GULF STATES MARINE FISHERIES COMMISSION

NINTH ANNUAL REPORT
1957 - 1958

To The

CONGRESS OF THE UNITED STATES

And To The

GOVERNORS AND LEGISLATORS

Of

ALABAMA
FLORIDA
LOUISIANA
MISSISSIPPI
TEXAS

IN MEMORIUM

Walter J. Gex, Jr., Commissioner
State of Mississippi
1950-1956

NINTH ANNUAL REPORT (1957-1958)

OF THE

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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
312 Audubon Building
New Orleans 16, Louisiana

GULF STATES MARINE FISHERIES COMMISSION

ROSTER — OCTOBER 1958

Howard D. Dodgen
Chairman

Hermes Gautier
Vice-Chairman

W. Dudley Gunn, Secretary-Treasurer

Emily C. Carr, Office Secretary

* COMMISSIONERS

Alabama

Robert Folsom, Director,
Alabama Department of Conservation,
Montgomery, Alabama

Garet Van Antwerp, III, Senator,
State of Alabama,
Mobile, Alabama

W. C. Holmes, M. D.,
Foley, Alabama

Florida

Ernest C. Mitts, Director,
Florida State Board of Conservation,
Tallahassee, Florida

Walter O. Sheppard, Representative,
State of Florida,
Fort Myers, Florida

Vern Merritt,
Tarpon Springs, Florida

Louisiana

F. Lamar Clement, Director,
Louisiana Wild Life and Fisheries Commission,
New Orleans, Louisiana

E. J. Grizzaffi, Representative,
State of Louisiana,
Morgan City, Louisiana

A. O. Rappelet, Senator,
State of Louisiana,
Galliano, Louisiana

Mississippi

Chester Delacruz, President,
Mississippi Sea Food Commission,
Biloxi, Mississippi

Stanford E. Morse, Jr., Senator,
State of Mississippi,
Gulfport, Mississippi

Hermes Gautier,
Pascagoula, Mississippi

Texas

Howard D. Dodgen, Executive Secretary,
Texas Game and Fish Commission,
Austin, Texas

Jimmy Phillips, Senator,
State of Texas,
Angleton, Texas

Wilson Southwell,
San Antonio, Texas

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

SUCCESSIONS ON THE COMMISSION DURING THE YEAR

Robert Folsom	Vice	William H. Drinkard
A. O. Rappelet	Vice	Jeffery J. LeBlanc
Chester Delacruz	Vice	Walter J. Gex, Jr.
Wilson Southwell	Vice	Travis Bailey

COMMISSION OFFICERS ELECTED OCTOBER 17, 1958 FOR YEAR 1958-59

Chairman: Howard D. Dodgen succeeding W. C. Holmes

Vice-Chairman: Hermes Gautier succeeding Howard D. Dodgen

STANDING COMMITTEES

Roster — October 1958

Committee To Correlate Fishery Laws

A. J. Harris, Assistant Attorney General,
Alabama Department of Conservation,
Montgomery, Alabama

Mary Schulman, Assistant Attorney General,
State of Florida,
Tallahassee, Florida

Warren M. Simon, Attorney,
Louisiana Wild Life and Fisheries Commission,
New Orleans, Louisiana

T. Upton Sisson, Attorney,
Mississippi Seafood Commission,
Gulfport, Mississippi

(To Be Appointed),
Texas Game and Fish Commission,
Austin, Texas

Committee To Correlate Research And Exploratory Data (Committee 1)

Shellfish Committee (Committee 2)

Estuarine Technical Coordinating Committee (Committee 3)

Committee Membership

I. B. Byrd, Principal Biologist, (3)
Alabama Department of Conservation,
Montgomery, Alabama

Howard H. Eckles, Chief, (3)
Branch of Marine Fisheries,
Bureau of Commercial Fisheries,
U. S. Fish and Wildlife Service,
Washington, D. C.

Theodore B. Ford, Biologist, (3)
Louisiana Wild Life and Fisheries Commission,
New Orleans, Louisiana

Gordon Gunter, Director, (1-2-3)
Gulf Coast Research Laboratory,
Ocean Springs, Mississippi

Walter A. Gresh, Regional Director, (3)
Bureau of Sport Fisheries and Wildlife,
U. S. Fish and Wildlife Service,
Atlanta, Georgia

W. L. Holland, Jr., Federal Aid Coordinator, (3)
Alabama Department of Conservation,
Montgomery, Alabama

Robert M. Ingle, Director of Research, (2-3)
Florida State Board of Conservation,
Tallahassee, Florida

Howard T. Lee, Director, (1-2-3)
Coastal Fisheries Division,
Texas Game and Fish Commission,
Rockport, Texas

Donald R. Luethy, Marine Biologist, (1-2)
Alabama Department of Conservation,
Bayou La Batre, Alabama

H. T. Odum, Director, (3)
University of Texas Institute of Marine Science,
Port Aransas, Texas

Lyle S. St. Amant, Marine Biologist, (2-3)
Louisiana Wild Life and Fisheries Commission,
New Orleans, Louisiana

F. G. Walton Smith, Director, (1)
Marine Laboratory, University of Miami,
Coral Gables, Florida

Bruce H. Strawbridge, Biologist, (3)
Mississippi Seafood Commission,
Biloxi, Mississippi

Paul E. Thompson, Chief, (3)
Branch of Fishery Research,
Bureau of Sport Fisheries and Wildlife,
U. S. Fish and Wildlife Service,
Washington, D. C.

Seton H. Thompson, Regional Director, (3)
Bureau of Commercial Fisheries,
U. S. Fish and Wildlife Service,
St. Petersburg Beach, Florida

Percy Viosca, Jr., Marine Biologist, (1)
Louisiana Wild Life and Fisheries Commission,
New Orleans, Louisiana

Eugene Wallace, Biologist, (3)
Florida Game and Fresh Water Fish Commission,
Vero Beach, Florida

ACKNOWLEDGEMENT

In submitting this ninth 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 compacted States. The Commission fully appreciates that such measure of success as has been attained in the past nine 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,
Howard D. Dodgen, Chairman
Hermes Gautier, Vice-Chairman
W. Dudley Gunn, Secretary-Treasurer

COMMISSION ACTIVITIES

OCTOBER 1957 - OCTOBER 1958

The Commission met twice during the past year. The regular spring meeting was held at Clearwater, Florida, April 10-11, 1958 and the annual fall session at Biloxi, Mississippi, October 16-17, 1958. Three Commission sponsored scientific meetings were held during 1958; Ocean Springs, Mississippi, February 6-7; New Orleans, Louisiana, August 14-15; and Biloxi, Mississippi, October 15.

The following summarizes action of general interest taken by the Commission at its two mentioned regular meetings:

Resolutions adopted at Clearwater—

Requests the Fish and Wildlife Service and the five Gulf States to appoint a committee on estuarine environment which would be responsible for planning investigations into that broad subject; such committee to be represented by two members from the Bureau of Commercial Fisheries, two representatives from the Bureau of Sport Fisheries and Wildlife and two members from each of the compacted states' conservation agency or agencies.

Calls attention to the need for additional fresh water in the Louisiana coastal areas during dry periods to assist the fishes, shellfish and wildlife and requests the Corps of Engineers and the Fish and Wildlife Service, in cooperation with the Louisiana Wild Life and Fisheries Commission, to make this possible.

Favors use of Saltonstall-Kennedy funds for research in the cultivation of shrimp in completely controlled and in partially controlled ponds and reservoirs.

Requests the Fish and Wildlife Service and the marine fishery administrations of the member states to proceed expeditiously with the procurement of necessary data on shrimp, menhaden and other industrial fishes, and oysters, as recommended in reports of the Commission sponsored conference of scientists, February 6-7, 1958.

Resolutions adopted at Biloxi—

Requests Commission Committee to Correlate Research and Exploratory Data to program an improved fishery

statistical system and report on progress at the next regular meeting of the Commission, New Orleans, Louisiana, March 19-20, 1959.

Requests State Fisheries Directors on the Commission to appoint a technical committee of five members to study possible revision of Commission Informational Bulletin No. 1 on the shrimp resource; such committee to furnish report at the March 19-20, 1959 Commission meeting.

Reaffirms the Commission resolution, adopted in January 1954, which recommends a Federal Gulf shrimp research program, and recognizes that such items of expense as were incorporated in the suggested program be considered minimum amounts due to increased costs over the intervening years. The affirming resolution urges that past and future biological data be assembled and expeditiously published and distributed.

Requests that the governors and legislatures of the member states give favorable consideration to approving annual appropriations for the support of the Commission, as follows:

Alabama	$ 3,500	(Represents increase from $1,000)
Florida	3,500	(Represents no increase)
Louisiana	5,000	(Represents no increase)
Mississippi	3,500	(Represents increase from $1,000)
Texas	6,000	(Represents increase from $4,000)
	$21,500	

The Commission has not been in a financial position to support fishery biological and associated research but suggests the implementation of such programs at the federal and state levels when it appears insufficient data are available to properly evaluate the well being of a fishery. The Commission from time to time has suggested other character of programs such as the previously mentioned request that consideration be given to the supplying of fresh water into Louisiana marsh areas and coastal bays during dry seasons. Information developed from the various federal and state programs is freely exchanged among the several agencies through the Commission, which in numerous instances has avoided duplication of effort.

Much of the research suggested by the Commission during

its nine years of existence has been undertaken by the cooperating agencies. The pages to follow summarize certain 1957-58 research activities and findings thought to be of general interest, of the Alabama Department of Conservation, Florida State Board of Conservation, Louisiana Wild Life and Fisheries Commission, Mississippi Seafood Commission, Texas Game and Fish Commission, and the Fish and Wildlife Service Bureaus of Commercial Fisheries, and Sport Fisheries and Wildlife. An increasing amount of research on fisheries of the Gulf is being contracted by federal and state agencies to university fishery laboratories located in the area.

The Commission continues the rotation of regular meetings from state to state in order to increase its knowledge of fishery problems by areas. Since the formation of the Commission one or more meetings has been held in the following cities of the Gulf States:

Alabama	—	Mobile, Montgomery
Florida	—	Clearwater, Pensacola, Tampa
Louisiana	—	New Orleans
Mississippi	—	Edgewater Park, Biloxi
Texas	—	Austin, Brownsville, Houston, San Antonio

The next regular meeting of the Commission, as previously mentioned, will be held at New Orleans, March 19-20, 1959. The tenth annual meeting of the Commission will be held at Corpus Christi, Texas, October 15-16, 1959.

STATE ACTIVITIES

OCTOBER 1957 - OCTOBER 1958

ALABAMA

The exceptional success of the Alabama Department of Conservation artificially created snapper banks reported last year have exceeded even optimistic anticipation this current year.

Fishing success on the location of some 500 car bodies off Gulf Shores, after a few months, was such that fishermen found it worthwhile to seek out the location. During recent months the increased fishing success and larger sizes of snapper and other fishes at this location has created a fishing utopia for local and visiting fishermen. The concentration of fishes caused through the artificially created cover by the 1,000 car bodies off Dauphin Island is progressing similar to the earlier deposited car bodies off Gulf Shores. To describe this project as construction of artificial snapper banks is rather misleading in that these areas attract other species of fish and are utilized extensively as trolling grounds for king and spanish mackerel. Creel census on the Gulf Shores banks after 112 man fishing hours indicate an average of 14.7 fish per man hour effort with an average weight of 1.8 pounds per fish.

As a possible guide to any agency anticipating a common project, the following factors should be considered:

1.) Submerge car bodies in 7 to 10 fathoms of water so as not to create navigational hazards and also to discourage skin diving activities.
2.) Find hard bottoms in an area easily located by fishermen through land reference marks.
3.) To facilitate good anchorage, use discarded cable to cluster some ten car bodies for each deposit. All deposits should be in a predetermined pattern.
4.) Close cooperation with the Coast Guard should be solicited so as to properly buoy the areas.
5.) An exceptional effort for widespread publicity is necessary so that shrimp trawlers may avoid the areas and fishermen may readily locate the sites.

Seed oyster plantings during the past year have been increased with a majority of the project being conducted with new planting techniques. This project was conducted with two objectives in mind—one, of course, to improve our existing pro-

ductive oyster bottoms and reefs and, secondly to thin and cultivate the large clustered non-producing Whitehouse reef. Thusfar, preliminary findings are encouraging in behalf of both objectives. The oysters were rake dredged by three large power-operated boats and transferred by canvas lined cargo nets on to a 30′ x 120′ barge. The barge was maneuvered on a tow rope over a measured acreage of preapproved oyster bottoms. As the barge was being towed in the planting areas, two 4″ discharge pumps were used to wash the seed oysters overboard. The discharge hoses were not reduced and care was taken to wash the seed oysters overboard rather than jet them. Bill damage on oysters was found to be over 20% less than those dispersed by shoveling. Also, an almost perfect distribution of the seed oysters was possible when the operation was properly supervised. Some 49,860 barrels of seed oysters were planted in three general areas utilizing these techniques. Approximately 10,000 additional barrels were planted as in the past with numerous small boats and distribution by shovel. The Whitehouse reef area where the seed oysters were dredged shows a very probable possibility of producing oysters for raw stock market value for the first time in recent years. To further study the effects of dredging on over-populated reefs, a shore period of rake dredging was legalized on this reef, the oyster to be utilized for steam stock. As previously mentioned, these dredging operations are indicated as beneficial. However, with this being the first such liberalization on dredging regulations in many years, enforcement problems were considerable.

Intensive shrimp studies have been conducted during the past year in Mobile Bay and adjacent inshore waters. The migrations and other life habits seemingly conform with adjoining States. However, of particular circumstance is the extreme fluctuations of hydrographic conditions. These extreme conditional changes and other factors not conforming with nearby States may well necessitate some change in shrimping regulations. Studies covering this possibility are not as yet advanced enough for publication. However, biological studies on several of the animal's behaviors and mannerisms have been underway since 1952 and a publication covering the findings is anticipated next year.

Preliminary coordinated studies on shrimp trawl catches have just been completed with some interesting data. An effort

was made to determine an approximate waste figure on discarded trash fish caught during shrimping operations. The findings from this study indicate that for every eleven pounds of shrimp taken in trawls in inland waters, approximately 85.4 pounds of trash fish are discarded overboard as a waste. Using this ratio with last year's reported landings and valueing the trash fish at $45/ton, one can assume that Alabama's fishery industry was deprived of an estimated $800,000 in gross revenue. Much of this waste could be eliminated were convenient market sites available for the trawler to sell rather than dispose of trash fish.

The "Jubilees", so-called when the demersal fish and crustaceans suddenly make a shoreward migration with almost no escape power and yet without natural mortality, is of small overall fisheries consequence, but yet of biological interest in that the phenomena occurs only in Mobile Bay. A publication covering this unusual occurrence should be available this coming year. Indications are that a combination of biochemical, meteorological, and other factors create conditions whereas these animals are subjected to stratified waters, that is, salt water with high CO_2 and oxygen depleted on bottom and fresh water with life supporting oxygen on top. The affected animals in their erratic travel are at one time in conditions of high CO_2, hence biologically subjected to rapid physiological reaction. Then when in the fresh water, the fish receives a life sustaining supply of dissolved oxygen but not enough to offset the demand initiated by the salt water CO_2 concentration. Therefore, an explanation on the frustrated behavior of the shallow water animal so easily taken on fish jubilees. The few hours duration of this occurrence makes for difficulty in gathering data to absolutely ascertain these preliminary indications.

Other continued or proposed studies in Alabama include:—

1.) The effects of purse seines on fishes in Mobile Bay: This research could well involve the rough fish problem in the several estuaries of Mobile Bay. The project will be directed so as to determine effects on game and food fishes and economic evaluation of the fishes contributing to oil and meal production.

2.) A study to correlate biochemical and other hydrographic factors of inshore marine water with fresh water river stages: This, of course, would contribute

to oyster management, help predict shrimp migrations, and afford recommendation for future Corps of Engineer projects.

3.) The continued cooperative summer course offered through the University of Alabama and conducted at the Department's Marine Laboratory: This course should most certainly be perpetuated each summer. Also, it is proposed that continued effort be exerted to acquire funds for graduate students so that they can participate in departmental marine research for advanced degrees. These graduate students could contribute many sorely needed answers for a better seafoods program.

FLORIDA

As in recent years, studies are carried out in two different ways. Part of the work is done by scientists hired directly, and working within, the State Board of Conservation. The Board's laboratory located on the Maritime Base at St. Petersburg is headquarters for these activities. However most of the scientific work is still carried out, under contract, with the Marine Laboratory of the University of Miami. These projects are reported upon directly to the State Board of Conservation on a quarterly basis.

Research Performed
by the
St. Petersburg Marine Laboratory

SHRIMP

Studies will continue into the basic biology of the pink spotted shrimp, *Penaeus duorarum*. Work presently under way will shed light on such basic processes as growth, migrations, reproduction and feeding activities. Salinity and temperature requirements are also being evaluated.

PARASITES

Parasites and diseases of fishes and shrimp will continue to be investigated. Many of these abnormalities will provide indirect information on the basic processes of the fishes and shrimps afflicted. Possible additional benefits may include future control of the harmful agent.

Marine Botany

A long neglected aspect of marine biology is now receiving attention due to the established value of coastal aquatic plants as cover for developing fishes and shrimps. Practical studies are aimed at the effect of various kinds of fishing gear upon the salt water grasses.

Fishes

Studies are now underway to gather basic information on the growth, migratory patterns, feeding and reproduction of the prominent coastal fishes of the west coast of Florida. An attempt is being made to show salinity and temperature preferences, also.

Red Tide

Periodically, as the need presents itself, samples of water are taken along the southwest coast of the State to determine the incidence of the causative agent of Red Tide, *Gymnodinuim brevis*. One object of these studies is to advise county and municipal governments of impending fish kills along the beach. With local agencies thus apprised, measures can be taken to eliminate the carcasses quickly and minimize the harm. Also, it may later be possible to correlate outbreaks with meteorological phenomenon.

Inspections

Various governmental agencies often seek advice concerning certain dredging projects, channel construction and other coastal alterations. A study is made in such cases to show what, if any, effects are likely to accrue from the proposed alterations. This information is made available to legally constituted and responsible agencies.

Bottom Studies

In cooperation with the Geological Survey (a part of the State Board of Conservation), a study is being made of the characteristics of the mud and sand deposits that constitute the bottom deposits of Tampa Bay and vicinity. This study will provide new knowledge of the type of bottoms preferred by aquatic plants and animals.

Because a detailed examination is being made of the very

small animals encountered, much knowledge of the food of shrimp and small fishes is also being obtained.

Research Performed by the University of Miami Marine Laboratory

Trout and Tarpon Studies

The present year's work on the trout from the upper west coast has provided data on the life history of this population. Comparison with similar information from the east coast is useful in setting the management policy. For example, it proves that minimum size limits should be different.

It is proposed to tag in the upper west coast areas for growth and migration; if it proves feasible mortality rates can also be estimated.

Shrimp Biology

The nature of the eventual management program on the Tortugas fishery will depend on the determination of the balance between growth rates and mortality rates, including the extent to which fishing affects both of these. From the good results of limited tagging experiment during this year it is believed this approach is the one most likely to yield qualitative results. A concentrated tagging program will be made in the fishery, aiming to put on 1,000 tags per month.

The collections and analysis of catch records will continue.

Florida Bay Estuary

It is certain now that this area is the nursery ground for the Tortugas commercial fishery. The information already gained of the physical characteristics of the region and of the animal and plant complexes there, is already useful in an understanding of the shrimp fishery and of the sport and commercial fisheries at the southern end of the state.

It is proposed to continue the description of this estuary and to take the next steps in improving quantitative studies of the physical environment in relation to the plant and animal populations.

Technology

Two technological problems are most pressing in Florida. These are related to rancidity control in stored fatty fishes and

crab studies. These two problems are being attacked full-scale.

Crab Studies

The need for developing a synthetic crab bait is as pressing as ever. Behavior studies and more extensive field trials are necessary. These are being made.

The Board's inability to be very helpful in cases of crab kills investigated in the last year arises from lack of knowledge of the "normal" situation in regard to bacterial flora and other conditions. Pathology and abnormality thus cannot be recognized. It is proposed to examine normal crabs from as many situations and areas as possible, to record their bacterial flora, the sources of contamination and to describe their appearance and condition. Abnormal crabs would also probably be encountered during this work and a more rational comparison could henceforth be made.

Statistics: Commercial Landings and Catch and Effort Studies

It has been realized from the beginning of this program in 1950 that fish tickets, which provide accurate statistics of total landings, in addition to catch and effort data, would have to be used eventually. A trial with fish tickets being given to some dealers is proving successful. For this year, fish tickets will be provided all dealers who can be persuaded to use them.

Oyster Division

During the summer of 1958, 200,400 bushels of oyster shell were planted at carefully selected sites in Apalachicola Bay.

LOUISIANA

The Division of Oysters, Water Bottoms and Seafood of the Louisiana Wild Life and Fisheries Commission, through its Oyster Section, has proceeded according to plan during the period, 1957-58. Studies of oyster growth and mortality; the biology and control of oyster predators and the effects of pollution with oil-based muds and well cuttings have been continued. Hydrographic studies are continuous but expanded effort in this direction is planned. A specialist in hydrography and sedimentation has been added to the staff and plans are being made to make studies of the efforts of canaling and dredging the oyster leases.

A program of reporting on all types of damages and mortalities on oyster leases is continuing and is in considerable demand by both oyster growers and industrial companies. During 1958 less complaints of oyster mortalities have been registered. It is believed several factors are responsible for a reduction in complaints. These are:

Better relationships between oyster growers and industrial companies.

The fact that industrial companies have been using technical information and consultation furnished by the Louisiana Wild Life and Fisheries Commission in advanced planning.

Better over all oyster condition resulting from high river stages and heavy rainfalls which have reduced salinities, predation and diseases.

More rigid enforcement of pollution laws.

Progress is being made toward introducing fresh water from the Mississippi River into various oyster areas. Plans, specifications and cost benefits are completed and tentatively approved by the U. S. Corps of Engineers. It is believed that these projects will be included in the next year's Mississippi River Tributaries project plan.

Much of the work load of the biological section has been directed in planning and construction of the Marine Laboratory at Grand Terre Island. To date, the turning basin, docks and residence are complete. Much of the laboratory site is cleared and prepared for construction and a temporary laboratory has been moved into place and equipped. Plans for the laboratory are complete and are being prepared for bids. Since it is expected that all types of Marine Research will be undertaken at the new laboratory, plans for the pond culture of shrimp and oysters are now being made at the new site.

Seed oyster production from shells planted in Black Bay in 1956 were extremely successful. In September 1957 over 120,000 barrels of seed were harvested on approximately 600 acres. Because of this success 25,000 barrels of shells were planted on 300 acres in the same area in May and June 1958. Recent examinations indicate that between 75% and 80% of these new shells have now caught spat.

The Commercial Seafood Section has proceeded with investigations of the shrimp fishery. The serious decline in the white

shrimp population, *Penaeus setiferus,* in recent years was more or less coincident with an unprecedented drouth period in the Northern Gulf Drainage Area. Even after the onset in early 1957 of an extended rainy period in this drainage area, resulting in decreasing salinities in estuarine waters all along the northern shores of the Gulf, the white shrimp population continued to decline.

New questions have arisen, for which answers are being sought, among them the following:—Is the lag in recovery of the white shrimp population after the break of an extended drouth cycle a normal phenomenon? Are natural and man-made factors interactive in the biological recovery processes? Can man-made factors as they exist today prevent a return to normal? Are they delaying the recovery processes in any way?

In view of the current situation in shrimp production circles, any information which might throw light on environmental changes associated with the rises and declines of shrimp populations is being eagerly and continually sought after. Increased emphasis has been placed on associated and bottom organisms not utilized in commercial channels. If changes in the populations of non-commercial species can be correlated with changes in the shrimp populations, at least some of the problems will be solved and much will be gained from the studies. It is yet too early to evaluate the data obtained.

In addition to studies of the nursery grounds of the white, *Penaeus setiferus,* and brown, *Penaeus aztecus,* shrimp species, studies have been extended to include those of the pink species, *Penaeus duorarum.* In Louisiana, these latter grounds extend for the most part in a north-south belt of submarine meadows which are protected from turbulent seas in the lee of the Chandeleur-Breton Island Chain.

Incidental to these pink shrimp nursery ground studies, was the rediscovery of beds of the bay scallop, *Aequipecten gibbus,* as an important constituent of the same environment. The original discovery of this small but tasty scallop dates back more than a half century and was reported on in a 1906 bulletin of the Gulf Biological Station. Recent surveys of these beds were made with the aid of aqua lungs, as reported in the September 1958 issue of the Louisiana Conservationist.

Recommendations relative to changes in the shrimp statutes were submitted to the shrimp fishery and to the Louisiana Leg-

islature. Some, but not all of these recommendations were incorporated in the new Louisiana shrimp law, now Act No. 53 of the 1958 Louisiana Legislature. Essential features are the following: the closed seasons in *inside waters* extend from December 20 to April 30, and from July 1 to the third Monday in August, all dates inclusive. *Inside waters* are redefined to include waters out to the three mile limit. Bait trawling is prohibited during the closed seasons. Night trawling is now permitted during the open seasons. Licensing of commercial tackle has been reinstated. Penalties are very severe.

MISSISSIPPI

The Gulf Coast Research Laboratory staff completed work on the monthly faunistic study and transect across Mississippi Sound, but the data have not been compiled or written up. Work on the anatomy and salinity tolerance of the borer, *Thais haemastoma,* was also continued. Some new fishes and invertebrates were added to the species catalogue.

Sixty-one students enrolled in the courses in marine biology and geology during the 1958 summer session at the Laboratory. The courses taught were Marine Zoology for Teachers, Marine Invertebrate Zoology, Marine Vertebrate Zoology, Problems in Zoology, Marine Botany, Marine Geology and Problems in Sedimentation. Several of the students were college teachers of biology and geology. Thirty-three teachers received stipends from Foundation funds, which enabled them to take classes at the Laboratory.

Eleven people carried on research problems as a result of a grant from the National Science Foundation, and several of them are in the process of completing research papers. Several stages of shrimp and crab larvae were collected by one worker, which materially added to the life histories of this group. A new phylum for the region, and a new species of kinorhynch was discovered and described. A histological study was made of the locus of deposition of glycogen and fat in the oyster mantle. The species of *Necturus* in Mississippi were surveyed and one probable new species was discovered. The organogeny of the catfish *Galeichthys,* was described, with particular reference to the nervous elements. The flipping behavior of *Fundulus similis* in returning to the water was analyzed, and compared to other fishes. A general survey was made of the trematode

parasites of several marine fishes. A great deal of information on the early embryology of a trematode was found almost accidentally.

The menhaden bibliography was completed. A review of biological literature on the Gulf menhaden was also completed and turned over to the Fish and Wildlife Service. Plankton samples for larval menhaden during the winter and spring were partially successful. Total length frequencies of the young populations in the shallows of Mississippi Sound were followed during the spring and summer. Populations of the commercial catch were followed in the same fashion by samples taken at the docks and from boats as they fished. A survey of the other fishes caught with menhaden was also made. Salinity samples taken at 50 sets or strikes with purse seines showed that the salinities varied from 7.0 to 30 parts per thousand and averaged about 22.0, or about 60 per cent sea water. Evidently this fishery, like most others on the Gulf coast, is of an estuarine nature.

Meristic counts were made on 2,085 fish, divided into three groups, from Apalachicola, the Mississippi coast and Sabine Pass. Preliminary analyses indicate that the Mississippi fish show some slight differences from the other two in a few characters.

There were no plantings of oyster shell by the Seafood Commission during the 1958 season. The seafood laws were revised at the last session of the legislature. None of the changes involved biological matters relating to conservation. However, a progressive step forward was made when the Commission employed a biologist to handle its biological problems. His chief concern will be with oyster problems. The change of laws also permitted private leasing of oyster bottoms and considerable progress in this direction has already been made.

TEXAS

In order that the investigational work of the Marine Division of the Texas Game and Fish Commission might be intensified and results be made more readily available for use, practically the entire program was reorganized in April of this year.

The inland coastal waters of the State have been divided into nine regions. Region M-1 consists of Sabine Lake and abutting waters. Proceeding down the coastline the bays are divided so that Region M-9 is the lower Laguna Madre from the "land-cut" to the Rio Grande. An outline on which investiga-

tional projects are based was defined and detailed project and job descriptions written.

Several permanent staff additions have been made. New survey projects were originated; an additional oyster study project was begun and a third chemist was employed late in this year to assist in pollution work.

The program of employing college students as summer assistants was continued.

In October 1957 negotiations for the purchase of land and buildings in Seabrook were completed. A one story frame building of over 3,000 square feet and some 25,000 square feet of land were obtained for the establishment of a Field Laboratory.

In April six oyster reefs were built in the lower Laguna Madre near Port Isabel. Each reef is approximately one fourth of an acre in size. If this experiment proves successful, larger areas will be planted and it is hoped that private interests will be encouraged to lease bottoms for oyster culture. As the year closed work was beginning on three larger areas in Galveston Bay.

Some 200 junked car bodies were dumped in a restricted area some five or six miles southeast of Port Aransas in water ten fathoms deep.

Studies intended to measure the catch of the non-commercial saltwater fishermen have begun. Specialists in marketing research have conducted the preliminary stages of this work by contract agreement. A survey questionnaire and procedure are being designed as the year closes. Data on the catch per unit of effort are to be obtained in order that comparison may be made with subsequent findings. Also a measure of the total harvest from the inland coastal waters will then be possible by combining sport and commercial catch data.

One fishery study was undertaken in a contract agreement with the University of Texas. This study of "Striped Mullet Production in the Laguna Madre" began in February and will continue throughout next fiscal year. Data to be developed include life history information, population dynamics, and estimates of production for the entire bay.

Shell Survey

The survey continued in Corpus Christi Bay with the use of the Sonoprobe. As the year ended, a Marine Autotraverse Positioner had been installed. Use of this device will allow the

operators on the boat to determine the boat's position and will eliminate the need for two shore parties using transits.

MESQUITE BAY PROJECT

An ecological and hydrographic survey of Mesquite Bay and Cedar Bayou conducted from August 1956 through May 1958 has been completed and a report submitted. Cedar Bayou has served at times as a natural pass allowing free interchange between the open Gulf and Mesquite Bay. This extended study precedes the anticipated dredging of the pass and will be repeated upon completion of the construction work. Photographs were made of the coastal bay-gulf passes at intervals of three months beginning in May. Because these passes can in some cases influence the ecology of the bays, it is important to know what if any changes occur.

A brief survey of trawled scrap fish processed by a plant was conducted to find what food or game fish are caught in the trawls and the disposition of these fish. It was found that the two boats which were operated by one menhaden plant as scrap fish trawlers have been reconverted to purse net boats.

In May 1958, a basic ecological survey was begun in Area M-2 (Upper Galveston Bay and Trinity Bay). Sampling stations have been established and records are being kept of salinities, turbidity, air temperature, surface water temperature, bottom water temperature, bottom types, vegetation, weather, and animals taken at each station.

A field station was re-established on Matagorda Bay and a general ecological survey of Area M-4 was begun in June. An inventory of bottom types was completed and was found to vary from firm to very soft mud. There are live oyster reefs throughout the area.

A program for the study of fish populations, hydrography, and other biological aspects of Corpus Christi Bay was drawn up and the actual field work was begun in July. Water samples and temperature data are taken periodically at various stations. Information concerning current patterns and bottom topography is being obtained.

Area M-8 (the Upper Laguna Madre) was subjected to an intensive survey from September 1951 to July 1956 at which time the field station was discontinued. In March of 1958 the station was re-opened and a basic survey was begun. In addition to other studies systematic nutrient analyses have begun

using nutrient additives phosphates, nitrates, and iron chloride. There is some indication that a lack of phosphates limits phytoplankton growth in the Upper Laguna Madre. Further experiments will be conducted and methods will be refined.

The survey of the Lower Laguna Madre was continued throughout the year. A continuation of the survey of the vegetation of the area shows a marked progress in the extension of the range of widgeon grass, *Ruppia maritima,* which is important to the spawning of the spotted trout. The spawning grounds of the spotted trout have been plotted. The effects of the Port Mansfield Channel, pass and jetties on the ecology of the Redfish Bay area have been noticeable but not of a spectacular nature. Marine populations of Redfish Bay remain unchanged. The two most noted possible effects of the pass on the bay are the advancing of the seasons and the decreased salinity.

Oyster Fishery Investigations

The study of factors affecting the productivity of natural oyster reefs in the Galveston Bay area was continued. Special attention was given to the rate of recovery of reefs damaged by the Trinity River floods. A moderate spatfall occurred in September and October 1957. Trinity Bay reefs which had been killed by the 1957 flood were repopulated. Because of the scarcity of oysters, power dredging was prohibited during the 1957-58 oyster season. The harvest was generally poor and the oysters did not reach the quality of previous years.

Pollution

The Seabrook Field Laboratory is equipped to handle all water pollution control problems in the upper coastal area. Bio-assays of industrial waste water are run on various forms of marine and aquatic life to determine the toxic effects of a specific waste.

Six of the major potential pollution violators are now investigating waste treatment facilities, setting up waste treatment pilot plants, or are drawing plans for waste treatment improvement. An intensive study of the highly polluted areas along the lower coast was begun to determine the extent of the damage credited to industrial pollution. Bio-assays and chemical analyses are made to check the cause of pollution. Toxicity studies on waste waters have been conducted for industrial plants, and two plants are working on an improved process of reducing the concentration of toxic components in their waste waters.

U. S. FISH AND WILDLIFE SERVICE ACTIVITIES

OCTOBER 1957 - OCTOBER 1958

Bureau of Commercial Fisheries

GULF FISHERY INVESTIGATIONS, Shrimp Studies: The new method of marking shrimp by colored vital stains is an important advance in shrimp research. This technique, after preliminary field trials, was being successfully employed on a large scale at the close of the year. This method provides a mark that remains after shedding, and makes it possible to estimate growth and mortality rates. The first field trials in Biscayne Bay demonstrated the success of the method when well-marked shrimp were recovered after a few months at liberty. Since then, several thousand young pink shrimp have been marked and released in the Whitewater Bay area of Everglades National Park to determine whether this is an important nursery area for the large Tortugas fishery centering about one hundred miles to the west.

At Galveston, studies of the life history of the white and brown shrimp in the inside waters show that they each reach a peak of abundance at different seasons of the year. This sharply reduces the interspecific competition on the nursery grounds.

The University of Miami Marine Laboratory under contract with the Bureau sampled pink shrimp on the Tortugas fishing grounds to determine the sizes of shrimp in relation to depth where the shrimp were taken.

Tulane University, under contract with the Bureau, has completed an anatomical atlas of the white shrimp which is now in process of publication.

Red Tide Studies: During the autumn red tide outbreak in Florida, the first extensive attempt at control was made in cooperation with the Florida State Department of Conservation by spreading 105 tons of copper sulfate with crop-dusting airplanes. The method appears too expensive to use for controlling large outbreaks, and the organisms appear to be able to increase to their former abundance within a couple of weeks.

Since 1948 the Fish and Wildlife Service has been conducting research to determine the causes of outbreaks of Florida red tide, and especially to develop methods of prediction and control.

A number of scientists from various parts of the United States and the research staff of the Gulf Fishery Investigations held a symposium at the Galveston Laboratory on March 5-7 to review this decade of research, and to evaluate the program. This discussion and appraisal has aided greatly in formulating a revised program of research that is expected to speed our understanding of the factors causing the overblooming of the red tide organism.

The red tide laboratory at Galveston has been improved by the addition of constant temperature rooms, a light room and a germ-free room. These improvements have materially facilitated research and culturing of *G. breve*.

The former red tide field laboratory at Naples, Florida, has been moved to adequate quarters in St. Petersberg Beach, Florida. Provided with better facilities, including a chemistry laboratory, the program has been expanded to include work on shrimp and basic estuarine hydrography.

Estuarine Studies: Most of the important fisheries of the Gulf are intimately connected with the shallow waters, marshes, and estuaries lying behind the barrier islands. The young of the white, the brown, and the pink shrimp enter these waters through the passes as larvae or postlarvae and grow very rapidly to a good size before emigrating seaward. The same applies to the young of the menhaden, mullet, tarpon, sea trout, and other species. In view of the importance of these nursery grounds, the Service has been concerned lest engineering and industrial projects and developments impair their value because of a lack of biological information.

In order to obtain essential data, the Gulf Fishery Investigations laboratory at Galveston has plans developed by the Galveston District Office of the Corps of Engineers for a sea-water system with aquaria, tanks, and ponds. These will be used in studying the effects of environmental changes which could occur in the marshes and affect the normal life cycles of shrimp, menhaden, and other organisms using these shallow areas. Work will be coordinated closely with the Gulf Estuarine Study committee recently formed.

Industrial Fish Studies: Two biologists have recently been stationed at Pascagoula, Mississippi, to work with the Bureau's Exploratory Fishing and Gear Research Laboratory in studying

life histories of herring-like fishes taken with experimental gear by the exploratory fishing vessel Oregon.

Menhaden Studies: The Gulf Coast Research Laboratory, under Service contract, has been studying morphological characters of menhaden to determine whether there are several populations.

GULF OYSTER INVESTIGATIONS: This laboratory has now completed ten years of continuous observations of the time and intensity of oyster setting in Santa Rosa Sound. These records with comparable data for salinity and water temperature demonstrate the wide natural fluctuations in spatfall that occur without apparent cause. There is little indication of progressive change in the environment, and occasional increases in the amount of oyster set appear to be related primarily to increased amounts of fresh-water drainage from the land. The decade of records are now being processed for publication and it is planned to continue the program to search for additional factors which might affect the set of oysters.

Studies on growth and survival of New England hard clams *Mercenaria,* transplanted to Florida have been conducted for the past seven years. These observations show that growth in the south is at least twice as rapid and may be as much as seven times as fast as in northern areas where clams are profitably harvested. However, increased predation here due to two types of crabs and three snails will make commercial production difficult and, without suitable fencing, probably impossible. Cost accounts are being prepared to show yield of clam meats in terms of the cost of fencing and trapping of predators. Clam farming may be well worthwhile, since large numbers of seed clams can now be cultivated artificially in the laboratory.

Further studies on the control of *Thais,* the oyster drill, confirm the earlier conclusion that practically the only natural control agent is fresh water from seasonal flooding; that the trapping of snails on a large scale is not economically feasible and the chief hope for eliminating this predator is the development of a biological control. A program developing methods for using a parasite or disease as a biological control is progressing steadily. Surveys of the natural incidence of the worm *Parochis,* which parasitizes *Thais,* show that it is present throughout the Gulf Coast but always in very small numbers. The worm has a complicated life history involving an adult

stage in the intestine of shore birds, and larval life in the snail, where it invades and destroys the gonad. Work is underway to determine suitable methods for increasing the natural incidence of the parasite in controlling drills.

Despite the many investigations of Gulf oysters, little is still known concerning the factors involved in their feeding and fattening. This investigation has been unable to identify as yet any causal relationships between the normal ranges of salinity, temperature, and plankton, for example, and oyster feeding.

A new non-toxic water-pumping system is now under construction, and there are plans to continue and emphasize investigations of relationship between oyster activity and trace elements or compounds which may be of importance in the natural environment.

EXPLORATORY FISHING AND GEAR RESEARCH: Exploration has been carried on by the Pascagoula, Mississippi, Station in the following projects: Snapper trawling, deep water shrimp trawling, hard clam and scallop dredging, shrimp exploration of the continental shelf off Central and South America, and exploration of school fishes in the Gulf. During the year, over 1200 stations were made by the exploratory fishing vessels Oregon and Silver Bay.

Red Snapper Trawling: The Silver Bay devoted five cruises to snapper trawling. Areas covered have been off the Texas, Louisiana, Alabama, and Florida coasts and the Campeche area. The development of the gear has resulted in a heavy braided nylon trawl with 20-inch rollers on the foot rope. Some areas heretofore considered untrawlable have been fished successfully with this gear. In areas where stocks of snapper are abundant, this method of fishing has produced as high as 870 pounds of snapper and 50 pounds of grouper per tow. In one five day period in which 33 tows were made, 4600 pounds of snapper and 700 pounds of grouper were taken. Additional trawling will be conducted in the Campeche area during the forthcoming winter months to evaluate commercial possibilities.

Shrimp Exploration: Some deep water tows were made by the Oregon for red shrimp on its cruises to Central and South America with no large concentration of a commercial nature determined in any of the tows. The Oregon is currently on a second trip to the East coast of South America to examine the

shrimp potential along the broad continental shelf in that area. Until the vessel returns there is no detailed information on the results of this cruise.

Clam and Scallop Exploration: The Silver Bay made a follow-up cruise for hard clams and scallops during July and August from Chandeleur Island to Cape Romano, Florida. In areas off Marco Island, Venice and Pass-a-Grille Beach, Florida, using a 13-tooth "Fall River" type clam dredge, good results were obtained. Production of 1½ bushels per fifteen-minutes tow was obtained in 16 to 22 feet of water. These clams ranged from 2 to 4½ inches in size with approximately 75% being 3 inches. Shallower water potential is unknown inasmuch as the vessel draft is too great for close inshore operation.

A scallop bed approximately 10 miles long was defined south of Apalachicola. Production in this area ran to 40 bushels per 15-minute tow. The average size of these scallops is 2¼ inches yielding approximately 2 quarts of meats per bushel.

Exploration of School Fish: Exploration of the school fishes of the Gulf which are not currently being utilized was started. Sampling and identification of various species have been underway as well as gear development for capturing these species. The mid-water trawl has been used with some degree of success in this work. A telemeter device is being installed aboard the Oregon which will aid in maintaining the mid-water trawl at precise depths. Use of a small lampara seine has also assisted in sampling. Development of more effective lampara seines is now underway both by the Bureau and industry members. The South African type and the California type are to be used in the near future in this program.

Areas explored so far have extended from the Mississippi Delta east to Fort Myers Beach, Florida, and the Yucatan-Campeche areas. Some of the species obtained have been anchovies, razorbellies, chub mackerel, round herring, thread herring, cigar fish, menhaden and pinfish. It is felt that with the further development of both the lampara seines and mid-water trawls this program has good potential.

Red Snapper Trap Research: Designing and testing various types of traps that may be economically feasible for use in the Gulf red snapper fishing has been conducted by the staff of the Bureau's Miami gear research station using the vessel George M. Bowers. Various designs of traps have been observed by

underwater television instruments while fished in the Gulf and the reactions of the fish to them have been studied for determining improvements in efficiency of the traps. A film depicting this work is in preparation and will be available for use by other organizations when completed.

GULF FISHERY STATISTICAL AND MARKET NEWS PROGRAM: Statistics: A general survey was made showing the volume, value and number of fishermen and operating units involved in the catch of commercial fish by U. S. Nationals in the Gulf of Mexico. A detailed survey of the shrimp fisheries of the Gulf was made to obtain information on effort, area of capture, species breakdown, size and value.

The annual survey of the Gulf fisheries was completed this past year at the earliest date in history. This was achieved by organizing certain aspects of the survey which could be kept current and requiring that it be kept current. The data are now being analyzed and will be published in the Bureau's Annual Statistical Digest.

An investigation was made this past year into improving survey techniques and methods of tabulation of data in order to obtain the most from available resources. A new survey card was designed which can be field recorded and machine tabulated. This will result in considerable speed in tabulating the operating units, fishermen and gear and will enable the Bureau to obtain data on individual fisheries economically. Much of this data has been obtained previously but not tabulated simply because the cost of hand processing was too great.

Monthly landing bulletins developed in cooperation with the States are being issued for each of the Gulf states.

The bait shrimp survey, because of a reduction in funds, is not progressing rapidly and its future is in doubt.

Market News: The Market News Service activities in the Gulf area include the publication of a daily Fishery Products Report, a Monthly Summary, and a 1957 Annual Summary of Landings of Fishery Products for Selected Areas in the Gulf of Mexico. These reports are mailed currently on request to the industry and other interested parties.

GULF FISHERIES TECHNOLOGICAL STUDIES: The Bureau's recently completed technology laboratory at Pascagoula, Missis-

sippi, has initially been staffed with a bacteriologist, a chemist, and a chemical scientific aide.

Preliminary investigation has been completed on the canning of round herring, *Etremeus teres,* in a sardine-type pack. Further canning experiments are planned to obtain data on suitable methods for canning them commercially. An investigation has been initiated on the technological problems in utilizing in an oyster soup the oyster liquor from canning operations. An acceptable canned mullet in tomato sauce was developed. Case-lot samples of this product were shipped to two export brokers for market testing. Technologists are now engaged in product development on anchovies, *Anchoa hepsetus.* Attempts are being made to pack Gulf anchovies sardine style. Investigations on the canning of white trout, scad, and razorbellies have shown that technological difficulties and taste acceptability have ruled out these species for the present.

Chemical analysis has been completed on several species of industrial fish utilized in pet food and fish meal. Data are being obtained on the date and geographic location of each sample, on the per cent of each species present in the load, on the proximate chemical analysis of both the mixed sample and the individual species therein. These data are being published on a quarterly basis as technical releases of the laboratory. Releases Nos. 1 and 2 (covering winter 1957, spring 1958 and summer 1958) are being printed and will be available to the industry shortly. Chemical analysis has also been completed on several of the more common food fish of the Gulf.

Time temperature tolerance tests have been initiated on royal red shrimp, butterfly filets of mullet, and whole raw red snapper.

The laboratory has instituted a technological advisory service to the Gulf fisheries industry. Bureau of Commercial Fisheries publications are made available to the industry. Written response to inquiries on technological matters is made, followed by a visit to the firm for further conferences when necessary. Problems of a broad nature, involving a large segment of the industry, may be the object of laboratory research at Pascagoula. Scientific personnel of the laboratory have visited many segments of the seafood industry to obtain firsthand information on the problems needing technological research.

Bureau of Sport Fisheries and Wildlife

Activities of the Bureau of Sport Fisheries and Wildlife as they relate to Gulf fisheries were largely confined to an examination of specific development projects of the U. S. Army Engineers. The wetlands, bays, and estuaries along the Gulf coast are essential to the sustained production of many forms of fish life which are economically important from both a sport and commercial standpoint.

Due to the vastness of the areas involved and the relatively small acreage heretofore affected by man, the consideration given to the problem now arising has been small. Our coast, however, now has become a new frontier upon which is focused the attention of agriculture, industry, and urban development. Competition for the use of coastal lands and waters, therefore, is destined to become a problem of increasing proportions in the future.

The interrelationship of land and water masses to the ecology of Gulf waters is not sufficiently understood to predict with certainty the effects of particular works by man upon the productivity of a specific marsh or bay. Nor do we have sufficient information on which to recommend modifications in project design that will guarantee the preservation of fishery resources to be affected.

Notwithstanding, through the efforts of the Branch of River Basin Studies working in cooperation with State and local conservation agencies, much progress has been made toward establishing an approach to the problem and in demonstrating the wisdom of sound planning. Some projects in which we are particularly interested are the Mississippi River-Gulf Outlet and the Freshwater Navigation project in Louisiana, and the regulation of discharge from Lake Okeechobee by way of Caloosahatchee River into the Gulf waters of Florida.

Of equal importance are the opportunities afforded by other projects to improve or restore certain coastal waters to their former productivity. For example, a report has been completed recommending the installation of water-control structures in the lower Mississippi River levees which would make possible the regulated discharge of fresh water into selected shallow waters of the Gulf. In this manner we hope to restore favorable conditions for the production of shrimp, oysters, and other forms of marine life.

A sustained program of this type is planned.

PEAT, MARWICK, MITCHELL & CO.

Certified Public Accountants

Hibernia Bank Building

New Orleans 12, La.

ACCOUNTANTS' REPORT

Commissioners

The Gulf States Marine Fisheries Commission

New Orleans, Louisiana

We have examined the statement of income and expenses of The Gulf States Marine Fisheries Commission for the year ended June 30, 1958 and related statement of resources as of that date. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying statements of income and expenses and resources, with notes thereto, present fairly the results of the financial transactions of The Gulf States Marine Fisheries Commission for the year ended June 30, 1958 and its resources at that date, in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Peat, Marwick, Mitchell & Co.

New Orleans, Louisiana
July 7, 1958

THE GULF STATES MARINE FISHERIES COMMISSION

Statement of Income and Expenses

Year ended June 30, 1958

Income:		
Member states contributions:		
Alabama		$ 1,000.00
Florida		3,500.00
Louisiana		5,000.00
Mississippi		1,000.00
Texas		4,000.00
Total income		14,500.00
Expenses:		
Salaries	$11,400.00	
Traveling	1,332.41	
Rent of office	1,080.00	
Stationery, printing and supplies	709.87	
Telephone and telegraph	336.66	
Postage	127.09	
Electricity	96.41	
Accounting	225.00	
Insurance	238.41	
Depreciation	450.06	
Meeting Expense	637.02	
Payroll taxes	175.49	
Sundry	7.20	
Total expenses		16,815.62
Excess of expenses over income		(2,315.62)
Resources of the Commission, June 30, 1957		6,839.06
Resources of the Commission, June 30, 1958		$ 4,523.44

(For notes see accompanying supplementary information to accounts)

Statement of Resources

June 30, 1958

Cash (note 1)	$3,198.05
Traveling advance	250.00
Meter deposit	10.00
Prepaid insurance premiums	120.78
Equipment—at cost less allowance for depreciation, $1,401.34 (note 2)	944.61
	$4,523.44

(For notes see accompanying supplementary information to accounts)

THE GULF STATES MARINE FISHERIES COMMISSION

Supplementary Information to Accounts

June 30, 1958

(1) Cash:

Cash receipts (see accompanying statement)			$14,500.00
Cash disbursements:			
Expenses (see accompanying statement)		$16,815.62	
Adjustment for expenses not representing cash outlay:			
Increase in prepaid insurance	$ 2.89		
Depreciation	(450.06)	(447.17)	16,368.45
Excess of (disbursements) over receipts			(1,868.45)
Cash balance June 30, 1957			5,066.50
Cash balance June 30, 1958			$ 3,198.05

Comprised as follows:

National American Bank of New Orleans checking account	$3,175.22
Petty cash	22.83
	$3,198.05

(2) Equipment:

	Cost	Depreciation	Net
Amount at beginning of year:			
Automobile	$1,436.38	359.09	1,077.29
Furniture and fixtures	909.57	592.19	317.38
	2,345.95	951.28	1,394.67
Depreciation allowance for year	—	450.06	(450.06)
	2,345.95	1,401.34	944.61
Amount at end of year:			
Automobile	1,436.38	718.19	718.19
Furniture and fixtures	909.57	683.15	226.42
	$2,345.95	1,401.34	944.61

(3) Fidelity bond insurance carried—$10,000.00 each on chairman, vice-chairman and secretary-treasurer of the Commission.

BUDGET

GULF STATES MARINE FISHERIES COMMISSION

Fiscal Year 1958-59

Salaries	$11,733.36
Rent of office	1,080.00
Stationery, printing and supplies	400.00
Traveling	1,200.00
Telephone and telegraph	330.00
Postage	248.00
Electricity	95.00
Accounting	225.00
Insurance	250.00
Meeting expense	112.00
Payroll taxes	212.25
Publications	967.25
Depreciation	450.00
Sundry	5.50
	$17,308.36

(Budget approved October 17, 1958)