ 41,651.06	\$ 1,966.45
Auto	1,899.94	
Dues and Subscriptions	1,230.50	
Indirect costs	3,973.04	
Insurance	1,267.00	
Maintenace and repairs	1,241.85	
Meetings	6,832.89	310.68
Office supplies and expense	2,204.37	234.74
Postage	1,759.14	99.99
Printing	2,801.00	120.00
Professional fees	1,400.00	
Rental of equipment	6,315.78	
Sub-contracts	7,186.44	
Taxes - payroll	4,891.10	
Telephone	4,374.61	125.01
Travel and entertainment	17,263.87	2,328.55
Depreciation	<u>2,132.22</u>	
 Total expenses	 \$ <u>108,424.81</u>	 \$ <u>5,185.42</u>
Excess of revenues over (under) expenses	\$ [40,110.80]	\$ 2,335.39
Fund balances, October 1, 1981	<u>111,356.02</u>	<u>15,528.21</u>
Fund balances, September 30, 1982	\$ <u>71,245.22</u>	\$ <u>17,863.60</u>

<u>State-Federal Administrative Support Funds</u>	<u>State-Federal Programmatic Funds</u>	<u>State-Federal Council Funds</u>	<u>Combined Funds</u>
\$	\$	\$	\$ 11,250.00
			-0-
			22,500.00
			1,000.00
			15,000.00
12,365.37	35,578.83	23,141.85	78,606.86
			4,840.00
			<u>13,724.01</u>
\$ <u>12,365.37</u>	\$ <u>35,578.83</u>	\$ <u>23,141.85</u>	\$ <u>146,920.87</u>
\$ 3,841.70	\$ 28,280.13	\$ 20,289.50	\$ 96,028.84
			1,899.94
	8,433.01		1,230.50
			12,406.05
			1,267.00
			1,241.85
1,113.02			8,256.59
933.32	1,620.37	860.44	5,853.24
366.67	722.06	400.00	3,347.86
3,926.00	562.50		7,409.50
			1,400.00
37.48	1,578.31	37.49	7,969.06
	259.63		7,446.07
			4,891.10
738.11	233.25	1,662.35	7,133.33
9,368.12	2,557.65	46.91	31,565.10
		512.21	<u>2,644.43</u>
\$ <u>20,324.42</u>	\$ <u>44,246.91</u>	\$ <u>23,808.90</u>	\$ <u>201,990.46</u>
\$ [ 7,959.05]	\$ [ 8,668.08]	\$ [ 667.05]	\$ [55,069.59]
-0-	5,600.58	7,988.66	140,473.47
\$ <u>[ 7,959.05]</u>	\$ <u>[ 3,067.50]</u>	\$ <u>7,321.61</u>	\$ <u>85,403.88</u>

\*Fiscal year 1982-83 payments  
See the accompanying Notes to Financial Statements (pages 4 & 5).

GULF STATES MARINE FISHERIES COMMISSION  
NOTES TO FINANCIAL STATEMENTS

NOTE 1 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

- (a) The accounting and reporting practices of the Commission conform to generally accepted accounting principles applicable to governmental units applied on a consistent basis between periods. The accrued basis of accounting is followed with these modifications:
  - (1) Revenues from member states' appropriations are recorded when received in cash.
- (b) Depreciation of furniture, fixtures, equipment and the commission vehicle is calculated using the straight-line method.

NOTE 2 - ORGANIZATION

Gulf States Marine Fisheries Commission was created with the consent of the 81st Congress of the United States, granted by Public Law 66, approved May 19, 1949, authorizing an interstate compact relating to the better utilization of the fisheries of the Gulf of Mexico. Parties to the agreement are the states of Alabama, Florida, Louisiana, Mississippi and Texas.

NOTE 3 - STATE-FEDERAL FISHERIES MANAGEMENT PROGRAM

Effective August 15, 1975, the Commission entered into a contract with the U.S. Department of Commerce to provide administrative support of the State-Federal Fisheries Management Program in the Gulf of Mexico coastal states.

NOTE 4 - STATE-FEDERAL FISHERIES ADMINISTRATIVE SUPPORT PROGRAM

Effective in prior fiscal years, the Commission entered into contracts with the U.S. Department of Commerce to provide administrative support of the State-Federal Fisheries Planning and Administrative Program in the Gulf of Mexico coastal states.

GULF STATES MARINE FISHERIES COMMISSION  
NOTES TO FINANCIAL STATEMENTS

[CONT'D]

NOTE 5 - STATE-FEDERAL FISHERIES COUNCIL SUPPORT PROGRAM

Effective in prior fiscal years, the Commission entered into contracts with the U.S. Department of Commerce to provide administrative support of the State-Federal Fisheries Council in the Gulf of Mexico coastal states.



