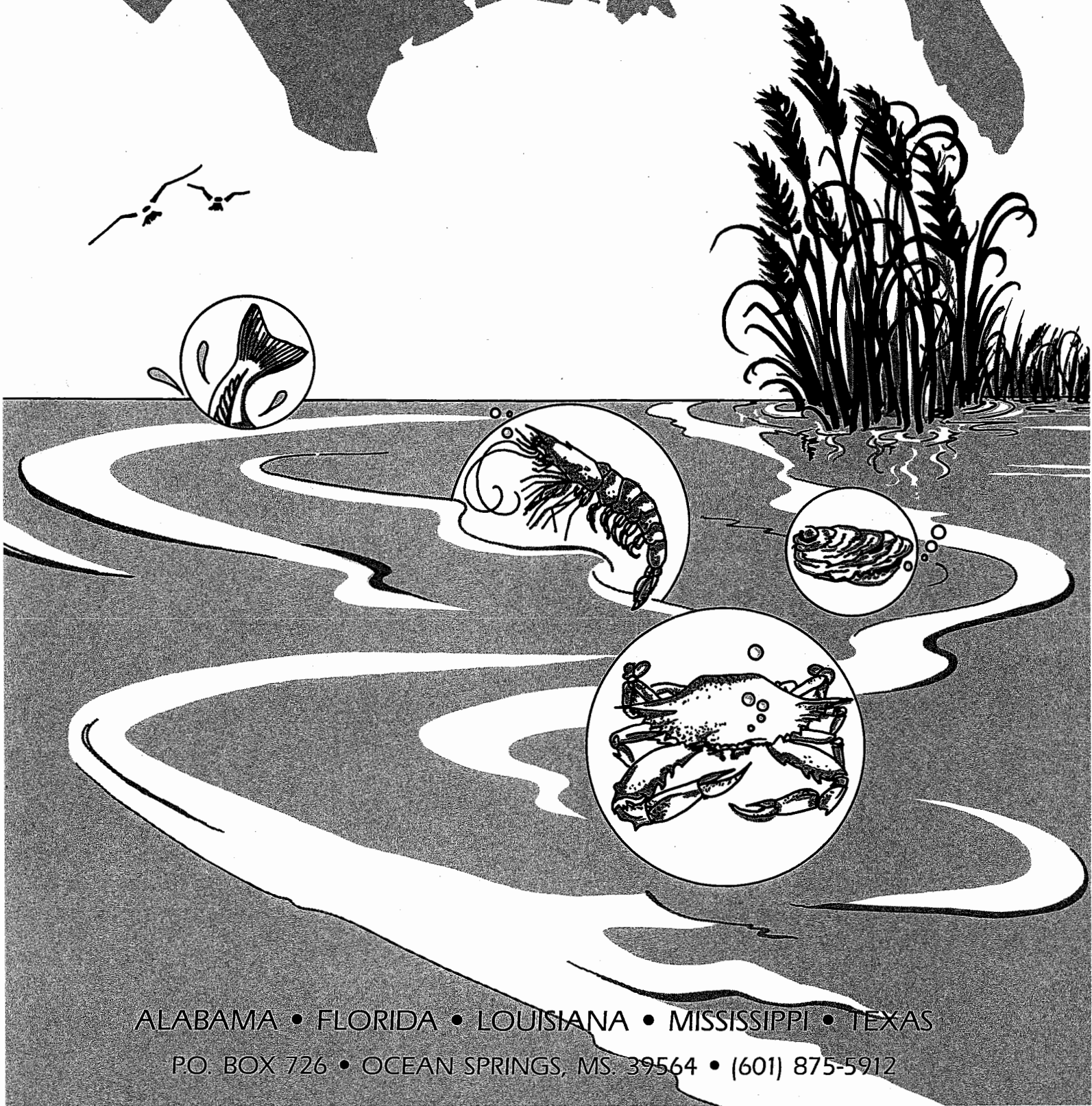


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# THIRTY-NINTH ANNUAL REPORT OF THE GULF STATES MARINE FISHERIES COMMISSION



ALABAMA • FLORIDA • LOUISIANA • MISSISSIPPI • TEXAS

PO. BOX 726 • OCEAN SPRINGS, MS. 39564 • (601) 875-5912

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-NINTH ANNUAL REPORT (1987-1988)**

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-Ninth 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-nine 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,

Taylor F. Harper, Chairman  
Charles E. Belaire, Vice Chairman  
Larry B. Simpson, Executive Director

Published August 1989

GULF STATES MARINE FISHERIES COMMISSION

Thirty-ninth Annual Report (1987-1988)

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Roster of the  
**GULF STATES MARINE FISHERIES COMMISSION**

October 1, 1987 - September 30, 1988

Chairman: Taylor F. Harper

Vice Chairman: Charles E. Belaire

**COMMISSIONERS**

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

**ALABAMA**

James C. Martin, 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

Frank J. Patti, Representative  
State of Louisiana  
Belle Chasse, LA  
Leroy Kiffe  
Tom Kiffe & Sons Boats  
Lockport, LA

**FLORIDA**

Tom Gardner  
Executive Director  
Florida Department of Natural  
Resources  
Tallahassee, FL  
Sam Mitchell, Representative  
State of Florida  
Chipley, FL  
H. Gilmer Nix  
Tampa, FL

**MISSISSIPPI**

Vernon Bevill  
Executive Director  
Mississippi Department of  
Wildlife Conservation  
Jackson, MS  
Tommy Gollott, Senator  
State of Mississippi  
Pascagoula, MS  
Rudy Lesso  
Biloxi, MS

**LOUISIANA**

Virginia Van Sickle  
Executive Secretary  
Louisiana Department of  
Wildlife and Fisheries  
Baton Rouge, LA

**TEXAS**

Charles D. Travis  
Executive Director  
Texas Parks and Wildlife  
Austin, TX  
H. Tati Santiesteban, Senator  
State of Texas  
El Paso, Texas  
Charles E. Belaire  
Fulton, TX

**STAFF**

Larry B. Simpson  
Executive Director

Virginia K. Herring  
Executive Assistant

Thomas M. Van Devender  
SEAMAP Coordinator

Ron R. Lukens  
D-J W-B Program Coordinator

Stephen Meyers  
IF Program Coordinator

Lucia B. Hourihan  
Publication Specialist

Eileen M. Benton  
Administrative Assistant

Nancy K. Marcellus  
MARFIN Secretary

Cynthia B. Dickens  
IF Staff Assistant

COMMISSION OFFICERS ELECTED FOR  
FISCAL YEAR 1987-1988

Chairman: Taylor F. Harper succeeding Frank J. Patti  
Vice Chairman: Charles E. Belaire succeeding Taylor F. Harper

COMMITTEES

Executive Committee . . . . . Taylor F. Harper, Chairman

Technical Coordinating Committee. . . . . J.Y. Christmas, Chairman

    SEAMAP Subcommittee. . . . . Walter Tatum, Chairman

    Crab Subcommittee. . . . . Phil Steele, Chairman

    Data Management Subcommittee . . . . . Henry "Skip" Lazauski, Chairman

    Anadromous Fish Subcommittee . . . . . Larry Nicholson, Chairman

    Spanish Mackerel Subcommittee. . . . . Roy Williams, Chairman

Industry Advisory Committee . . . . . Jim Gilmore, Chairman

Recreational Fisheries Committee. . . . . Fred Deegen, Chairman

Law Enforcement Committee . . . . . Jerald Waller, Chairman

Gulf State-Federal Fisheries  
Management Board . . . . . Edwin Joyce, Chairman

    Menhaden Advisory Committee. . . . . George Brumfield, Chairman



## GULF STATES MARINE FISHERIES COMMISSION ACTIVITIES

October 1, 1987 - September 30, 1988

In 1964 the U.S. Congress passed PL 88-309. This statute titled the Commercial Fisheries Research and Development Act was to become considered by some state agencies as the single most significant piece of legislation ever passed with regard to marine fishery resources. The state matching formula grant was directly responsible for increased state expertise by allowing the state to employ fishery scientists and providing programmatic funds with which to work. This program stimulated the states' ability to provide additional personnel thereby creating a resident pool of knowledge and personnel without which many have stated the Councils would not have been able to develop the fishery management plans currently in place. Partly because the program produced the vital but not glamorous information needed to properly address marine fishery issues and the fact that long-term federal programs become difficult to continuously get reapproved, it was eliminated.

Certainly the absence of support and even hard work by the Washington office of the agency administering the program, the National Marine Fisheries Service (NMFS) of the Department of Commerce (DOC) was a factor in its demise.

While the basic data is still very much needed a new direction for marine fishery work by the states was charted. This new program is the Interjurisdictional Fisheries Act (IJA) PL 99-659. Utilizing what worked well in the past (i.e., a state matching formula based grant program directed at producing fishery management plans) it was felt significant work could be accomplished. The states have and continue to be the major entity dealing with the complicated and difficult task of marine fishery management. Some 95% of the commercial yield and 90% of the recreational yield comes from estuarine dependent species. Further the Gulf and South Atlantic accounted for over 55% of all retail recreational fishing sales in the U.S. Needless to say, the Gulf of Mexico, indeed the entire marine fisheries complex, is vitally important and therefore most worthy of sound, coordinated, effective management so as to achieve the highest and best use of our natural resources from the marine environment.

The purposes of the IJA are to promote and encourage state activities in support of the management of interjurisdictional fishery resources and to promote and encourage management of these resources throughout their range.

The role of the GSMFC is contained in Section 8(C) of the IJA, where the three interstate compacts are provided support through Congressionally appropriated money and are charged with the effort of developing interstate fishery management plans for interjurisdictional fishery resources.

In the first year of action under this program, the GSMFC worked with the Gulf States to develop a list of those resources which we felt were in need of plan development. Then focusing on those fisheries which were deemed most appropriate for initial action, started the process with existing technical expertise within the GSMFC structure without creating any new groups. As of October the results have been noteworthy, that is completed and approved a 1988 revision to the Menhaden Management Plan, approximately three-quarters complete with a Blue Crab Plan and initiated efforts on oysters. The GSMFC has hired the necessary technical personnel to staff this effort in addition to part-time consultant help and as always relies heavily on state resident expertise in this process.

A plan for integrated and cooperative management for Spanish mackerel in state waters will be finalized with respect to management measures recommended for adoption by state action under this program, the technical scientific efforts being accomplished under the Dingell-Johnson Wallop-Breaux Program last year.

The existent committees within the GSMFC have been and will continue to be used for review and broad-based input, thus satisfying the requirement of coordination with industry (recreational and commercial), NMFS, U.S. Fish and Wildlife Service, biological and economic and social points of view. When the workload and schedules permit the next area of plan development will be black drum.

The new efforts coupled with the existent long term efforts the GSMFC administers under the Southeast Area Monitoring and Assessment Program (SEAMAP), the Dingell-Johnson Wallop-Breaux Program and Marine Fisheries Initiative (MARFIN) have enabled the GSMFC to be utilized by the states to advance and coordinate marine resource policy, research and activity as charged in the original GSMFC Compact enabling legislation.

Larry B. Simpson  
The Executive Director

## MEETINGS/ACTIVITIES OF THE EXECUTIVE DIRECTOR

### Gulf States Marine Fisheries Commission (GSMFC)

38th Annual Fall Meeting, Joint Meeting with Atlantic States Marine Fisheries Commission, Key West, Florida - October 1987  
Presentation to Louisiana Department of Wildlife and Fisheries staff regarding the Interjurisdictional Fisheries Act, New Iberia, Louisiana - November 1987  
SEAMAP Plankton Work Group, Ocean Springs, Mississippi - December 1987  
Management Seminar re: employees, New Orleans, Louisiana - December 1987  
Interjurisdictional Fisheries Program (IJF) Consultants, Ocean Springs, Mississippi - January 1988  
IJF Consultants, Ocean Springs, Mississippi - February 1988  
Meeting with Dr. R. Leard re: IJF Program, Ocean Springs, Mississippi - January 1988  
38th Annual Spring Meeting, Gulf Shores, Alabama - March 1988  
IJF Menhaden Technical Task Force, New Orleans, Louisiana - March 1988  
IJF Crab Technical Task Force, Pensacola, Florida - April 1988  
IJF Consultants, Ocean Springs, Mississippi - April 1988  
IJF Consultants, Ocean Springs, Mississippi - May 1988  
IJF Crab Technical Task Force, New Orleans, Louisiana - June 1988  
Gulf States Marine Directors Meeting, New Orleans, Louisiana - June 1988  
SEAMAP Red Drum Work Group Meeting, Biloxi, Mississippi - July 1988  
IJF Crab Technical Task Force, Biloxi, Mississippi - August 1988  
SEAMAP Gulf and South Atlantic Joint Meeting, St. Petersburg, Florida - August 1988  
GSMFC Budget Committee, Ocean Springs, Mississippi - September 1988

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

Marine Fisheries Advisory Committee (MAFAC) DOC, Providence, Rhode Island - November 1987  
Louisiana Department of Wildlife and Fisheries Commission Public Hearing re: Louisiana menhaden season, New Orleans, Louisiana - December 1987  
Marine Fisheries Advisory Committee (MAFAC) DOC, Hilton Head, South Carolina - June 1988

### Congressional Meetings

House and Senate Members and Staff Meetings re: gulf fisheries programs, Washington, DC - December 1987  
Testimony before House Appropriations Subcommittee re: gulf fisheries programs, Washington, DC - April 1988

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

October 1987	Miami, Florida	Intercouncil Spiny Lobster and Limited Entry Conference
December 1987	New Orleans, Louisiana	
January 1988	Miami, Florida	Joint South Atlantic and Florida Marine Fisheries Commission
April 1988	New Orleans, Louisiana	
July 1988	Key West, Florida	

Marine Fisheries Initiative (MARFIN) Program Management Board (PMB)

February 1988	San Antonio, Texas	MARFIN PMB
July 1988	Tampa, Florida	MARFIN PMB
September 1988	Tampa, Florida	MARFIN Principle Investigators Conference
September 1988	Tampa, Florida	MARFIN PMB

Other Meetings and Activities

Southeastern Fisheries Association Purse Seine Workshop, Panama City, Florida - January 1988

Texas Shrimp Association Annual Convention, San Antonio, Texas - March 1988

Meeting with Acting Assistant Administrator for Fisheries (Jim Douglas) re: gulf fishery issues, Washington, DC - April 1988

Louisiana Department of Wildlife and Fisheries re: setting of shrimp season, New Orleans, Louisiana - April 1988

Conference on Sociological Aspects of Fishing Industry, Mobile, Alabama - May 1988

Ribbon Cutting for Sea Chick (Striped Bass) Aquaculture Facility, Moss Point, Mississippi July 1988

International Association of Fish and Wildlife Agencies, Toronto, Canada - September 1988

## WALLOP-BREAUX ADMINISTRATIVE PROGRAM

The Wallop-Breaux Administrative Program, which addresses important recreational fisheries issues, was initiated by the Gulf States Marine Fisheries Commission in January 1987, utilizing U.S. Fish and Wildlife Service Wallop-Breaux administrative funds. Since the inception of the program, the program coordinator has interacted with several of the committees and subcommittees of the GSMFC including the Recreational Fisheries Committee, the TCC Spanish Mackerel Subcommittee, the TCC Anadromous Fish Subcommittee, and the TCC Data Management Subcommittee. The following is a description of the activities of those committees and subcommittees during FY 88.

### Recreational Fisheries Committee

During the Annual Fall Meeting of GSMFC in October 1987 in Key West, Florida, the committee authorized the program coordinator to seek funding for a project to compare two methods of monitoring and assessment of artificial reef materials. The project will compare the benefits and drawbacks of a SCUBA survey method and a side scan sonar survey method. During the Annual Spring Meeting in March 1988 in Orange Beach, Alabama, the program coordinator reported that funding was being requested of the Office of Fisheries Assistance of the U.S. Fish and Wildlife Service. Approval was expected within two weeks of that meeting. Should the project be funded, it is expected that the results will provide artificial reef managers with alternatives for monitoring of artificial reef sites.

Another major initiative begun at the Key West meeting was the development of an action plan for the committee to guide future actions. Further discussion of this initiative took place during the Orange Beach meeting, at which time an ad hoc subcommittee was appointed to develop some ideas on an action plan. It is anticipated that a final plan will be developed during FY 89.

### TCC Spanish Mackerel Subcommittee

One of the first tasks under the GSMFC Wallop-Breaux Administrative Program was the development of a fishery management plan for Spanish mackerel for state territorial waters of the Gulf of Mexico. During FY 88 a major portion of the text of the fishery management plan was nearing completion and discussions were centering on the regulatory aspects of the plan. By the end of this reporting period, a set of goals, objectives and several regulatory recommendations were prepared. Completion of the fishery management plan is expected during mid 1989.

### TCC Anadromous Fish Subcommittee

The first major task of the subcommittee under the GSMFC Wallop-Breaux Administrative Program was the completion of a project entitled "Habitat Criteria for Striped Bass Stocked in Rivers in the Northern Gulf of Mexico." Meetings of the subcommittee were held in conjunction with the GSMFC Annual Spring and Fall Meetings to develop that project.

Another important project discussed during FY 88 was a proposal to locate and identify thermal refuges for striped bass in riverine systems. The proposal called for the use of a remote sensing instrument called a Thermal Infrared Multispectral Scanner (TIMS) mounted on a Lear jet. The subcommittee asked that the program coordinator investigate other possible

methods by which to acquire the same data, and that the topic would be further discussed at the next meeting.

### TCC Data Management Subcommittee

Though no formal activities of the subcommittee with the Wallop-Breux Administrative Program took place, preliminary discussions with the subcommittee indicated a major activity involving marine recreational fishery data collection would be pursued during FY 89. It is expected to culminate in a cooperative state/federal data collection program which could be used both regionally and on a state-by-state basis.

Ronald R. Lukens  
Program Coordinator

## INTERJURISDICTIONAL FISHERIES MANAGEMENT PROGRAM

A new program to promote and encourage state activities in interjurisdictional fisheries resources and to promote management of these resources throughout their range was created by Title III of P.L. 99-659 on November 14, 1986. This program addresses the national objective of regionally managing priority interjurisdictional resources not already addressed by the Magnuson Fisheries Conservation and Management Act plans. This program allows the state to utilize an existing mechanism, the Gulf States Marine Fisheries Commission (GSMFC), without creating a new entity to develop fisheries management plans (FMPs). A contract was issued by the Southeast Regional Office of the National Marine Fisheries Service to the GSMFC on January 1, 1988, to develop, prepare, publish and distribute FMPs. The GSMFC has initiated a program to address development of several interjurisdictional FMPs for selected species in the U.S. Gulf of Mexico. The following is a description of the activities of the Interjurisdictional Fisheries (IF) Management Program for FY 1988.

Two fisheries consultants, Mr. J.Y. Christmas and Dr. David Etzold, began discussions with GSMFC committees and other groups. Mrs. Cindy Dickens, staff assistant for the IF Management Program, began work in February, 1989. Mr. Stephen Meyers, program coordinator for the IF Management Program, began work in May, 1989.

Activities to identify and prioritize fisheries for regional FMP development are well underway. Files have been set up; state (and federal) laws, regulations and data are being accumulated for the various species. Major efforts for other species will begin as funding and manpower permit. The following table identifies the species being addressed.

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<u>Species</u>	<u>Major efforts initiated</u>	<u>Efforts started</u>	<u>Data accumulation</u>	<u>State laws</u>
Menhaden	X		X	X
Blue crab	X		X	X
Oysters	X		X	X
Spotted sea trout, etc.		X	X	X
Blue fish		X	X	X
Mullet		X	X	X
Flounder		X	X	X
Croaker / Bottomfish		X	X	X
Ground mullet		X	X	X
Scallops / Clams / Conchs		X	X	X
Black drum		X	X	X
Eels		X	X	X
Sheepshead		X	X	X

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## Menhaden FMP

The initial Menhaden FMP was published in 1977 and revised in 1983. A technical committee has been selected to update this FMP, and a workshop was held in New Orleans, Louisiana, on March 1, 1988. A follow-up session was held on March 14, 1988, in Orange Beach, Alabama. A final draft has been completed, and approval by the GSMFC is expected in October, 1988.

## Blue Crab FMP

A technical committee has been selected. The existing blue crab profile, "A Profile of The Blue Crab Fishery of The Gulf of Mexico," has been reviewed, and committee assignments have been given. Several meetings have been held with the Blue Crab Technical Task Force, and the FMP is about 75% complete.

## Oyster FMP

A technical task force has been organized and will meet in October, 1988. Data continues to be accumulated through the efforts of the five state marine resource agencies. A schedule has been developed for the FMP, and it is anticipated to be complete in December, 1989.

Stephen Meyers  
Program Coordinator



## ALABAMA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

### MARINE RESOURCES DIVISION

The Marine Resources Division is responsible for management of Alabama's marine fisheries resources through research and enforcement programs. Three Division facilities supported 41 employees of the Administrative, Fisheries and Enforcement Sections during FY 88. A total expenditure of \$1,798,000 was made from the approved budget of \$1,905,000. Revenue of \$1,591,300 was made up from federal aid (38%), license fees (42%), marine gas tax (12%) and other sources (8%).

#### ADMINISTRATIVE SECTION

The Administrative Section consists of the Division Director, five clerical, one custodial and one mechanical personnel. Offices are maintained at Dauphin Island, Gulf Shores and Bayou La Batre. The section provides supervision, clerical, purchasing and general administrative support for the two operations divisions and supervises state seismic activities. The Administrative Section expenditures were \$467,100 on salaries and operational expenses for division activities, some of which is reimbursed under federal aid to fisheries programs.

Long over-due seafood license increases were proposed and adopted with few changes during the regular legislative session. License fees established between 1915 and 1943 were increased, or repealed when multiple licenses were required for the same activity. Anticipated revenue is estimated to increase by \$200,000. All license information is entered, maintained and retrieved by data management personnel in the Fisheries Section which also maintains data on Division expenditures.

Future plans include slight revisions to recently passed licenses to provide for a reduced annual fee for persons over 65 and to seek outside funding for the Enforcement Section which are deputized to enforce three federal law enforcement statutes but receive no outside funds for operations.

#### ENFORCEMENT SECTION

The Enforcement Section personnel patrol Alabama's coastal waters enforcing both state and federal rules on conservation and protection of marine resources. Officers also enforce rules pertaining to boating safety, freshwater fishing and hunting and conduct search and rescue and drug interdiction operations.

Facilities and personnel include headquarters at Dauphin Island and district offices in Bayou La Batre and Gulf Shores. At the beginning of FY 88, the section consisted of 14 enforcement officers which were reduced to 12 at the end of the year due to one death and one retirement.

Expenditures during the year totaled \$495,450, of which \$21,500 was reimbursed by an ADECA contract. Other expenses for shared services and materials such as utilities and gasoline were paid by the Administration Section.

Enforcement officers conducted 21,685 boat and shore patrol hours, checked 18,352 boats, 1022 seafood shops and issued 963 citations on illegal activities. Violations of rules concerning finfish made 34% of the citations followed by oystering (33%), shrimping (19%) and other (14%). Eleven officers attended the drug enforcement school by U.S. Customs and were designated special custom agents authorized to assist in coastal drug interdiction. Cooperative agreements were finalized to allow for state enforcement of federal rules on fisheries management and protection of endangered species and marine mammals. Officers attended schools and courses on the federal marine law enforcement training program, F.B.I. firearms instruction and other state law enforcement programs. Division officers are better educated and trained now than during any period in division history as demonstrated by quality and quantity of their work and contact with the public.

The most significant problem was the lack of sufficient personnel to adequately monitor commercial and recreational fishing activities. Three officers will be hired during FY 89 to fully staff the section at 15 for the first time since 1974. The increasing number of alias warrants has become a very serious problem by causing reduced Division revenue and allowing violators to remain unpunished. Damage to 15 outboard motors was traced to outboard motor oil supplied under state contract. Chevron and Gulf paid \$64,000 to reimburse the Division for damages.

The future plans include designating a training officer, formulation of training programs to upgrade performance and to maintain adequate equipment and personnel to effectively conduct operations.

## FISHERIES SECTION

The Fisheries Section conducts applied research on marine fisheries stocks in Alabama and offshore federal waters. Data are collected by field collections of species throughout Alabama waters, cooperative state/federal cruises in gulf waters, interviews with recreational fishermen and seafood dealers, tag and release of hatchery-reared fish and shrimp and fish caught by Fisheries Section personnel and through contractual agreements with universities and other agencies. The section also manages the offshore fishing reef program, the Weeks Bay National Estuarine Research Reserve, boat ramp construction, reviews applications for construction in the coastal zone to protect the environment and participates in educational programs to provide information on marine resources to groups and individuals.

Facilities consisted of the Claude Peteet Mariculture Center at Gulf Shores and the Marine Resources Laboratory at Dauphin Island. Personnel included one Biologist V, two Biologists IV, one Biologist III, two Biologist II, three Biologist Aides III, two Biologist Aides II, three Biologist Aides I, one Lab Technician, one data entry Clerk Typist II and four laborers.

Expenditures during FY 88 totaled \$794,000 consisting almost entirely of federal aid funds from nine federal programs. State funds for required match varied from none to 45% of the program costs.

Supervision was provided in the maintenance of Division structures in Mobile and Baldwin counties with maintenance required at Dauphin Island headquarters, Claude Peteet Mariculture Center in Gulf Shores, public boat launching facilities at six locations in Mobile and Baldwin counties, and the development and maintenance of a nature trail at Weeks Bay National Estuarine Research Reserve. A general permit area in the Gulf of Mexico off Dauphin Island was secured by the Division allowing the Division to issue permits for artificial reef construction in the area. A similar area is located off Baldwin County and biological personnel inspect the reef material, issue the permit, and maintain a site log for the reefs. The Fisheries Section

additionally investigated fish kills and investigated and provided written comments on U.S. Army Corps of Engineer Section 10 and 404 construction permits in the coastal area. Monitoring and assessment activities were accomplished through all or part of three federal aid programs during 1987-88. The SEAMAP program (Southeast Area Monitoring and Assessment Program) is a state/federal cooperative program providing 100% federal funds. These funds are used to monitor shrimp, fish and crabs in the Alabama estuarine area and to participate in regional synoptic sampling for shrimp, groundfish, plankton, and hydrological conditions in the Gulf of Mexico in conjunction with the other four Gulf States and the National Marine Fisheries Service. The Interjurisdictional Fisheries Act (IFA) funds activities on fish and shellfish resources which migrate between two or more fishery management jurisdictions during their life cycle. Alabama's IFA projects consisted of taking biological data from recreationally caught finfish in Alabama estuarine and territorial waters. The MARFIN (Marine Fisheries Initiative) project provides funds to assess the sexually-immature red drum stocks in Alabama's estuarine and territorial waters. Biological staff conduct creel surveys during the historical high red drum yield period and take biological data from red drum. Biological staff additionally fish for red drum to tag and release. Alabama's Cooperative State/Federal Statistical Program funds the Marine Resources Division's commercial fishery data collection and data management activities. Two state port agents, one data entry specialist and one data manager comprise the Data Management Section. Port agents in Mobile and Baldwin counties routinely visit all seafood dealer/processors in their respective counties and gather seafood landing statistics. The landings data are forwarded to the data manager in Gulf Shores where they are tabulated and entered into an "Alabama Landings" data file for storage and manipulation. Port samplers additionally collect biological data from fishery stocks of concern from a regional or local perspective. Species of fish raised, tagged and released into Alabama waters under three federal aid programs are spotted seatrout, striped bass, and red drum. Previous hatchery rearing, tag and release projects with all three species have demonstrated dramatically that a minimum tag and release size of 40-60 grams (6"-8") is required in order to optimize released fish survival and subsequent angler catch and tag return. All fish released from CPMC are tagged prior to release and during the past year all fish were 6"-8" in size at release. The recent emphasis on minimum size at release has resulted in prolonged culture periods with accompanying increased mortality for fish in culture, but has resulted in a tremendous increase in angler tag returns. The MARFIN mullet study was initiated to gather biological and socio-economic data from both the traditional mullet fishery and the recently established roe-mullet fishery. Data collection and analysis have demonstrated the age frequency of mullet harvested from the traditional fishery (primarily 2+ age class), the roe-mullet fishery (primarily 4+ and 5+ age class) and the purse-seine fishery (primarily 2+ and 3+ age classes). Since sexual maturity is not reached until mullet attain the 2+ age group it is obvious that the roe-mullet fishery is targeting older fish that have spawned 2-3 seasons prior to being caught. Socio-economic data acquired during 1987 demonstrated the state of origin for mullet entering Alabama's roe-mullet processing industry to be: 44% - Louisiana, 31% - Alabama; 23% - Florida; and 2% - Mississippi. The Weeks Bay National Estuarine Research Reserve is managed by Marine Resources Division under contract from ADECA, the Coastal Zone Management (CZM) agency in the state of Alabama. A nature trail was constructed by MRD staff on the Damson Tract of Weeks Bay National Estuarine Research Reserve with a raised observatory and elevated catwalk over a fringe marsh habitat along the western shore of Weeks Bay. The official opening of the nature trail was conducted on September 24, 1988, in celebration of National Estuarine Research Reserve Day.

Coordination of all sportfish restoration projects was accomplished utilizing Dingell-Johnson/Wallop-Breaux funds. The Coordination Project provides funds for continuing education courses for biological personnel, staff meetings to keep biological personnel informed on local and regional marine sportfish activities and provides a focal point to insure that the programs operate within the limitations provided by federal law. Biological personnel investigated construction permit requests for Sections 10 and 404 permits in the coastal area.

Thirty-three investigations were conducted in Baldwin County and 18 investigations were conducted in Mobile County. If the permit application resulted in environmental degradation, the biological personnel would suggest alternatives to the request that would minimize problems. If there were no alternatives and the project would result in environmental problems, the Division would request a U.S. Army Corps of Engineers denial of the activity. Fisheries personnel worked with State Park personnel in conducting an Environmental Day Camp at Gulf State Park for 25 Baldwin County High School students and to Elderhostel groups at the convention center. Four fish kills were investigated by MRD biological personnel in Baldwin County. The kills were brought about by low dissolved oxygen in some cases, but the majority appeared to be by-catch from either the shrimp or mullet fisheries. Testimony was provided on the issuance of NPDES permits to the City of Gulf Shores for discharge of treated sewage into the Gulf Intracoastal Waterway, Pleasure Island Sewer System for discharge of treated sewage into the Gulf Intracoastal Waterway and Shell Oil for discharge of drilling muds, drill cuttings and deck water into the Gulf of Mexico.

The problems with maintaining expenditures for salaries, material and supplies and other charges to nine federal aid projects have increased significantly over the years as additional programs are obtained to fund fisheries management activities. Software was developed by the Data Management Section to allow for closer inhouse accounting on these expenditures. The chief biologist also had to serve as reserve manager of the Weeks Bay Estuarine Research Reserve diverting much of his time away from fisheries duties. An Estuarine Reserve Manager position was created by the Personnel Department and the position will be filled during FY 89. Access by several seafood dealers was terminated due to their objections to state or federal rules on fishing, resulting in loss of fisheries catch and landings data used to manage gulf fisheries stocks. Loss of such data on a large scale will incorrectly show a reduction in gulf-wide catch resulting in more restrictive management measures. Draft legislation was prepared to provide access to such data.

Future plans include construction of a boat slip and water intake pipe protection at the Gulf Shores hatchery to protect the intake which has been destroyed many times by barge traffic and to continue to spend most effort on collection of data needed to manage Alabama's marine fisheries resources.

## FLORIDA DEPARTMENT OF NATURAL RESOURCES

### DIVISION OF MARINE RESOURCES

#### BUREAU OF MARINE RESEARCH

Advisory and research assistance was provided to various federal, state and local agencies by biologists of the Florida Department of Natural Resources, Bureau of Marine Research in 1988. They also reviewed and commented on Gulf of Mexico and South Atlantic fisheries management plans by supplying research data and critiques. They were active participants in workshops on marine fisheries that were conducted by the Florida Marine Fisheries Commission and the National Marine Fisheries Service. Programs initiated in 1987 were continued and numerous manuscripts were published or in review in 1988.

#### FINFISH

A tarpon life history study was initiated to study age, growth, reproduction and stock structure of tarpon in Florida. Data from nearly 200 adult tarpon and 300 juvenile tarpon have been collected. Experiments to validate daily growth increments and annuli using OTC-marked otoliths are in progress.

Nearly 1200 snook have been sampled to determine their growth and reproduction. Preliminary results suggest a life span of at least 16 years and sexual differences in growth and size at maturity.

Studies of Spanish sardine life history, population structure and fisheries characteristics were conducted. More than 3500 Spanish sardine have been examined for life history characteristics and several hundred have been processed for biochemical studies of stock structure.

From 1978 to 1980, 1342 gag grouper were collected from the central west coast of Florida for a life history study. This data is presently being examined. Marginal increment data revealed that annuli were laid down in the summer. Age ranged from 0-22 years and length from 17.4 to 1222 mm TL. A von Bertalanffy growth curve was calculated and had the following parameters:  $L_{max}=1180$  mm TL,  $K=0.165$ , and  $T=0.74$ . Gag grouper are protogynous hermaphrodites and peak spawning occurs from February to March. Mature females range in age from 3 to 16 years (457 to 1170 mm TL) and males from 5 to 21 years (935 to 1222 mm TL).

In the 1960s and 1970s, life history information was collected on black sea bass captured along the central west coast of Florida. Gonads have been examined, however this data has not been analyzed yet. Approximately 500 otoliths have been sectioned for age and growth analysis and will be examined this summer.

Florida's 1988 participation in the Southeast Area Monitoring and Assessment Program (SEAMAP) included:

1. Planning and execution of two plankton collection cruises in May and September, which comprised a total of 65 stations occupied over the West Florida Shelf. Sampling included measurements of chlorophyll concentrations and neuston and bongo trawling at each station, along with the collection of pertinent hydrographic information.
2. Curation and maintenance of the SEAMAP Archiving Center. Current holdings include approximately 43,000 lots of larval fishes collected from throughout the Gulf of Mexico in

1982 through 1986. Specimens collected in 1985 through 1987 are currently being incorporated into the collection.

Work continues on a wide variety of other species including, but not limited to red drum, spotted seatrout, black mullet and king mackerel. For additional information, please contact Dr. Joe Kimmel at the Florida Department of Natural Resources Marine Research Institute in St. Petersburg.

#### INVERTEBRATES

Hard clam research in the northern Indian River lagoon to determine seasonal patterns of recruitment continues. Field sampling to investigate coupling between larval settlement, environmental parameters and food availability was discontinued as of June 1989. Plans to expand field sampling to determine distribution and growth patterns and aquaculture potential in the southern Indian River lagoon have been initiated. Four manuscripts are in preparation and other data will be analyzed and reports published as data warrant.

Proceedings of a symposium on stone crab biology and management are in preparation. Data analysis to compare population structure and life history strategies of two stone crab species and hybrids in the northern Florida hybrid zone is underway; genetic studies are underway. Field studies to determine population structure and collect material for genetic studies are underway in Tampa Bay. Laboratory studies of reproductive success and larval physiological response to variations of salinity, temperature and time continue. Reports will be published as data warrant.

Data from blue crab field studies, 1980-85, are being analyzed and reports are in preparation. Field studies to determine if coastal waters near Apalachicola Bay are primary spawning grounds for blue crabs were completed, and data will be incorporated in reports in preparation. Electrophoretic and mitochondrial DNA analysis to determine genetic variations in blue crab stocks throughout their range are in progress. Development of a Gulf of Mexico blue crab management plan under auspices of GSMFC is almost complete.

Two years of field sampling to investigate for spiny lobster population dynamics, offshore recruitment and comparative population assessment techniques at Looe Key National Marine Sanctuary was completed. More than 700 den sites have been observed and tracked on a bi-weekly basis. Individual multiple spawning is commonplace on the Looe Key fore reef. A two-week sampling of spiny lobsters at Fort Jefferson National Park in Dry Tortugas was completed. The largest lobster was a 202 mm carapace length male.

A project to assess existing stocks of queen conch and to evaluate the feasibility of stock enhancement with hatchery-reared juveniles completed its second year. More than 925 hectares of the sea floor were surveyed by towed divers using a randomized sampling program stratified by season and habitat. These data show very low conch abundance. Wild-caught and hatchery-reared juvenile queen conch were successfully reared in a large-scale raceway system and in redfish ponds. Tag-recapture studies provided data for analysis of growth and mortality in both laboratory and wild aggregations.

The Bureau of Marine Research has continued to assess coastal and estuarine fisheries habitat changes, under contract with the Florida Department of Environmental Regulation. Areal fisheries habitat component loss, e.g., mangroves, seagrasses, saltmarshes, mud flats and oyster reefs, have been documented through time series evaluation of aerial photographics, satellite imagery and maps for portions of Charlotte Harbor, Tampa Bay, Indian River, Loxahatchee River, northeast Florida, the Big Bend area, Ponce Inlet and the Florida Keys. Quantification

techniques to establish the relationship of habitat to fisheries will be tested in order to define carrying capacity of wetlands. Completed reports are published, or ready for publication. Initial fisheries habitat mapping is completed for the entire state.

Numerous studies looking at physiological, physical and environmental relationships in marine habitats are also being conducted. This includes a habitat restoration research program to plant marsh vegetation, mangroves and seagrasses for evaluation of planting techniques, colonization and habitat utilization.

Other habitat studies are also in progress. Seagrass stress studies to evaluate the effect of sediment sulfide on seagrass die-back and to define metabolic stress indices continues and has expanded to include investigation of the extensive die-backs occurring in Florida Bay. These studies will evaluate the possible causes as they relate to seagrass physiology, reproductive biology and morphology. The Institute is cooperating with several agencies as they attempt to examine the overall problem. In the laboratory, more emphasis has been directed to tissue culture of seagrasses in order to provide suitable material for restoration and research. Preliminary work indicates that facilities and methodology are appropriate; Thalassia will become the primary species of interest. In cooperation with HRS, impoundments are being studied to improve management strategies so that the impact on fisheries may be reduced. In cooperation with Sea Grant, two publications concerning a survey of restoration/mitigation sites have been initiated; they will summarize information contained in a completion report to Sea Grant. Mangrove pruning has been a controversial management issue; on several occasions, the Institute has provided biological input on pruning implications.

#### PLANKTON

Studies continue on identifying and culturing potentially toxic dinoflagellates and using shape/size analyses as a taxonomic tool. Following renovations of culture facilities, the collection of potentially toxic phytoplankton has expanded. Blooms of Pytychodiscus brevis occurred in the summer and fall of 1988 and again in early 1989. Bivalve harvesting closures and information to the public were accomplished as required. Institute personnel continued to exchange information concerning toxic blooms internationally.

#### ENDANGERED SPECIES

The green turtle headstart program was discontinued in 1988 and replaced with an enhanced nesting beach monitoring, research and conservation program. After hatchlings from the 1988 season are released the department will not be issuing permits to facilities for headstarting green turtles or any other species. The department will continue to pursue other strategies to ensure the future of Florida's sea turtle populations. These include promoting the use of Turtle Excluder Devices (TEDs) to reduce incidental mortality in shrimp trawls, increasing the protection of nesting beaches and foraging habitats, assisting with the implementation of lighting ordinances, providing standardized guidelines and training to sea turtle conservationists and developing improved programs on beaches managed or owned by the State of Florida.

Manatee mortalities totaled 133 in 1988, with 43 due to boat/barge collisions, 7 crushed/drowned in flood gates or canal locks, other human-related deaths totaling 4, 30 perinatal, 24 other natural and 23 deaths from undetermined causes. These were the highest overall mortalities as well as the highest due to boat/barge collisions. Brevard, Lee and Collier counties led the list of deaths; boat-related deaths were highest in Brevard, Lee, Collier and Martin counties.

The Division of Marine Resources reviewed and commented on local government comprehensive plans in order to ensure strong manatee protection measures were incorporated. In addition, DNR

assisted Lee County in the development of an area specific manatee protection plan and began a year long boat study in Manatee County. DNR cooperated with the U.S. Fish and Wildlife Service in the radiotracking of 20 manatees. Several manatees had transmitters replaced, including 7 who were captured and handled in nets. Manatee abundance and distribution were assessed by aerial census at several selected sites. The Florida Marine Patrol made 237 arrests for various manatee-related violations.

#### FISHERIES STATISTICS

The commercial fisheries statistics cooperative effort with the National Marine Fisheries Service continued. The Marine Fisheries Trip Ticket program currently has approximately 650 dealers reporting 30,000 to 40,000 fishing trips per month. The program provides catch and effort data on all state fisheries and real time effects of management decisions. Fisheries independent sampling methods for multispecies complexes are being conducted in Tampa Bay and Charlotte Harbor. Indian River and Apalachicola Bay are being evaluated. Testing continues for quantitative and efficient sampling methods. Recreational fishing sites have been inventoried and weighted by activity and facilities during the past two years. The data are the basis for future surveys on recreational fishing and boat traffic and their effects on endangered marine species, as well as planning of state recreational facilities.

#### BUREAU OF MARINE RESOURCE REGULATION AND DEVELOPMENT

The primary responsibilities of the bureau include the classification and monitoring of shellfish growing waters and the inspection of shellfish and blue crab processing plants to insure that shellfish and blue crabs are processed in a sanitary manner. Other programs include oyster reef construction and oyster transplanting, shellfish leasing and artificial reef construction.

Sections 20.06(4), 20.56(6), 370.021, 370.071 and 370.16, Florida Statutes, and Chapters 381 and 386, Florida Statutes, set forth the department's responsibilities in management of shellfish resources and the public health protection aspects of the shellfish industry.

Accordingly, under the mandate to "improve, enlarge, and protect the oyster and clam resources of this state" {Section 370.16(12)} this department has been actively engaged in the collecting of oyster shell from processing plants and constructing and restoring oyster reefs on public bottoms. During 1988 the Oyster Culture Section collected 235,056 bushels of shucked oyster shells and planted 200,736 bushels to restore approximately 40 acres of oyster reefs in Apalachicola Bay.

Again in 1988, \$300,000 were appropriated by the legislature as part of a statewide commitment to rehabilitate and develop productive shellfish resources. Funding was allocated among 7 coastal counties, Levy, Dixie, Wakulla, Franklin, Bay, Santa Rosa and St. Johns. Approximately 205,000 bushels of live oysters and 140,000 bushels of shell were planted during resource development projects.

Marine Fisheries Information System statistics showed oyster landings statewide increased in 1987 to 3.8 million pounds valued at \$7.1 million. However, landings from Franklin County decreased from 655,298 bags in 1987 to 231,827 bags in 1988. Landings for Franklin County, representing oysters reported to monitoring stations in Apalachicola Bay, reflect estimated declines in statewide production for 1988. The department has determined that extended drought conditions from 1986 through 1988 have had injurious effects on oyster resources on a regional level and that resolution of the problems facing the oyster industry are of regional significance. Additional appropriations of \$200,000 were allocated to rehabilitate damaged oyster resources and mitigate economic hardship in Franklin and Bay Counties.



Hard clam production decreased slightly in 1987 to 1.2 million pounds valued at \$6 million (MFIS). Production declines are anticipated in 1988 resulting from poor recruitment during 1985-1987 in the Indian River, especially in Brevard County which is the largest producing county. The department issued 563 Clam Harvesting Licenses in Brevard and Indian River Counties, representing a reduction of about 40% in the number of clambers in the fishery. Clam Harvesting Licenses generated a total revenue of \$51,150 in user fees.

Clams harvested from waters classified as Restricted or Conditionally Restricted must be processed through relaying and depuration activities rigorously controlled by the Division of Marine Resources. The division has promoted depuration as a practical method for cleansing potentially contaminated shellfish, ensuring product quality, and protecting public health. In 1988 the Division issued 16 Special Activity Licenses to leaseholders and depuration plant operators; six licenses were issued for facilities using controlled purification processes.

Provisions of Section 370.16(1)-(11), F.S., allows leasing sovereign submerged bottoms for cultivation of oysters and clams. In 1988 there were 161 shellfish leases in effect totaling 2079.02 acres. Cultivation of hard clams and oysters offers a technically feasible and economically practical alternative to increase shellfish production. Additionally, 25 Chapter 253 Aquaculture Lease applications were reviewed by the division.

The division licensed 250 shellfish processing plants. Two comprehensive shellfish surveys to determine proper classifications of coastal waters for shellfish harvesting were completed in 1988. Nearly 14,000 acres of growing waters in three counties were classified by the Shellfish Environmental Assessment Section.

The Artificial Reef Program, which provides funds to local governments to help defray the costs of constructing an artificial fishing reef, was enhanced by receipt of Wallop-Breaux funds from the U.S. Fish and Wildlife Service. Twenty projects were funded during 1988 and proposals for 20 new projects were received for review.

## BUREAU OF MARKETING AND EXTENSION SERVICES

The seafood industry today plays an important role in Florida's economy and the Florida Department of Natural Resources. The Bureau of Marketing and Extension Services is a vital factor in its continuous growth. The bureau's prime function is to spearhead the state's seafood marketing activities, not only in Florida, but in existing and potential markets both foreign and domestic. With headquarters in Tallahassee, the bureau consists of five offices located in Florida and Georgia.

The market potential for Florida seafood continues to grow. Problems known to be limiting the growth of domestic fisheries centers around production of traditional species. While allocation of the resource is a common concern affecting the consumer supply, the bureau's attention will be focused on the production of less known fisheries and the utilization of by-products. The underutilized species will continue to receive product education and enhancements within the scope of extension efforts while utilization of by-products and less desirable food fish will be set forth in the economics development component.

Several new fisheries will be given study including work with coastal herring and deep water marine eel. A major work effort will be directed to the Rex eel. Coordinated plans are underway with the University of Florida Sea Grant staff to stay current with research development to expand production and test markets of oriental and European origin. Product forms and speciality processing such as smoking may open up markets both domestic and internationally.

In addition to marine products, the bureau will attempt to seek funding support for aquacultural products such as catfish, crawfish, alligator, fresh water eel and tilapia. These products have the potential to supplement the supply of fish currently demanded in the market place.

The U.S.'s competitive position on the international front appears favorable for increased efforts to expand exports. Coordination of Florida's program will be improved by closer liaison with the Florida Department of Commerce's Division of International Trade and Economic Development.

The international marketing expansion work will also provide closer liaison with the U.S. Department of Commerce, International Trade Administration, U.S. and Foreign Commercial Service offices in Florida and in export trading companies in Atlanta, Georgia to improve trade opportunities. Special industry tours will be planned to introduce product to export trading companies located in the Southeast. International Food Shows and Exhibits along with Florida Trade Missions will also be coordinated with the Gulf and South Atlantic Fisheries Development Foundation and the Florida Department of Commerce.

Domestic market expansion will be centered around the combined efforts of the bureau, Southeastern Fisheries Association, Florida Sea Grant, Florida Department of Agriculture and Consumer Services and other groups to formulate a quality certification program. A fish and seafood component is being considered with the aid of industry representatives and Florida Sea Grant personnel, to establish a quality certification promotion for all Florida products.

The bureau now maintains a growing library of video tapes to tell the Florida seafood story. The tapes can be used at seafood retail counters as point of sale information and other tapes offering information on capture, handling, processing and food demonstrations are available.

With the placement of a new position in Gainesville, seafood nutritionist specialist, the bureau will provide technical guidance and nutrition research and findings to further promote the benefits of Florida seafood. This program will be in association with the seafood technology program in the Food Science and Human Nutrition Department at the University of Florida, IFAS. The focus of this program will be in the areas of nutrition labeling for the seafood industry, a nutritional newsletter, seafood extension presentations, recipe development, seafood nutrition computerized database and professional development.

A new photographic component of the bureau will provide graphic support for all phases of the program. The primary medium will be still photography of the industry to serve the interest of food service, retail and consumer education. Video presentations will be added as grant funds become available on a contractual basis.

Future plans for service in the institutional area is scheduled to be directed through improved cooperation with the Florida Restaurants' Association and related groups in food service. The past efforts of the bureau have been related to food competition with professional chefs. The bureau will continue this approach and further expand efforts to reach food distributors, food and beverage managers and owners to maximize service and information about seafood.

## LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES

### OFFICE OF FISHERIES MARINE FISHERIES DIVISION

Major changes occurred to Louisiana's marine fisheries resource agency during 1988. The Office of Coastal and Marine Resources was reorganized into the Office of Fisheries. Most of the "Environmental Protection and Regulation" Subprogram was moved into the Department's Office of Wildlife. The Inland Fisheries Division was transferred from the Office of Wildlife and joined the Marine Fisheries Division in a new "Office of Fisheries." As a result of budgetary restrictions, 20% of Marine Fisheries Division personnel were laid off, and three remote facilities were closed. Most operations at the Lyle S. St. Amant Laboratory were suspended.

#### SHELLFISH SUBPROGRAM

##### Shrimp Seasons

The shrimping season in Louisiana's offshore territorial waters closed at 12:01 a.m. on January 30. The closure applied to all state waters except in the area from Bayou Fontanell (Empire Ship Channel) west to Caminada Pass, where it applied only from the inside-outside shrimp line seaward for three miles. In that area, state jurisdiction extends a short distance beyond the customary three-mile limit.

The offshore territorial waters south of Zone 3 (Texas state line to Southwest Pass near Marsh Island) reopened to shrimping at 12:01 a.m. on April 4. The outside waters of Zone 1 and Zone 2 (Southwest Pass to the Mississippi state line) reopened at 12:01 a.m. on April 30.

The shrimp trawling season in Zone 2 of the state's inshore waters opened 6:00 a.m. on May 16; Zones 1 and 3 opened at 6:00 a.m. on May 25. The Louisiana Wildlife and Fisheries Commission (the commission) had specified that the inshore season open statewide simultaneously in all three shrimp management zones; however, a subsequent legislative resolution mandated a later opening in Zones 1 and 3. Biologists predicted that the 1988 catch of brown shrimp would approximate the 1987 catch of 48 million pounds, and that on opening day, the percentage of marketable size shrimp (at least 100 to the pound) would range from 45% in the centrally located Zone 2 to 1% in Zone 1 on the east and 0% in Zone 3 to the west. National Marine Fisheries Service (NMFS) statistics later indicated that the 9.5 million pounds of shrimp landed in Louisiana during May 1988 was below the 12.8 million pounds landed in May of 1987.

The inshore season in Zone 2 ended at 12 noon on July 8 because biological samples confirmed the arrival of significant numbers of juvenile white shrimp in the inner marshes of the Zone. The spring shrimp season in that portion of Zone 3 eastward from and including the Mermentau River and the western shore of Grand Lake and Lake Arthur to Vermilion Bay closed at 12 noon on July 11. The remainder of Zone 3 including Calcasieu Lake closed at 12 noon on July 17. The inshore season in Zone 1 closed at 12 noon on July 31, except for Breton and Chandeleur Sounds which remained open.

In an emergency action, the commission closed an area in Terrebonne Parish in the vicinity of Bayou du Large and Bayou Grand Caillou to all shrimping on July 8. Owing to a

typographical error, the area had previously been mistakenly classified as being situated in the outside waters.

The fall inshore shrimp season opened at 6:00 a.m. on August 15 statewide. It closed at 12:01 a.m. on December 21.

#### Interjurisdictional Fisheries

Louisiana continued to develop the long-term fisheries/environmental database which has been used for over 25 years to make management recommendations affecting marine fisheries. A portion of these activities are funded with Interjurisdictional Fisheries monies obtained through NMFS. This information is gathered by a routine sampling program in which trawl samples are gathered at over 100 locations in the estuarine and coastal area. These samples are taken as often as weekly in the spring, summer and fall months, and monthly in the winter months. In addition, constant recorders located throughout the coastal area log salinity, water temperature, tides, rainfall, winds, and speed and direction of water currents. This information is augmented with data on daily rainfall, river discharge, and air temperature obtained from other organizations.

#### LOOP

The Louisiana Offshore Oil Port (LOOP) monthly monitoring along a transect from the Intracoastal Waterway to twenty miles offshore from Grand Isle continued for the tenth year. This sampling consists of nekton, plankton, sediments, benthos, brine tracking, water chemistry and hydrology.

#### DOE

The Department of Energy funded project is monitoring brine discharge off the western coast of Louisiana. These offshore sampling efforts continue to provide a fishery independent database essential to fishery management decisions.

#### SEAMAP

SEAMAP sampling began in 1983 and includes offshore stations from the mouth of the Mississippi River to the offshore area south of Atchafalaya Bay.

#### MARFIN Shrimp Tagging

A MARFIN funded brown shrimp tagging project was undertaken in the area east of the Mississippi River. Movements of shrimp in this area are poorly understood.

### MOLLUSC SUBPROGRAM

#### Oyster Seasons

The 1988-89 oyster season on the public oyster seed grounds except for Calcasieu Lake and Sabine Lake began 1/2 hour before sunrise on September 7. The Bay Gardene, Sister Lake, and Hackberry Oyster Seed Reservations also opened at that time. The Bay Gardene and Sister Lake Reservations were opened for the taking of oyster seed for bedding purposes only; they closed 1/2 hour after sunset September 12 and reopened 1/2 hour before sunrise on September 21 for both bedding and sacking. The Hackberry reservation opened for both bedding and sacking. As scheduled, the Bay Junop Reservation was closed during this season.

The public grounds in Calcasieu and Sabine lakes opened 1/2 hour before sunrise November 1 and remained open into 1989. Gear was restricted to tongs only. Provisions were made to prohibit the harvest if the Louisiana Department of Health and Hospitals declared those waters closed to shellfish harvesting.

#### Oyster Task Force

In 1988 the legislature created an oyster task force to study the downturn in oyster output and other management problems. Among others, the 13-member panel includes four legislators, spokesmen for the oyster industry, and representatives from the Louisiana Department of Health and Hospitals and the Louisiana Department of Wildlife and Fisheries.

#### Lease Auction

An auction of all delinquent oyster leases was held on March 29. The auction included oyster leases on which rent was delinquent. Opening minimum bid for each lease was rental and penalty due.

#### Interjurisdictional Fisheries

Louisiana was able to demonstrate that adverse hydrological conditions on the public oyster grounds had reduced the amount of young oysters available to the oyster fishery. As a result, approximately 3/4 million dollars of Interjurisdictional Fisheries funds were obtained to rehabilitate the natural reefs. These funds will be used to plant clam shell for use as cultch by young oyster spat.

#### Seed Grounds

Salinity, a prime factor determining oyster production on Louisiana's public oyster seed grounds and reservations, remained higher than optimal in 1988. The introduction of freshwater east of the Mississippi River resulted in localized oyster production; however, in general, production levels were low. Sampling indicated that in historically productive areas of Plaquemines Parish only 2,500 of the 13,000 acres of public reefs produced seed oysters. Those areas produced only 6% of the expected oyster seed needs during the 1988-89 season.

#### Caernarvon

The U.S. Army Corps of Engineers, with support from the Louisiana Department of Natural Resources and the Department of Wildlife and Fisheries, has developed a project for the controlled diversion of freshwater from the Mississippi River into the Breton Sound Estuary. The diversion structure will be located in the mainline Mississippi River Levee at Caernarvon, Louisiana, and have a design flow capacity of 8,000 cubic feet per second. The effect of the diversion project on the estuary's ability to support wildlife and fisheries resources is expected to be significant. Diversion of nutrient and sediment rich freshwater will rejuvenate existing marsh, significantly reduce dependence on local rainfall as the principle source of freshwater input to the estuary, reduce peak salinities and induce more regularity in the seasonal salinity pattern. Project benefits involve reducing land loss rate and increasing fish and wildlife production.

The Louisiana Department of Wildlife and Fisheries conducts extensive monitoring activities in the Breton Sound Estuary. It has undertaken a diversion monitoring program to accurately measure the success of the diversion project. In 1988, the department began a three-year prediversion monitoring program to establish base-line information. The monitoring program will extend for four years after the beginning of diversion activities to measure the effect of these activities.

## RESEARCH SUBPROGRAM

At the end of 1988, the central element of the division's research subprogram; i.e., the Lyle S. St. Amant Marine Laboratory, was dramatically scaled back because of budgetary restrictions. The laboratory's 28 year history was marked by numerous research contributions which are providing tangible benefits to Louisiana and the Gulf of Mexico's seafood industry. While it is hoped that suspension of activities at this facility is temporary, its future at this point is uncertain. The major projects undertaken at the laboratory in 1988 were:

### Shrimp

Since 1981, inshore brown shrimp populations in the Barataria Bay system have been sampled intensively before and after the opening day of the inshore season. This intensive sampling scheme is used on an annual basis to evaluate the efficiency of the inshore fleet in Barataria Bay and to determine the success of the opening date with respect to the 100 count/pound criteria. In 1988, approximately 35% of the inshore brown shrimp population was 100 count or larger on opening day (May 16). The efficiency of the fleet was comparable to that observed in previous years with the marketable inshore population decreasing in weight by 69% during the first week of the season. This method of assessing the season's opening was expanded in 1988 to include all Louisiana's coast. The percentage of inshore brown shrimp population 100 count or larger on opening day ranged from a high of 58% east of the Mississippi River to a low of 2% in Vermilion Bay.

### Oysters

Over the past five years, the basis for management recommendations concerning the oyster seed grounds has been a forecast of seed oyster availability determined by a predictive model developed at the laboratory. The 1988 prediction indicated that the 1989 season would be no better than the poor production being seen on the primary grounds in 1988. A survey of the public oyster grounds in the Atchafalaya and Vermilion Bays indicated that high oyster densities in these areas would partially offset poor production expected from the traditional grounds.

### Finfish

Sampling continued for a sixth year in a study to determine environmental parameters influencing distribution and abundance of young-of-the-year spotted seatrout and red drum. A cooperative king mackerel tagging project continued in association with the National Marine Fisheries Service.

### Crabs

A study addressing the annual variability in blue crab populations in the Barataria Bay system indicates that an inverse relationship exists between blue crab catch-per-unit-effort and springtime salinities.

## FINFISH SUBPROGRAM

### Red Drum

On January 15, both commercial and recreational fishing for redfish was suspended by the commission; this action was taken to relieve pressure on the heavily stressed redfish resource.

Commercial fishing was stopped because projections indicated that the legislatively mandated quota of 1.7 million pounds for the 1987-88 winter season had been reached. Commercial harvest was prohibited until August 31. Recreational harvest was suspended until June 1. This closure coincided with a shutdown on redfish harvest in all federal waters of the Gulf of Mexico. A procedural conflict resulted in suspension of the commission's decision to shut down recreational fishing.

On February 4, the commission held a public hearing in Houma to reconsider the action which had halted recreational fishing for redfish. After this meeting the commission reaffirmed its decision to suspend recreational fishing for redfish and such fishing was prohibited from February 15 through June 1.

Legislation enacted in 1988 prohibited the commercial fishing of redfish from July 21, 1988, to September 1, 1991. The new law reduced the recreational creel limit to five redfish per day and set a possession limit of five. The minimum size was set at 16"; only one redfish 27" or longer could be taken per day.

#### Speckled Trout

The commercial harvest of speckled trout in state territorial waters was halted at midnight, May 6. The closure prohibited the commercial harvest, purchase, barter, trade and sale of spotted seatrout taken from Louisiana waters but did not prohibit dealers from possessing spotted seatrout legally taken prior to the date of the closure if appropriate records were maintained. Commercial harvest was suspended because technical projections indicated that the one million pound annual quota mandated by the legislature had been reached.

Legislation enacted in 1988 set the commercial quota at 1,250,000 pounds per year with the commercial speckled trout season beginning September 1 each year. Once the quota is reached no vessel possessing or fishing any seine net, gill net, trammel net, or hoop net is allowed to have a speckled trout aboard. Commercial mesh sizes for gill nets, trammel nets and seine nets other than strike nets increased to a minimum of 4 1/2 inches once the commercial speckled trout quota was reached. Minimum size for commercially taken speckled trout was set at 14"; all fish were required to have head and caudal fin (tail) intact when put ashore from a vessel or when sold.

#### Finfish Panel

At the end of 1988, the department created a marine finfish panel to assist in developing a comprehensive plan for managing Louisiana's Gulf of Mexico finfish resources. Represented on the panel are the recreational and commercial fishing industries, the Senate and House natural resources committees, the Louisiana Wildlife and Fisheries Commission, the Louisiana Restaurant Association, and Louisiana State University's Coastal Fisheries Institute. The panel was conceived to examine the status of Louisiana's fisheries and to develop a comprehensive plan for managing marine finfish resources by providing a formal mechanism for the department to receive input from the public and the scientific community regarding those resources.

A related technical working group, formulated to provide biological expertise, is open to all state, federal, and university scientists with marine fisheries experience. The panel and working group are established and currently working toward their designated goals.

#### Monitoring

The saltwater finfish resources of the state are enjoyed by both commercial and recreational fishing interests. A comprehensive monitoring program was developed to protect or

enhance these valuable resources by providing information regarding the status of fish stocks that occur in the coastal waters of Louisiana at some time during their life cycle. Three gear types are used coastwide to sample various year classes of estuarine dependent fish. A bag seine is used to sample young of the year and provide information on growth and movement. The seine is 50' in length, 6' in depth and has a 6'x6' bag as an integral part of and midway the length of the net. The mesh size is 1/4" bar, 1/2" stretched, Delta 44 knotless mesh. A gill net is used to sample juvenile, sub-adult and adults and provide information on relative abundance, year class strength, movement and gonadal condition. The gill net is 750' in length, 10' in depth and constructed of monofilament. The net is composed of 5 panels, each of the following mesh sizes: (1) 150'x10', 1" bar, 2" stretched mesh, minimum number 104 filament; (2) 150'x10', 1 1/4" bar, 2 1/2" stretched mesh, minimum number 177 filament; (3) 150'x10', 1 1/2" bar, 3" stretched mesh, minimum number 208 filament; (4) 150'x10', 1 3/4" bar, 3 1/2" stretched mesh, minimum number 208 filament; and (5) 150'x10', 2" bar, 4" stretched mesh, minimum number 208 filament. A trammel net is used to provide information on relative abundance, standing crop and movement. The trammel net is 750' in length, 6' in depth and constructed of nylon. The entire net has a 2:1 sag, and the mesh sizes are as follows: inner wall - 1 5/8" bar, 3 1/2" stretched, number 6 twine; outer wall - 6" bar, 12" stretched, number 9 twine. Gill net samples are taken semi-monthly, trammel net samples are taken monthly during October through March, and seine samples are taken monthly. Hydrological readings (conductivity, salinity, and water temperature) are taken one foot beneath the surface each time a biological sample is taken. Also, estimates of cloud cover, sea state, tide, wind direction and speed are taken each time a biological sample is taken. Samples are taken at specific locations arranged in such a manner so as to cover the beach, mid-marsh and upper marsh areas of all major bay systems throughout coastal Louisiana. The catch and hydrological information is summarized for each coastal area on a weekly basis to give the resource managers information as to the current condition of the resource. The pertinent life history information for the important species is also used in developing analytical and predictive models.

#### Menhaden

In addition to opening and closing the shrimp seasons, information from the trawl samples is used each year to develop a forecast for menhaden production. Meetings are held every year with menhaden industry personnel prior to the opening of the menhaden season to present catch forecasts and to discuss other matters relative to the menhaden industry. This year's meeting was held on February 24-25, 1988. Models for predicting commercial catches of gulf menhaden have been developed by department biologists. These predictive models are based on abundance of juvenile menhaden taken in the shrimp monitoring trawl samples the previous year and on hydrological and climatological data such as salinity, temperature, river discharge, wind direction, and tides, also from the previous year. Catch-per-effort of age-1 menhaden is predicted. Since age-1 menhaden comprise 90% and 67% of the catch in western and central Louisiana, respectively, the age-1 forecast also reflects on total catch. In addition, optimum hydrological/ climatological conditions have been identified for the critical early life history stages, which occur from December to March. Relatively cold, dry winters are associated with good recruitment of age-1 menhaden into the fishery the following year. The cold, dry winter is characterized not only by low temperatures and low rainfall but also by low tide levels, low Mississippi River discharge, high salinity, low wind speeds and low incidence of southwest winds. The 1988 forecast was for an average age-1 year class to enter the fishery, and for an average or below average total harvest by weight. The 1988 menhaden landings for the Gulf of Mexico was 30% below the 1987 landings.

#### Artificial Reefs

Louisiana's Artificial Reef Program began in 1987 with the legislature's acceptance of a comprehensive plan for siting artificial reefs in both state and federal waters. The first



reef was created in October of 1987 when Oxy Corporation donated the jacket of a large eight-pile structure. The structure, located in South Marsh Island-146, was toppled in place in one of the eight planning areas selected by the Artificial Reef Council. Two more artificial reefs were created in 1988. Chevron contributed its South Timbalier-128 platform which is located in 102 feet of water approximately 20 miles southwest of Grand Isle. A cooperative effort between Exxon Corporation and Mobile Exploration and Producing, resulted in the transportation of a structure from offshore Texas to one of Louisiana's planning areas. In addition to the structures, the participating companies donate half of their savings realized through participation in the program. These monies are placed into a trust fund for administration of the program and maintenance of the reefs. To date, over \$500,000 has been deposited into the fund. In November 1988 plans for the development of inshore reefs were initiated.

#### State/Federal Cooperative Fishery Statistics

Since 1983, the Coastal Fisheries Institute (CFI) at Louisiana State University has been working cooperatively with the Louisiana Department of Wildlife and Fisheries and the NMFS in collecting urgently needed biological and catch/effort data on king mackerel in the western gulf. This program was so successful that it has since been expanded to include other recreationally and commercially important fishes managed by the federal government such as reef fish and shrimp. The information supplied by CFI to the NMFS over the last four years has been the only commercial data on king mackerel and red snapper available from the western gulf for use by NMFS and Gulf of Mexico Fishery Management Council statisticians. The continuing goal of this project is to obtain catch/effort data, sex ratios, ages, and length frequencies of king mackerel, other coastal pelagics like Spanish mackerel and tunas, and reef fish landed by both commercial and recreational boats in Louisiana.

#### MARFIN Red Drum

A MARFIN funded project entitled "Louisiana Red Drum Research" began in October 1986. The project objectives are as follows: (1) to assess estuarine escapement and migration; (2) to collect catch and effort data and length frequency composition of fish caught by commercial and recreational vessels in state waters; (3) to obtain and validate annulus formation in sagittal otoliths; (4) to determine age structure, growth rates, and reproductive biology; (5) to determine total, fishing, and natural mortality, and size at recruitment in Louisiana's fishery; (6) to develop an index of offshore stock abundance from analysis for searching, siting, and harvesting patterns of purse seine fisheries; and, (7) to assess the ability of existing and proposed regulations to attain the council's 30% escapement guideline.

To date, 3,962 juvenile red drum have been tagged and released, and 227 have been returned. Catch-per-effort, length frequency, and sex composition information have been collected from the commercial red drum fishery. Over 2,752 fish have been collected and aged under this project and validation of age estimates have been performed. We have also determined mortality rates by area, fitted a "double von Bertalanffy curve," developed an index of stock abundance, estimated escapement to a spawning pool, and recommended measures to attain the Gulf Council's 30% escapement guideline.

#### MARFIN Mackerel

A tagging project was initiated by the Louisiana Department of Wildlife and Fisheries with the guidance of the NMFS to begin answering the question of stock identification. Its purpose was to supplement previous tagging attempts by NMFS and to collect tissue samples for electrophoretic analysis.

To date, 477 king mackerel have been tagged and 228 tissue samples collected. Three fish have been reported recaptured. Two fish were recaptured off of Louisiana, one tagged in May 1987 and caught in August 1988 and another tagged in September 1987 and caught in June 1988. The third fish was tagged in August 1987 and traveled to Fort Myers, Florida, where it was recaptured in December 1987.

#### Wallop-Breaux

In 1988, Louisiana used the marine share of its Sport Fish Restoration Funds in two activities; development of boat ramps to create access for fishermen and support of the Artificial Reef Program discussed above. Funds are provided to Louisiana State University through an interagency agreement for development and revision of the Louisiana Artificial Reef Plan.

## MISSISSIPPI DEPARTMENT OF WILDLIFE CONSERVATION

### BUREAU OF MARINE RESOURCES

#### DIVISION OF SALTWATER FISHERIES

The Division of Saltwater Fisheries is responsible for the administration of all marine fisheries management-related activities for the state of Mississippi. The division provides technical support to the Mississippi Commission on Wildlife Conservation, the Gulf of Mexico Fishery Management Council, the Gulf States Marine Fisheries Commission and the Gulf State-Federal Fisheries Management Board. Division biologists also conduct routine surveys of Mississippi's shellfish and finfish resources.

The monitoring and assessment work is intended to provide support data for the proper management of the state's fisheries resources and to coordinate seasonal openings and closures of the various fisheries in the territorial sea. In addition to these fisheries-independent studies, division biologists participate in a regional commercial fisheries statistics program in which commercial landings data are collected, processed and evaluated. The end result of these efforts include: publication of Mississippi Landings, the tri-weekly Market News Report, and other miscellaneous landings-related reports.

The division's annual program of oyster reef revitalization involved the planting of some 10,634 cubic yards of clamshells on the St. Joseph, Waveland, St. Stanislaus, Henderson Point and Pass Christian reefs.

Projects funded under the Sportsfish Restoration Act and undertaken by the division included the construction or enhancement of artificial low-profile fishing reefs off Dunbar Pier and south of the U.S. Highway 90 bridge in St. Louis Bay, the Kuhn Street pier, Gulf Marine Park in Biloxi, and off of Weeks Bayou in Ocean Springs. An additional project was funded for the continuing development of the "Liberty Ship" reef site in conjunction with Mississippi Gulf Fishing Banks, Inc.

Also in 1987, division biologists participated in a red drum mark recapture project. The results of this study will be utilized in determining much needed population information on Mississippi's red drum fishery. Biological information on king and Spanish mackerel was collected by division biologists and sent to the National Marine Fisheries Service, Panama City, Florida Laboratory for age, growth and stock studies.

Beginning in June 1987 division biologists began tagging brown and white shrimp in Mississippi waters. This program, a part of a cooperative mark/recapture effort with the state of Louisiana, was completed in June 1988.

Finally, the division is conducting a recreational creel survey in three coastal counties. Biologists visit access sites on randomly prescribed days to interview fishermen and enumerate their catch. The program is expected to yield valuable information about the state's marine recreational fishery.

## DESCRIPTION OF FISHERIES

Landings of commercial marine fish and shellfish during 1987 amounted to over 394 million pounds valued at \$44.9 million. This represents over a 7% increase in volume and a 7.9% increase in value over the previous year. This increase can be largely attributed to the increase in menhaden landings which constitute the bulk of Mississippi's landings tonnage. The most noteworthy increases in landings occurred for butterfish (up 1124% in volume and up 1353% in value) and shark (up 603% in volume and 781% in value).

The gulf led the nation during 1987 in commercial landings totalling over 2.5 billion pounds. The Pascagoula-Moss Point port once again ranked second among U.S. ports in quantity of commercial fisheries landings with 391.6 million pounds. Cameron, Louisiana was the leading U.S. port.

Each fishery for which data are available and nonconfidential is summarized as follows:

### Menhaden

Menhaden landings of 380.8 million pounds in 1987 represent a 7.7% increase over the landings in 1986. The total value of 14.5 million dollars was also up some 9.8% over last year. This is attributable to a 3% increase in the unit price from \$.037 to \$.38 per pound.

Menhaden are used primarily for the production of meal, oil and solubles, with small quantities being used for bait and canned pet food. Mississippi landings of menhaden appear to be stabilizing since the record-level catches of 1984 and 1985.

### Oysters

During 1987, some 132,103 pounds of oyster meats were landed in Mississippi. This reflected a marked decline from landings of the previous year which totalled 1.2 million pounds. The 89% drop in oyster landings is attributed largely to an overabundance of oyster drills, a major predator of the marine mollusks, and to poor water quality during much of the oyster season, necessitating closure of many of the reef areas. Although unit cost of oysters increased some 115.8% over last year's price, the total value of the fishery is estimated at only \$426,723, considerably less than the \$1.8 million of 1986.

### Blue Crabs

The blue crab harvest in Mississippi showed an increase in 1987. Crab landings equalled 1,374,102 pounds with an average price per pound of \$.35. This represents a 5.5% increase in poundage landed, the total value of the harvest rose only 2% as a result of a 3% decrease in unit price. Interestingly, gulf-wide landings of all species of crabs increased some 22% during 1987.

### Edible Finfish

United States per capita consumption of fish and shellfish in 1987 reached a record 15.4 pounds. This total exceeded the 1986 per capita consumption rate by 0.7 pounds. Finfish landings in northern Gulf of Mexico typically undergo dramatic fluctuations from year to year, principally as the result of changing availability and shifting to other target species by fishermen as the result of market demands. This trend was amply demonstrated by Mississippi's 1987 finfish season.

Black drum landings showed a slight 1.3% decline in landings volume. The total dockside value of this species decreased some 16% between 1986 and 1987. Unit prices (price per pound) decreased to \$0.22, representing a 15% decrease in that indicator.

Mullet landings, both striped and black, for 1987 totalled some 585,468 pounds, representing a 48% decrease over landings during the previous reporting period. Average total dockside value decreased 38% in 1987; and the price per pound of fresh, whole mullet rose about 19% to \$0.407.

Red snapper landings in 1987 underwent a fall from 672,658 pounds to 608,606 pounds, a 9.5% decline. Total dockside value rose 2.1%, from \$896,197 in 1986 to \$915,342 in 1987. Average unit prices during 1987 stood at \$1.50, increasing 12.9% from the previous year.

Changing patterns in finfisheries are evident in both the short term and the long term. In addition to the factors previously mentioned, the demands for frozen fishery products both here and abroad are of particular importance in determining local finfish prices. In addition to black drum and mullet, Spanish mackerel are a significant contributor to the frozen fish market. Landings of Spanish mackerel in Mississippi for 1987 totalled 54,105 pounds. The total dockside value of these landings was \$16,526, representing a 28% increase in landings and a 25.5% increase in value for this fishery. The price per pound of Spanish mackerel in 1987 was \$0.31, remaining the same as the 1986 price.

Landings of premium inshore market species (i.e., spotted seatrout, red drum and flounder) were as follows:

Red drum landings showed a decrease of 58% in 1987, from 126,352 pounds to 53,059 pounds. The total dockside value of red drum landings fell by 52.3%, the final tally standing at some \$41,324. The average price per pound rose 12.9% to \$0.78, largely as a result of increased demand and decreased supply.

Commercial landings of spotted seatrout during 1987 totalled 57,304 pounds valued at \$60,433. According to most sources, the sportsfishing catch of this species may exceed the commercial catch as much as three-fold. If this is the case, then the estimated combined sports and commercial catch can be expected to exceed 229,000 pounds in state waters. One of the higher-priced and consumer-preferred species, spotted seatrout prices averaged about \$1.05 per pound in 1987, representing a 5% increase in price.

Flounder landings, as collected by division and NMFS biologists under a cooperative statistical agreement, include a number of different species. In 1987 the landings volume of flounder totalled 57,308 pounds, representing a 104% increase over those landed in 1986. The total dockside value of these landings was up 182% from \$15,044 in 1986 to \$43,066 in 1987.

Landings of kingfish, locally known as ground mullet, amounted to 115,899 pounds in 1987, valued at some \$41,872. The average price per pound of kingfish during 1987 was up to \$0.36 from the \$0.33 of last year.

Grouper landings, which include spotted, Nassau and black grouper, and scamp totalled 32,346 pounds in 1987 down 22.6% from the 41,791 pounds in 1986. Total dockside value of grouper also fell 21.6% to \$33,526 during the interval. The price per pound of this species averaged \$1.04 in 1987, up 2% from 1986.

In summary, of the major finfish indicator species, landings gains were shown by the following: blue runner, butterfly, croaker, flounder, king mackerel, lemon fish, little tuna, menhaden, shark, sheepshead, Spanish mackerel, spotted seatrout and vermillion snapper.

Landings declines, on the other hand, were recorded for the following: amberjack, black drum, bluefish, grouper, kingfish, mullet, pompano, red drum, red snapper and sea catfish.

### Shrimp

The Mississippi Commission on Wildlife Conservation opened the 1987 shrimping season on June 10, after division biologists had determined that shrimp size would average 68 to the pound at that date.

Heads-off landings in 1987 of Mississippi's three major species of shrimp (white, brown, and pink) were down 3% from last year's catch, totalling 7,898,160 pounds. However, because of the significant 15.8% increase in the average price paid per pound, 1987's total harvest was valued at \$27,285,192, representing a 12% increase over the value of the previous year's catch.

The 1987 shrimping season in Mississippi represented a better than average year based upon the 26-year mean landings figure of 5.5 million pounds.

Shrimp imports for the U.S. during 1987 totalled 478.3 million pounds valued at \$1.7 billion, up from the 400.1 million pounds and previous year's value of \$1.4 billion.

## RECREATIONAL FISHERIES

Marine recreational fishing along the Mississippi Gulf Coast followed its usual seasonal trends. During January and February, good catches of black drum were taken from the area's numerous oyster reefs and front beach piers. March and April signalled the start of the annual run of spotted seatrout and an influx of other estuarine dependent species. The First Annual Gorenflo's Cobia Tournament was held in April, and numerous large lemonfish were entered. As usual, some of the earliest catches were reported from the bar off the southwest tip of Horn Island. Throughout the summer, good catches of spotted seatrout, red drum, southern kingfish, croaker, flounder, and other species were taken in as usual along the front beaches. Unusually, however, some snapper and grouper were taken within the Sound itself, notably near the mouth of the Pascagoula River and around the Ship Island rock jetties. This occurrence is presumably linked to the relatively dry spring and general lack of freshwater throughout much of the summer, resulting in unseasonably high salinities. Offshore fishermen enjoyed good catches of bonito, king mackerel, Spanish mackerel and other migratory pelagic species.

The only saltwater sportfishing record broken this year was an African pompano caught by Mark Bosarge weighing 26 lb 12 oz. Several other records were broken but the required documentation has not been received.

Among the new saltwater sportsfishing regulations implemented in 1987 was a change in possession limits for recreational oystermen, reduced from three sacks per day to three sacks per week.

Results from a coast-wide creel survey conducted by division biologists from June through February 1987 indicated that approximately 19380 boats were fishing in Mississippi waters, with the bulk of the boats fishing during the summer and early fall (see Table 1). Percentage of the total catch by species and mean weight of the fish caught by species is illustrated in Table 2. Four species of fish Cynoscion orearion (white seatrout), Cynoscion nebulosus (spotted seatrout) Micropogon undulatus (croaker) and Mugil spp. (mullet) comprise approximately 88% of the individuals caught.

Typically, most fishermen were fishing inshore along the bays and bayous or on the natural or man-made reefs on the front beach.

Table 1. Trailer counts of fishing parties at all access sites.

<u>Month</u>	<u>Weekday</u>	<u>Weekend</u>	<u>Total</u>
June	1,670	1,414	3,084
July	2,554	2,162	4,716
August	1,260	1,067	2,327
September	1,369	587	1,956
October	1,193	1,906	3,099
November	993	591	1,584
December	857	241	1,098
January	548	114	662
February	707	147	854
Totals	11,151	8,229	19,380

Table 2. Catch data summary by species.

<u>Species name</u>	<u>% of total catch</u>	<u>mean weight (pounds)</u>
<u>Cynoscion arenarius</u>	.2566	.50
<u>Cynoscion nebulous</u>	.2212	.67
<u>Micropogonias undulatus</u>	.1640	.34
<u>Mugil spp.</u>	.1586	.65
<u>Archosargus probatocephalus</u>	.0447	.74
<u>Menticirrhus spp.</u>	.0326	.59
<u>Sciaenops ocellatus</u>	.0310	1.21
<u>Pleuronectidae</u>	.0257	1.15
<u>Arius felis</u>	.0138	.42
<u>Lagodon rhomboides</u>	.0095	.29
<u>Pogonias chromis</u>	.0082	1.72
<u>Rhizoprionodon terraenovae</u>	.0042	5.33
<u>Scomberomorus maculatus</u>	.0042	1.40
<u>Lutjanus campechanus</u>	.0040	1.17
<u>Bairdiella chrysura</u>	.0027	.19
<u>Pomatomus saltatrix</u>	.0026	1.53
<u>Caranx chrysos</u>	< .0010	.73
<u>Orthopristes chrysoptera</u>	< .0010	.35
<u>Chaetodipterus faber</u>	< .0010	.95
<u>Lutjanus griseus</u>	< .0010	.64
<u>Bagre marinus</u>	< .0010	1.85
<u>Euthynnus alletteratus</u>	< .0010	1.00
<u>Scomberomorus cavalla</u>	< .0010	16.60
<u>Caranx hippos</u>	< .0010	17.71
<u>Brevoortia patronus</u>	< .0010	.29
<u>Leiostomus xanthurus</u>	< .0010	.26
<u>Elops saurus</u>	< .0010	.68
<u>Mycteroperca microlepis</u>	< .0010	2.73
<u>Lutjanus synagris</u>	< .0010	1.69
<u>Rachycentron canadum</u>	< .0010	15.65
<u>Carcharinus limbatus</u>	< .0010	16.72
<u>Morone saxatilis</u>	< .0010	.72
<u>Balistidae</u>	< .0010	1.56
<u>other sharks</u>	< .0010	1.32



## TEXAS PARKS AND WILDLIFE DEPARTMENT

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

The Coastal Fisheries Branch of the Texas Parks and Wildlife Department (TPWD) is responsible for making management recommendations regarding the state's saltwater fishery resources within the bays and estuaries and out to nine nautical miles in the Gulf of Mexico. More than \$400 million is spent annually in Texas' 4 million acres of saltwater by approximately 20,000 commercial and over 1,000,000 recreational fishermen.

The goal of the Coastal Fisheries program is to develop management plans within the concept of optimum yield for selected fisheries that include harvest regulations, resource stock enhancements or habitat enhancements based on monitoring programs and the best scientific information available. The objectives of the Coastal Fisheries Branch are: (1) to recommend management strategies for the aquatic marine resources to the Division Director, the Executive Director, the Parks and Wildlife Commission and the Legislature based on the results of research and monitoring programs and the best scientific information available; (2) to determine the sizes and changes in the sizes of finfish and shellfish populations caused by environmental conditions and fishing; (3) to determine the landings of marine species and the associated social and economic characteristics of the fisheries; (4) to develop mariculture techniques for selected species and make the information available to commercial mariculturists in Texas; (5) to educate the consumer regarding high quality, wholesale seafood products. To achieve these objectives, the Branch is organized into five major functions or programs: Administration, Fisheries Resource Monitoring, Fisheries Harvest Monitoring, Marine Culture and Enhancement, and Seafood Marketing. In FY 88, a total of 20 technical reports, scientific journal articles and magazine articles about various aspects of the Texas coastal fishery resources were completed to aid in meeting the objectives.

Effective management of finfish and shellfish resources must be based on a thorough knowledge of the population dynamics and stability of the resources. Long-term trend data based on routine monitoring are necessary to assess changes in abundance and stability. Landings information from both sport and commercial fishermen is necessary to assess the impacts of user groups on the fisheries and to determine the economic importance of the fisheries to the state.

Monitoring of the relative abundance of adult finfishes in Texas waters is accomplished using 600-foot-long gill nets with individual 150-foot sections of 3-, 4-, 5-, and 6-inch stretched mesh. Bag seines (60 feet long) and 20-foot trawls are used to determine the abundance of juvenile finfish as well as shrimp, blue crabs and associated organisms. Oyster dredges (19.5-inches wide) are used to collect oyster samples. Beach seines (200 feet long) and standard 60-foot long bag seines are used to sample the gulf surf zone.

The sport landings and fishermen activity are estimated from on-site creel interviews of sport boat fishermen at the completion of their trip. Samples are selected in proportion to the activity at a site (probability sampling); thus the higher use sites are sampled more frequently. Roving counts are utilized to assess relative pressure at sampling sites to insure that proper sampling probabilities are maintained. The charter fishery is randomly sampled on

a continual basis within each of the bay systems of the coast by intercepting boats when trips are completed (party boats) or by accompanying the boat on fishing trips and assessing the landings (headboats). Commercial landings are obtained from commercial seafood dealers through submission of Monthly Marine Products Reports and through on-site interviews of commercial fishermen at the completion of their trip.

The Perry R. Bass Marine Fisheries Research Station at Palacios was established to provide information and techniques necessary for the improvement of Texas fisheries management plans. Research effort is directed toward methods for spawning and rearing marine fish and shellfish. Once developed, such techniques will be used to provide animals for stocking coastal bays and freshwater reservoirs and information on techniques will be made available to commercial mariculturists in Texas. Coastal fisheries personnel cooperative with other coastal states in marine fisheries enhancement efforts through the transmittal of information and supply of available fishes.

As directed by the Texas Legislature, the Seafood Marketing Program was initiated to increase the utilization and value of seafood products. This charge is aimed at all functional levels within the marketing channel. The Seafood Marketing Program has functioned through an interagency contract with Texas A&M University, the Texas Agricultural Extension Service, the Sea Grant College Program's Marine Advisory Service, and the Texas Department of Agriculture. Several fisheries development foundations nationwide have also supported various work completed by the Seafood Marketing Program.

#### ACTIVITIES IN FY 88 INCLUDED:

Development of a shrimp fishery management plan was continued and a draft oyster fishery management plan was submitted for public comment as part of the 6-year plan for the Coastal Fisheries Branch approved by the Parks and Wildlife Commission. The Branch also participated in the development, review, and revision of 10 Gulf of Mexico Fishery Management Council management plans.

Recommended changes in regulations were adopted by the Parks and Wildlife Commission to insure stability of the resource. Regulations were modified to prevent depletion of red drum, black drum, sheepshead, flounder and tarpon by placing restrictive bag, possession and size limits on each of these species and by closing all state saltwater to the use of nets (gill, trammel and drag seine).

Saltwater and freshwater regulations were clarified, simplified and standardized. Regulations were modified to apply to state rules to the Exclusive Economic Zone to prevent over-exploitation of Texas stocks which migrate outside of state territorial waters.

Other regulation changes include a 14-inch minimum size length for king mackerel to eliminate identification problems; standardized markers and gear tags on crab traps; and prohibition of the use of tags to track or monitor fish or of the possession of devices used to locate tags.

Closure period for gulf shrimping in state waters was coordinated with the National Marine Fisheries Service (NMFS) for closure of a portion of the Exclusive Economic Zone to increase yield and value for the shrimping industry.

Public oyster reefs were closed to harvest from November 1 through December 3, 1987. The season was closed because oysters in Galveston Bay had not recovered from overfishing during the 1986-1987 season and flooding severely damaged oysters in San Antonio Bay. Galveston and

San Antonio Bays account for 90% of the annual harvest. The season was reopened on December 4, 1987 through a Temporary Restraining Order.

A total of 1,268 survey-days was spent to estimate landings and pressure of sport-boat fishermen. There were 760 gill net samples, 1,632 bag seine samples, 462 beach seine samples, 2,760 bay and gulf trawl samples, and 4,992 oyster dredge samples collected. The total number of routine samples collected is an increase of 987 samples over FY 87. A total of 2,873 fishes were tagged and released. Approximately 8% were returned for rewards. The percent of tags returned was consistent with prior years.

Gulf of Mexico waters from Alabama to the Rio Grande were sampled to a depth of 300 feet during November 1987 and June-July 1988 with other Gulf States and NMFS. This effort entitled the Southeast Area Monitoring and Assessment Program (SEAMAP) was coordinated by the Gulf States Marine Fisheries Commission. Results of sampling were used to evaluate the closure of gulf waters to shrimping and determine relative abundance of associated organisms.

Nearly 250 king mackerel were tagged in gulf waters off Texas. This effort was coordinated by TPWD and NMFS. TPWD personnel and volunteer taggers were used. Results of tagging will be used to determine identity and distribution of king mackerel stocks.

The socioeconomic questionnaire designed to collect data on the motivation, satisfaction and expenses of interviewed fishermen was reviewed and modified based on data analyses and staff input. Routine sport boat monitoring surveys incorporated these modified questions coastwide on May 15.

The commercial-vessel landings survey procedures and data were evaluated and modifications were made to improve the overall precision of the results and increase the efficiency of the operations. Sites with seafood dealers became a separate sampling stratum. Bait shrimp dealers and commercial-vessel docking structures were sampled in conjunction with the seafood dealer stratum or with the boat access site stratum.

Routine collection, editing, summarization and publication of self-reported commercial landings data continued through a formal cooperative statistics agreement with NMFS. The TPWD collected commercial landings statistics on crabs, oysters and finfish, while the NMFS continued to gather landings statistics on shrimp.

Research effort directed toward spawning and rearing marine fish and shellfish was continued at the Perry R. Bass Marine Fisheries Research Station. Several fishes were maintained on a controlled photoperiod and temperature regime to induce sexual maturity and spawning which resulted in the production of more than 13 million spotted seatrout larvae for stocking in Matagorda Bay. Pond culture studies included juvenile tarpon collected and being reared to maturity, 230 thousand spotted seatrout fingerlings produced for stocking into Matagorda Bay, and more than 2.2 million red drum fingerlings reared and stocked into freshwater reservoirs.

Several laboratory experiments were initiated in 1988. Scales, spines and otoliths from 54 adult red drum were collected and are being prepared for age and growth analysis. Growth and survival of oyster stocks from different Texas bays are being compared. Approximately 300 striped bass of 314,000 which were marked with oxytetracycline and released into Trinity Bay are being retained to evaluate long-term mark retention.

Technical information concerning aquaculture and commercial fish hatchery development was provided to other coastal states in a cooperative effort to enhance coastal marine fisheries.

The Seafood Marketing Program developed and distributed educational material, media articles, seafood curriculum newsletters, and Texas seafood recipes through seafood outlets, media efforts, and state agencies. Educational programs and training courses were conducted for groups such as county agents, seafood producers and wholesalers, and home economists. Several seafood cook-offs were coordinated for professional chefs in preparation for nationwide competitions.

## GULF STATE-FEDERAL FISHERIES MANAGEMENT BOARD

During the period October 1, 1987 to September 30, 1988, two meetings were held by the Gulf State-Federal Fisheries Management Board (GS-FFMB): Key West, Florida - October 1987 and Orange Beach, Alabama - March 1988.

The GS-FFMB is comprised of Gulf States Marine Fisheries Commission (GSMFC) Commissioners, two from each of the five Gulf States. The GS-FFMB members vote as a state with a single vote per state. The regional director of the National Marine Fisheries Service (NMFS), or his designee, the Region IV director of the U.S. Fish and Wildlife Service, or his designee, and the executive director of the GSMFC are members of the GS-FFMB. The GSMFC executive director is a non-voting member of the GS-FFMB. The GS-FFMB is advised on technical, scientific matters and industry views by the same advisory groups as the GSMFC. Among these groups are the Technical Coordinating Committee (scientific), the Menhaden Advisory and Management Committee, the Crab Subcommittee, the Anadromous Subcommittee, the Data Management Subcommittee, the Law Enforcement Committee, the Spanish Mackerel Subcommittee, as well as the NMFS.

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

SOUTHEAST REGIONAL OFFICE (SERO)  
AND SOUTHEAST FISHERIES CENTER (SEFC)

NATIONAL MARINE FISHERIES SERVICE

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

The National Marine Fisheries Service and the fishing community in the southeast face many challenges and opportunities. The success that we achieve comes only from cooperation with our partners and constituents in meeting mutual responsibilities to conserve and manage the marine resources.

Major activities in the fisheries management area this past year focused on catch restrictions to reduce overfishing and rebuild overfished stocks. There were closures of king and Spanish mackerel fisheries as quotas were reached, closure of the red drum fishery in the Gulf of Mexico, and prohibition on the use of trawls in the snapper/grouper fishery of the South Atlantic. The five-Council Billfish Fishery Management Plan was approved which brought blue marlin, white marlin, sailfish, and longbill spearfish under management in the Gulf of Mexico, Caribbean Sea, and Atlantic Ocean. The Spiny Lobster Plan was amended to require that undersized lobsters used as attractants in traps be kept in live wells, and to establish recreational and commercial seasons to coincide with those in Florida waters. Over 7,000 fishery permits were issued in fiscal year 1988 for vessels participating in the coastal migratory pelagics, coral, snapper/grouper, swordfish, and reef fish (fish trap) fisheries. The Tortugas Shrimp Sanctuary is temporarily opened from May 22 to November 3, 1989, to allow fishermen to harvest marketable size shrimp and provide reports of incidental take of sea turtles. The annual shrimp closure off Texas began June 1 through July 16, 1989, in Federal waters out to 100 nautical miles off the Texas coast in coordination with the state of Texas closure.

We are processing Amendment 4 to the coastal migratory pelagics (mackerels) management plan and anticipate amendments this year to the management plans for swordfish, Caribbean shallow water reef fish, and Gulf of Mexico reef fish including additional restrictions on fishing effort. We anticipate the submission of a queen conch plan by the Caribbean Council as well as early actions toward management of the shark fisheries.

A great challenge facing us is to reduce the incidental catch of sea turtles by shrimp trawlers. A proposed solution to this problem is the Turtle Exclude Device (TED). Regulations requiring the use of TEDs and/or 90 minute tow times went into effect for offshore waters on May 1, 1989. Shrimp trawlers 25 feet or longer must use one of six certified TEDs when fishing in offshore waters from North Carolina through Texas. Trawlers less than 25 feet can either use TEDs or 90 minute tow times in offshore waters. We continue to support the program carried on by the Gulf and South Atlantic Development Foundation through industry representatives to design more efficient TEDs. The industry is key to developing the "best" design.

A new amendment to the Marine Mammal Protection Act requires some commercial fishermen to obtain an exemption from the NOAA to fish lawfully beginning July 21, 1989. All commercial fisheries are categorized based on the anticipated frequency of incidental take of marine mammals. In the Southeast Region only the tuna, shark, and swordfish longline fisheries

are classified as Category II; all other fisheries in this Region are Category III. All vessel owners in Category I or Category II fisheries are required to register their vessels, pay a \$30 application fee and file annual reports of marine mammal interactions. Observer coverage is voluntary for Category II fisheries. Category III fisheries are only required to report if they kill a marine mammal during fishing activities. The purpose of the exemption is to establish a five-year period for studying the effects of interactions between marine mammals and commercial fisheries. Brochures and application forms are available from the Protected Species Program, NMFS Regional Office in St. Petersburg, Florida.

Other activities undertaken to protect sea turtles and marine mammals involved monitored oil rig removals, controlled dredging activities and investigated methods to reduce mortalities caused by dredging.

Under federal grants and cooperative agreement programs for fiscal year 1988, NMFS/NOAA allocated federal funds in the amount of \$1,438,769 to the Gulf and South Atlantic states under the Interjurisdictional Fisheries Act (Public Law 99-659) for fisheries research and management. In addition, Louisiana received \$742,400 and Texas \$194,600 under disaster emergency provisions of the act for the restoration of destroyed oyster resources. The act also provided \$109,333 each for the Gulf States Marine Fisheries Commission and the Atlantic States Marine Fisheries Commission to assist the states in the development of interjurisdictional fisheries management plans. Funding was provided to coastal states under the Anadromous Fishery Conservation Act (Public Law 89-304) for research and enhancement of anadromous fisheries.

Two other major grant programs are the Marine Fisheries Initiative Program (MARFIN) and Saltonstall-Kennedy Program (S-K). Through MARFIN, 26 proposals were recommended for \$1,437,181 in funding for fiscal year 1988. An additional \$944,000 was allocated for NMFS projects. Thirty-three S-K projects were recommended for \$1,825,469 funding in fiscal year 1988.

The National Marine Fisheries Service's Habitat Conservation Policy emphasizes the importance of habitat conservation of fishery resources, calls for improved coordination of NMFS management and research activities, and directs the agency to more closely coordinate with partners and constituents. This past year liaison with the fishery management councils, Fish and Wildlife Coordination Act activities, outreach efforts, and research coordination received considerable attention. At least 4,060 proposals to alter wetlands were reviewed. We estimate that our suggestions on these proposals, if followed, will conserve nearly 190,000 acres of valuable fishery habitat. A detailed report of these activities is available on request from the Habitat Conservation Division, NMFS Regional Office, St. Petersburg, Florida.

One of our most important activities is the research carried out by the Southeast Fisheries Center. The SEFC's research supports federal laws and international agreements relating to living marine resources and provides scientific and technical information to numerous fishery management, development and research organizations in the southeast. Without a good data base, managers are often forced to make more conservative decisions than they or industry would prefer in order to be sure that the resource is protected. It is to everyone's benefit that we have the data to allow us to use renewable marine resources to the maximum while ensuring they will be there for future generations.

The federal deficit has caused fiscal "belt-tightening" throughout the federal government and as our responsibilities and needs grow our ability to do the job by ourselves decreases. More and more we rely on the cooperation of our partners in the states and fishing community. We appreciate the cooperation and close working relationship we have with our partners and

constituents and look forward to working together even more closely for rational management of our fisheries.

## SOUTHEAST REGIONAL OFFICE

Following are brief reviews of activities and accomplishments during fiscal year 1988. A telephone number is listed for each area should you need addition information (813-893-3141).

### Fisheries Management Program

The main thrust of the Fisheries Management Program is to carry out the directives of the Magnuson Fishery Conservation and Management Act (The Magnuson Act). The Magnuson Act is a law designed to assure that fishing stays within sound biological, economic and other limitations, and that U.S. commercial and recreational fishermen have the opportunity to harvest all the fishery resources within these limitations. In this regard, the program staff provides support to the three regional fishery management councils (Gulf of Mexico, South Atlantic and Caribbean) that appropriate fishery management measures are considered that will properly weigh the relevant scientific, social and economic factors.

Activities are focused on developing, processing and implementing the fishery management plans (FMPs) and amendments submitted by the regional councils. The plans contain objectives for each fishery - appropriate management measures such as gear restrictions and area and season limitations. In addition, the Fisheries Operations staff monitors catches and landings against quotas, issue permits, distribute materials to the fishing community relative to closures and rule changes, and coordinate regulations with states. Significant FMP-related activities for FY88 included:

Closures or zero bag limits for king and Spanish mackerel in the management area.

Closure of the red drum fishery in federal waters of the Gulf of Mexico.

Approval of the billfish FMP which brought blue marlin, white marlin, sailfish, and longbill spearfish under management in the Atlantic Ocean.

Expansion of the stone crab management unit to recognize occurrence of new species and a hybrid in the management area.

Adjustment of the spiny lobster plan to require that undersized lobsters used as attractants in traps must be kept in live wells, established dates for the recreational season to coincide with the season for Florida waters.

Fishery permits totalling 7,003 were issued for vessels participating in the coastal migratory pelagics, swordfish, and fish trap (reef fish) fisheries in both the gulf and south Atlantic. Applications for permits are processed through the Regional Office Computer Services Unit thereby maintaining a



continuing data base of fishery permits issues. Refer to Chart I (813-893-3722).

### Protected Species Program

A major predicament that has existed in the Southeast Region has been the high incidental catch of sea turtles by shrimp trawlers. To alleviate this situation, the Fisheries Service developed gear (trawling efficiency device called the TED) that, when attached to the back of a shrimp trawl, releases sea turtles unharmed but does not reduce the shrimp catch. Regulations implementing the mandatory use of the TED went into effect in October 1987. The regulations were suspended in mid 1988 by a federal court injunction and later delayed by a Congressional amendment to the Endangered Species Act. The current status is that the regulations are in effect in the Gulf of Mexico (May 1, 1989) for offshore waters and will go into effect on May 1, 1990, for inshore waters.

Permits for the live capture of bottlenose dolphins also are issued by the staff, as well as reviewing/commenting on all marine mammal and endangered species permit applications. A total of 29 permits were reviewed and comments provided to the Washington Office. The live capture of bottlenose dolphins for public display was coordinated and monitored and 56 takes of an authorized quota of 91 occurred in 1988.

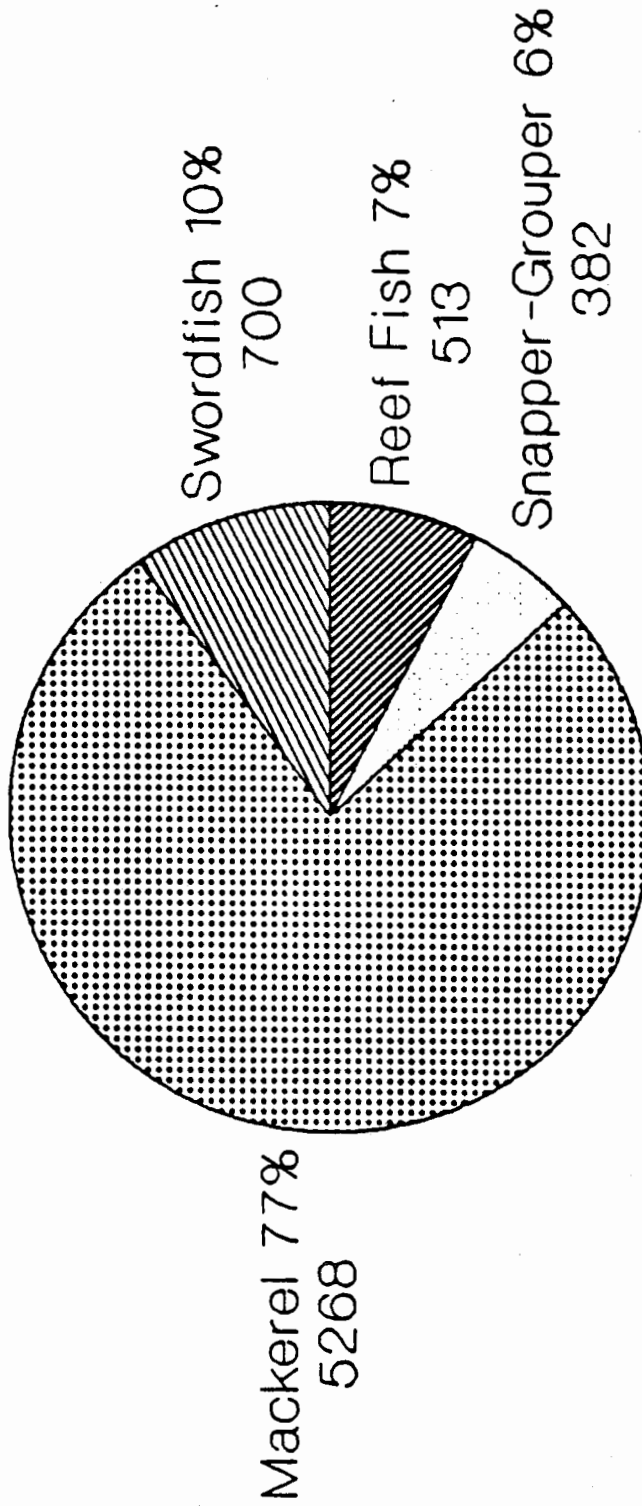
Federal agencies also are prohibited from harming listed species. The process of review under the Endangered Species Act is termed a Section 7 consultation; 102 consultations were conducted during FY88 - 35 were formal consultations. Most were with the Minerals Management Service on the issue of using explosives and the U.S. Army Corps of Engineers for channel dredging.

Staff participated in various meetings with Minerals Management Service, the Corps of Engineers, the Navy and others to discuss appropriate mitigation measures. As a result of these meetings, \$1.5 million in research funds was allocated by the Federal agencies for protected species (813-893-3366).

### Fisheries Development Program

The last two years reflect a great deal of change in the NMFS' fisheries development program in the Southeast Region. Increasing demands on the National Marine Fisheries Service with regard to our growing role in fisheries management, research and enforcement has taken its toll of the agency's direct participation in seafood market development. The Gulf and South Atlantic Fishery Development Foundation and its member trade associations assumed the leadership role in market research and development. The Fisheries Service staff concentrated primarily on the broader Department of Commerce goal of reducing foreign trade imbalance. An effort was made to identify unfair tariff and non-tariff trade practices barring or limiting the export of U.S. fishery products and prepare cases to be used in negotiating the elimination of unfair foreign tariffs, quotas, licenses and other barriers. Limited success was experienced in this new activity in some Asian markets where specific concessions favorable to southeastern fishery products have received focused attention. The recent reduction in the tariff on mullet roe in Taiwan is the most direct and important concession to date (813-893-3271).

# FY88 Fisheries Permits Issued



## Financial Assistance Program

### S-K and MARFIN Programs

There has been substantial growth over the last few years in the funding available to fishery development activities in the Southeast Region through the Saltonstall-Kennedy (S-K) and Marine Fisheries Initiative (MARFIN) programs. Approximately \$3 million are available annually through the MARFIN program for funding research and development projects of importance to both commercial and recreational fisheries. A large amount of the MARFIN funding to date has been devoted to the mitigation of new requirements being placed on the industry, e.g., the turtle excluder device, and the development of information that should contribute to the resolution of user conflicts. The Southeast Region successfully competed for almost \$2 million in new Saltonstall-Kennedy projects in FY88, of which approximately 80% went to proposals submitted by the Gulf and South Atlantic Fisheries Development Foundation. Competition for S-K funding should be much keener in FY89 due to strong competition for funding of only \$4.4 million nationally.

### State-Federal Grants

The Federal government provides non-competitive funding to states under Public Law 99-659, Interjurisdictional Fisheries Act, for research in fisheries management, disaster projects, and development of fishery management plans. Public Law 89-304, Anadromous Fish Conservation Act, provides funding for such resources. The products and output from projects funded by these grants provide important information for fisheries management decision makers in the southeast.

The programs encompassed 19 grantees and 27 projects. Disaster funds were awarded to Louisiana (\$742,400) and Texas (\$194,600) for the restoration and enhancement of public oyster reefs. The other projects ranged from monitoring and assessing activities to research of early life histories of fishery resources. Refer to Chart II.

Two competitive grant programs also are administered by the grants office, the MARFIN Program and the S-K Program. The staff received 50 applications for MARFIN funds. Of these, 28 proposals were funded for \$1.5 million, \$686,000 for continuing projects, and \$944,000 for in-house and contract projects. S-K applicants numbered 52 with 34 projects funded for \$1.8 million (813-893-3720).

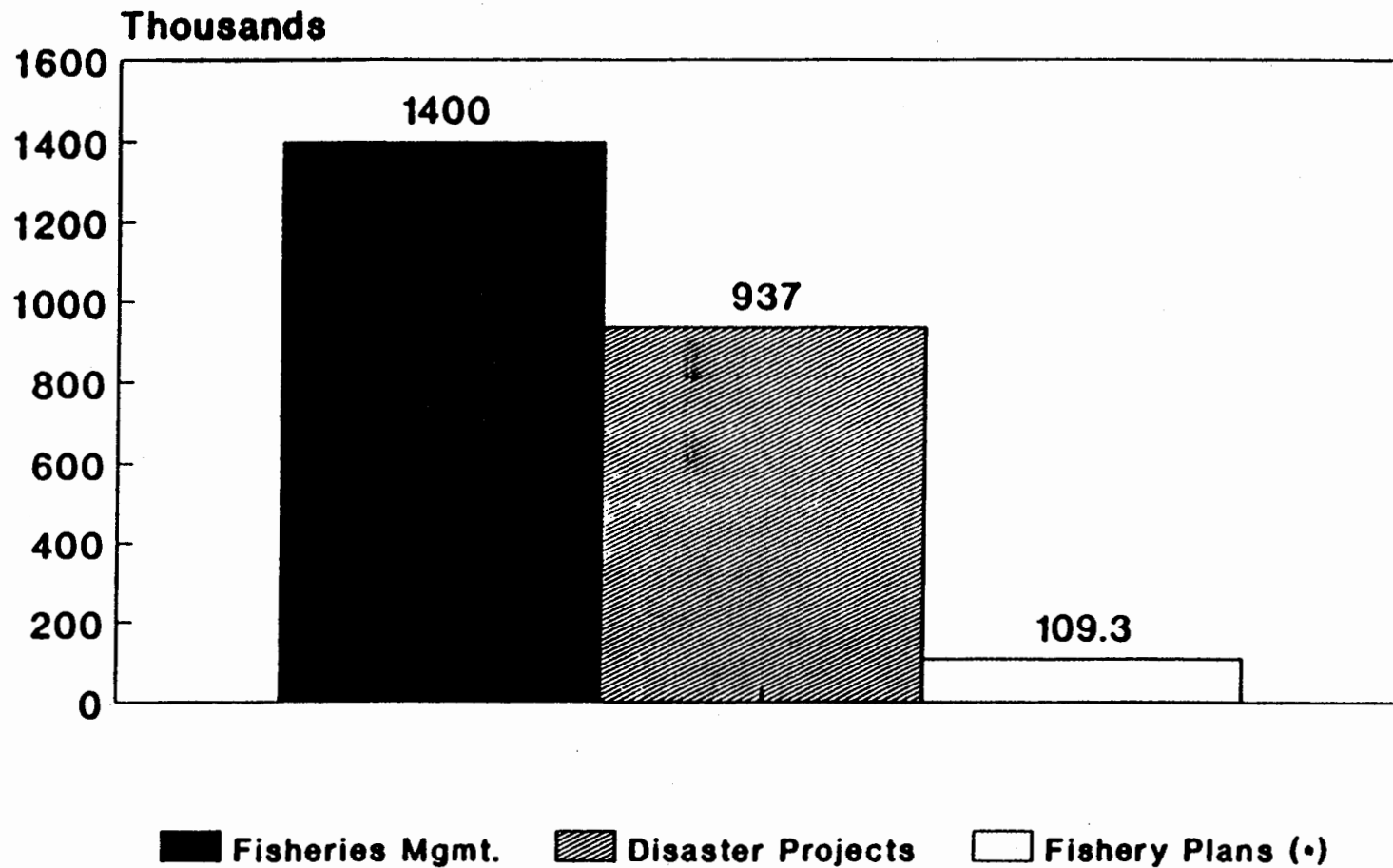
### Economic Analysis

The Economic Analysis is no longer a part of the Development Division. Industry market information needs continue to be met through the Market News Service and Situation and Outlook reports. However, fisheries management needs regarding allocation issues command an ever increasing share of relatively scarce economic evaluation resources.

### Financial Services

The Financial Services Unit is responsible for the fishing vessel obligation guarantee and capital construction fund programs. It was organizationally transferred to Washington headquarters this past year to ensure more uniformity of policy and improve administrative practices. The office still remains in St. Petersburg with the Southeast Region. The declining fortunes of much of the commercial fishing industry in the region has brought new vessel mortgage guarantee activity to a near standstill. Debt servicing on the existing loan guarantee portfolio, together with some new financing of charter and head boats constitutes the bulk of current financial services activity (813-893-3148).

# FY88 Federal Financial Assistance Interjurisdictional Fisheries (PL99-659)



•Gulf States Marine Fisheries Commission

Chart II.

## Habitat Conservation Program

NMFS in 1983 adopted its Habitat Conservation Policy (HCP). This policy emphasizes the importance of habitat conservation for management of fishery resources, calls for improved coordination of NMFS management and research activities, and directs the agency to more closely coordinate with partners and constituents. In the NMFS Southeast Region most of these efforts are carried out by the Habitat Conservation Division (HCD) in close cooperation with the habitat research component of the SEFC.

The goals of the HCP are defined under 12 major areas called implementation strategies. These strategies also set forth the actions NMFS will take to fully implement the HCP. The specific and generic activities of the HCD and SEFC under the 12 implementation strategies are included in Appendix 1.

There was considerable progress in 1988 in meeting the objectives of the HCP. Liaison with the fishery management councils, Fish and Wildlife Coordination Act activities, outreach efforts, and research coordination received considerable attention as highlighted below, but a detailed report is available upon request.

Development of coordination process between the division and the Southeast Center.

Fishery habitat research conducted by key habitats and important fishery species.

Habitat issues coordinated with Regional Councils.

4,060 projects reviewed under FWCA.

Assisted state agencies with reviews of water-development projects, planning exercises, and committees.

Continued interagency agreements involving habitat research.

Held 200 preapplication meetings.

Outreach activities included presentations, reports and publication of research/management material.

## Recreational Fisheries

The Southeast Region's Marine Recreational Fisheries Program was productive during 1988. The MRFSS (Marine Recreation Fisheries Statistics Survey) was enhanced by using \$280,000 of funds obtained from MARFIN. This helped to continue developing a regionwide coordinated recreational fisheries statistics program. These enhancements were added to the MRFSS in a very specific way, i.e., to test the response of the survey to the input of additional resources. This study demonstrated that predictable results in precision and processing time can be obtained if various levels of resources are devoted to the survey. The region's Marine Recreational Fisheries Steering Committee devoted much of their 1988 meeting to a review of fishery statistics.

A contract was awarded in 1987 (using MARFIN funds) to produce a broadcast quality video and brochure on "Catch and Release Techniques for Anglers." Production and filming of the video was accomplished during 1988 and an excellent product has been developed. This video provides instructions on the proper methods to release fish which will be safe for the fisherman and ensure a good survival rate for the fish. The video was available by early 1989 and is still being distributed.

A major effort was begun in 1988 to develop and implement a fish tagging program. Upon maturity the program will involve sport fishermen, sport fishing clubs and associations, recreational fishing industries, and government teaming up to produce a tagging program with proper documentation to provide valid scientific data (813-893-3141).

## SOUTHEAST FISHERIES CENTER

One of the most important activities is the research carried out by the SEFC. The SEFC's research supports federal laws and international agreements related to living marine resources and provides scientific and technical information to numerous fishery management, development and research organizations in the Southeast. Without a good data base managers are often forced to make more conservative decisions when they or industry would prefer in order to be sure the resource is protected.

Activities of the SEFC during fiscal year 1988 concerned programs focusing on species that support major commercial and recreational fisheries within the region. Most often, these groupings corresponded to those employed by regional fishery management councils in their consideration of management needs. Each of the species-oriented programs were responsible for developing data needed to assess/monitor stock characteristics and condition. SEFC species programs include: Latent Resources, Mackerels, Menhaden, Molluscan Shellfish, Ocean Pelagics, Protected Species, Red Drum, Reef Resources and Shrimp. This report covers these species programs and other related activities.

### Latent Resources

A primary program goal has been to quantify specific components of the coastal herring and associated species complex. To accomplish this, much of the early effort was directed at developing direct sampling techniques for the fish relying heavily on trawling technologies developed in other regions of the world. High-opening, large-mesh bottom trawls and more recently, high speed pelagic trawls present the targeted technologies. Satellite remote sensing also has been a key investigative area mainly as a means to help tactically direct survey operations and gain improved understandings of environmental relationships.

Scientific observers sampled catches aboard butterfish trawlers. Concerns of possible trawl damage to reefs and incidental catches of reef fish and related recreational species appear to be unwarranted as relatively few reef fish are taken in butterfish trawls. The incidental catch of recreational and commercial species is small, and the trawlers purposely avoid reefs to prevent damage to their expensive gear.

A number of gulf vessels entered the fishery in 1988 due in part to several financial assistance programs. Technical support was provided to aid in design of retrofits and technical assistance was provided in obtaining market information.

Survey cruises were conducted in winter and spring with high opening bottom trawls. Large catches of butterfish, harvest fish, rough scad, and chub mackerel were reported and extensive biological and environmental data were collected. Efforts continued to upgrade NOAA Ship CHAPMAN with an advanced chromosome sonar and a split beam echo integrator. A number of analyses of historical data were completed including one comparing total finfish and butterfish biomass trends in the north central gulf. Efforts continued to apply satellite thermal data to latent resources.

An experimental fish processing facility was established in Pascagoula, in cooperation with the Charleston Laboratory, Mississippi State University, Jackson County Board of Supervisors and Mississippi Power Company. A plate freezer was installed on the NOAA Ship CHAPMAN along with renovating the vessel's existing freezer and refrigerated sea water systems for fish handling and processing studies.

A study was initiated to determine spatial and seasonal differences in cestode infection levels of gulf butterfish. While posing no human health hazard, this cestode can affect the aesthetic quality of butterfish.

## Mackerels

Major efforts were directed toward king and Spanish mackerels with research designed to investigate the life history and population structures of these species. Research included studies of stock identification, movements and migrations, age and growth, reproductive potentials, food habits, mortality and other biological characteristics. A tagging program continued to gather data for management purposes.

The fishery management plan for coastal migratory pelagic resources has historically placed major emphasis on king and Spanish mackerel fisheries. However, the Gulf of Mexico and South Atlantic Fishery Management Councils are beginning to direct more attention to other species in the plan, particularly the cobia and dolphin.

Amendments I and II of the plan divided the king and Spanish mackerel resources into Atlantic and gulf groups of management purposes. The fishing year for both species in the Atlantic was set for April 1 through the following March 31, while for the gulf, it was set for July 1 through the following June 30. During 1987-88, all commercial fisheries for mackerels, except for the Atlantic king mackerel, were closed prior to the end of the fishing year and all recreational fisheries for mackerels, except for the Atlantic king mackerel, had bag limits reduced to zero before the end of the fishing year.

## Menhaden

Research on assessment of menhaden stocks and fisheries centered at the Beaufort Laboratory, with data collection and research projects spanning virtually all the Atlantic and gulf coast states. Activities were directed toward ecology of juveniles, stock assessments, monitoring the purse-seine fisheries and providing scientific advice to the states, industry, and fishery management institutions. At the Charleston Laboratory, research was conducted on the development and application of fisheries technology to increase the export and direct domestic consumption of menhaden products. Major goals of the technology research are the increased use of menhaden oils plus the development of minced menhaden and surimi products.

## Molluscan Shellfish

A significant portion of this year's activities focused on reviewing research proposals and monitoring grants funded through the S-K and MARFIN programs. In addition to proposal reviews, staff members served as Program Officer, Contract Officer's Technical Monitors for three new S-K grants on: depuration of viruses and bacteria from oysters and clams, shellfish growing water classification, and a national indicators study. Two S-K grants related to molluscan shellfish were completed during the year, one by the University of North Carolina on the depuration of hepatitis A virus and other microbes from oysters and the other by the Shellfish Institute of North America on market standards for drip loss in oysters. A MARFIN grant is being monitored on the depuration of oysters in the Gulf of Mexico.

Charleston Laboratory personnel served as advisors to the interstate Shellfish Sanitation Conference (ISSC), as the NMFS spokesperson and voting delegate to the ISSC and as members of several ISSC committees. NMFS scientists also assisted FDA on a source evaluation board to evaluate funding proposals for Norwalk virus/gene probe research.

## Ocean Pelagics

Highlights of oceanic pelagics research during 1988 included completion of the first ICCAT Swordfish Assessment, the implementation of an ICCAT Billfish Research Program, and the implementation of a five-Council U.S. Billfish Management Plan. Substantial progress was made in filling data needs through the implementation of a mandatory logbook system for swordfish longliners. As in past years, the major thrust of the program was the monitoring of landings of oceanic pelagics for catch, effort and size-frequency. This included sampling landings and trans-shipments in Puerto Rico, the maintenance of a large billfish tournament-sampling activity, hiring of seasonal employees to cover high billfish landing areas in the southeast and support of a sampling program run by the NMFS Northeast Fisheries Center for telephone interviews and dock-side sampling from Virginia through New England.

## Protected Species

### Sea Turtles

A total of 13,572 headstarted Kemp's Ridleys have been released into the wild since February 1979. As of June 1988, 537 (3.9%) had been recovered. Primary recovery locations include Texas, Louisiana and Florida. Primary recovery methods were strandings and incidental capture in shrimp trawls, and most recoveries occurred during April, May and June.

A new sea turtle headstart research facility was completed in Galveston during February. Initial funding was provided by HEART (Help Endangered Animals - Ridley Turtles) with funds for completion from MARFIN.

The Sea Turtle Stranding Network, encompassing the coastal areas of the 18 state region from Maine through Texas, and including portions of the U.S. Caribbean, continued to compile data to the centralized data base. During the first six months of 1988 a total of 735 reports were received. Of these, 11 were known to be headstarted turtles. Loggerhead turtles comprised almost 68% of the total reported strandings, green turtles comprised almost 16%, Kemp's Ridleys about 7%, and leatherbacks almost 3%.

The Beaufort Laboratory initiated a 1-year pilot study jointly funded by the U.S. Fish and Wildlife Service and the NMFS to determine the best combination of methods to study the species



composition and distribution of sea turtles in North Carolina's Pamlico-Albemarle Estuarine Complex. The project is anticipated to be 3 to 5 years in duration.

NMFS and the U.S. Corps of Engineers initiated a 1988 Predredge Trawl Survey in the Corpus Christi and Aransas Bays. These bay systems are in close proximity of the headstarted Kemp's Ridleys release sites.

Monthly sampling to characterize amounts and types of marine debris accumulating on the upper Texas and southwest Louisiana beaches continued. Plastics of various types dominated the samples in weight and number of items collected.

NMFS, in cooperation with the shrimp industry, collected preliminary data that document catch rates of shrimp in TED-equipped trawls and in trawls without TEDs for selected shrimp fishing areas of the southeast. Observers were placed on shrimp vessels operating off Texas, Louisiana, Florida, Georgia and South Carolina. The Pascagoula Laboratory continued efforts to develop expertise in TED technology and to distribute TED information to industry.

A fishery independent study of turtles is being conducted in the northeastern Gulf of Mexico at Cedar Key, which historically supported a green turtle fishery. The Kemp's Ridley is the target species and is the most frequently captured species in the area. Turtles captured incidentally in fishery activities are being tagged.

#### Marine Mammals

In continued efforts to investigate the bottlenose dolphin die-off, which began in June 1987, the SEFC operating in concert with Marineland of Florida staff to collect, necropsy and sample stranded dolphins along the northeastern coast of Florida. Nearly 100 stranded animals were examined. In addition, the SEFC cooperated in an aerial survey program with the Smithsonian Institution to determine the distribution of both live and stranded dolphins from Long Island, New York, to Savannah, Georgia. The number of strandings may represent as much as a 50% reduction in the coastal stock of bottlenose dolphins.

The NMFS Southeast and Northeast Fishery Centers are involved in monitoring the population of right whales. Most of the work is being done through cooperative agreements with universities and other private organizations. The SEFC is developing a computer-based image storage and analysis system to store photographs of individually identifiable whales.

#### Red Drum

Research emphasized determining distribution and abundance of adult red drum, monitoring age structure, maintaining a centralized tagging center, monitoring incidental captures of red drum in federal waters and providing annual assessments of the status of the red drum resources in the Gulf of Mexico.

According to Gulf of Mexico Fishery Management Council priorities, only a limited red drum assessment was completed for 1988. A more detailed assessment is scheduled for submission to the Council in May 1989. The 1988 assessment found (1) gulf-wide reported commercial red drum landings in 1987 decline by 65% from the 1986 historical high. Most of the decline was due to prohibition of a directed commercial fishery for red drum in the EEZ. Florida conservation measures also contributed to the decline; and (2) compared to 1986 estimates, the estimated

1987 red drum recreational harvest declined in numbers and weight in Louisiana, Alabama and Florida but increased in Mississippi and Texas.

## Reef Resources

Research efforts were expanded to improve monitoring of the fisheries throughout the region, to evaluate the effectiveness of regulations, to assess the status of selected reef fish stocks in the Gulf of Mexico and off the southeast Atlantic coast and to examine changes in populations as the result of human activities.

Gulf of Mexico commercial reef fish landings continued an overall decline through 1987. Several assessment activities were conducted in support of the Gulf of Mexico Fishery Management Council's effort to update the Reef Fish Management Plan. These included an assessment of gulf red snapper; a compilation of a descriptive profile of various aspects of the reef fish fishery in the gulf and analyses of yield and spawning stock biomass per recruit for several reef fish species.

The age structure and population size of the stock of red porgy off the coast of North and South Carolina were assessed. Combining annual age-length keys with length-frequency distributions estimated annual landings in numbers of age. Virtual population analysis applied to these data resulted in estimates of annual, age-specific population sizes and fishing mortality rates.

Research was conducted on the effects of fish trap mesh sizes on the catch and size of reef fishes. Changing mesh size affected the catchability for various species.

Research into recruitment mechanisms among the SEFC, SEAMAP, CIMAS, Polish Plankton Sorting Center and MEXUS-Gulf focused in three areas: (1) ocean pelagics, emphasizing bluefin tuna; (2) reef fishes; emphasizing snappers, groupers and grunts; and (3) larval fish ecology, emphasizing their interactions in oceanic waters.

Headboat surveys continued with collection methods being changed so that hand recording was virtually eliminated for some data sets. Electronic balances linked to an electronic measuring board allowed recording of fish length without resort to pen and paper as well as recording of weight, species, location and other accessory information for over 1,500 fish without unloading.

Assessment and monitoring research on stone crab and spiny lobsters continued. Data collection programs include spiny lobster commercial size frequency, landings data collection and stone crab landings and trip-ticket monitoring.

## Shrimp and Bottomfish

Shrimp and groundfish research efforts were directed towards evaluating the impact of closures, obtaining information on the biology and ecology of major shrimp and groundfish species and collecting recreational and commercial catch and effort statistics to provide necessary scientific information for management purposes.

Most Gulf States noted a decrease in shrimp landings in 1987 as compared to 1986. Louisiana led all Gulf States with 116.3 million pounds (down 21%). Texas was next with 92.4 million pounds (down 5%) followed by Florida (west coast) with 18.5 million pounds (down 24%). Alabama's production was 17.0 million pounds (down 25%) and Mississippi's was 12.9 million pounds (unchanged).

Results of stock assessments dealing with the 1960-86 commercial catch statistics for brown shrimp, white shrimp, and pink shrimp for the U.S. Gulf of Mexico indicate (1) a significant increase in yield in the brown shrimp fishery is attributable to an increase in recruitment; (2) the white shrimp fishery also had an increase in landings attributable to improved recruitment with no increase in parent stock; and (3) the most notable result in the pink stock is the stability of the fishery.

Brown shrimp harvest from offshore Texas were forecast to be 25.9 million pounds for the 1988-89 season, slightly below the historical annual average of 27.4 million pounds. Prospects for the combined inshore and offshore Louisiana brown shrimp harvests for waters west of the Mississippi River suggest catches could be around 30.2 million pounds for the 1988-89 season, which is above the 27.5 million pound annual average yield for the area.

During the spring of 1988, influxes of postlarval brown shrimp entering the Galveston Bay through Bolivar Roads were studied, with emphasis placed on their spatial distributions at two historically important sampling sites. Results of the studies will assist in establishing a sampling design to monitor PL influx in the future and has established some confidence around past years' PL Samplings.

SEFC staff participated in a series of workshops with the processing industry and the National Fisheries Institute as part of the NOAA Model Seafood Surveillance Program in development of a system to be applied to the shrimp and bottomfish of the southeast. The completed system design and an economic evaluation is due to be delivered to Congress in June 1990.

### Economics and Statistics (ESO)

ESO is responsible for fishery statistics and information management for the Southeast Region. Fishery statistics were collected, processed and archived and the data and information made available to scientists, administrators and the public. Information management (computer) services were provided to the Region and cooperating individuals and agencies. The SEFC operated a mainframe computer system and regional telecommunicatins system, providing programming and software development services and implementing NOAA policies and procedures on automatic data processing. The statistical information and services of the office were used by fishery management councils and the agency to manage the fishery resources in the southeast.

### Fishery Habitat

Research emphasis during 1988 was on (1) the distribution and abundance of larval and juvenile fishes, and factors influencing larval growth and survival; (2) mapping and characterization of habitats supporting finfish and shellfish; (3) evaluation of mitigation methodologies and the impact of alterations on habitat quantity and quality; (4) research on feeding habits and predator-prey interactions and (5) effects of metal contamination on larval fish food webs and mechanisms of metal accumulation and metabolism.

Research at the Beaufort and Galveston Laboratories included recruitment to estuaries; utilization of various wetland habitat types as a measure of relative habitat value; predator-prey interactions; uses of detrital material; evaluation of impacts of freshwater inflow and temperature; the functional value of mitigated and created wetland habitats; and synthesis of information on wetland acreages and fishery species life histories.

## Product Quality and Safety

Research concerning quality and safety of seafood was centered at the Charleston Laboratory with cooperative research and communication interfaces with state and federal regulatory and environmental agencies. Specific areas of research concerned the production and distribution of fish oil base test materials, establishment of edibility and storage stability characteristics, nutritional and quality evaluation, process and product development, forensic activities concerning identification of endangered species and studies to distinguish wild from cultured fish, and critical seafood safety issues stemming from chemical and microbiological contamination of fish and shellfish.

## APPENDIX I

### Research and Management Coordination

- Coordinate management research needs with SEFC
- Review and relay fishery management council (FMC) habitat research needs with SEFC
- Provide reviewer services for draft research papers
- Coordinate research and management issues relative to EPA's National Estuary Program
- Disseminate relevant research findings to constituents
- Provide ad hoc advisory services
- Develop appropriate interagency agreements for habitat research

### Coordinate Habitat Issues with Fishery Management Councils

- Review and/or draft habitat sections for fishery management plans
- Notify and/or brief FMC's of habitat issues of concern
- Serve as member of Habitat Advisory Panels (three HAP's for each of the three FMC's)
- Attend council meetings as needed
- Provide ad hoc advisory services

### Fish and Wildlife Coordination Act Activities

- Review specific proposals to alter fishery habitat (4000-6000/year)
- Review COE federal projects
- Review Environmental Impact Statements
- Conduct preapplication planning and consultative services
- Coordinate with state, federal, and local agencies
- Participate in committees, working groups, task forces, etc.
- Review activities by other federal agencies

### Anadromous Fish

- Participate in activities that affect anadromous fish such as habitat conservation and anadromous fish restoration

### Preapplication Planning

- Provide preapplication planning services
- Participate in interagency screening and planning efforts

### Integrating Programs

- Integrate programs with other agencies

### Intra NOAA Cooperation

- Represent NOAA in National Estuary Program
- Provide consultative services for CERCLA activities
- Represent NOAA on MMS Regional Technical Working Groups
- Coordinate with NOAA relative to EPA's Gulf Initiative
- Work closely with other NOAA components as needed

### Regulatory Relief

- Participate in activities that streamline review procedures
- Participate in interagency task force meetings
- Participate in the development of special area management plans and other planning exercises

Communicate Habitat Information

- Attend symposia and workshops
- Provide program presentations
- Develop reports and papers on habitats
- Distribute educational materials
- Respond to information requests

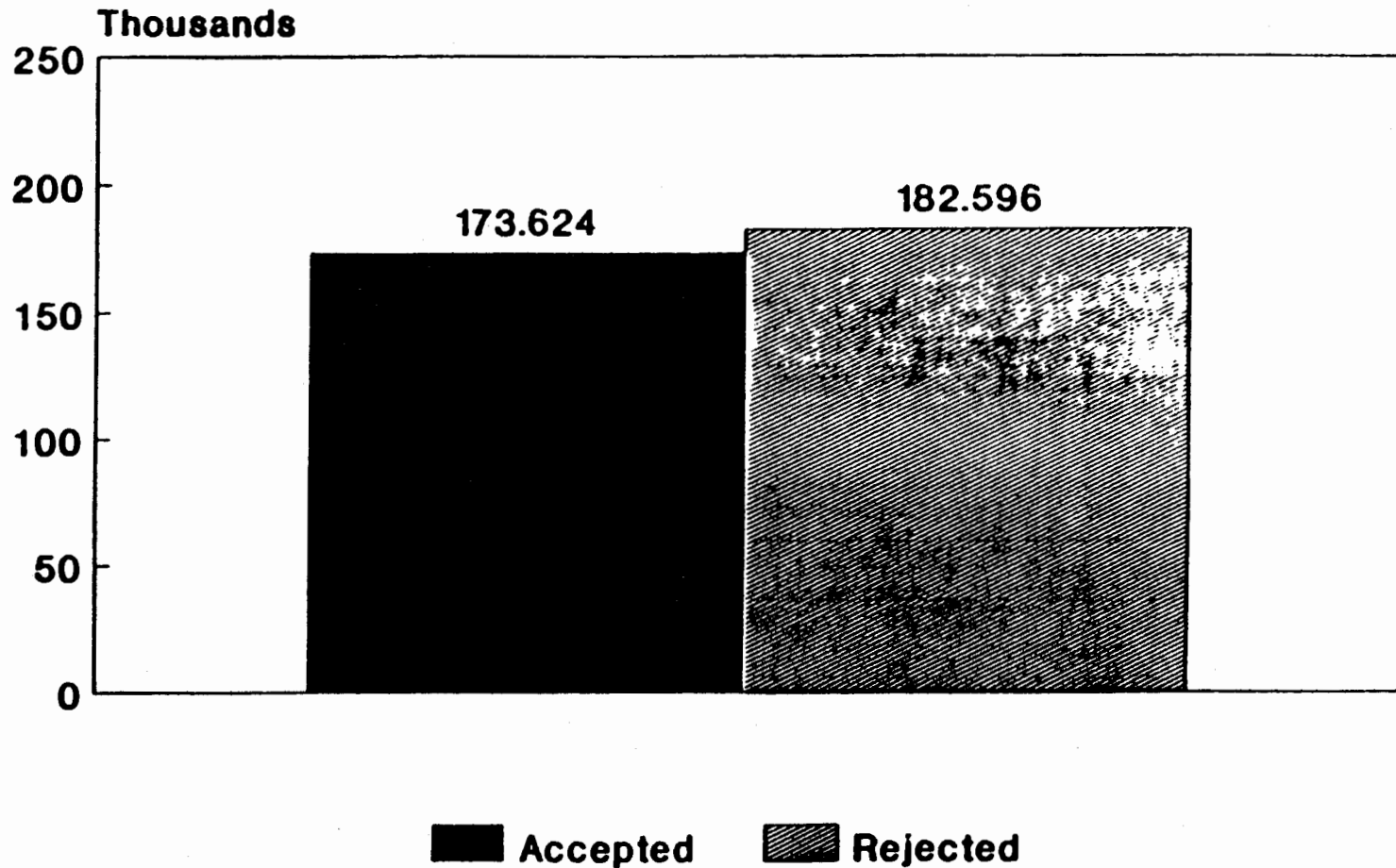
Other Activities

- Review projects relative to Clean Water Act
- Review National Environmental Policy Act activities
- Review CZM activities of states
- Review MMS oil and gas leasing activities
- Review FERC activities
- Develop and disseminate habitat protection guidelines
- Develop criteria to assist in development of NMFS recommendations
- Maintain data base for habitat alterations involved in FWCA activities in SER
- Maintain contracting program for field reviews
- Maintain student-coop program
- Maintain an IPA program

## APPENDIX II

1. Research and management staffs in the southeast have developed an effective and productive coordination process for habitat-related matters. Examples include input by the SEFC on significant water-developments and especially those projects requested for elevation to higher levels in the Corps of Engineers (COE), collaboration between the HCD and SEFC on preparation and reviews of scientific papers and research proposals and continued dialogue on ongoing mitigation studies.
2. Fishery habitat research conducted by the SEFC dealt with the relationships between key habitats and important fishery species. The multidisciplinary research program on estuarine-coastal habitats emphasizes a balanced mixture of field and laboratory studies.
3. The HCD and SEFC coordinated extensively with the three fishery management councils (FMC) in the southeast. Assistance was provided to the Habitat Advisory panels and Habitat Committees. Fishery management plans were reviewed, habitat sections were amended and briefing materials and background documentation on key environmental issues and research were provided.
4. The HCD continued its efforts under the Fish and Wildlife Coordination Act (FWCA). At least 4,060 proposals to alter wetlands were reviewed. A sub-sample of these proposals (1020) indicate that at least 356,220 acres of wetlands were proposed for alterations, the HCD did not oppose the alteration of 173,624 acres, and thereby potentially conserved 182,596 acres. The mitigation of about 6,939 acres of wetlands was recommended.
5. HCD and SEFC staffs worked closely with the southeastern coastal states. NMFS serves on a number of state panels, committees, and/or interagency working groups.
6. The SEFC and HCD worked under or entered into a number of interagency agreements. Federal agencies involved included the Minerals Management Service, U.S. Fish and Wildlife Service, COE, the Environmental Protection Agency, and the NOAA.
7. The HCD and SEFC were involved in a number of activities regarding the conservation and management of anadromous fish.
8. The HCD continued to work closely with applicants. More than 200 preapplication meetings were attended.
9. Efforts continued at integrating HCD and SEFC programs with others. The HCD and SEFC continue to coordinate management needs and research efforts to insure compatibility.
10. The SEFC and HCD have undertaken a number of cooperative arrangements with other agencies and NOAA components.
11. Several initiatives were undertaken to assist in providing regulatory relief.
12. Habitat information was communicated to NMFS constituents, partners and the public by numerous presentations and scientific papers. Refer to Chart III (813-893-3503).

# Acres Proposed for Alteration Fish & Wildlife Coordination Act (FWCA)



FY88 Habitat Conservation Policy Report

Chart III.



## GULF OF MEXICO FISHERY MANAGEMENT COUNCIL

Annual Progress Report  
CY 1988 Administrative Cooperative Agreement No. NA88-WC-H-06078  
January 1, 1988 through January 21, 1989\*

### NMFS STATUS REPORT ON RULES IMPLEMENTING FISHERY MANAGEMENT PLANS (FMPs)

Notice of availability of Billfish FMP published. Billfish FMP was approved. Billfish FMP final rules were published.

Under the terms of the Mackerel FMP, NMFS promulgated rules closing commercial fisheries for gulf Spanish mackerel for the remainder of the fishing year. Proposed and final rules for mackerel quotas and bag limits were published. NMFS closed the recreational fishery for Atlantic Spanish mackerel. NMFS closed the recreational and commercial fisheries for Atlantic Spanish mackerel, Atlantic king mackerel and Gulf king mackerel.

NMFS published and extended an emergency rule to regulate the red drum fishery in the EEZ and a notice of availability for the council's amendment to the FMP. NMFS published proposed and final rules to regulate the red drum fishery in the EEZ for Amendment 2 to the FMP.

Proposed and final rules changing exemption for undersize snapper for Reef Fish FMP were published. NMFS published final rule to regulate trawl bycatch of red snapper.

Amendment 4 to Shrimp FMP was rejected. The Texas Closure for 1988/1989 was implemented by rule. Proposed rules for shrimp Amendment 4 were published.

Reserved sections of Amendment 1 to the Spiny Lobster FMP were implemented changing bag limit and requiring live wells on vessels.

Proposed rules for swordfish reporting were published.

### COUNCIL ACTION ON FMPS

#### BILLFISH FMP

Staff assisted in preparation of the Regulatory Impact Review (RIR) for the final FMP which was submitted to the South Atlantic Fishery Management Council (SAFMC). The final FMP was submitted to the Secretary. The final FMP was approved by the Secretary for implementation and proposed rules published.

#### CORAL FMP

No action this year.

#### GROUND FISH FMP

Council reviewed the stock assessment and report on status of butterfish fishery.

#### MACKEREL FMP

The council approved a regulatory amendment to regulate drift gill nets in SAFMC area and suggested options for inclusion in next plan amendment. The council hosted a technical workshop on king mackerel stock identification. The NMFS Southeast Fisheries Center (SEFC) completed the 1988/89 stock assessments for mackerel. Stock Assessment Group recommended Allowable Biological Catch (ABC) ranges for king and Spanish mackerel which were reviewed by the Scientific and Statistical Committee (SSC) and Advisory Panel (AP). Councils recommended Total Allowable Catches (TACs), quotas and bag limits to Regional Director for implementation. Councils defined options for Amendments 3 and 4. Councils approved draft Amendments 3 and 4 for public hearings. Councils held hearing and approved draft Amendment 3 for submission to Secretary. Councils requested staff revise Amendment 4.

The technical group reviewed recreational catch information used in closing fisheries for Spanish mackerel and king mackerel.

The council completed options for Amendment 5 and convened the Mackerel AP to review Amendments 3, 4 and 5.

#### RED DRUM FMP

The council approved draft Amendment 2, held public hearings (6) and AP and SSC reviews. The council approved the final amendment and submitted it to the Secretary. The council approved extension of the Secretary's emergency rule closing the EEZ to fishing. The SSC reviewed studies estimating size of offshore spawning stock. The council instructed staff to initiate development of Amendment 3. Amendment 2 was implemented. The council reviewed and deferred action on adoption of Amendment 3 until the stock assessment group sets an ABC range for the fishery. The stock assessment group reviewed the updated stock assessment and deferred action until the assessment is revised.

#### REEF FISH FMP

Staff continued development of Amendment 1. The council reviewed options related to fish traps and trawl bycatch of reef fish. SSC and council reviewed an economic analysis of the fishery and a SEFC stock assessment for red snapper and reef fish for development of Amendment 1. Council completed development of draft Amendment 1, reviewing stock assessment information and selecting management measures to arrest overfishing.

#### SHARK FMP

An Intercouncil meeting of the five East Coast Councils was held. They recommended a Secretarial data collection program be implemented and the councils proceed with development of a framework FMP. Staff recommended data to be included in a Secretarial data collection program being developed by Mid-Atlantic Council. The council's committee approved a Secretarial data collection program in a meeting with Mid-Atlantic Council's committee.

#### SHRIMP FMP

Amendment 4 to the FMP was returned by the Secretary for revision of the RIR. The SSC, AP and council reviewed analyses prepared by SEFC on the Texas Closure, and the council recommended to the Regional Director a 15-mile limit be implemented for 1988 through regulatory amendment under the FMP. Staff and NMFS revised the RIR for Amendment 4 which was resubmitted to the Secretary. Council reviewed assessment information on Tortugas Sanctuary and took action to open a portion of the sanctuary to fishing. Council reviewed NMFS comments on Amendment 4.

Council reviewed NMFS comments on partial disapproval of Amendment 4. Council, SSC and AP reviewed Texas Closure analyses and set extent of closure for 1989 at 200 miles.

#### SPINY LOBSTER FMP

The councils met with the Florida Marine Fisheries Commission to review alternative limited entry systems developed for the fishery and proposals for development of a more flexible and effective cooperative management system. The councils addressed options for development of Amendment 2 for a more flexible and effective cooperative management system. Staff developed Amendment 2 which provides for a more flexible and effective cooperative management system. Councils approved draft Amendment 2 which provides for a more flexible and effective cooperative management system.

#### STONE CRAB FMP

No action this year.

#### WORDFISH FMP

No action this year.

### OTHER ACTIONS

#### HABITAT PROTECTION

The council urged the U.S. Army Corps of Engineers (COE) that the Final Feasibility Report on Galveston Bay Area Navigation Study (GBANS) not be approved until a comprehensive cumulative impact analysis is conducted that considers the Houston ship channel in the context of other projects authorized and proposed for the Galveston Bay system. The Regional Director examined the MARFIN project selection process to give habitat related proposals greater importance.

The Gulf Council went on record with the Senate Committee on Environmental and Public Works and the House Committee on Merchant Marine and Fisheries endorsing the spirit and intent of H.R. 4338, Ocean Dumping Bill, and requested that the final version be broad enough to control the universal problem of open water waste disposal.

The council wrote to the Galveston District, COE, objecting to construction of a 30-mile channel from the Gulf of Mexico through Vermilion Bay to the Port of Iberia, Louisiana. The council also wrote the Jacksonville District, COE, objecting to filling of wetlands for expansion of the Port of Tampa. The council wrote to the Assistant Secretary of Commerce for NOAA and Director for the Fish and Wildlife Service encouraging them to file with the President's Council on Environmental Quality their concerns with the proposed GBANS.

The council wrote to urge EPA to invoke veto authority on Bayou Rigaud project should the COE decide to issue the permit. The council wrote to urge NOAA to elevate Bayou Rigaud project should the COE decide to issue the permit. The council wrote to commend COE, i.e., New Orleans District and Chief of Engineers, for initiative on the Louisiana Comprehensive Coastal Plan and encourage similar initiatives with other districts. The council convened the Louisiana/ Mississippi and Texas Habitat Protection Advisory Panels and held a Marsh Management meeting.



**1989 SEAMAP-GULF OF MEXICO MARINE DIRECTORY**  
**Fishery-Independent Survey Activities**

**SOUTHEAST AREA MONITORING AND ASSESSMENT PROGRAM**  
**Walter M. Tatum, Chairman**

**GULF STATES MARINE FISHERIES COMMISSION**  
**Post Office Box 726**  
**Ocean Springs, Mississippi 39564**

## INTRODUCTION

The Southeast Area Monitoring and Assessment Program (SEAMAP) is a cooperative State/Federal/university program for the collection, management and dissemination of fishery-independent data (data collected without direct reliance on any commercial or recreational fishery) and information in the southeast region. Presently operational are the SEAMAP-Gulf, SEAMAP-South Atlantic and SEAMAP-Caribbean (Puerto Rico and the U.S. Virgin Islands).

This Marine Directory, incorporated into the Thirty-ninth Annual Report of the Gulf States Marine Fisheries Commission, updates information contained in the 1983, 1984, 1985, 1986, 1987 and 1988 SEAMAP Marine Directories, and describes survey activities (ongoing programs, vessel schedules, etc.) throughout the Gulf of Mexico. The SEAMAP Program is managed through the office of the Gulf States Marine Fisheries Commission.

Agencies responding to the 1989 Directory were contacted in April 1989 and requested to provide current information or projected changes in their survey programs. Tables 1, 2 and 3 are condensed summaries of information submitted by responding agencies and organizations, indicated as either Federal, State or university activities.

Representatives of agencies contributing information to past directories are listed alphabetically in Appendix A by organizational category. The SEAMAP Subcommittee would like to express its appreciation to all organizations responding to the request for information. Other organizations conducting fishery-independent marine or estuarine surveys are encouraged to contact the SEAMAP Program for inclusion in future listings. The Directory will be updated each year, with copies supplied to participating organizations.

Appendix B lists published documents which have been produced by the SEAMAP Program and are available through the Gulf States Marine Fisheries Commission. Questions and requests for detailed information concerning the Directory or the SEAMAP Program should be referred to:

Tom Van Devender  
SEAMAP-Gulf Coordinator  
Gulf States Marine Fisheries Commission  
Post Office Box 726  
Ocean Springs, Mississippi 39564  
(601) 875-5912

TABLE 1. SUMMARY OF INFORMATION PROVIDED BY FEDERAL AGENCIES

AGENCY	TARGET SPECIES	LIFE STAGES SAMPLED	TYPES OF FISHERY-INDEPENDENT SAMPLING			ANNUAL EFFORT DEVOTED TO FISHERY-INDEPENDENT SAMPLING BY ACTIVITY IN:		TYPES OF GEAR		SAMPLE STRATEGY FOR DATA COLLECTION	ANTICIPATED CHANGES IN DIRECTION OF FISHERY-INDEPENDENT ACTIVITIES OVER NEXT 5 YEARS	HIGH PRIORITY SPECIES PRESENTLY UNABLE TO SAMPLE
			AREA SAMPLED	GEOGRAPHIC AREAS OF IMPORTANCE	TYPES OF PLATFORMS	NUMBER OF DAYS	NUMBER OF SAMPLES	FISHING, TRAWLING	PLANKTON			
NOAA NMFS/SEFC Mississippi Lab., Pascagoula (MS)	Groundfish (shrimp, spot, croaker, cat- fish, trout)	Subadults- adults	Gulf of Mexico South Atlantic	Territorial; open ocean (EEZ)	172' OREGON II	80/yr toward target spec- ies; 102/yr total sea days	500/yr trawl sta- tions, 100 plankton/yr 100 neuston/ yr	Standard 40' semibal- loon trawl; High-opening fish trawl	Bongo array with .333-mm mesh nets; 1 x 2-m neuston net with .947mm mesh	Random (stratified) 5-60 fm	None	None
	Reef fish (snap- er, grouper, tilefish)	Adults	Gulf of Mexico; South Atlantic; Caribbean	Territorial; open ocean (EEZ)	OREGON II; 127' CHAP- MAN	60/yr toward target species	150 longline sets/yr	Longline; traps; gill nets; camera	None	Varies	None	None
	Latent resources (coastal her- ring, squid, butterfish)	Subadults- adults	Gulf of Mexico	Territorial; open ocean (EEZ)	CHAPMAN	120/yr toward target species  145/yr total sea days	400/yr trawl stations	High-open- ing & mid- water bottom trawls	None	Transects	Expansion	None
NOAA NMFS/SEFC Miami Lab (FL)	All recreation- ally & commer- cially impor- tant species; reef fish	Larvae; juvenile; adult	Gulf of Mexico; SW FL; SE FL	Territorial; open ocean (EEZ); internal	OREGON II; CHAPMAN; various small boats	120/yr	3500/yr	Fish traps	Bongo nets 60 & 20 cm with .333-mm mesh; neuston 1 x 2-m with .947-mm mesh	Systematic, grid basis; long-term station selection; estuary entrances; reefs	Continuation of SEAMAP; continuation of SE & SW FL monitoring	Billfishes; tunas
NOAA NMFS/SEFC Beaufort Lab (NC)	Atlantic croaker; spot	Subadults- adults	Charlotte Harbor; Tampa, Apa- lachicola, Pensacola, Mobile, Barataria, Corpus Christi, Galveston, San Antonio Bays; MS Sound; MS Delta; Laguna Madre Lavaca	Territorial	133' FERREL	70/yr	130 fish per sampling site	30' otter trawl	None	Samples representa- tive of general contaminant levels at each sampling site (NOAA Status & Trends Program; National Benthic Surveillance Project; organic contamin- ants, trace metals, histopathology)	Project funded on yearly basis	None
NOAA NMFS/SEFC Galveston Lab (TX)	Penaoid shrimp; bottomfish; estuarine dependent spp.	Postlarvae- adults	Gulf of Mexico	Internal; EEZ	OREGON II (Texas Closure); small boats	257/yr	1996/yr	Other trawls 10'-40'; beam trawl; drop sampler		Random stratified for Texas Closure; long-term studies for estuarine ecology	None	None
	Sea turtles	Juveniles	Gulf of Mexico	Internal; EEZ-oil and gas platforms	Bay boats; helicopters; crew boats; zodiac	12/yr  45/yr	96  Various	Otter trawls  60'-80' None	None None	Random Random	None None	None None
	Kemp's ridley sea turtles	Hatchlings- yearlings	Gulf of Mexico (release of tagged turtles)	Territorial Sea; EEZ (Texas)	U.S. Coast Guard Cutter; Univ. Texas R/V LONGHORN	2	1-2 releases per year	None	None	None	None	None
	Sea turtles	Stranded juveniles- adults	SW LA; TX	Coastline beaches	All terrain vehicles; dirt bikes; outboard boats	50	Variable	None	None	Twice-monthly stratified random sampling by beach strata	None	None
NOAA NMFS/SEFC Panama City Lab (FL)	King & Spanish mackerel	Subadults- adults; larvae	Gulf of Mexico; South Atlantic	Territorial; open ocean (EEZ)	OREGON II; CHAPMAN; small boats	50/yr	Various	Trawls; longlines; trolling	Bongo nets 60 & 20 cm with .333-mm mesh; neuston 1 x 2-m with .947-mm mesh; tucker trawl	Systematic, grid basis; long-term station selection; oceanic discon- tinuities	Continuation of SEAMAP;	None

TABLE 1. (CONTINUED)

			TYPES OF FISHERY-INDEPENDENT SAMPLING		ANNUAL EFFORT DEVOTED TO FISHERY-INDEPENDENT SAMPLING BY ACTIVITY IN:		TYPES OF GEAR					
AGENCY	TARGET SPECIES	LIFE STAGES SAMPLED	AREA SAMPLED	GEOGRAPHIC AREAS OF IMPORTANCE	TYPES OF PLATFORMS	NUMBER OF DAYS	NUMBER OF SAMPLES	FISHING, TRAWLING	PLANKTON	SAMPLE STRATEGY FOR DATA COLLECTION	ANTICIPATED CHANGES IN DIRECTION OF FISHERY-INDEPEND. ACTIVITIES OVER NEXT 5 YEARS	HIGH PRIORITY SPECIES PRESENTLY UNABLE TO SAMPLE
U.S. Dept. of Interior, Fish & Wildlife, LSU, Baton Rouge, LA	All economically important estuarine-dependent fishes & crustaceans	Larvae-juveniles	SW LA; south central LA	Estuarine	35-hp outboard	Varies	Once every two weeks	Custom-designed shallow marsh trawl; traps;	None	Systematic, long-term station selection; short-term special studies	Depending on funding, will remain the same	None
U.S. Army Corps of Engineers, Mobile, AL	All commercially & recreationally important species	All stages	Mobile Bay; MS Sound; Gulf of Mexico to the 20-fm contour	Internal; territorial	Charter research vessel; small boats	Varies with project	Varies with project	Varies	None	Systematic, random, short-term special studies	None	None
USDI NMS/GOM OCS Region New Orleans, LA	Projects are as follows:											
Physical Oceanography	None	None	Gulf-wide	Shelf & slope	R/V PELICAN; drift buoys; ships-of-oppor.	100's	--	Hydrographic records		Moorings; X-sects	Study ends in 1988	None
Sea Turtle Study	All turtles	Adult	LA	Continental shelf	Aerial over flights; contracted fishing vessel; R/V CHAPMAN	66	--	Photos; videos		Stratified X-sects	Sea turtle study conducted under Interagency Agreement with NMFS	None
MS/AL Pinnacle Trend Study	N/A	N/A	MS/AL outer shelf	Shelf to 200 m	R/V TOMMY MUNRO	14/yr	Varies	N/A	N/A	Side-scan and photography cruises	Project to end in 1990	N/A
Flower Garden Monitoring Study	Corals	Adult	East and west Flower Garden Banks	Reef	M/V FLING	18/yr	Varies	N/A	N/A	Photographs, video tape and diver surveys	Project to end in 1991	N/A
LA/TX Shelf Program	N/A	N/A	LA/TX continental slope & shelf	Continental shelf	Moored and drifting buoys; Ships and aircraft	N/A	N/A	N/A	N/A	Hydrographic and current measurements	Continued indefinitely	N/A



TABLE 2. SUMMARY OF INFORMATION PROVIDED BY STATE AGENCIES

			TYPES OF FISHERY-INDEPENDENT SAMPLING		ANNUAL EFFORT DEVOTED TO FISHERY-INDEPENDENT SAMPLING BY ACTIVITY IN:			TYPES OF GEAR				
AGENCY	TARGET SPECIES	LIFE STAGES SAMPLED	AREA SAMPLED	GEOGRAPHIC AREAS OF IMPORTANCE	TYPES OF PLATFORMS	NUMBER OF DAYS	NUMBER OF SAMPLES	FISHING, TRAWLING	PLANKTON	SAMPLE STRATEGY FOR DATA COLLECTION	ANTICIPATED CHANGES IN DIRECTION OF FISHERY-INDEPENDENT ACTIVITIES OVER NEXT 5 YEARS	HIGH PRIORITY SPECIES PRESENTLY UNABLE TO SAMPLE
Alabama Dept. of Conservation & Nat. Resources	All penaeid shrimp; southern flounder; Gulf menhaden; spot; croaker; red drum; seatrout; blue crab; black drum; Spanish mackerel; mullet	Larvae-adults	AL marshes to territorial sea	Internal; territorial; EEZ	22' Tiara; (2) 90-hp; 23' Seacraft; (2) 150-hp; 32' Laffitte	110/yr	450/yr	50' bag seine; 16' otter trawl	6' beam plankton trawl; neuston	Long-term station selection, effort varies according to spawning season of target species	Increase effort to determine year-class strength of target species Conduct more age and growth work; Explore means to sample offshore redfish areas	King mackerel, cobia, reef fish, in open Gulf waters
Florida Dept. of Natural Resources	Red drum; spotted trout; snook; king mackerel; mullets; gag grouper; tarpon; baitfish; stone crab; blue crab; spiny lobster; oysters; hard clam	All stages, larvae-adults	FL waters & offshore	Internal; territorial; EEZ	37' BONNIE 'E'; 24' T-craft Inboard; 3 small out-boards used for inshore sampling; 5 mullet skiffs; 34' Allmand; 24' tunnel boat; 19' Monark; 2-17' Boston Whalers; 85' HERNAN CORTEZ II; 20' Boston Whaler; 25' Boston Whaler; 3-20' MARO; 16' Monarch; 4-20' mullet skiffs; 16' skiff	Varies	Varies with project	35' trawl 100' bag seine; benthic sled with net; 600' x 8' lobster & crab traps	bongo array; neuston nets	Systematic, random (stratified), grid basis; long-term station selection, short-term special studies	As per Florida Marine Fisheries Commission; Increase sampling for baitfish distributed in spring and increase sampling for tarpon larval in nearshore water.	Mainly applies to implementation of research phases on current species or topics with additional personnel and increased funding
Louisiana Dept. of Wildlife & Fisheries	All penaeid shrimp; finfish; oysters	Larvae-adults	LA inshore waters; territorial seas; EEZ	Internal; territorial	13-17' out-boards for 6' trawl; 30' in-boards for 16' trawls; 85' vessel (LOOP) for 50' trawl	167/yr state	Plankton, 528/yr; Benthos, 56/yr; Trawls: 800/yr 1288/yr 494/yr 72/yr 12/yr 96/yr	50' bag seine; 16' otter trawl	1/2-m surface ring nets (.153-mm & .363-mm) 1-m surface ring (.363-mm) 60-cm bongo nets (.333-.363-mm) neuston (.948-mm)	Long-term station selection, LOOP monitoring, and stratified random sampling for SEAMAP (40' trawls and plankton)	Increase territorial sea sampling; increase emphasis on finfish	Adult pelagic finfish in open Gulf waters
Mississippi Bureau of Marine Resources	All penaeid shrimp; speckled trout; redfish; mullet; black drum; flounder; snapper; grouper; white trout; so. kingfish; menhaden; blue crab; cobia; Spanish mackerel; king mackerel	Juveniles-adults	MS territorial sea	Internal; territorial; (EEZ)	32' Laffitte; 19' Proline; 65' oyster dredge boat; 24' Boston Whaler; 18' Boston Whaler	50/yr; 10/yr; 50-60/yr	Varies; oyster 6/mo; shrimp 10-15/mo; varies	16' trawl; oyster tongs and dredge; gill nets	None	Long-term station selection, varies with opening and closing of areas	Increase tagging activities	
					Leased vessel 40' trawl	16/yr	250/yr 1500/yr 100/yr	50' bag seine; gill net; trammel net oyster; butterflyplate sq. meter dredge				

TABLE 2. (CONTINUED)

			TYPES OF FISHERY-INDEPENDENT SAMPLING		ANNUAL EFFORT DEVOTED TO FISHERY-INDEPENDENT SAMPLING BY ACTIVITY IN:		TYPES OF GEAR					
AGENCY	TARGET SPECIES	LIFE STAGES SAMPLED	AREA SAMPLED	GEOGRAPHIC AREAS OF IMPORTANCE	TYPES OF PLATFORMS	NUMBER OF DAYS	NUMBER OF SAMPLES	FISHING, TRAWLING	PLANKTON	SAMPLE STRATEGY FOR DATA COLLECTION	ANTICIPATED CHANGES IN DIRECTION OF FISHERY-INDEPEND. ACTIVITIES OVER NEXT 5 YEARS	HIGH PRIORITY SPECIES PRESENTLY UNABLE TO SAMPLE
Texas Parks & Wildlife Dept.	All penaeid shrimp; all other species	Juveniles-adults	TX internal coastal waters; territorial sea	Internal; territorial	30'-45' inboards; 18'-21' outboards; skiffs	365/yr	1584/yr 1680/yr 960/yr 756/yr 5232/yr 504/yr	16' bag seines (shoreline); 20' trawl (bay, open water); 20' trawl (Gulf waters); gill nets for adult finfish (along shore); oyster dredge; beach seine	None	Random, grid basis	None	Adult finfish in open Gulf waters

TABLE 3. SUMMARY OF INFORMATION PROVIDED BY UNIVERSITIES

UNIVERSITY	TARGET SPECIES	LIFE STAGES SAMPLED	TYPES OF FISHERY-INDEPENDENT SAMPLING			ANNUAL EFFORT DEVOTED TO FISHERY-INDEPENDENT SAMPLING BY ACTIVITY IN:		TYPES OF GEAR		SAMPLE STRATEGY FOR DATA COLLECTION	ANTICIPATED CHANGES IN DIRECTION OF FISHERY-INDEPEND. ACTIVITIES OVER NEXT 5 YEARS	HIGH PRIORITY SPECIES PRESENTLY UNABLE TO SAMPLE
			AREA SAMPLED	GEOGRAPHIC AREAS OF IMPORTANCE	TYPES OF PLATFORMS	NUMBER OF DAYS	NUMBER OF SAMPLES	FISHING, TRAWLING	PLANKTON			
<b>FLORIDA</b>												
Florida State Tallahassee	Benthic in-fauna; epibenthic fishes & invertebrates	Larvae-adults	NE Gulf of Mexico	Internal; territorial	(3) 55-hp 25' skiffs; outboard	48/yr	Monthly samples, both trawl & environ.	Standard 5-m otter trawl	80-um plankton net	Systematic, random long-term station selection; short-term special studies	More environmental experimentation	Areas: Apalachicola Bay system & Apalachee Bay; species: all species in those areas
Univ. West Florida Pensacola	Demersal vertebrates & invertebrates	Subadults-adults	NE Gulf of Mexico	Estuarine	18' skiff	7/yr trawl; 14/yr plankton neuston	50/yr; 140/yr	16' otter trawl	2 (1-m) bongos 3 (1-m) neustons	Systematic, random (stratified)	More environmental assessment	None
Florida Sea Grant Gainesville	All species	All stages	Gulf; Caribbean; South Atlantic	Estuarine; offshore	Industry, NMFS and F.I.O. contract vessels	Varies with project	Varies with project			Varies with project	None	None
Florida Institute of Oceanography St. Petersburg	All species	All stages	Gulf; Caribbean; South Atlantic	Internal, territorial	SUNCOASTER; BELLONS	20-30/project	Varies	40' otter trawl; Tucker trawl; shellfish dredge	Various plankton nets	Random, long-term station selection; short-term special studies	To continue with SEAMAP; Expanded environmental sampling	None
University of Florida Gainesville	Offshore: deep-water crabs & lobsters; nearshore: stone crabs	Offshore: adults, juveniles; nearshore: adults, sub-adults	Offshore & nearshore, eastern Gulf of Mexico	Offshore: continental slope nearshore: internal, territorial	Offshore: SEWARD JOHNSON; OREGON II; industry vessel; submersible; nearshore: 24' inboard-outboard	Offshore: 7/yr; nearshore: 30+/yr	Offshore: 96 transects 2 trawl tows 5 trap lines nearshore: 5 transects/day	Otter trawl; various traps; scuba and 250-m transect line		Offshore & Nearshore: intensive sampling during mating season	None	None
<b>ALABAMA</b>												
Marine Environmental Sciences Consortium (University of South AL) U. Alabama	Sciaenidae; hard clam	Larval/adult	Shelf and mouth of Mobile Bay, NW Florida and east AL	Shelf/estuaries/grassbeds	21' skiffs	22/24 episodic/quarterly	Several hundred	-	Surface and demersal	Environmental impact/growth rate	Shift toward management application	None
Marine Environmental Sciences Consortium (University of AL)	Oysters; blue crab	Larval/adult	Mobile Bay and east MS Sound	Estuarine	26'-42' research vessels	Biweekly and 48 hour time series	Hundreds	-	Clark-Bumpers zooplankton	Distribution patterns; settlement factors	None	None
Mississippi-Alabama Sea Grant Consortium Ocean Springs (MS)	Red drum; blue crabs; stone crabs; oysters	Vertebrates: larvae; invertebrate: all stages	Northern Gulf of Mexico; MS Sound; Mobile Bay	Territorial; EEZ; estuarine; coastal	96' TOMMY MUNRO; skiffs; industry	Varies with project	Varies with project	Various types of crab pots; tonging for oysters; closed, recirculating sea-water system for crabs; opening/closing plankton trawl	Tucker trawl (.202-mm and .333-mm mesh nets); 60-cm bongo net	Varies with project	None	None
	Estuarine fish species	Juvenile to sub-adult	Weeks Bay, AL	Estuarine	14' skiffs	60/yr	180/yr	Block nets/seine		Random concentrated in May, July and September		None

TABLE 3. (CONTINUED)

			TYPES OF FISHERY-INDEPENDENT SAMPLING		ANNUAL EFFORT DEVOTED TO FISHERY-INDEPENDENT SAMPLING BY ACTIVITY IN:		TYPES OF GEAR					
UNIVERSITY	TARGET SPECIES	LIFE STAGES SAMPLED	AREA SAMPLED	GEOGRAPHIC AREAS OF IMPORTANCE	TYPES OF PLATFORMS	NUMBER OF DAYS	NUMBER OF SAMPLES	FISHING, TRAWLING	PLANKTON	SAMPLE STRATEGY FOR DATA COLLECTION	ANTICIPATED CHANGES IN DIRECTION OF FISHERY-INDEPEND. ACTIVITIES OVER NEXT 5 YEARS	HIGH PRIORITY SPECIES PRESENTLY UNABLE TO SAMPLE
<b>MISSISSIPPI</b>												
Univ. So. Mississippi Hattiesburg	Freshwater prawn; all estuarine finfish; centrarchids	All stages	MS estuarine; northern Biloxi Bay	Estuarine; territorial	Various small skiffs (outboard)	Varies	Biweekly to monthly	Standard basic equipment	Standard basic equipment	Short-term special studies	Increase development of a marine science program	None
Gulf Coast Research Laboratory Ocean Springs	All penaeid shrimp; blue crab; croaker; spot; seatrout; catfish; Gulf menhaden; sea mullet; Atlan. bumper; butterfly; cutlassfish; red drum; squid; golden Gulf crabs	Larvae-adults	MS territorial sea; offshore to 300 fm	Internal; territorial; (EEZ)	96' TOMMY MUNRO; (5) 20' skiffs; 35' HERMES; 40' NEREUS;	Seminomthly and monthly	216 trawl stations/yr	50' bag seine; 36' otter trawl; 16' otter trawl; 6' Renfro beam trawl; variable mesh gill net sampler; 40' shrimp trawl; 80' high-rise net; crab traps	Tucker trawl; neuston; bongo	Long-term station selection; stratified-random	Fishery Division anticipates its program of monitoring & assessment over the long term, with appropriate increases in intensity & scope if funds become available; longline for pelagic fishes; bottom longline; deepwater traps for crabs	None
Mississippi-Alabama Sea Grant Consortium Ocean Springs	Red drum; blue crabs; stone crabs; oysters	Vertebrates larvae; invertebrates: all stages	Northern Gulf of Mexico; MS Sound; Mobile Bay	Territorial; EEZ; estuarine; coastal	96' TOMMY MUNRO; skiffs; industry	Varies with project	Varies with project	Various types of crab pots; tonging for oysters; closed, recirculating seawater system for crabs; opening/closing 1chthy. trawl	Tucker trawl (.202-mm and .333-mm mesh nets); 60-cm bongo net	Varies with project	None	None
<b>LOUISIANA</b>												
Univ. New Orleans New Orleans	Blue crab; oysters; marine commercial finfish	All stages	Lake Pontchartrain; Lake Borgne	Estuarine		Varies				Short-term special studies	Analyze commercial fish populations by use of electrophoresis; studies of oyster nutrition and parasitology	None
McNeese St. University Lake Charles	Periphyton chemical		Calcasieu Estuary	Estuarine		Varies	Monthly	Periphytona			None	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	2 more years with oyster project before it ends	None

TABLE 3. (CONTINUED)

			TYPES OF FISHERY-INDEPENDENT SAMPLING			ANNUAL EFFORT DEVOTED TO FISHERY-INDEPENDENT SAMPLING BY ACTIVITY IN:		TYPES OF GEAR				
UNIVERSITY	TARGET SPECIES	LIFE STAGES SAMPLED	AREA SAMPLED	GEOGRAPHIC AREAS OF IMPORTANCE	TYPES OF PLATFORMS	NUMBER OF DAYS	NUMBER OF SAMPLES	FISHING, TRAWLING	PLANKTON	SAMPLE STRATEGY FOR DATA COLLECTION	ANTICIPATED CHANGES IN DIRECTION OF FISHERY-INDEPEND. ACTIVITIES OVER NEXT 5 YEARS	HIGH PRIORITY SPECIES PRESENTLY UNABLE TO SAMPLE
<b>LOUISIANA</b>												
Louisiana St. University Baton Rouge	Red drum	Juveniles	Saltwater impoundment near Grand Isle	Estuarine	None	10	more than 200/yr	Hook & line	None	Short-term, random at fixed station	Short-term special study to be applied to long-term tagging studies	None
	Red drum	Adults	Nearshore Gulf of Mexico off eastern LA	Coastal	Varies	Varies	Varies	Varies		Sample in areas of historic fishing activity	Two additional years	None
	King mackerel; Spanish mackerel; black drum; tunas; snapper; grouper; red drum; greater amberjack; sheepshead; spotted seatrout	Juveniles; adults	Louisiana	Estuarine; coastal	Varies	Varies	Varies	Varies	None	Areas of commercial and recreational activity	On-going	Sharks
	striped mullet	Juveniles; adults	LA coastal waters		None	Varies	Approximately 1000/yr	Seine, gill and trammel nets	None	Samples received from LDWF finfish monitoring programs	Program will continue through end 1990	N/A
	Drums; seatrouts; croaker; spot	Eggs; larvae	Western LA continental shelf	Coastal	Ocean-going SEAMAP vessels	150	185	None	Modified bongo net	Stratified, short-term station selection	Short-term special study	None
	Red drum; carangids; clupeids; scombrids	Larvae	Gulf of Mexico	Gulf-wide	Ocean-going SEAMAP vessels	Varies	Varies	None	Bongo array	Partially randomized stations Gulf-wide	Next want to look at MS River Delta plume effects on larva recruitment and transport	None
	Southern flounder; cobia; tarpon; black drum; greater amberjack; bluefish	Juveniles; adults	Louisiana	Estuarine; coastal	Varies	40-60	50-1000	Hook & line; spear gun	None	Sample fish landed in rodeos and charter boats	Long-term program	Most jacks, snappers and groupers
	sea turtles -- Kemp's, loggerhead, green, hawksbill & leatherback	Juveniles; adults	Southeastern LA coast & Chandeleur Islands	Gulf-wide	None	Varies	Varies	None	None	Beach surveys and interviews in areas of known or reported occurrences	None	None
Louisiana Universities Marine Consortium Cocodrie	Zooplankton; benthos; bottomfish; anchovies	All stages	Terrebonne and Timbalier Bays; Inner Cont. Shelf	Estuarine; coastal	110' PELICAN; 58' R/V ACADIANA; small outboards; 19-m, 32-m vessels	Varies	Varies	5-m otter trawl	.333-mm & .505-mm mesh bongo nets	Fixed station transects	None	None

TABLE 3. (CONTINUED)

			TYPES OF FISHERY-INDEPENDENT SAMPLING			ANNUAL EFFORT DEVOTED TO FISHERY-INDEPENDENT SAMPLING BY ACTIVITY IN:		TYPES OF GEAR				
UNIVERSITY	TARGET SPECIES	LIFE STAGES SAMPLED	AREA SAMPLED	GEOGRAPHIC AREAS OF IMPORTANCE	TYPES OF PLATFORMS	NUMBER OF DAYS	NUMBER OF SAMPLES	FISHING, TRAWLING	PLANKTON	SAMPLE STRATEGY FOR DATA COLLECTION	ANTICIPATED CHANGES IN DIRECTION OF FISHERY-INDEPEND. ACTIVITIES OVER NEXT 5 YEARS	HIGH PRIORITY SPECIES PRESENTLY UNABLE TO SAMPLE
TEXAS												
Univ. of TX, Austin Marine Science Institute, Port Aransas	Shelf & bay species	All stages	Internal; territorial waters	Internal; territorial; (EEZ)	105' LONGHORN 57' KATY	100/yr	Varies with project	42' semi-balloon shrimp trawl; 40' semi-balloon otter trawl	12' x 24" plankton net	Short-term special studies	Institute expansion on all present programs	None
Texas A & I Kingsville	All inshore bay species	All stages	Corpus Christi to Brownsville	Internal; coastal		24/yr	150/yr			Short-term special studies	None	None
Texas A & M College Station and Galveston	All macro-crustaceans and finfish	All stages	NW Gulf off LA & TX	Internal; territorial; (EEZ)	71' EXCELLENCE II; 47' ROAMIN EMPIRE	Varies	Varies with project	34' & 50' semi-balloon trawls	Bongo net with .333-mm & .505-mm mesh	Short-term special studies	None	None
Pan American University, Coastal Studies Lab, So. Padre Island	All finfish of Laguna Madre, benthic macrofauna of Laguna Madre	All stages	Corpus Christi to Brownsville	Laguna Madre; Gulf near-shore	Shallow-draft bay boats	48/yr	Biweekly and monthly depending on project	Otter trawls & bag seines	Plankton tows	Long-term baseline studies	Intensive studies of individual species	None

**APPENDIX A**

**MARINE AGENCY CONTACTS**

## FEDERAL AGENCIES

U.S. DEPARTMENT OF COMMERCE  
NOAA/NATIONAL MARINE FISHERIES SERVICE  
Southeast Fisheries Center

Dr. Brad Brown, Acting Director  
75 Virginia Beach Drive  
Miami, Florida 33149  
(305) 361-4284

Miami Laboratory  
Dr. Walter Nelson  
75 Virginia Beach Dr.  
Miami, FL 33149  
(305) 361-4225

Galveston Laboratory  
Dr. Edward Klima  
4700 Avenue "U"  
Galveston, TX 77550  
(409) 766-3500

Mississippi Laboratories  
Dr. Andrew J. Kemmerer  
Pascagoula Facility  
P.O. Drawer 1207  
Pascagoula, MS 39568  
(601) 762-4591

Panama City Laboratory  
Mr. Eugene Nakamura  
3500 Delwood Beach Rd.  
Panama City, FL 32408  
(904) 234-6541

National Space Technology  
Laboratories  
NSTL Station, MS 39529  
(601) 688-3650

Beaufort Laboratory  
Dr. Ford Cross  
Beaufort, NC 28516  
(919) 728-4595

Economic and Statistics Office  
Dr. Albert Jones  
75 Virginia Beach Dr.  
Miami, FL 33149  
(305) 361-4259



## FEDERAL AGENCIES

### U.S. DEPARTMENT OF INTERIOR

Minerals Management Service  
Dr. Richard Defenbaugh  
1201 Elmwood Park Blvd.  
New Orleans, LA 70123-2394  
(504) 736-2896

Dr. Robert M. Avent  
Continental Slope Study  
Florida Shelf Ecosystems Study  
(504) 736-2899

Dr. Murray Brown  
Circulation Modelling Program  
Field Measurements Program  
(504) 736-2901

### U.S. Fish and Wildlife Service

Dr. Roy Perez  
c/o Corpus Christi State University  
P.O. Box 338  
6300 Ocean Drive  
Corpus Christi, TX 78412  
(512) 888-3346

Mr. Barton Rogers  
Louisiana Cooperative Fishery  
Research Unit  
Louisiana State University  
Baton Rouge, LA 70803  
(504) 385-0380

Dr. Susan Rees, PD-EC  
U.S. Army Corps of Engineers  
P.O. Box 2288  
Mobile, AL 36628  
(205) 690-2724

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### GULF AND SOUTH ATLANTIC FISHERIES DEVELOPMENT FOUNDATION, INC.

Mr. Tom Murray, Executive Director  
5401 W. Kennedy Blvd.  
Suite 571  
Tampa, FL 33609  
(813) 870-3390

## STATE AGENCIES

### ALABAMA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

Mr. Walter M. Tatum  
Drawer 458  
Gulf Shores, AL 36542  
(205) 968-7576

### FLORIDA DEPARTMENT OF NATURAL RESOURCES

Mr. J. Alan Huff  
100 8th Avenue, S.E.  
St. Petersburg, FL 33701  
(813) 896-8626

### LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES

Mr. Barney Barrett  
P.O. Box 98000  
Baton Rouge, LA 70898-9000  
(504) 765-2390

### MISSISSIPPI DEPARTMENT OF WILDLIFE CONSERVATION

Bureau of Marine Resources  
Mr. Scott Gordon  
2620 West Beach Blvd.  
Biloxi, MS 39531  
(601) 385-5860

### TEXAS PARKS AND WILDLIFE DEPARTMENT

Dr. Gary Matlock  
4200 Smith School Road  
Austin, TX 78744  
(512) 389-4857

## UNIVERSITIES

### SEA GRANT PROGRAMS

Florida Sea Grant Office  
Dr. James Cato, Director  
Dr. Bill Seaman, Assoc. Director  
Building 803  
University of Florida  
Gainesville, FL 32611  
(904) 392-5870

Mississippi-Alabama Sea  
Grant Consortium  
Dr. James Jones  
P.O. Box 7000  
Ocean Springs, MS 39564-7000  
(601) 875-9341

Louisiana Sea Grant Office  
Dr. Jack Van Lopik, Director  
Mr. Ronald Becker, Assoc. Director  
Center for Wetland Resources  
Louisiana State University  
Baton Rouge, LA 70803  
(504) 388-1558

Texas Sea Grant Office  
Mr. Tom Bright, Director  
Texas A & M University  
College Station, TX 77843  
(409) 845-3854

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### ALABAMA UNIVERSITY PROGRAMS

Alabama Marine Environmental  
Sciences Consortium  
Dauphin Island Sea Lab  
Dr. George F. Crozier  
P.O. Box 369-370  
Dauphin Island, AL 36528  
(205) 861-2141

Talladega College  
Dr. Arthur Bacon  
Biology Department  
Talladega, AL 35160  
(205) 362-0206

University of South Alabama  
Dr. Robert Shipp  
Department of Biological Sciences  
Mobile, AL 36683  
(205) 460-6101

### FLORIDA UNIVERSITY PROGRAMS

Florida Institute of Oceanography  
Dr. John C. Ogden  
830 First St., South  
St. Petersburg, FL 33701  
(813) 893-9100

Florida State University  
Dr. Robert Livingston  
Department of Biological Sciences  
Tallahassee, FL 32306  
(904) 644-1466

## UNIVERSITIES

### FLORIDA UNIVERSITY PROGRAMS (CONTINUED)

University of Florida  
Dr. Ron Labisky  
School of Forest Resources  
and Conservation  
Gainesville, FL 32611  
(904) 392-4851

University of South Florida  
Dr. John Briggs  
Department of Marine Science  
140 Seventh Avenue, South  
St. Petersburg, FL 33701  
(810) 893-9130

University of Miami  
Dr. Frank Williams  
Rosensteil School of Marine  
and Atmospheric Sciences  
4600 Rickenbacker Causeway  
Miami, FL 33149  
(305) 284-2211

University of West Florida  
Dr. Steve Bortone  
Department of Biology  
Pensacola, FL 32514  
(904) 474-2000

### LOUISIANA UNIVERSITY PROGRAMS

Louisiana State University  
Dr. Mike Wascom  
Coastal Fisheries Institute  
Center for Wetland Resources  
Baton Rouge, LA 70803  
(504) 388-6513

Nicholls State University  
Dr. John Green  
Department of Biological Sciences  
Thibodeaux, LA 70301  
(504) 446-8111

Louisiana Universities  
Marine Consortium (LUMCON)  
Dr. Donald Boesch  
Chauvin, LA 70344  
(504) 851-2800

University of New Orleans  
Dr. Thomas M. Soniat  
Department of Biological Sciences  
New Orleans, LA 70148  
(504) 286-6307

McNeese State University  
Dr. Robert Maples  
Department of Biological Sciences  
4100 Ryan St.  
Lake Charles, LA 70609  
(318) 437-5663

University of Southwestern  
Louisiana  
Dr. William Reese  
Department of Biological Sciences  
Box 42451  
Lafayette, LA 70504  
(318) 231-6748

### MISSISSIPPI UNIVERSITY PROGRAMS

Gulf Coast Research Laboratory  
Dr. Thomas McIlwain  
P.O. Box 7000  
Ocean Springs, MS 39564  
(601) 875-2244

University of Southern Mississippi  
Dr. Steve Ross  
Department of Biological Sciences  
Hattiesburg, MS 29401  
(601) 266-4928

## UNIVERSITIES

### TEXAS UNIVERSITY PROGRAMS

Pan American University  
Dr. Frank W. Judd  
Coastal Studies Laboratory  
P.O. Box 2591  
South Padre Island, TX 78597  
(512) 761-2644

Texas A & I University  
Dr. Allan H. Chaney  
Department of Biology  
Campus Box 158  
Kingsville, TX 78363  
(512) 595-3803

Texas A & M University  
Dr. Andre M. Landry  
Department of Marine Biology  
Mitchell Campus  
P.O. Box 1675  
Galveston, TX 77553  
(409) 740-4400

University of Houston  
Dr. Al Loedlich  
c/o NOAA/NMFS  
4700 Avenue "U"  
Galveston, TX 77550  
(409) 766-3500

The University of Texas at Austin  
Dr. Robert S. Jones  
Marine Science Institute  
P.O. Box 1267  
Port Aransas, TX 78373  
(512) 749-6730

**APPENDIX B**

**SEAMAP DOCUMENTS**

## SEAMAP DOCUMENTS LIST, 1982 - CURRENT

- 1) SEAMAP Strategic Plan, January 1981. The initial planning document describing the intent to develop the SEAMAP Program and outlining the preliminary goals and objectives, assessment requirements and priorities, research strategies, and funding requirements.
- 2) SEAMAP Quick-Reports (Data Summaries): six summaries, June-July 1981; seven summaries, June-July 1983; seven summaries, June-July 1984; five summaries, June-July 1985; five summaries, June-July 1986; six summaries, June-July 1987; five summaries, June-July 1988; six summaries, June-July 1989. Summaries of catch rate information from the SEAMAP Summer Shrimp/Groundfish surveys (Squid/Butterfish Survey, 1985 only) in the northern Gulf of Mexico, indicating stations sampled, catch rates, assessment of shrimp and finfish yields, and synopses of hypoxic conditions in the survey areas.
- 3) 1983, 1984, 1985, 1986, 1987, 1988, 1989 SEAMAP Marine Directories: May 1983, March 1984, March 1985, March 1986, September 1987, July 1988 and August 1989. Inventories of marine agency contacts (State, Federal and university) concerned with fishery research in the Gulf, and summaries of information provided by these organizations: target species, types of fishery-independent sampling gear and platforms, annual sampling effort and other material.
- 4) SEAMAP Information System Manual, Fall 1983. A description of the data management program supporting SEAMAP surveys and collecting activities, detailing the data processing and quick-report subsystems and presenting data formats for SEAMAP surveys and sample documentation and transmittal forms.
- 5) SEAMAP-Gulf Operations Plan, October 1983. A description of the SEAMAP Program, its goals and objectives, program accomplishments, survey and information systems operations, survey plans and schedules, program management, and funding requirements. Includes figures and tables detailing system functions, platform and funding needs, and information utilization.
- 6) SEAMAP-Gulf Operations Plan Executive Summary, March 1984. A summary of the features of the Operations Plan.
- 7) SEAMAP Environmental and Biological Atlases of the Gulf of Mexico, 1982, 1983, 1984, 1985, January 1985; February 1986; October 1986; June 1988. Compilations of information obtained from the 1982, 1983, 1984 and 1985 SEAMAP surveys. Included are dominant finfish and invertebrate catches from the shrimp/groundfish surveys, results of the plankton surveys, environmental data taken during both surveys, and methodology used in SEAMAP surveys.

## SEAMAP DOCUMENTS LIST, 1982 - CURRENT

- 8) SEAMAP 1982, 1983 Ichthyoplankton Atlases. NOAA Technical Memoranda NMFS-SEFC-144 (1985) and NMFS-SEFC (1986) summarizing in plots the larval distribution and abundance of the families Engraulidae, Carangidae, Clupeidae, Lutjanidae, Serranidae, Coryphaenidae, Xiphiidae, and Scombridae taken on SEAMAP surveys in 1982 and 1983.
  
- 9) Proceedings: SEAMAP Shrimp and Bottomfish Sampling Gear Workshop, August 1985. A summary of seven technical papers and a panel discussion on shrimp/groundfish sampling gear, presented at the 33rd Annual Spring Meeting of the Gulf States Marine Fisheries Commission. Included are recommendations for standardizing and calibrating bottom trawl survey activities and for satisfying future research requirements.
  
- 10) Annual Report of the Southeast Area Monitoring and Assessment Program,  
October 1, 1984 - September 30, 1985, October 1985;  
October 1, 1985 - September 30, 1986, October 1986;  
October 1, 1986 - September 30, 1987, December 1987.  
Summaries of activities and proposed events for the SEAMAP-Gulf and SEAMAP-South Atlantic components.
  
- 11) Data Management System Requirements Document for Gulf and South Atlantic, November 1986.
  
- 12) Data Management System Design Study for Gulf and South Atlantic, March 1987. A result of the system design study, this documents describes the high level design of the proposed system and presents a five year implementation plan.
  
- 13) SEAMAP Operations Manual for Collection of Data, May 1987. A manual presenting the procedures to be followed by all vessels that participate in SEAMAP surveys.
  
- 14) SEAMAP Data Management System Users Manual, August 1989. A manual outlining system operations and procedures needed to enter, edit, upload and download data on the PC-based system.

Biological and environmental data, and ichthyoplankton specimens sorted to the family level from SEAMAP surveys in the Gulf of Mexico, are available to researchers upon request to the SEAMAP Coordinator, Gulf States Marine Fisheries Commission (601/875-5912).



GULF STATES MARINE FISHERIES COMMISSION

Financial Statements  
September 30, 1988

*Boutwell & Company, Limited*

*Certified Public Accountants*

*1126 Jackson Avenue*

*Pascagoula, Mississippi 39567*

# *Boutwell and Company, Limited*

Certified Public Accountants

1126 JACKSON AVENUE — POST OFFICE BOX 295  
PASCAGOULA, MISSISSIPPI 39567

MEMBER

AMERICAN INSTITUTE OF  
CERTIFIED PUBLIC ACCOUNTANTS  
MISSISSIPPI SOCIETY OF  
CERTIFIED PUBLIC ACCOUNTANTS

MILLETTE BUILDING  
SUITE 402  
TELEPHONE 762-5181

March 3, 1989

To The Commissioners  
Gulf States Marine Fisheries Commission  
c/o Mr. Larry B. Simpson, Executive Director  
P. O. Box 726  
Ocean Springs, Mississippi 39564

Gentlemen:

We have examined the statement of assets, liabilities, and Fund Balances (modified cash basis) of Gulf States Marine Fisheries Commissioners as of September 30, 1988, and the related statement of revenues, expenses, and changes in fund balances (modified cash basis) for the 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.

As described in Note 1, the Commission's policy is to prepare its financial statements on the basis of cash receipts and disbursements, except that a provision for depreciation for office equipment, furniture, fixtures and automotive of the operating fund (unrestricted) has been included. Consequently, certain revenue and the related assets are recognized when received rather than when earned, and certain expenses are recognized when paid rather than when the obligation is incurred. Accordingly, the accompanying financial statements are not intended to present financial position and results of operations in conformity with generally accepted accounting principles.

In our opinion, the financial statements referred to above present fairly the asset and liabilities of Gulf States Marine Fisheries Commission at September 30, 1988, and its revenues, expenses, and changes in fund balances for the year then ended, on the basis of accounting described in Note 1, which has been applied in a manner consistent with that of the preceding year, except certain depreciable fixed assets and the related accumulated depreciation were reflected on the balance sheet of restricted funds of prior years as more fully explained in footnote number 18.

Respectfully submitted,

*Boutwell and Company, Limited*  
BOUTWELL AND COMPANY, LIMITED  
Certified Public Accountants

GULF STATES MARINE FISHERIES COMMISSION  
Statement of Assets, Liabilities and Fund Balances (Modified Cash Basis)  
September 30, 1988

<u>ASSETS</u>		
Cash		\$ 109,339
Furniture, Fixtures and Equipment	\$ 41,353	
Automotive Equipment	13,661	
Total	<u>\$ 55,014</u>	
Less: Accumulated Depreciation	(31,759)	<u>23,255</u>
Total		<u>\$ 132,594</u>
<u>LIABILITIES</u>		
None		\$ -0-
<u>FUND BALANCES</u>		
<u>Unrestricted</u>		
Operating Fund		134,936
<u>Restricted</u>		
State-Federal Management Funds	\$ 17,864	
State-Federal Administrative Programmatic Funds	(1,281)	
State-Federal SEAMAP Funds	12,458	
State-Federal Council Funds	5,190	
Marine Fisheries Initiative Funds	(17,602)	
MARFIN-Red Drum	-0-	
D-J Support	(21,158)	
Striped Bass	-0-	
Interjurisdictional Fisheries	(130)	
Side Scan Sonar	<u>2,317</u>	<u>(2,342)</u>
Total		<u>\$ 132,594</u>

The accompanying notes are an integral part of these financial statements.

GULF STATES MARINE FISHERIES COMMISSION  
Statement of Revenues, Expenses and Changes in Fund Balances (Modified Cash Basis)  
Fiscal Year Ended September 30, 1988

	Operating Fund	State-Federal Management Funds	Administrative Programmatic Funds	SEAMAP Funds
<b>REVENUES:</b>				
Member States Appropriations				
Alabama	\$ 11,250			
Florida	22,500			
Louisiana	45,000			
Mississippi	22,500			
Texas	22,500			
Grants and Agreements - Previous Year			\$ 3,023	\$ 60,624
Grants and Agreements - Current Year				61,931
Interest Earned	2,746			
<b>Total Revenues</b>	<b>\$126,496</b>	<b>\$ -0-</b>	<b>\$ 3,023</b>	<b>\$122,555</b>
<b>EXPENSES:</b>				
Salaries	\$ 28,783			\$ 38,725
Contract Labor	1,775			
Insurance - Hospital	5,375			3,318
Retirement Plan	657			2,014
Taxes - Payroll and Penalties	4,021			2,655
Office Rental	1,466			1,577
Office Supplies	1,566			1,160
Postage	988			1,740
Professional Fees	2,826			
Travel	9,433			30,011
Telephone	3,197			3,507
Printing	1,866			7,108
Meetings	4,480			1,406
Dues and Subscriptions	536			
Auto Expense	238			
Insurance - Auto Bond and Office	2,125			
Maintenance and Repairs	2,046			
Courtesies	270			
Depreciation	5,952			
Copy Expense	496			3,032
Office Equipment				
<b>Total Expenses</b>	<b>\$ 78,096</b>	<b>\$ -0-</b>	<b>\$ -0-</b>	<b>\$ 96,253</b>
<b>Excess (Deficiency) of Revenues Over Expenses</b>	<b>\$ 48,400</b>	<b>\$ -0-</b>	<b>\$ 3,023</b>	<b>\$ 26,302</b>
Fund Balances, October 1, 1987	86,536	17,864	(4,304)	(13,844)
Adjustments, See Footnote No. 18				
<b>Fund Balances, September 30, 1988</b>	<b>\$134,936</b>	<b>\$ 17,864</b>	<b>\$ (1,281)</b>	<b>\$ 12,458</b>

The accompanying notes are an integral part of these financial statements.

<u>Council Funds</u>	<u>Marine Fisheries Initiative Funds</u>	<u>MARFIN Red Drum</u>	<u>D-J Support</u>	<u>Striped Bass</u>	<u>Interjurisdictional Fisheries</u>	<u>Side Scan Sonar</u>	<u>Totals</u>
							\$ 11,250
							22,500
							45,000
							22,500
							22,500
\$ 6,250	\$ 43,634	\$ 2,325	\$ 46,499	\$ 13,196			175,551
18,750	12,291	5,735	39,435		\$ 92,717	\$ 3,750	234,609
							2,746
<u>\$ 25,000</u>	<u>\$ 55,925</u>	<u>\$ 8,060</u>	<u>\$ 85,934</u>	<u>\$ 13,196</u>	<u>\$ 92,717</u>	<u>\$ 3,750</u>	<u>\$ 536,656</u>
\$ 19,057	\$ 19,604		\$ 43,189	\$ 881	\$ 28,563		\$ 178,802
	1,316		572		133		3,796
665	2,466		3,334		4,490		19,648
428	1,756		2,858		1,875		9,588
	1,251		3,352		2,573		13,852
1,576	1,952		1,577		1,750		9,898
732	2,786	\$ 460	1,078	667	816	328	9,593
385	1,599	795	709	697	1,102		8,015
200					18,620	1,096	22,742
1,258	21,082	2,453	21,695	7,781	16,049	9	109,771
500	1,625		600	50	1,299		10,778
	2,527		868		710		13,079
	1,907	958	1,054	415	2,113		12,333
							536
420	169						827
							2,125
							2,046
							270
							5,952
162	836	1,069	646	993	261		7,495
	239		426		12,493		13,158
<u>\$ 25,383</u>	<u>\$ 61,115</u>	<u>\$ 5,735</u>	<u>\$ 81,958</u>	<u>\$ 11,484</u>	<u>\$ 92,847</u>	<u>\$ 1,433</u>	<u>\$ 454,304</u>
\$ (383)	\$ (5,190)	\$ 2,325	\$ 3,976	\$ 1,712	\$ (130)	\$ 2,317	\$ 82,352
5,721	(12,412)	(2,325)	(25,134)	(1,712)	-0-	-0-	50,390
(148)							(148)
<u>\$ 5,190</u>	<u>\$ (17,602)</u>	<u>\$ -0-</u>	<u>\$ (21,158)</u>	<u>\$ -0-</u>	<u>\$ (130)</u>	<u>\$ 2,317</u>	<u>\$ 132,594</u>

GULF STATES MARINE FISHERIES COMMISSION  
Notes to Financial Statements  
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NOTE 1: SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES:

The modified cash basis of accounting has been used to record the transactions of the unrestricted fund (operating fund) of the Commission. The cash basis of accounting has been used to record the transactions of the restricted funds (grants and agreements) of the Commission. The modified cash basis used by the unrestricted fund is composed of cash receipts and disbursements and includes a provision for depreciation of office equipment, furniture, fixtures and autos.

Revenue Recognition

Member States' Appropriations

To belong to the Commission, member states are assessed annual fees according to the following schedule:

Alabama	\$ 11,250.00
Florida	22,500.00
Louisiana	22,500.00
Mississippi	11,250.00
Texas	22,500.00

Revenue is recognized in the year that the fees are received by the Commission regardless of what fiscal year of the state to which the payments pertain.

Louisiana and Mississippi paid two (2) years dues in the current year.

Grants and Agreements

Revenue is recognized in the year that it is received.

Revenue from some grants and agreements are received in two (2) fiscal years of the Commission.

Long-Term Assets

Fixed assets purchased with Member States' Appropriations (unrestricted operating fund) are properly capitalized and set up as a fixed asset on the books.

Fixed assets purchased from grant and agreement funds (restricted funds) are expensed at the time of payment, and are not capitalized on the books.

Depreciation recorded in the operating fund (unrestricted) is recorded using the straight-line method.

Lives used are summarized below:

<u>Type of Asset</u>	<u>Life (Years)</u>
Office Equipment, Furniture and Fixtures	10
Automotive	5

GULF STATES MARINE FISHERIES COMMISSION  
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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:     FISHERIES ADMINISTRATIVE SUPPORT PROGRAM:

Effective in April, 1978, the Commission entered into contracts with the U. S. Department of Commerce to provide programmatic funds to support the State-Federal Fisheries Planning and Administrative Program in the Gulf of Mexico coastal states.

NOTE 5:     FISHERIES COUNCIL SUPPORT PROGRAM:

Effective in October, 1977, 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.

NOTE 6:     INTERJURISDICTIONAL FISHERIES MANAGEMENT PROGRAM:

Effective in October, 1987, the Commission entered into contracts with the U. S. Department of Commerce to develop Interjurisdictional Fisheries Management Plans.

NOTE 7:     ADMINISTRATIVE SUPPORT OF MARINE FISHERIES INITIATIVE (MARFIN):

Effective in March, 1986, the Commission entered into contracts with the U. S. Department of Commerce to provide administrative support for Marine Fisheries Initiative Program Management Board for the Gulf of Mexico.

GULF STATES MARINE FISHERIES COMMISSION  
Notes to Financial Statements  
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NOTE 8: MONITORING AND ASSESSMENT PROGRAM:

Effective in December, 1981, the Commission entered into contracts with the U. S. Department of Commerce to provide fishery-independent monitoring and assessment information essential to the national management of U. S. Gulf of Mexico fisheries resources.

NOTE 9: STRIPED BASS FISHERIES:

Effective in May, 1987, the Commission entered into agreements with the U. S. Fish and Wildlife Service, Dept. of Interior, to help gather and disseminate new scientific information on biological, chemical, and physical characteristics of rivers as they affect striped bass fisheries.

NOTE 10: COOPERATIVE INTERSTATE FISHERIES MANAGEMENT:

Effective in March, 1987, the Commission entered into agreements with the U. S. Fish and Wildlife Service, Dept. of Interior, along with the Atlantic States and Pacific Marine Fisheries for Cooperative Interstate Fisheries Management in the Territorial Sea of the United States.

NOTE 11: RED DRUM:

Effective in September, 1986, the Commission entered into agreements with the U. S. Department of Commerce for coordinating, planning, and progress-reporting activities of the cooperative State-Federal Research Plan for Red Drum in the Gulf of Mexico.

NOTE 12: SIDE SCAN SONAR:

Effective in May, 1988, the Commission entered into agreements with the U. S. Fish and Wildlife Service, Dept. of Interior, for monitoring and assessment of survey of artificial reef materials.



GULF STATES MARINE FISHERIES COMMISSION  
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NOTE 13: FIXED ASSETS - UNRESTRICTED FUND:

	<u>Cost</u>	<u>Accumulated Depreciation</u>	<u>Undepreciated Cost</u>
Office Equipment, Furniture & Fixtures	\$ 41,353	\$ 26,295	\$ 15,058
Automotive	13,661	5,464	8,197
Net Fixed Assets	<u>\$ 55,014</u>	<u>\$ 31,759</u>	<u>\$ 23,255</u>

NOTE 14: COMMITMENTS:

An office lease agreement was begun on December 1, 1987 and will expire in the year 2002. The monthly lease payment for the first three (3) years is \$875.00 and will be adjusted every three (3) years using the consumer price index.

NOTE 15: RELATED PARTY TRANSACTIONS:

No related party transactions are known.

NOTE 16: RETIREMENT PLAN:

In previous years, the Commission implemented a tax sheltered annuity plan for all employees that have been employed for at least six (6) months. The Commission contributes six (6) percent of the eligible employees' base pay with the amounts being fully vested upon payment by the Commission. The total expense for the year amounted to \$9,588.00.

NOTE 17: ALLOCATION OF EXPENSES:

The expenses of providing the various grant and agreement programs and activities are summarized in the Statement of Revenue, Expenses, and Changes in Fund Balances. Accordingly, certain expenses have been allocated among the grants, agreements, and the Commission activities based upon the benefited program. In some instances, the expenses were allocated based upon an equitable and equal distribution.

NOTE 18: ADJUSTMENT TO FUND BALANCE:

Depreciable fixed assets with an original cost of \$2,215.36 and the related accumulated depreciation of \$2,067.00 were charged off to the fund balance - council for a net of \$148.36. This adjustment was made so that the same basis for reporting fixed assets for all grants and agreements would be the same.

