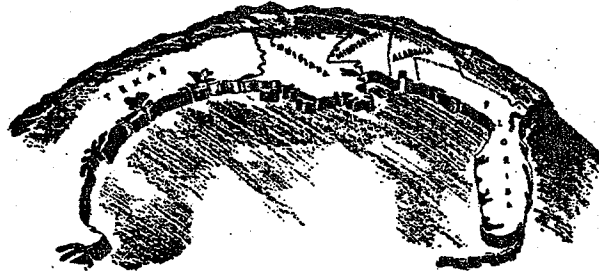


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Gulf States Marine Fisheries Commission

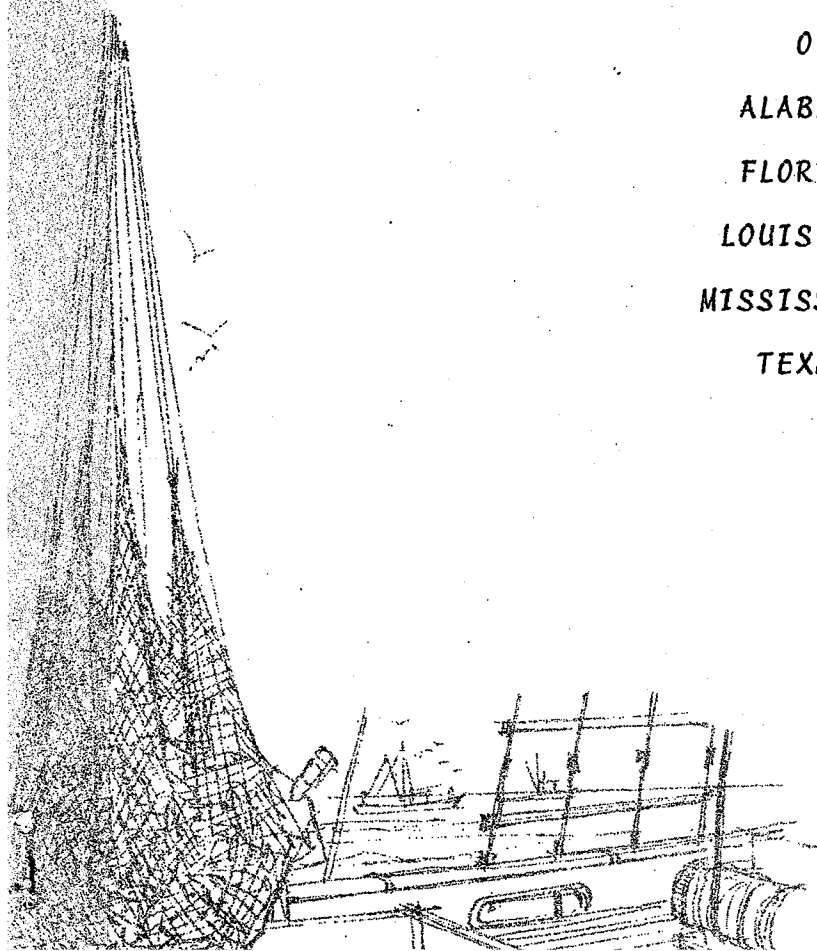
MEMBER STATES

ALABAMA
FLORIDA
LOUISIANA
MISSISSIPPI
TEXAS



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GULF STATES MARINE
FISHERIES COMMISSION
TWENTY-SIXTH ANNUAL REPORT
1974 - 1975
CONGRESS OF THE UNITED STATES
And To The
GOVERNORS AND LEGISLATORS
OF
ALABAMA
FLORIDA
LOUISIANA
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TEXAS

TWENTY-SIXTH ANNUAL REPORT

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ACKNOWLEDGEMENT

In submitting this twenty-sixth annual report the Commissioners wish to express their most sincere gratitude for the splendid cooperation of the members of the 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 twenty-five years could not have been possible without such valued assistance. This acknowledgement 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,

Charles H. Lyles, Chairman

Harmon Shields, Vice-Chairman

Joseph V. Colson, Executive Director

TWENTY-SIXTH ANNUAL REPORT (1974-1975)

Of The

GULF STATES MARINE FISHERIES COMMISSION

To The

CONGRESS OF THE UNITED STATES

And To The

GOVERNORS AND LEGISLATORS

Of

ALABAMA

FLORIDA

LOUISIANA

MISSISSIPPI

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

531 St. Louis Street

New Orleans, Louisiana 70130

IN MEMORIAM

WILLIAM F. ANDERSON

for his untiring efforts to promote
Marine Conservation and Utilization.

COMMISSION COMMITTEE MEMBER

1965 - 1974

GULF STATES MARINE FISHERIES COMMISSION

ROSTER - OCTOBER 1974

Charles H. Lyles

Chairman

Harmon Shields

Vice-Chairman

Joseph V. Colson, Executive Director

*COMMISSIONERS

ALABAMA

Claude D. Kelley, Director

Alabama Department of Conservation

Montgomery, Alabama

L. D. Owen, Senator

State of Alabama

Bay Minette, Alabama

* H. L. Callahan

Mobile, Alabama

FLORIDA

Harmon Shields, Director

Florida Department of Natural Resources

Tallahassee, Florida

* J. Lorenzo Walker, Representative

State of Florida

Naples, Florida

Clyde Richbourg

Pensacola, Florida

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New Orleans, Louisiana

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State of Louisiana
Cameron, Louisiana

* James H. Summersgill

Golden Meadow, Louisiana

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Pascagoula, Mississippi

* August Rauxet

Bay St. Louis, Mississippi

TEXAS

Clayton T. Garrison, Executive Director

Texas Parks & Wildlife Department
Austin, Texas

Leroy Wieting, Representative

State of Texas
Portland, Texas

John Mehos

Galveston, Texas

*Order of listing - Administrator - Legislator -
Governor's Appointee

SUCCESSIONS ON THE COMMISSION DURING THE YEAR

Eugene Hodges	vice	J. Lorenzo Walker
Leroy Kiffe	vice	James Summersgill
William Gillis	vice	August Rauxet
Nat Sonnier	vice	H. L. Callahan

COMMISSION OFFICERS ELECTED OCTOBER, 1974

FOR YEAR 1974-75

Chairman: Charles Lyles, succeeding John Mehos

Vice-Chairman: Harmon Shields, succeeding Charles Lyles

STANDING COMMITTEES

Executive Committee

Charles H. Lyles, Chairman

Technical Coordinating Committee

Ted Ford, Chairman

Industry Advisory Committee

George Snow, Chairman

Recreational Fisheries Committee

Guy Billups, Jr., Chairman

Sea Grant Committee

Willis Clarke, Chairman

Committee to Correlate Fishery Laws

Sanford Steckler, Chairman

COMMISSION ACTIVITIES

OCTOBER 1974 TO OCTOBER 1975

The Gulf States Marine Fisheries Commission met twice in regular session during the period covered by this report. The annual session was held in Biloxi, Mississippi, October 16-18, 1974, and the spring meeting took place in Mobile, Alabama, March 19-21, 1975. The latter meeting was significant in that it marked a return to the location of the first Commission meeting, 25 years ago, although the Biloxi meeting being the fall session was officially the 25th annual meeting.

The annual meeting in Biloxi centered around the theme of resources management, specifically emphasizing State/Federal and multi-lateral State management aspects, as agreed upon at the previous meeting. Subjects specifically brought before the audience included a report on the Law of the Sea Conference, description of the National Fisheries Plan, a discussion of State/Federal management, and a panel on multi-lateral State shrimp management. Resolutions resulting from Committee meetings were: (1) That the Corps of Engineers be requested to conduct a study into the feasibility of controlled diversion of freshwater in and to Mississippi and Louisiana estuaries; (2) that the Small Business Administration recognize the plight and structure of the fishing industry in the gulf area; and (3) that cooperation with the Sea Grant Program be increased. Recommendations were made that a close look be taken at the marketing of undersized spiny lobsters and the possibility of Federal control of such practice, and that Food and Drug Administration look into developing better means of dealing with virus detection and location, with special reference to hepatitis virus organisms.

A contract was approved with the National Marine Fisheries Service to undertake the National Fisheries Plan work, under contract to Gulf States Research Institute, and a discussion was held on the status of the so-called "Eastland Resolution," Senate Con. Res. 11. (Appendix A).

The spring meeting in Mobile continued emphasis on management problems, both State/Federal and multi-state, with particular focus on the shrimp industry. A discussion was included of the Emergency Marketing Program and the Shrimp Marketing Crash Program, designed to help the shrimp industry in a period of low landings prices and high operating costs. The commission formed an official

Executive Committee to aid the Executive Director in the carrying out of his duties, with one member representing each State in the Compact. Resolutions adopted were: (1) that the Secretary of Health, Education, and Welfare be requested to postpone action on proposed National Shellfish Safety regulations until industry had a sufficient chance for comment and input; and (2) that the Commission advise Congress of its strong desire for an embargo of seafood products from nations refusing to recognize traditional rights to U.S. fishermen in grounds where those fishermen have previously fished. Both resolutions were consequently widely circulated, with effect. In addition, Position Statements were promulgated to the effect that the Commission would strongly oppose any reduction or institutional constraints placed on the Statistical Program of the National Marine Fisheries Service and the announced policy of a user charge for Market News Reports, and greater reliance on States for collection.

Under contract, at the request of the National Marine Fisheries Service, the Commission successfully concluded a contract study of the industry for development of the National Fisheries Plan. In conjunction with Gulf South Research Institute in ports throughout the Gulf States. Results were submitted to the National Marine Fisheries Service.

With passage of the "Eastland Resolution" (Senate Concurrent Resolution 11), and a \$500,000 total appropriation, the Commission has begun survey work Gulf-wide. The Gulf States Marine Fisheries Commission was allocated \$200,000 of the total for work in the Gulf States, plus Puerto Rico and the Virgin Islands and those contiguous states where catfish and/or crawfish farming are carried out intensively. A coordinator/project manager for the Eastland Survey was added to the Commission staff in May, following approval of the Executive Committee in April. A contract was let with Coopers and Lybrand, Washington, D.C., for the first phase of the survey following a meeting and approval of the Executive Committee in New Orleans in July. This resulted in a working document entitled, "Responsibilities, activities, and authorizations of Federal agencies having bearing on United States marine fisheries, both commercial and recreational, and related industries; a survey for the Eastland Resolution Team." A contract, similarly approved by the South Research Institute for the field work and analysis of interviews with industry and allied members.

Renewal of the State/Federal contract was approved also in August, with a meeting in early September being held for the purpose of a general review of National Marine Fisheries Service programs and budget, by the industry and State agencies. The meeting was held in New Orleans by the Commission.

Much time during the reporting period was occupied by efforts to regain funding under Public Laws 88-309 and 89-304, which were variously placed under deferral or rescission, and on preliminary aspects of preparation for impending extended fisheries jurisdiction and management to 200 miles. A meeting was held in New Orleans in August for industry discussion of House Bill 200 (H.R. 200) and the corresponding working paper from the Senate concerning the 200-mile extension and built-in management provisions, including the provision for Regional Management Councils. At the request of the Commission, Puerto Rico and the Virgin Islands were added to both the proposed South Atlantic and the Gulf Regional Management Councils. At this time, the role of the Commission in the Council system is unclear. This will be a topic for consideration at the fall 1975 meeting.

Cooperation continued with the Alabama-Mississippi Sea Grant Consortium and other phases of Gulf Sea Grant programming. Commission staff and members were well represented at the July meeting of the National Fishery Policy group; the Commission's Executive Director was one of two fishery representatives appointed to and active on the Advisory Committee for Fuel Allocation of the Department of Agriculture; and a number of National and multi-state conferences and workshops were attended. Among the latter, a meeting of the Council of State Governments in Cape Cod was attended by the Executive Director. A model for development of rational and reciprocal State fishery laws was a foremost product of this meeting and will be discussed at the annual meeting of the Commission in the fall. The Executive Director was named as a delegate to the World Conference on Research to meet U. S. and world food needs, sponsored by the Department of Agriculture in Kansas City in July. He was also appointed Program Representative of the Commercial Fisheries Division of the National Safety Council.

The Commission's Technical Coordinating Committee was extremely active during the period, and was effective in overseeing contract work on the NMFS \$18,000 National Fisheries Plan study subcontracted to Gulf South Research Institute by the Commission. Early stages of

development of the Eastland Fisheries Survey Contract were also greatly facilitated. An Eastland Advisory Subcommittee has been formed to aid Commission staff in directing the Committee.

The Committee also initiated a feasibility study by the Corps of Engineers to determine potential sources of fresh water for nourishing Louisiana and Mississippi estuaries at the recommendation of certain inshore fisheries groups, primarily oyster and shrimp fishermen, and State Agency people. The technical Coordinating Committee formulated and encouraged the majority of Commission resolutions cited elsewhere in this report.

The Industry Advisory Committee was active, especially in working with the fishing industry and the oil industry in resolving problems associated with underwater obstructions and damages associated. Identification and location of such obstructions and development of means of minimizing them remain problem areas. Cooperation with Federal Agencies, including National Marine Fisheries Service, Corps of Engineers, Coast and Geodetic Survey, Bureau of Land Management, and U.S. Coast Guard has been greatly strengthened.

STATE ACTIVITIES
OCTOBER 1974-OCTOBER 1975

ALABAMA

Fishery Surveys

A survey was initiated by the Alabama Department of Conservation, Division of Marine Resources, in January to determine the number of Marine recreational anglers, their catch by species, and the expenses incurred by the fishermen. The survey, to be completed in December, will include data on inshore, offshore, and charterboat fishing.

In a second survey, recently completed, recreational fishermen using 16-foot trawls were shown to have taken between 15 and 25 percent of total inshore shrimp landings in Alabama waters in 1972-74. Nearly 5,000 trawls were in use during the period.

A compilation of commercial catch data by species by area for the period 1964-73 was completed, which when combined with results from the recreational surveys previously mentioned, should provide relatively complete information on the total catch from Alabama waters.

Oysters

The major producing oyster reefs, constituting about 2,000 acres, were planted with 167,000 barrels of clam shell in fiscal year 1974 and 167,500 barrels the following year. Funds for the work were provided by the National Marine Fisheries Service under Section 4b of P.L. 88-309 for flood damage incurred in 1973.

A study of a modified open oyster dredge for cultivation oyster reefs shows great promise. Results indicate that bottom improvement by cultivation can be achieved at \$31.28 per acre compared with shell planting at \$266.27, with equivalent shell exposure.

Historical data since 1852 on Alabama's oyster resources, oyster management and oyster research and industry were summarized for publication.

Crabs

Use of hormones to induce molting in blue crabs was investigated in an effort to aid the soft-shell crab industry. Varying dosages of these different hormones were inspected. Results, though producing some effect, did not indicate commercial feasibility at this time.

Fish Culture

Experiments were conducted at Gulf Shores on overwintering pompano with solar heaters and well water. Both methods proved inadequate. A comparison of winter growth rates of rainbow trout in fresh water and in brackish water ponds showed that not only growth but also survival was significantly better in brackish water. Culture studies on penaeid shrimp, freshwater shrimp, and pompano were begun.

Anadromous Fish

A total of 534,000 striped bass fry were reared to fingerlings and stocked in estuarine waters. This represents a 500-percent increase in fry-to-fingerling production. An additional 6,000 fish will be raised to advanced stages for tagging before release.

Artificial Reefs

In the Artificial Reefs Program, two Liberty ships and two barges were sunk offshore as reefs. One tire reef was completed inshore and a second was started. The reefs have been highly successful in congregating fish.

Other

Sedimentation rates in Mobile Bay for the past 10,000 years were documented by C-14 dating of core material. Heavy metal concentration (including mercury) increased with depth and time.

FLORIDA

DEPARTMENT OF NATURAL RESOURCES

Two fish tagging programs were initiated during the past year: A cooperative effort with Florida Keys Bonefish Guides and a cooperative effort with the National Marine Fisheries Service and several other states interested in king and Spanish mackerel. The Bonefish Tagging Program followed department studies of the life history of that important game fish. The department also continued assisting National Marine Fisheries Service in monitoring Atlantic sailfish tournaments out of the West Palm Beach Field Station. A manuscript on life history of that species (recently chosen by Florida Legislators to be Florida's State Marine Fish) was also completed. In addition some short term behavioral studies were conducted with electronic tags on sailfish survival after capture and release to verify that they can effectively be tagged and released by sportsmen.

Other species of marine fish which have received department research attention have been black sea bass and red snapper. Atlantic herring, hickory shad and sturgeon studies have also been concluded last year with the assistance of Federal Anadromous Fisheries Funds.

Florida's shellfish have also received coverage. Last year an intensive study was concluded of the east coast rock shrimp fishery with the assistance of PL 88-309 funding. The manuscript is currently in the final stages of preparation.

Oyster shell cultch planting activities in Apalachicola have been continued with federal assistance and the department has recently applied for federal help to begin work on stone crabs and spiny lobsters. Departmental staff has conducted a survey of stone crab claw landings and pulled together an historical analysis of larval lobster occurrence at various east coast habitats last year. The department finished a paper dealing with the resotation of oyster habitats in Pensacola Bay last year.

Surveys were continued of marine turtle nesting activities along Florida's east coast and considerable success was determined last year in recovering tagged hatchlings from the annual rearing program, some being recovered as far away as South America.

The Department also continued mariculture research, successfully spawning and rearing to juveniles the larvae of black sea bass. Florida helped host the first Macrobrachium (freshwater shrimp) Culture Workshop last year and completed 2/3 of our federally subsidized research to mass culture larvae and juveniles of M. rosenbergi and M. acanthurus. Diet evaluation work is continuing this year with the rental of ponds near the St. Petersburg laboratory.

Ecological research has been diversified, the most relevant to fishery problems being studies of reef fish communities of the eastern Gulf of Mexico and "Middle Ground" areas. The Department also initiated a survey of the ecological and economic impact of red tides upon the fishing community, and continued to assist the Florida Health Department's Division of Shellfish Sanitation in monitoring coastal areas that might be effected when red tide threatened inshore shellfish beds.

LOUISIANA

WILDLIFE AND FISHERIES COMMISSION

OYSTERS, WATER BOTTOMS AND SEAFOODS DIVISION

Damages to the Marine Laboratory facilities at Grand Terre by hurricane Carmen in September, 1974, were minimal. Several large holes had to be filled on the grounds. Standing water levels reached the tops of many of the experimental ponds. This made the results of some pond studies questionable and will require their being redone.

Intensive investigations of oyster mortalities resulting from the hurricane were conducted south of Houma, Louisiana. Mortalities ranged up to ninety-five per cent and heavy overburden prevented the taking of samples on many leases. A number of investigations from other causes were also made.

Monitoring of various hydrological parameters with constant-recording meters was continued and biological sampling with trawls, plankton nets, and other gear was continued on a regularly scheduled basis.

The brown pelican reintroduction program, initiated in 1968, was continued. A partial die-off of the flock in the spring was attributed to endrin and possibly other pesticides. Pelican reproduction was lower than expected this year due to the mortalities and the poor nesting site chosen by the birds this year.

Various experiments were initiated or conducted on oysters, oyster drills, clams, pompano, marine and fresh-water shrimps, crabs, speckled trout, and menhaden. Field trips, tours and lectures were given to a number of visiting high school and college groups.

Post larval and juvenile menhaden were sampled in the Barataria and Terrebone Bay complex to correlate this sample data with that gathered by NMFS. Scale development and annulus formation were studied on pond fish. Approximately 10,000 fish were tagged prior to emigration from the estuaries.

Striped bass were raised in brackish ponds, located at Grand Terre Island, for release in the Barataria Bay complex. While in the ponds, the fish were studied for growth rates and survival. Approximately 35,000 striped bass fingerlings were stocked in the Barataria Bay complex as part of a statewide restocking program. Equipment was

obtained for tagging Spanish and king mackerel for the cooperative Gulf Coast and Atlantic states tagging program, but no fish were tagged by Commission people during this time period.

Composition, distribution and relative abundance of fishes, mollusks, and crustaceans in the Vermillion Bay-Atchafalaya Bay estuarine complex was studied. A completion report was published this year.

Composition, distribution and relative abundance of fishes, mollusks, and crustaceans in the Lake Pontchartrain-Lake Maurepas complex was studied. The project was completed during this fiscal year and results are in press.

A study of the composition, general distribution, and relative abundance of the fauna in dredged canals as well as selected physical and chemical parameters affecting abundance was completed during this fiscal year; results are in press.

Penaeid shrimp populations were monitored for the purpose of enhancing Louisiana's present management programs, and to develop new, improved areal management techniques.

The purpose of the seabob study is to determine seasonal occurrence, abundance, and relative distributions of the seabob and to correlate selected hydrological parameters to abundance.

A study was conducted to establish oyster density and distribution of state seed grounds, to determine areas of heavy fishing activity as it relates to density and distribution, and to attempt to correlate environmental parameters to abundance.

Survey stations for oyster leases were established in the important oyster producing areas of Lake Cuatro Caballo, Sister Bayou, Round Lake, False Bayou, Bayou and Bay Aux Chenes, Lake Campo, Grand Lake, Little Lake, Lake Calebasse, and Lake Coquille in Plaquemines and St. Bernard Parishes. Approximately 200 monuments were placed in these areas. The placing of these monuments brings under monument control approximately 20,000 addition acres.

MISSISSIPPI

MISSISSIPPI MARINE CONSERVATION COMMISSION REORGANIZATION

The Mississippi Marine Conservation Commission was reorganized by an act of the 1974 legislature. The agency had for many years operated entirely on funds obtained from taxes and licenses on the commercial fishing industry and income from dead shell resources. Shifting landing patterns and a declining oyster industry resulting from pollution curtailed income to such an extent that the agency was forced to apply for a funding from the State Treasury. A general reorganization bill was passed which expanded memberships on the Commission from ten members, all of whom had been wholesalers or processors, to thirteen members. The reorganization act was known as House Bill 1243. It provided that one commercial fisherman be appointed from each of the three coastal counties, that the Director of the Marine Resources Council, the Director of the Boat and Water Safety Commission, and a member of the State Board of Health be Commission members. Furthermore, it provided for a Director, a professional, who could give leadership and direction to activities of the commission. The Director had no vote on the Commission. It moved the Marine Conservation Commission into a position to effectively manage the State's fishery resources on a par with sister states.

Although information is still inadequate in many cases, fisheries-related research in Mississippi continued to add to knowledge of fishery resources, and the related environment and to provide current data required for day to day management decisions.

GULF COAST MARINE RESEARCH LABORATORY

Surveys and Sampling

Regular monthly sampling at selected stations produced detailed data on seasonal and areal distribution, migrations, growth rate, and relative abundance of exploited and potentially exploitable species occurring in territorial waters along with more general information on numerous forage species. Facets of this work were closely coordinated with concurrent NMFS work in the Gulf.

Special shrimp sampling procedures provided current data required by the Commission for management of shrimp resources.

Monthly status reports were published.

Field interviews and mail surveys provided essential data used to determine species composition, catch, and effort expended in Mississippi's extensive subsistence fishery.

Established procedures provided landings statistics for all species sold by bait fishermen.

A continuing study of sport fishing catch, effort, and economics provided new information. Fish landed at rodeos were examined.

Menhaden

Plankton samples (1,439) on archives at various institutions or collected by cooperators during the 1974-75 spawning season were examined for the occurrence of menhaden eggs and larvae. Resulting data combined with existing information were used to delineate menhaden spawning seasons and location. A publication on menhaden spawning was issued.

Oysters

Oyster reefs in both closed and open fishing areas were examined. Results, combined with economic studies indicate that extensive depuration using more economical methods for moving oysters is feasible.

A modern oyster hatchery was designed and constructed. The hatchery is in operation now.

Shrimp

Extensive laboratory studies of brown shrimp physiology and related environmental factors were carried out.

Crabs

Successful operation of a commercial closed system crab-shedding operation was established as a result of technical assistance provided over the last two years. Up-to-date files of current literature provided answers to numerous inquiries of a technical nature.

Anadromous Fish

Local reservoir striped bass were successfully spawned, raised, and released in addition to releases of fish grown from fry received from other areas.

Microbiology, Parasites, and Diseases

Identification, infection rates, life history, and methods for control of parasites and diseases in fish and shell fish continued.

Regularly sampling of coliform bacteria in various areas was carried out. Additional areas will probably be closed to oyster fishing.

Other

Several extensive fish kills were investigated.

Methods for planting marsh and "grassbed" plants were developed and evaluated. Studies of marsh productivity progressed.

Numerous requests for permits to carry out work in wetlands were investigated.

Plans for requesting a feasibility study of controlled fresh water introduction into estuarine nursery areas were completed and endorsed by numerous agencies.

Extensive hydrographic sampling in Mississippi Sound provided a large block of data for development of working mathematical models of the Sound.

Laws and ordinances of the State were updated and coded. New ordinances for crab and bait fisheries were put into effect after research results were discussed with interested fishermen.

The Mississippi Marine Conservation Commission completed a new 65-ft. oyster boat to be used in management operations. A new 95-ft. research vessel for Gulf Coast Research Laboratory is nearing completion.

TEXAS

COASTAL FISHERIES BRANCH

TEXAS PARKS & WILDLIFE DEPARTMENT

Finfish

A survey of fish harvest in four bay systems (Galveston, San Antonio, Aransas, and Upper Laguna Madre) is underway. An end-of-trip survey of sport fishermen is providing estimates of total sport fishing pressure, total sport harvest by species, and catch per effort. Commercially-caught fish are measured and weighed at fish houses to provide sizecomposition of the commercial harvest. Total pounds and value of the commercial harvest are gathered under a separate study. Early results show that Galveston Bay has the greatest fishing pressure and produces the largest volume of sport caught fish.

A cooperative study between the Parks and Wildlife Department and a commercial fish company is providing information of fishing gear selectivity. The purpose of the study is to determine if various types of fishing gear can be utilized to harvest little utilized species such as the mullet, black drum, and croaker while taking insignificant numbers of heavily used species such as seatrout and redfish.

A life history study of the southern flounder has yielded good information on spawning migrations, distribution of young fish in estuarine nursery areas, and on characteristics of the sport and commercial fishery.

Important bay fish such as the seatrout, redfish, drum, and flounder are being tagged in a cooperative program with the National Marine Fisheries Service. The federal agency is tagging mackerels in the Gulf of Mexico and provides rewards for all tags returned under the program.

Netting studies of finfish populations in the Laguna Madre and Corpus Christi Bay have yielded good information on population levels and aided in evaluation fishing regulations.

Fish Culture

Fish culture studies at the Marine Fisheries Research Station (saltwater pond research facility near Palacios)

have resulted in successful spawns of spotted seatrout and redbfish. Efforts to rear fry to fingerling size in the ponds are now underway as are efforts to refine spawning techniques. Pond studies of white and brown shrimp to measure the influence of various salinity levels on growth and survival are also being conducted.

Shrimp

Preliminary findings of the growth and survival of juvenile brown shrimp stocked as post larvae in ponds of different salinities have shown no survival at salinities of 5 parts per thousand with improved survival at 15 ppt and best at 22ppt. (Final data analyses are not available at time of writing). These findings correspond to estuarine sampling which shows better brown shrimp production in bays with higher salinities. The studies are being repeated with white shrimp.

A cooperative tagging study of white shrimp scheduled for Galveston Bay in September of 1974 was postponed because of the low availability of shrimp. Sampling of juvenile brown shrimp in four estuarine systems in the spring of 1974 showed an abundance of shrimp as a result of favorable temperatures. Flooding on the watersheds of several of the major bays prematurely flushed juvenile browns from the nursery areas and lowered probability of an excellent season.

Studies in the inshore Gulf of Mexico delineated the spawning grounds of the white shrimp off the Texas coast and identified an area with a potential for rock shrimp production between 25 and 30 fathoms off Freeport.

Oysters

The 1974-75 oyster season was one of the lowest in recent years with production at 1.7 million pounds. The poor season was the result of flooding the previous year.

Mapping of the Galveston Bay oyster beds continued and was nearing completion.

Shell dredging activities were monitored to ensure that permit requirements are adhered to and that the fishery resources are protected. Dredging is now concentrated in Matagorda Bay on the mid-coastal area.

Other

A study to determine fresh water inflow requirements of Lavaca Bay is being conducted in cooperation with the Texas Water Development Board. There is a great need for information on this subject because of the ever increasing demand for water inland. A similar study for San Antonio Bay has been completed and the final report is in preparation.

Information on the wildlife and fisheries resources of Texas coast is being prepared under contract to the General Land Office. That agency has been assigned the task of developing a coastal zone management plan for the state and will use the natural resource data in that effort.

Other continuing projects include periodic sampling for the pesticides in estuarine organisms, monthly sampling for physical and chemical parameters in the estuaries, evaluation of developmental projects that will influence the bays, and maintenance of markers on artificial fishing reefs.

A seafood marketing project, located in Austin, has sponsored programs to encourage increased consumption of underutilized species such as black drum, croaker, and mullet. Workshops for seafood processors and distributors were held to improve merchandising techniques and improve the quality of the product reaching the consumer.

NATIONAL MARINE FISHERIES SERVICE

SOUTHEAST REGIONAL OFFICE

The organization of the National Marine Fisheries Service in the Southeast remains the same as it was at the time of the last report, with no turnover among the heads of the principal organizations.

ECONOMICS DIVISION

The economics Division devoted a substantial portion of its time to the development of the groundfish resources of the Gulf of Mexico as an alternative trawl fishery for shrimpers. A small but viable foreign market was documented for croaker surimi in Japan and at least one commercial venture is currently being negotiated between an American processor and the Japanese Kamaboko Manufacturers' Association.

A pilot plant has been brought on stream by a cooperative team of Southeast Utilization Research Center in College Park and Texas A & M scientists. The plant has enabled NMFS to get minced fish products into controlled storage tests and may be the key to making smaller, but abundant, fish stocks in the Gulf of Mexico, available to commercial use.

ENVIRONMENTAL ASSESSMENT DIVISION

The overall objective of this program is the protection and enhancement of our fishery resources by reviewing, evaluating, and providing pertinent comments to appropriate authorities on all water development projects that could affect these resources and the habitat upon which they depend for continued productivity. These projects are either federally planned, such as maintenance dredging of our national waterways, or private projects that require a Federal permit or license. Our responsibilities are carried out by 11 biologists, all specialists in the water resource field. Four are stationed in Galveston, Texas; three in Beaufort, North Carolina; two in Panama City, Florida; and two in the Regional Office, St Petersburg, Florida.

During the past year, we received for review 6,000 applications for permits to perform work in navigable waters, 200 Environmental Impact Statements prepared by Federal and non-Federal agencies, 3 applications for permits to conduct offshore dumping operations (all in the Gulf of

Mexico), and 7,300 permit applications for various types of discharge of pollutants into any U.S. waters under the Environmental Protection Agency's National Pollutant Discharge Elimination System program.

Through the efforts of the Environmental Assessment Division, valuable marshland and fishery habitat has been protected.

FINANCIAL ASSISTANCE DIVISION

Five separate programs of financial assistance to the fishing industry are administered by the National Marine Fisheries Service. All of these programs deal primarily with commercial fishing vessels, with the exception of the obligation guarantee program which also has a provision for supporting shoreside facilities and part-time charter activity. They are the (1) Fishing Vessel Obligation Guarantee program, (2) Fisheries Loan Fund program, (3) Fishing Vessel Capital Construction Fund program, (4) Fishing Vessel Construction-Differential Subsidy program, and (5) Fishermen's Protective Act. During the past year, all programs were active in the Gulf and South Atlantic States with the exception of the Fisheries Loan Fund and subsidy program.

FISHERIES MANAGEMENT DIVISION

Administrative efforts of the Fisheries Management Division focused upon the intensification of studies addressing high priority objectives identified by the National Marine Fisheries Service. Although research programs administered by the division have been traditionally instrumental in developing regulatory legislation, greater emphasis was placed upon the initiation of studies contributing to the procurement of a more substantial data base for effecting optimum production, utilization, and management of the Nation's fisheries resources.

Under the provisions of the Commercial Fisheries Research and Development Act (PL 88-309) and the Anadromous Fish Conservation Act (PL 89-309), 31 projects were initiated by the coastal States during the reporting period. The majority of these projects were directly responsive to elements identified for optimizing production and managing marine resources in behalf of commercial and recreational uses, whereas the others were supportive or contributory to the attainment of these objectives.

PL 88-309 ACTIVITIES

Projects contributing to the accumulation of a management data base included studies on the stock assessment of economically important finfishes, crustaceans, and mollusks in Louisiana; spiny lobster, stone crab, and king mackerel in Florida; and shrimp and ground fish in Texas. Life history studies were initiated for Atlantic croaker and red snapper in Mississippi, and for spotted seatrout, redfish, and sea bob in Louisiana. Harvest statistics are being collected and summarized for finfish landings in Texas, and for various commercial fisheries in Alabama.

Studies on the optimization of fish production through the application of improved aquaculture techniques were initiated in Mississippi to increase channel catfish production through the selection of favorable genetic characters. In Alabama, an experimental polyculture system is being tested utilizing pompano and penaeid shrimp in the summer and rainbow trout in the winter.

Projects for habitat improvement of oyster reefs were initiated in Alabama and Florida.

PL 88-304 ACTIVITIES

In general, anadromous fish projects addressed priorities of fisheries management (stock assessment), fisheries development, and marine recreational fishing (introduction of stocks to restore or improve existing fisheries). Rearing and releasing striped bass, in an attempt to restore a depauperate population, continued in Alabama and Mississippi and was initiated in Louisiana. Studies continued at Auburn University to determine the most feasible methods for optimizing production and rearing success of striped bass.

STATE-FEDERAL FISHERIES MANAGEMENT PROGRAM

The objectives of the SFFMP are to initiate studies culminating in the development and implementation of management plans for the most important fisheries resources within the region.

In the Gulf, a study was initiated at Louisiana State University to relate environment factors to the harvest of Gulf menhaden.

LAW ENFORCEMENT DIVISION

The Law Enforcement Division is responsible for the surveillance of foreign fishing vessels operating adjacent to the U.S. coast and the enforcement of various fishing laws

in cooperation with the U.S. Coast Guard. In addition, the division enforces various provisions of the Marine Mammal Protection Act, the Endangered Species Act, and other pertinent Federal laws as they apply to the taking of marine animals. This division also enforces the regulations of international fishery treaties to which the United States is signatory as they may apply to U.S. citizens.

Recent observations indicate a considerable increase in the Japanese tuna fishing in the Gulf of Mexico, but data for 1975 are incomplete. No significant decreases in foreign fishing efforts have been recorded. A computer system to record and evaluate foreign fishing has recently been established.

In August 1975, a Cuban shrimp trawler was seized off the Texas coast for fishing in the U.S. contiguous fishing zone. The master was placed on probation for one year in lieu of one year in prison and the vessel was forfeited to the United States in the district court. An NMFS Special Agent, supported by a Coast Guard boarding party from a small patrol vessel, arrested the master and was a principal witness at the subsequent trial.

MARKETING SERVICES DIVISION

The past year's efforts of the Marketing Services Division were greatly influenced by an unprecedented backup of the Nation's fisheries products. The supply problem, aggravated by the Nation's sluggish economy and the rapid reduction of consumer's real purchasing power, was particularly severe at the producer level because of the rise in the cost of fishing coupled with drastic reductions in ex-vessel prices.

A combined effort by the NMFS, industry, and the Southeastern coastal States, particularly Texas, North Carolina, and Florida resulted in a coordinated nationwide marketing program for shrimp and other major U.S. fishery products. These efforts were in conjunction with a National Emergency Marketing Program (EMP) funded by a release of \$1 million from the S-K fund.

The regular continuing program in development of underutilized species was reduced so that resources could be freed to cope with the basic supply problem affecting the Nation's major fisheries.

STATISTICS AND MARKETING NEWS DIVISION

During the period October 1974, through September 1975, the division was on schedule in attaining its objectives with few exceptions. The objectives of the division include; performing a continuing detailed survey of the Gulf of Mexico shrimp fishery; performing a monthly survey of landings and prices of fish and shellfish in the region other than Gulf of Mexico shrimp; performing quarterly and annual surveys of processed food and industrial fish, as well as economic surveys of the industry; and publication of the triweekly Market News Reports. The results of these surveys are disseminated in various published forms by the division's Washington, D.C., office.

Due to staff changes and tight budget, the detailed shrimp survey in Texas was reduced to a monthly survey for several months in the spring of 1975. A full staff has since been restored in a modified form involving canvassing dealers for total landings on a monthly basis and sampling vessel trips for detailed information on a continuing basis. This procedure will probably be adopted for the entire detailed shrimp survey.

During the year, the Market News Reports were placed on a subscription basis in the recommendation of the General Accounting Office to the Department of Commerce. The reports are available on a triweekly basis for an annual fee of \$35, while a weekly summary is available for \$15 per year. The reports themselves have been restructured in format and content to varying degrees in an attempt to increase their usefulness to subscribers. The Market News Reports and the subscription system will be reviewed during the coming year and modified as necessary.

NATIONAL FISHERY PRODUCTS INSPECTION AND SAFETY LABORATORY
Pascagoula, Mississippi

Inspection Services

Three plants in Alabama have enrolled under consultative services for one hour per week. One of these discontinued services in January but is reinstating in July, 1975.

Technical Services

Label Approval List: An addition to the staff brought the Approval List of Fishery Product Processors to Pascagoula. Three quarterly publications have been issued with 3,000 copies of the December list mailed, and 3,800 of the May issue. Additionally, 4,400 of the July issue were mailed with an additional 10,000 forwarded to Pueblo, Colorado, for distribution. Pascagoula also supervises the Label Approval program and has approved and computerized 1,466 labels. A computer printout has been sent to each plant showing labels approved in that plant for verification.

Tuna Inspection

Inspectors at ten tuna plants have been provided with equipment, forms, and instructions.

SOUTHEAST INSPECTION OFFICE
St. Petersburg, Florida

The objective of the Southeast Inspection Office is to provide a voluntary fishery products inspection service to the fishing industry in the Southeast Region and thereby assist the industry to improve and upgrade the sanitation of their plants and the quality of their products.

ATLANTIC ESTUARINE FISHERIES CENTER
Beaufort, North Carolina

Gulf Menhaden Fishery

The Atlantic menhaden catch in 1974 declined for the second straight year, dropping from 347,000 to 292,000

metric tons. The catch increased 23 percent in the South Atlantic area and 85 percent in the North Carolina fall fishery, but declined 25 percent in the combined Chesapeake Bay and Middle and North Atlantic areas. Sixty-three vessels were active in 1974 as compared to 58 in 1973. Fishing effort increased from 1099 vessel weeks in 1973 to 1145 in 1974. Age-2 menhaden constituted most of the catch, with age-1 fish contributing numbers of Chesapeake Bay and age-3 and -4 in the North Atlantic. The fall fishery catch, although increasing 85 percent, was composed primarily of age -0 (juvenile) fish. A number of juveniles in the fall fishery catches had been tagged the preceding September and October in coastal waters from North Carolina to New Jersey.

In the Gulf menhaden fishery, both the purse seine catch and fishing effort increased over 1973. The purse seine catch of 587,000 metric tons, up 21 percent from 1973, was the second highest on record. Fishing effort increased to a record 495,000 vessel ton weeks. Seventy-one vessels fished, representing an increase of 5 vessels over 1973. Catch per unit of effort increased slightly over 1974. Age-1 fish accounted for 66 percent of the number of fish in samples, about 7 percent greater than in 1973. Age -2 fish composed 32 percent and age-3 fish 2 percent. Landings through July 1975 were down about 20 percent from 1974 for the same period. Much of this decrease may have been the result of unfavorable weather.

Artificial Reefs

Although the artificial reef task was officially terminated in September 1974, information on artificial reefs may still be secured from the Atlantic Estuarine Fisheries Center. Task biologists documented that artificial reefs could be employed by fishery managers to increase stocks of valuable food fishes.

Coastal Pelagic Fisheries

This is a new study of coastal pelagic game fishes, with initial emphasis primarily on mackerels. Major factors to be investigated are life history, distribution, movements, abundance, stock identification, and economic importance. Federal and State agencies will cooperate in the study.

GULF COASTAL FISHERIES CENTER Galveston, Texas

Biological research on the living marine resources in the National Marine Fisheries Service's Southeast Region is conducted out of three laboratories that comprise the Gulf Coastal Fisheries Center in Galveston, Texas. The lab-

oratories that comprise the Gulf Coastal Fisheries Center in Galveston, Texas. The laboratories are located in Panama City, Florida, and Galveston and Port Aransas, Texas, and the results of the studies are applicable to the living marine resources found throughout the region. Major research programs or tasks are entitled: "Fishery Resource Analysis, Modeling, and Evaluation"; "Shrimp Aquaculture"; "Life Studies: Gulf Coastal Marine Fish"; and "Impact of Environmental Change, Gulf of Mexico."

Fishery Resource Analysis, Modeling, and Evaluation

Monitoring and Prediction - Postlarval and juvenile shrimp data and associated environmental data from Galveston Bay are being collected on schedule and entered on computer cards. Such data banks will be used in development of the shrimp fishery models by the Vital Statistics Subtask. Historical data (1960-1973) on twice-weekly catches of postlarval shrimp and associated environmental variables taken at Galveston Bay Entrance have been transferred to punched cards, edited, and are ready for time-series analysis by computer. A data bank of local astronomical data for the years 1960-1976 was prepared and edited and will be analyzed in conjunction with the postlarval shrimp and environmental data.

Data on weekly catch and fishing effort from the Galveston Bay bait shrimp fishery for the years 1960-1973 have been transferred to punched cards, edited, and are ready for time-series analysis by computer. Larval and postlarval finfish taken in postlarval shrimp samples are being identified and the data are to be used for species association analysis.

The time-series analysis will be conducted to detect trends and cycles in shrimp abundance related to fluctuations in environmental variables and in abundance of associated organisms.

Vital Statistics - For FY 1975, objectives have been to provide a comprehensive computerized data base for the shrimp resources of the northern Gulf coast, to conduct data analysis to estimate population parameters, to apply conventional fishery models to shrimp data and to provide statistical analysis, computer use and data processing support to the other subtask.

A mark-recapture experiment, cancelled last year because of the poor shrimp crop, has been rescheduled for this fall.

Shrimp Aquaculture

General goals of the Shrimp Aquaculture Task for FY 1975 were achieved. Significant progress was made toward laying a solid biological foundation for the developing shrimp culture industry. Contributions in each of the sub-task areas (discussed below) have improved our basic understanding of shrimp culture and thereby moved us closer to economical shrimp farming.

The status of shrimp farming today is such that the rearing of bait shrimp is very close to commercial viability. The farming of shrimp to supplement natural catches for the frozen shrimp market is not yet profitable although steady progress toward reducing the costs of raising shrimp is being made.

Life Studies: Gulf Coastal Marine Fish

Assessment of Recreational and Commercial Fishing in St. Andrew Bay, Florida - This project is also nearing completion. The only work remaining is revision of two manuscripts, one concerned with numbers of recreational and commercial fishermen and boaters, and the other with catch and catch rates by anglers. Some highlights of this study were as follows:

Distribution and Abundance of Fishes and Crustaceans in St. Andrew Bay, Florida - This project is also nearing completion. Two manuscripts, one describing the increase in catches of fishes in gill nets whenever an atmospheric front passed through the area, and the other describing the distribution, abundance, and the size of shrimps, have been accepted for publication.

Three other manuscripts concerned with gill nets catches and one concerned with fishes caught by trawling are in various stages of revision.

Biology of Reproduction in Sciaenids and Bothids - Captive seatrout have spawned 82 times during 13 consecutive months in saltwater tanks at the Port Aransas Laboratory. In April 1975, they stopped spawning, so the temperatures and daylight hours were gradually reduced to simulate winter conditions. The temperatures and daylight hours were gradually increased to simulate summer conditions, and by June 1975, the trout began spawning again. The development, growth, and biology of the early life of this species have been studied; the results are being described in a manuscript for publication.

Redfish maintained in captivity spawned in our tanks for the first time in August 1975. An estimated 2 to 3 million eggs were spawned.

Flounders have also been kept in captivity. One spawning occurred, but apparently these flounder eggs were not viable, as none hatched.

Our program on sciaenids and bothids is a cooperative one with the Texas Parks and Wildlife Department. About 2 million seatrout eggs and about a quarter of a million redfish eggs have been given to Texas biologists for experiments with juvenile seatrout.

Movements of drums and flounders, another part of the cooperative program between the Gulf Coastal Fisheries Center and the Texas Parks and Wildlife Department, are being studied by tagging methods. As of mid-August 1975, a total of 3,125 fishes have been tagged and released and 103 of these have been recaptured.

Mackerel Migration - An informal agreement has been made with State biologists of the Coastal Southeastern States, and Atlantic Estuarine Fisheries Center to undertake a cooperative program to study the migration of Spanish and king mackerels in the Southeastern Region. Mackerels will be caught, tagged, and released. A reward system has been established; out of every 100 tags, two will be randomly selected for \$25 rewards, 5 for \$10 rewards, 5 for \$5 rewards, and the remaining 88 for \$1.

Vital Statistics of Mackerel - Data most useful for management of the recreation king mackerel fisheries in the Gulf of Mexico include catch and effort information for the boats used in these fisheries. A small pilot study was undertaken early in 1975 for familiarization with the problems of obtaining catch and effort data from boat fishermen in Bay County, Florida.

Attraction of Gamefishes Around Mid-Water Structures - New midwater structures designed to resemble pilings and vertical pipes have been constructed. These structures are anchored and are allowed to sway with the currents. Two models, consisting of 20 structures each, were deployed off Panama City in 60 feet of water. These models will be evaluated on the basis of cost, durability, and fish attracting qualities.

Impact of Environmental Change, Gulf of Mexico.

Ichthyoplankton - An ichthyoplankton survey of the St. Andrew Bay system and adjacent coastal waters was

initiated in January 1975 and will continue for 1 year. The survey consists of sampling at 12 stations every 2 weeks. Sampling is conducted with a 1-m plankton net, a modified Isaac Kidd midwater trawl and 10-cm bongo net. The objectives of this study are to determine species composition and their distribution and abundance.

Impact of Habitat Alterations - Progress over the past year dealt primarily in the documentation of the fishes and benthic invertebrates inhabiting the intertidal areas of the St. Andrew Bay system, and adjacent waters. This documentation provides baseline data for assessing impacts of environmental changes caused by dredging, beach restoration, oil spills, pollution, and other significant alterations.

Sedimentology and Hydrology - Sedimentological and hydrographical studies were made in St. Andrew Bay during the year to study the seasonal regime of the water and sediments, provide environmental data for a study of the bay's benthic fauna, and provide detailed seasonal baseline data on the bay.

SOUTHEAST FISHERIES CENTER
Miami, Florida

The Southeast Fisheries Center consists of three facilities located at Miami, Florida; Bay Saint Louis, and Pascagoula, Mississippi - Center Headquarters is in the Miami Laboratory.

The Southeast Fisheries Center is the primary user of two research vessels, OREGON II and GEORGE M. BOWERS. The major responsibilities of the Center are to: assess, monitor, and predict the availability and abundance of living marine resources in the waters under the SEFC purview; provide supporting data for the effective conservation and management of these resources; and provide a focal point for developing the unutilized and underutilized fishery resources of the region. Major tasks have been implemented within the SEFC to develop basic knowledge and survey techniques, and provide fishery resource research required to attain these objectives.

FISHERIES ENGINEERING LABORATORY
Bay Saint Louis, Mississippi

The Fisheries Engineering Laboratory is part of the SEFC Technology Division. Its mission is to solve fishery technological problems through applications of engineering talents and principles. Its objectives include the development of efficient sampling, monitoring, tracking, and data processing systems and techniques to increase data return and resource assessment reliability.

Satellite Applications

A 22-month LANDSAT investigation was initiated in April and is being conducted cooperatively by Federal and State Government agencies and private industry to demonstrate the feasibility of using satellite data for enhancing the management and utilization of coastal fishery resources in the northern Gulf of Mexico. Menhaden (Brevoortia patronus) and thread herring (Opisthonema oglinum) were selected as target species in study areas located in the Mississippi Sound and off the coast of Louisiana. Correlations are being sought between the fishery resources and oceanographic parameters measurable from aerospace platforms.

In support of the U.S. - Brazil Agreement of May 9, 1972, a preliminary study was implemented to determine if relationships exist between the distribution of shrimp and relatively constant high turbidity zone found along the northeast coast of South America. The study showed that stratification of the turbidity pattern as determined from LANDSAT multispectral scanner imagery, was curiously similar to the distribution of the shrimp fisheries along the coast of Guyana, Surinam, and French Guiana.

Remote Sensing Applications

In early 1975, the SEFC was asked by the Gulf Coastal Fisheries Center to conduct hydroacoustic surveys of pelagic fish off the coast of Texas. These survey data will provide baseline information upon which the impact of oil and gas explorations can be judged. A cooperative program between the Fisheries Engineering Laboratory and the Pascagoula laboratory was subsequently developed in which the former was to provide technological support and survey procedures to the latter who would conduct the surveys.

Complete mechanical and electronic system documentation was prepared for RUFUS II (Remote Underwater Fisheries Assessment System II) through a joint effort between the

Fisheries Engineering Laboratory and the Harvesting Technology task at the Pascagoula Laboratory (i.e., the SEFC Technology Division). This system was designed and constructed by Mississippi State University with Sea Grant support in close cooperation with the SEFC. The system is designed to provide photographic and video records of marine epifauna at depths to 400 fathoms while being towed and controlled from a research vessel.

A study to evaluate remote sensing techniques for detection and enumeration of giant bluefin tuna near the Grand Bahamas Bank was completed cooperative with the Pascagoula Laboratory. The sensors tested involved aerial photography, low-light level television, and hydroacoustics.

Additional research is being conducted on an airborne laser system for detection of pelagic fish, principally through a contract with Mississippi State University.

Sampling Systems and Analysis Applications

A cooperative program with the Department of the Navy's Underwater Systems Center, Newport, Rhode Island, was initiated early in 1975.

The first project undertaken by this program was the development of an inexpensive, reliable, and extremely rugged recording system for in situ measurements of depth, temperature, and salinity from a trawl door. Two prototype systems are being developed which will be ready for field testing in November 1975.

A cruise track optimization routing was developed for minimizing vessel time and expense associated with survey cruises. Software originally developed by Bell Telephone Laboratories was modified and expanded to select the optimum sequencing of and cruise tracks between sampling stations.

Data Management Applications

A data storage and retrieval system was developed for the Southeast Regional Law Enforcement Office located in New Orleans. This system has the capability to add, change, and delete data associated with a master surveillance file and to provide output on up to 14 different tabulations of data. Each tabulation emphasized a different aspect of information. Future plans call for adding several refinements to the system and a capability to display the location and time sequence of observations utilizing an Atlas Display System developed by the Fisheries Engineering Laboratory.

A groundfish resource assessment data display capability was developed for the Pascagoula Laboratory. This computer program provides a master file and update capability for all groundfish survey data.

In cooperation with the Pascagoula Laboratory, approximately 300,000 computer cards representing approximately 20 years of exploratory fishing data were converted into a computer tape master file system. This project required development of editing and format conversion routines and software for changing, adding and deleting data.

In support of a Food and Agriculture Organization (FAO) project, approximately 20 years of exploratory fishing data from the Western Central Atlantic were processed, tabulated, and plotted for estimates of groundfish and crustacean biomass. These data will appear in a special FAO report authored by Dr. Edward F. Klima entitled "The Fish Resources of the Western Central Atlantic."

Program Planning and Analysis Applications

Systems engineering and planning support has been provided to several SEFC programs, especially in the area of planning for extended jurisdiction. Similar support was provided to the NMFS Extended Jurisdiction Planning Office through development of a management data display system for their use.

MIAMI FISHERIES LABORATORY
Miami, Florida

Emphasis at Miami is directed toward diverse research projects dealing with status of stocks, biological studies, and environmental phenomena. The information gained is used to support international treaty negotiations, management and conservation controls, and other requirements related to living marine resources.

Commercial Fisheries Investigations

Catch and effort data for the Guianas-Brazil shrimp fishery are collected and processed on a continuing basis. Approximately 200 vessels submit logbook information and five processing plants submit landing records. These data are summarized (with the aid of a computer) according to statistical zone, depth, and month of landing. A report based on the analysis of the data for the period July 1972-December 1974 is currently being prepared and is nearing completion. Survey cruises of the Guianas' fishing grounds and the Agreement Area off the coast of Brazil were conducted in January and May 1975, respectively.

Collection of fishery statistics on the U.S. spiny lobster fishery in the Bahamas continues.

Computer summaries of the U.S. shrimping activities in distant waters off Mexico and in the Caribbean Sea were completed for 1967-72 and are in preparatory stage for 1973-74. Data in these summaries include a vessel list by document number, total pounds landed, number of trips, catch per trip, catch per vessel, and catch by grounds, and the zones fished.

A unit fishery description of shrimping activities off Contoy, Mexico, from its inception (1965) to 1973 was completed.

A comprehensive review of the recent (1949-73) history and present status of the U.S. commercial snapper-grouper fishery off the United States and international waters of the Gulf of Mexico and Caribbean Sea was prepared. This review is being updated for presentation at the Colloquium of Snapper-Grouper Resources of the Western Central Atlantic sponsored by the Gulf States Marine Fisheries Commission in October 1975.

The multispecies fishery for snapper-grouper has apparently been undergoing changes in characteristics (participants, vessels, grounds, size, and possibly species of fish). Since currently available information is insufficient for a rational analysis of the fishery, a procedure has been designed to collect additional data on catch and effort statistics.

Oceanic Game Fish Investigations

In 1974, research continued on the biology and population dynamics of billfishes in the western North Atlantic Ocean, Caribbean Sea, and Gulf of Mexico. Biological and statistical data were collected from 33 big

game fishing tournaments from New York to Jamaica and from the Virgin Islands to Port Aransas, Texas. Six tournaments were sampled by cooperating investigators from the Florida Department of Natural Resources, the Georgia Department of Natural Resources, and the South Carolina Wildlife and Marine Resources Department. Sampling was extended north of Cape Hatteras for the first time in 1974.

We are also examining the feasibility of using boat logs as an additional source of data. Japanese longline data for 1972 were examined for the western North Atlantic between lat. 10°-40°N and west long. 60°W.

The NMFS-WHOI Cooperative Game Fish Tagging Program completed its first full year of joint research on the tuna and billfish stocks in the Atlantic Ocean. Over 1,800 game fish were tagged.

Atlantic Bluefin Tuna Program

In February 1974, the National Marine Fisheries Service directed that a separate research program be organized at the Southeast Fisheries Center in Miami to study the biology, ecology, and population dynamics of North Atlantic bluefin tuna, and to develop rational management recommendations for conservation of the stocks.

New techniques are being examined for age and growth analysis.

At the November meeting of the International Commission for the Conservation of Atlantic Tunas in Madrid, the U.S. delegation proposed that international regulations be adopted to conserve the stocks of Atlantic bluefin. The Commission agreed to limit fishing mortality on bluefin to levels of recent years and to adhere to a minimum size limit of 14 pounds. The United States will conform to these regulations on both the sport and commercial fisheries by imposing bag limits, seasons, and catch quotas.

An extensive survey of the sport fishery for small bluefin along the mid-Atlantic coastal states is being conducted under contract to Rutgers and Adelphi Universities. Statistical and biological data are being collected by direct interviews with returning fishermen, postal card and telephone surveys, angler log sheets, and aerial surveys.

One senior staff member of the program is conducting an extensive sampling trip in several European countries to collect bluefin morphometric, meristic, and sex information. This information should provide valuable data for the final determination of stock structure in the Atlantic.

Research was initiated on spawning and recruitment, age and growth, sex ratios, stock size, and status of stocks. In May, daily aerial flights were begun to provide visual estimates of the number of adult bluefin tuna migrating past Cat Cay and Bimini, Bahamas.

Ecological Investigations of the Southeast United States-- Effects of Environmental Alteration:

A study plan of the effects of ocean outfalls on the living marine resources has been proposed and was accepted by EPA and the scientific community. It is in the process of being funded jointly by EPA, and the local municipalities. The study is divided into three phases: Biological, Chemical, and Oceanographic. It will evaluate the effects of some 100 million gallons per day of variously treated sewage being discharged into the inshore area of a 3-county section off south Florida.

Hydrocarbon Components of Marine Fauna

The objective of the oil-in-the-sea project was to determine the relationship between deep water subsurface oil and the indigenous marine life. Three approaches were employed: (1) chemical analysis for hydrocarbon uptake, (2) biological evaluation of species found in the area, and (3) visual examination of the study area.

In summation, the project has established (1) a typical deep water fauna does exist in conjunction with subsurface oil material, (2) crustaceans taken from this system contain increased levels of n-paraffins, and (3) the composition of hydrocarbons in the crustaceans indicates a mechanism within the animals for conversion of long straight chain even number hydrocarbons.

PASCAGOULA FISHERIES LABORATORY
Pascagoula, Mississippi

Emphasis at Pascagoula is directed toward the development of methods and techniques to harvest fishery resources more efficiently, and toward the acquisition of data to support improved management and utilization of the fishery resources.

Oceanic Resource Surveys and Assessment

The objectives of this program, which is comprised of four projects, are to evaluate the industrial and food-fish groundfish resources of the northern Gulf, providing information on availability, abundance, and status, and investigate selected and underutilized fish resources of the Gulf and southwestern Atlantic.

Resource Surveys Project

Nine R/V OREGON II and two GEORGE M. BOWERS cruises have been completed since the inception of this program. This includes one spring, three summer, three fall, and two winter cruises on the OREGON II and one spring and one summer cruise on the BOWERS. Standing stock estimates have been generated for each cruise. Environmental data (temperature, salinity, and bottom type) have been collected throughout the survey area. Age and growth evaluation is continuing.

Shrimp Fleet Discard Survey

This project has been seeking information on the volume of finfish incidental to shrimp catches being discarded by the U.S. Gulf of Mexico fleet. Primary source of information has come from recent R/V OREGON II and R/V GEORGE M. BOWERS groundfish cruises. Also a number of fishermen along with State and Sea Grant organizations have been most cooperative in providing information.

The project has prepared contracts for the purpose of identifying shrimp fleet discards and is negotiating with State departments and universities in Florida, Louisiana, and Texas. These contracts will provide the coverage needed for firm volume projection and a data base background for possible utilization.

Special Resource Surveys

LANDSAT '75 is a cooperative experiment utilizing the resources of NMFS, NASA, NESS, and member menhaden companies of National Fish Meal and Oil Association. Its purpose is to determine the feasibility of using remote presence or absence of menhaden and thread herring in traditional north Gulf fishing grounds. Test sites were established in Mississippi Sound and off the Louisiana coast between Raccoon Point and Marsh Island. Data were collected by satellites LANDSAT 1 in Louisiana waters and LANDSAT 2 in Mississippi Sound. Sensors were

also installed in NASA and chartered aircraft. Fish location and catch data were collected by spotter pilots and captains. Sea truth temperature, salinity, color, transparency, and chlorophyll data were collected by oceanographic technicians aboard menhaden and oceanographic vessels.

Industrial Bottomfish and Foodfish Survey

Processing plant and vessel personnel cooperated very closely with the National Marine Fisheries Service in supplying catch effort data and commercial catch samples to the Industrial Bottomfish and Foodfish Survey task. Record landings of fish for petfood, fishmeal, and crab bait in 1974 totaled 52,600 tons, worth \$2.6 million ex-vessel; and \$25 million processed.

Harvesting Technology

Harvesting Technology is part of the SEFC Technology Division. It is composed to two major tasks - Sampling and Harvesting Systems Development and Conservation Engineering. Its mission is to solve harvesting and resource assessment related problems through application of engineering and biological technology and principles. Objectives of the two tasks are to solve specific conservation or sampling and resource assessment problems through the development of efficient harvesting gear and monitoring or remote sensing equipment.

Shrimp Separator Trawl

A project was initiated in July 1975 to develop a solution to the significant shrimp fleet discard problem. This project is a harvesting gear development effort aimed at eliminating the non-target species catch in a shrimp trawl. Because operational grounds of the shrimp and groundfish fleet are overlapping, the large incidental catches and destruction of fish and other animals by the shrimp fleet has become a major concern. The objective of the project is to develop a new type shrimp net which will effectively separate shrimp from the other components of the catch, and release the other animals back into their environment unharmed.

Rufus II

Upgrading of the RUFUS II system was initiated to improve RUFUS II packaging, eliminate deficiencies, and generally develop RUFUS II from a breadboard state, as it was received from Mississippi State University, to an operational system. Field trials have outlined some initial deficiencies that must be corrected or improved before final effective field tests can be completed.

RUFUS II upgrading has been started. Rewiring of circuit boards and consoles and correction of minor deficiencies are being accomplished to prepare the system for more extensive field tests prior to a complete re-packaging effort. Status reports and a request for additional funds to complete system development are being prepared.

Electrical Shrimp Trawl

Promising design of an armored conductor cable was purchased from a wire rope manufacturer and tested. The cable conductor insulation failed prematurely. However, this cable design still has potential for solving the power supply/cable problem which has restricted general application and use of the electrical shrimp trawl system.

SOUTHEAST UTILIZATION RESEARCH CENTER
College Park, Maryland

The Southeast Utilization Research Center (SURC) conducts basic and applied technological research in response to the needs of the fishing industry and the consumer, with special emphasis to problems affecting the utilization of fishery resources of the South Atlantic and Gulf of Mexico (area). Activities are intergrated with those of regional marketing, economic, and resource specialists to define latent fish development opportunities. New product and process development research and acquisition of nutritional data and composition information are carried out to facilitate entry into the marketplace and use by consumers of little-used but abundant seafood species. Information is also collected to assist industry development of nutritious, economic feeds for animals, including cultured fish and shellfish. Related nutritional information for certain target shellfish species is also being collected.

Studies are underway to determine the nature and extent of contaminants in fish and fishery products to prevent potentially hazardous materials (for example mercury, lead, arsenic, and cadmium) from reaching the marketplace. Management procedures are developed jointly with industry and regulatory agencies to deal with these problems. Shellfish sanitation problems are also being addressed by definition of microbiological vectors that reduce the usefulness of the resource; in-plant and resource management procedures are being developed to insure the maximum availability of needed fishery food resources.

The Center is presently located on the Campus of the University of Maryland, College Park, Maryland. A new facility is being planned to house SURC at Fort Johnson, South Carolina, contiguous to the Marine Resources Research Institute and related activities of the Marine Resources Center, South Carolina Wildlife and Marine Resources Department, Charleston. Design of the laboratory is essentially complete. GSA has been preparing the necessary solicitations in order to negotiate with South Carolina to construct and lease the building. Upon completion of the laboratory, SURC will move from College Park to Charleston. The project has been delayed somewhat, but occupancy is anticipated in late 1976 or early 1977.

Research activities of SURC may be broken down under three general programs:

Fisheries Chemical Analysis Program: Microconstituents

There continues to be a strong requirement for a comprehensive assessment of the effects of trace elements and other contaminants (microconstituents) on the utilization of the nation's fish supply. As an essential step towards the achievement of this objective, the SURC Microconstituents Program is actively engaged in the development of baseline information on the occurrence and significance of microconstituents in fish and fishery products. It has become increasingly apparent that the toxicity of certain trace elements is related to their chemical form and their mode of occurrence in the living animal. With few exceptions, e.g., mercury in its organic and methyl forms, little is yet known about the influence of chemical structure and biochemical matrix upon the biological uptake and retention of microconstituents in fish. Information of this kind, together with sound statistical data on consumption patterns of fishery products, provides the basis for responding to erroneous allegations and influencing the establishment of realistic standards and guidelines with minimum negative impact on both industry and consumer.

Fisheries Utilization Program: Nutrition

Nutritional research by SURC falls under two major categories--aquaculture and animal nutrition.

Aquaculture/Nutrition

The SURC aquaculture/nutrition task was established approximately three years ago as part of NOAA's multidisciplinary approach to aquaculture research and development. During the past year, there were several major research activities in which the SURC aquaculture/nutrition program was involved. They are: (1) basic studies on the nutritional requirements for optimal growth of juvenile blue crabs reared in closed culture system; (2) basic research problems associated with the nutrition of shellfish (oyster/clams); (3) marine chemistry of closed system aquaculture; and (4) Macrobrachium prawn nutrition research planning.

Animal Nutrition

Industrial fishery products and by-products in general, have excellent and in some cases, unique nutritional properties, and can play significant roles in animal diets. However, in many cases, because these specific nutritional parameters are not adequately defined, maximum advantage is not being taken of these attributes. The Animal Nutritional Research Task of SURC has the responsibility to conduct the necessary research to explore and define nutritional properties of fishery products and by-products and to identify potential new markets.

Resources Development and Improvement Program

This program is divided into four major projects: (1) process and product development (2) nutritional data development (3) fishery by-product utilization and (4) shellfish development.

Process and Product Development: All the efforts in this program are directed toward the preparation and storage characteristics of experimental fish blocks made from latent resources. There is a significant amount of food fish available in the Gulf of Mexico and South Atlantic areas which is either underutilized or is not being fished extensively, while species of traditional importance are disappearing from the U. S. markets. Thus, the fish processing industry is looking to the Gulf and South Atlantic for latent species to fill this gap in production of fishery products from underutilized species.

Nutritional Data Development: To better inform the consumer on the nutritional value of fishery products, SURC has developed a data bank that contains the nutrient and chemical composition of finfish and shellfish. This past year, we have added to the bank, data obtained from 506 scientific articles. That increased the number of records on the tape to 20,500 items. So far, the data from the bank has been assembled and presented in several interim reports. Presently, data for three additional publications are being summarized.

By-product Utilization: Laboratory efforts at SURC have been directed at continuing the research on fishery by-product utilization as supplements in animal waste composting. The objective of this research is to show that fishery solid/sludge wastes, with minimum of processing, can be used to enhance the aerobic composting of animal wastes and to

produce material more suitable for animal feeding, soil conditioners, and other uses. These particular investigations are concerned with the stimulation of fly larva growth from fly eggs inoculated into animal wastes with the intent of increasing the rate of biodegradation of the animal waste.

Pollution Control: The problems of seafood processors in meeting effluent limitations were investigated. Both mechanized (steam and shake) and handshucking oyster plants were visited in order that we could become more familiar with processing operations and problems. Samples from selected waste streams were collected and analyzed for total and suspended solids, COD, and total and fecal coliforms. Oyster washing experiments at the plant determined the impact of a possible requirement for pre-washing of oysters in terms of additional settling tank capacity and a major sludge disposal problem. The seriousness of the effluent coliform problem was confirmed. Emphasis of this task is being shifted from pollution control technology toward by-product recovery and utilization.

Shellfish Development: The primary goal of the shellfish development project is to improve the utilization of shellfish products (mollusks) of a wholesome nature by (1) assisting in broadening the present market base by developing new products; (2) facilitating the use of misshapen, clustered, undervalued oysters, and (3) improving present detection techniques for microbial agents of public health concern. Our objective is to improve the utilization of mollusks by determining microbiological and economic parameters that limit the use and development of shellfish products, and methods for removing these constraints.

BUDGET SUMMARY
 ALL NMFS ACTIVITIES IN
 SOUTHEASTERN UNITED STATES

FY 1975 FUND ALLOCATION
 (Dollars in thousands)

<u>Organization</u>	<u>FY 1975</u>	
	<u>Man-years</u>	<u>Dollars</u>
Southeast Regional Office	104.6	\$ 4,376.1
National Fishery Products Inspection and Safety Laboratory	10.8	203.8
Southeast Inspection Office	12.0	175.3
Atlantic Estuarine Fisheries Center	70.3	1,317.0
Gulf Coastal Fisheries Center	81.4	1,890.2
Southeast Fisheries Center	107.8	2,516.2
Southeast Utilization Research Center	44.9	984.0
TOTAL	431.8	\$11,462.6

IN THE SENATE OF THE UNITED STATES

DECEMBER 21, 1973

Ordered to be printed as passed

JOINT RESOLUTION

Whereas the position of the United States in world fisheries has declined from first to sixth place among the major fishing nations; Whereas there has been a continuing decline in domestic production of food fish and shellfish for the last five years;

Whereas our domestic fishing fleet in many areas has become obsolete and inefficient;

Whereas intensive foreign fishing along our coasts has brought about declines in stocks of a number of species with resulting economic hardship to local domestic fishermen dependent upon such stocks;

Whereas rising costs and extremely high insurance rates have made fishing uneconomic in some areas even when stocks of fish and shellfish are at normal levels;

Whereas assistance to fishermen is very limited as contrasted to Federal aid to industrial, commercial, and agricultural interests;

Whereas United States fishermen cannot successfully compete against imported fish products in the market because a number of foreign fishing countries subsidize their fishing industry to a greater extent;

Whereas some 60 per centum of the seafood requirements of the United States is being supplied by imports;

Whereas the United States fisheries and fishing industry is a valuable natural resource supplying employment and income to thousands of people in all of our coastal States;

Whereas international negotiations so far have proved incapable of obtaining timely agreement on the protection of threatened species of fish;

Whereas our fisheries are beset with almost unsurmountable production and economic problems; and

Whereas certain of our coastal stocks of fish are being decimated by foreign fishing fleets: Now, therefore, be it

Resolved by the Senate (the House of Representatives concurring), That it is the policy of the Congress that our fishing industry be afforded all support necessary to have it strengthened, and all steps be taken to provide adequate protection for our coastal fisheries against excessive foreign fishing, and further that the Congress is fully prepared to act immediately to provide interim measures to conserve overfished stocks and to protect our domestic fishing industry.

SEC. 2. The Congress also recognizes, encourages, and intends to support the key responsibilities of the several States for conservation and scientific management of fisheries resources within United States territorial waters; and in this context the Congress particularly commends Federal programs designed to improve coordinated protection, enhancement, and scientific management of all United States fisheries, including coastal, anadromous and highly migratory species, under such presently successful Federal aid programs under the Commercial Fisheries, Research and Development Act of 1964, and the newly developing Federal-State fisheries management programs.

BALANCE SHEET

Gulf States Marine Fisheries Commission
New Orleans, Louisiana

June 30, 1974

ASSETS

Accounts receivable		\$ 7,570.00
Furniture, fixtures and equipment	\$2,625.79	
Automobile	<u>4,017.00</u>	
	\$6,642.79	
Less accumulated depreciation	<u>3,295.79</u>	<u>3,347.00</u>
Total		<u>\$10,917.00</u>

LIABILITIES

Bank overdraft		\$1,119.73
Accounts payable		70.44
Due to executive director		1,078.23
Payroll taxes withheld and accrued		<u>4,856.82</u>
Total liabilities		\$ 7,125.22

MEMBER STATES' EQUITY

Balance, July 1, 1973 as previously reported	\$4,270.34	
Add reimbursement of expenses by the National Marine Fisheries Service for fiscal year ended June 30, 1973	<u>3,357.00</u>	
	\$7,267.34	
Less travel expenses for fiscal years prior to July 1, 1973	<u>3,478.29</u>	
Balance, July 1, 1973 as restated	\$4,149.05	
Net loss for the fiscal year ended June 30, 1974 (Exhibit B)	<u>357.27</u>	<u>3,791.78</u>
Total		<u>\$10,917.00</u>

See the accompanying Notes to Financial Statements.

PROJECTED INCOME & EXPENDURES

1975 - 1976

MEMBER STATES APPROPRIATIONS:

Alabama - \$5,000.00
Florida - 4,500.00
Louisiana - 7,500.00
Mississippi - 2,500.00
Texas - 7,500.00

\$ 27,000.00

STATE FEDERAL MANAGEMENT, NMFS CONTRACT
(August 15, 1975 - August 31, 1976)

16,500.00

CONGRESSIONAL GRANT EASTLAND RESOLUTION
(June 1, 1975 - December 1, 1976)

\$200,000.00

LESS:

Contribution to Great Lakes
Coopers & Lybrand Contract
LESS: ASMFC Contract

10,000.00
9,045.32
2,666.67
\$ 6,379.65

GSRI CONTRACT

\$122,700.00

GSMFC (Administration Costs)

TOTAL

60,920.35
\$104,420.35