

History of the Gulf Coast Research Laboratory

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Natural and man-made beaches, productive marshes, protective barrier islands, abundant commercial and recreational fisheries, bays, bayous, and estuaries—these are the many rich and beautiful elements comprising the fertile, golden crescent that crowns the northern Gulf of Mexico and is the home of the Gulf Coast Research Laboratory (GCRL). Located in Ocean Springs, MS, about 60 miles west of Mobile, AL, and 90 miles east of New Orleans, LA, GCRL has two campuses—its original site of ~40 acres purchased in 1949 at the junction of Halstead Road and East Beach Drive, and Cedar Point, a 224-acre site acquired in 1995 on Gollott Road adjacent to Gulf Islands National Seashore. Each campus has its distinct function in the research, teaching, and service activities of GCRL. A third campus at Point Cadet in Biloxi, MS, the J. L. Scott Aquarium and Marine Education Center, was destroyed by Hurricane Katrina's (August 29, 2005) massive 26+foot storm surge. The GCRL conducts scientific studies; supports the research needs of local, state, regional, and federal agencies charged with managing and conserving the natural resources of the area; and provides quality educational experiences for students, teachers, and citizens (Fig. 1).

EARLY EFFORTS AND VISIONARIES

Although the anniversary of the GCRL is acknowledged as August 29, 1947, and dates to the first official summer session held at Magnolia State Park (now Gulf Islands National Seashore), the efforts and commitment of several members of the Mississippi Academy of Sciences (MAS) to establish a research and teaching laboratory devoted to the study of the marine and coastal environments of Mississippi began nearly 20 yr earlier. These early promoters and educators sprinkled among several state colleges had begun bringing students to the coast, typically during spring breaks or following the regular annual meetings of the Academy, from the 1920s through the 1940s. According to the summer 1949 *Bulletin of the Gulf Coast Research Laboratory*, "The earliest attempts to establish a Laboratory on the Gulf Coast, according to Dr. Charles Lyle, Head of the Department of Zoology and Entomology of Mississippi State College, was initiated by his predecessor, Dr. R. W. Harned. Dr. Lyle stated that he has found in his files

correspondence which indicated that considerable effort was made during the early 1920s by Dr. Harned and Col. H. D. Money of Biloxi, MS to establish a Research Laboratory on the Coast."

"The next effort came during a meeting of the Mississippi Academy of Sciences in session at the University of Mississippi. Dr. W. C. Morse, State Geologist, was active in this effort. It was discussed at each succeeding session of the Academy."

"In the meantime, R. L. Caylor, Professor of Biology of the Delta State Teachers College, conducted postsession field trips to the Gulf Coast during the summers of 1935, 1937, 1940, and again in 1946. This last group, composed of 20 students and the director, were domiciled in the Magnolia State Park. The Mississippi Academy of Sciences was invited to hold a summer session here. It was during this session that the Academy voted to establish the Gulf Coast Research Laboratory (Anonymous, 1949)."

Dr. Richard L. Caylor, a founding father and the first Director of the GCRL, was both an educator and scientist (Fig. 2). However, it was his 2 decades of unwavering faith, vision, determination, and ceaseless promotion combined with considerable skills in mobilizing the forces of the MAS, the political and business leaders along the gulf coast, and his colleagues at state colleges and universities to work together that culminated in the establishment of a marine research and teaching institution on the coast. In 1938, Caylor addressed the annual meeting of the Academy on "Some Research Possibilities along the Mississippi Gulf Coast," making him the champion for the establishment of a teaching and research laboratory from the earliest days (Bailey, 1993). Even the greatest of leaders with the most worthwhile of goals must face practical problems and encounter significant difficulties on the way to achieving their objectives. And great leaders must have associates, supporters, believers, and helpers to maintain the force of momentum, especially in a state where financial resources were limited, education was selective, and research was not particularly recognized as valuable by politicians or taxpaying citizenry. Caylor sensed that if he proposed the project as practical and of significant benefit to the local area and state, he would convince and gain the support of influential and



Fig. 1. Driveway onto the Gulf Coast Research Laboratory campus at Halstead Road and East Beach Drive.

well-meaning people who would lend aid and strengthen the cause. To do this, he demonstrated the need, usefulness, and practical benefits of a marine program by beginning on a small scale and promoting the results. He did this under



Fig. 2. Dr. Richard Caylor, founding father and first director of the Gulf Coast Research Laboratory.

circumstances that seem impossible, odd, and overwhelming by today's standards; he had no money for salaries, buildings, boats, or equipment, other than student fees. A typical faculty member was compensated for 3 wk of work with room and board plus \$25. Accommodations were old Civilian Conservation Corps barracks and a wooden cafeteria building that burned in the middle of the night during the 1949 session. With no fans, no air conditioning, and simple wooden tables set under live oak trees used for sorting the day's samples, the first official (1947) summer field classes of the GCRL were held at Magnolia State Park (Fig. 3). By the 1949 session, the old Seafood Commission boats were available for field trips to the barrier islands, old mayonnaise and other jars collected by local schoolchildren were used to hold specimens, and college students from across Mississippi and adjacent states came to learn and labor in the heat, humidity, and mosquitoes of late August in South Mississippi (Walker, 1974).

It was apparent the Magnolia State Park site was not sufficient for the laboratory's anticipated growth and expansion. During the summer of 1947, Caylor learned of a site along East Beach that could be purchased for a reasonable price



Fig. 3. A botany class held under the trees at Magnolia State Park ca. 1947.

and would become the campus now occupied by GCRL. Located 2 miles east and 1 mile south of Ocean Springs (pop. 3,000), the property, a vacation home belonging to D. A. Smart, a former editor of *Esquire* magazine, was nearly 40 acres between Davis Bayou and 1,600 feet of beach front with a two-story residence (affectionately nicknamed “the Big House” by lab staffers and students), a garage apartment, an artesian water well, two 36-foot boats and dock facilities, a long pier extending into the bay, and a large greenhouse (Fig. 4). A group of supporters that included Caylor, J. Fred Walker, Clyde Sheely, and others met with the chairman of the Mississippi Building Commission chairman and former governor Hugh L. White to persuade him to purchase the property for the GCRL. Their success, which came 2 yr later, guaranteed Dr. Caylor’s dream and vision of a permanent GCRL.

The \$35,000 purchase was not without intense negotiation, and proof of its broad support was illustrated by the number of participants, including MAS members, Institute of Higher Learning Board of Trustees President Martin V. B. Miller, Jackson County Board of Supervisors led by President Fred Moran, state legislators from across the coast, and the Ocean Springs Chamber of Commerce.

Establishing and operating a marine research laboratory led to the incorporation of the MAS. In its articles of incorporation, the following purpose was described:

To establish and maintain a scientific research laboratory or laboratories;

And to employ staffs for the operation and maintenance of such laboratories and purposes incidental thereto; to collect and resell specimens and use the proceeds thereof to further the purposes of the corporation; to provide living facilities for staff and persons engaged in research sponsored by the corporation; to receive any and all donations made for the purposes of the corporation and to lend or give financial and instructive aid to those designated



Fig. 4. Original residence on the Halstead Road property nicknamed “The Big House.” It was lost in 1969 during Hurricane Camille.

by the corporation for the purpose of aiding their study and research toward greater scientific development:

To acquire and own property, real and personal, to enter into all contracts, borrow money, and give security therefore and do and perform all acts and things needed to or convenient for the carrying out of foregoing purposes.

In 1950, Mississippi State Legislature passed a bill (Section 37-101-21, Mississippi Code of 1972 Annotated) that created GCRL and placed it under the direct control and supervision of the Board of Trustees of the State Institutions of Higher Learning (IHL) in cooperation with the MAS. The shared governance of the Board of Trustees and MAS allowed GCRL to function under the same rules, policies, and regulations by which other colleges and universities in the state operated. These rules and regulations included qualifications for instructors and employees, admission of students, and direction of research programs. In addition, the law establishing GCRL requires the object and purposes of it to be "...to promote the study and knowledge of science including the natural resources of the State of Mississippi and to provide for the dissemination of research findings and specimens from the Gulf Coast area."

As the Laboratory continued to define and refine its purpose among its sister state institutions of higher learning and state agencies, a twofold focus emerged largely due to its dual establishment—combining the priority of MAS, scholarly research, and education with the priority of state and local political leaders, research that was expected to have a direct effect on the economy of the State of Mississippi and benefit the citizens and taxpayers. The challenge of these priorities has set into motion a creative dynamic that has formed and directed for most, if not all, of the activities of the laboratory for 60 yr; faculty, researchers, graduate students, and technical staff focus on the fundamental questions about the coastal and marine plants, animals, and processes in the northern Gulf of Mexico while keeping the practical application of the work relevant to the institutions and people of the state (Skupien and Shaw, 1997).

Executive Officer of MAS Dr. Clyde Q. Sheely visited at the request of IHL Woods Hole (Massachusetts) Marine Biological Research Laboratory, an action that indicated the good intentions and professionalism on the part of both the Academy and IHL concerning the future prospects they held for GCRL. In his 1950 report to the Academy, Sheely called for

the hiring of a full-time director (Sheely 1948–1950). After the 1950 legislative action, Dr. Caylor, the academic who began summer field classes in 1935, was appointed first Director of GCRL. As the only employee, he continued his campaign for construction funds, surplus property, and the use of the Seafood Commission vessel *Uranus*. (Caylor 1948–50) Supporters of goodwill and dedication among the membership of MAS and IHL included from the academy Drs. Sheely, Ray J. Nichols, Clytee Evans, R. R. Priddy, J. Fred Walker, and Clay Lyle and Dr. E. R. Jobe, Executive Secretary of IHL and J. L. Scott, IHL member. Among the MAS group, Priddy, Nichols, and Walker continued their association by teaching during the summer sessions. (Gunter 1972)

In his 1953 report "Activities of the Gulf Coast Research Laboratory" to the annual meeting of the MAS, Caylor reviewed its short history and said, "as your humble servant, and as one who has given considerable thought to, and effort in, developing this project, may I now make a few suggestions. We should study the possible needs for:

1. Increased housing facilities at the laboratory.
2. Increased laboratory and library facilities.
3. The needs and demands for other courses, such as Physiology, Ecology, Embryology, Biochemistry, and Oceanography.
4. Projection of a graduate program to include those fields not included in our present graduate plans.
5. Seek further cooperation of the institutions of this State and other States in a plan to coordinate instruction and research.
6. Further cooperation with and the cooperation of agricultural agencies in discovery and recovery of the resources of the gulf that are now being dissipated by improper exploitation.
7. We much (sic) launch a program of search and discovery, calling for cooperation of all the agencies and educational facilities of the states bordering the gulf. We must then pool these findings so that each segment may render the economic and social service imperative for a growing developing section of this commonwealth of which we are a part.
8. These recommendations call for most complete and harmonious cooperation, counsel, advice, and financial assistance. This financial assistance is more than a problem of the States—it should be a problem of such agencies as the U.S. Public Health Service, the great philanthropic organizations such as The Rockefeller Foundation, Guggenheim Foundation, The National Research Council, The Science Foundation, and all others

engaged in a program for the social and economic uplift of the citizenry of this great commonwealth.

9. We must have the courage and tenacity to approach these problems with the idea of solution; others of us more peculiarly endowed must sell the aforementioned agencies, the state legislature, and our political and financial leaders on the idea that this is our problem. That it is solvable, offers economic and social returns, and that it is essential to our national security.” (Caylor, 1951–1953).

With the appointment of Dr. Aubrey E. Hopkins, a Harvard University-educated oyster biologist and the former head of research with the Mississippi Seafood Commission, as Director July 1, 1952, Dr. Caylor shifted to administering the summer academic program. Hopkins, working with local county senator, Hermes Gautier, secured state funding for the construction of a teaching laboratory and the acquisition of a research vessel. Caylor submitted his resignation as director of the educational program after seven summers of residence and work on the coast. Dr. R. R. Priddy, in a tribute included in the April 1954 MAS minutes, described Caylor as “...its [GCRL] founder, constant backer, and lobbyist extraordinary. To hundreds of students he has been the Gulf Coast Research Laboratory as much as the class rooms, the boat trips, and the permanent buildings one will see there.” Confident that the laboratory was on a permanent year-round footing and with Hopkins’ assurances he would carry on the summer program Caylor initiated and nurtured, the founding father could refocus his attention on his teaching at Delta State College (Priddy, 1954–1960). However, Hopkins died in February 1955, and Caylor resumed his summer duties as interim director until Dr. Gordon P. Gunter was hired September 1, 1955 (Sheely, 1954–1960). In memory of Dr. Hopkins, teaching laboratories on campus traditionally have been named in his honor. Unfortunately, these structures have been lost and rebuilt and lost again due to Hurricanes Camille (1969) and Katrina (2005). His legacy lives on in the form of the M/R *Hermes*, the research vessel Hopkins and State Senator Hermes Gautier acquired in 1955. The R/V *Hermes* faithfully continues to ferry students and researchers to Horn and other barrier islands today (Fig. 5). On March 17, 1973, the marine research and instructional building constructed in 1971 was dedicated to honor the memory of Richard L. Caylor in recognition of his outstanding leadership in the founding of GCRL (Walker, 1974).

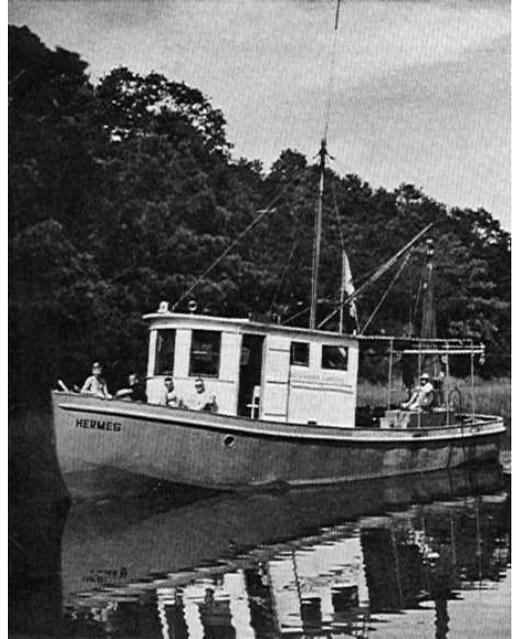


Fig. 5. R/V *Hermes*, a research vessel acquired in 1955 and still in service in 2010.

In 1953, when Caylor reported on the instructional activities of the laboratory to the annual MAS meeting, he reviewed the summers of 1947–1950. Enrollment rose from 26 students in 1947 over a 2-wk session to 54 over 10 wk in 1950 (Caylor, 1951–1953). In 1947 courses were taught by Caylor (Field Botany) and J. W. Ward (Faunistic Zoology) with six visiting lecturers (Ray Nichols, J. F. Walker, J. M. Frazier, G. H. Woollett, E. W. Strafford, and H. P. Sturdivant) and included opportunities for independent research with use of boats and other facilities (Gulf Coast Research Laboratory, 1947). By the 1950 summer session, the course offerings had expanded to four “Laboratory Courses”: Field Botany, Invertebrate Zoology, General Ichthyology, and Problems in Marine Sediments; and four “Courses Offered by Cooperating Institutions”: Introduction to Endocrinology, Techniques in Biology for High-School Teachers, Parasitology, and Elementary Science. The summer staff had grown to 12 (Gulf Coast Research Laboratory, 1950). During this time Caylor was responsible not only for teaching botany, but also for all administrative details ranging from scheduling the classes, arranging the use of vessels, and ensuring that students and faculty had room and board. This hands-on approach was necessary but was not always appreciated, with some detractors claiming Caylor viewed the facility as his “private laboratory” and at one

point blaming him for the poor quality of food in the dining hall (Bailey, 1993).

With Gordon Gunter taking the helm in 1955, the laboratory would undergo enormous growth surge in its educational efforts, physical plant, expansion of scientific staff, and contributions to the marine sciences (Fig. 6).

THE GUNTER ERA

Gunter, the former head of the University of Texas Institute of Marine Science at Port Aransas, TX, arrived at an institution poised and ready for growth. With a tenure as director lasting 16 yr, Gunter presided over a period of remarkable change, taking a campus where students had worked under moss-draped live oak trees through construction of most of the laboratory's major buildings: oceanography building, a 40-room brick dormitory, the anadromous fisheries building (lost in 2005), research building, Caylor building, maintenance shop, and rebuilding of the Hopkins teaching laboratory (lost in 1969) and the building of the 65-foot R/V *Gulf Researcher*. In 1955, there was one marine biologist and two part-time support personnel who comprised the totality of paid staff (Burke, 1999). By his retirement in 1971, there were over 20 scientists and other professionals divided into 13 sections: botany, chemistry, data processing, ecological physiology, fisheries management, fisheries research and development, geology, library, microbiology, museum, noxious animals, parasitology, and public information. Each section had technical staff and aides and a few supervised graduate students. Building support included custodial workers, tradesmen, and groundskeepers. GCRL's 1955-56 biennial legislative appropriation for operations was \$50,000, or \$25,000 per year. By the early 1970s, the state appropriation was about \$1 million, which was supplemented by grants and contracts equaling about half that amount. The first project under Dr. Gunter's supervision funded by U.S. Fish and Wildlife Service was a study of the life history of the menhaden and included a 61-page annotated bibliography on menhaden (Christmas and Collins, 1958).

The campus was a mecca for visiting scientists, some receiving National Science Foundation grants through the GCRL (Shoemaker, 1958). Some employed all means they felt necessary to pursue their goal. Sometimes things did not always work out as planned, as evidenced by this story submitted to the author by Dr. Art Myrberg (pers. comm.):



Fig. 6. Dr. Gordon Gunter, director from 1955 until 1971.

The story about Hurst H. Shoemaker (a fisheries biologist, ho, ho!) is probably one story that the lab probably has not kept "on its books." Bill Demoran was closely involved with the case. In the summer of 1957 (the summer before I went to the lab), Hurst took a boat and went up a big bayou near the lab one morning and proceeded to dump a massive amount of rotenone therein. The damn bayou exploded with fishes and other life coming to the surface and politely dying everywhere. He netted as much as he needed and returned to the lab. He said nothing to anyone. About 2000 hr that night, two trucks, full of Cajuns and others, rolled onto the grounds of the lab. The fellows had a rope that they said was going around the neck of the man who several saw in the boat that morning dumping something into the water and netting out dying and dead fishes. Hurst hid and remained hidden for several days because he and Gordon feared for his life! The lab personnel that told me the story the next summer firmly believed that the citizens were in deadly earnest about their intent that night. The immediate hostility of the citizens was finally quelled as Gordon Gunter and others talked them out of their apparent purpose. Police were also called, but they only witnessed the harangue. It finally subsided and the townsfolk left after Gordon promised them that all lab personnel would use every small boat they had, as well as other boats, and go into the bayou and dip out all the dead animals. Apparently all personnel did that, spending over a week netting out the dead stuff and taking each boatload to the sea-side of the nearest barrier island (don't remember the name) and there, shoveling the dead mass out. Shoemaker wasn't permitted into a

boat, since Gunter was afraid that he'd be seen from shore and get the people riled up again. Apparently, after a few days, the job became horrible as the cargo was becoming rotten. The boats stunk as did the poor people who had to clean up the bayou. You can imagine that Hurst was well on his way to being Mr. Outcast at the GCRL. Although he returned to the lab the next year (when I also arrived), that was his last year. One story for the books! Fortunately, Bill D. is still around to verify the story. A fellow by the name of Christmas (a colleague of Bill's at the time) was also an angry witness. I don't know what happened to him. He was a great guy except when around Hurst. I don't know if the story ever made it into the daily papers. No one the next year showed me any newspaper account. Gordon may have talked them out of running an article that would hurt the lab.

In spite of the setbacks of dealing with rogue visiting scientists, Gunter persevered. A man of amazing energy with a steel will, Gunter was single-mindedly committed to the tasks at hand including building a significant research program, recruiting quality personnel, developing a network of affiliate colleges and universities to enhance the summer field program, founding a scientific journal, supporting a research library and museum, and continuing his own research activities all while courting the members of the Board of Trustees of the IHL, state legislators, state university presidents, and members of the MAS.

In his first administrative presentation to the members at the annual MAS meeting in 1959, he provided a comprehensive report that reviewed 4 yr of progress at GCRL (Gunter, 1954–1960). It was a fitting response to the 1959 minutes that said "A more lengthy report was made on the progress of the Gulf Coast Research Laboratory by its director Dr. Gordon Gunter. All of his complaints and requests could be easily satisfied with adequate appropriations." (Sheeley, 1954–1960) Always a writer, Gunter provided a quarterly report to the Academy from his hiring in 1955 until his retirement in 1971. In these reports he detailed all activities of the laboratory from physical plant and grounds changes and enhancements, staff activities, research and publications, summer school, visitors, personnel changes, and miscellaneous, which included reports on the campus alligator, Albert. Dr. Gunter was a life member and former president (1965) of the MAS.

Under Gunter's guidance, the educational effort on the campus expanded. Besides the fully operational summer field program largely populated by upper-level college juniors and

seniors, several graduate students were making use of laboratories, vessels, and resident scientists. Gunter mentored 23 graduate students. Those are listed here along with their research topics to give the reader an idea of the scope of investigations undertaken at that time.

Ballard, B. S. 1967. Osmotic accommodation in *Callinectes sapidus* Rathbun. Unpubl. Ph.D. diss., Mississippi State University, Mississippi State, MS.

Din, Z. 1978. The food and feeding habits of the common bay anchovy, *Anchoa mitchilli* (Valenciennes). Master's thesis, University of Mississippi, Oxford, MS.

Edwards, E. J. 1967. Studies on populations of *Anchoa mitchilli* Cuvier & Valenciennes in Mississippi Sound, with special reference to the life cycle and seasonal variations in abundance. Master's thesis, University of Mississippi, Oxford, MS.

Edwards, J. C. 1967. Production of the marine shrimp (*Penaeus fluviatilis* Say and *Penaeus aztecus* Ives) in Texas and Louisiana waters, and the relation of rainfall and freshwater drainage. Master's thesis, University of Mississippi, Oxford, MS.

Franks, J. S., Jr. 1968. An investigation of the fish population within the inland waters of Horn Island, Mississippi. Master's thesis, University of Mississippi, Oxford, MS.

Howse, H. D. 1967. A comparative electron microscopic and histochemical study of myocardial cell surface coatings. Unpubl. Ph.D. diss., Tulane University, New Orleans, LA.

Lindsey, R. H., Jr. 1962. A study of recent foraminifera along a salinity gradient through the Mississippi Sound, Mississippi. Master's thesis, University of Mississippi, Oxford, MS.

McIlwain, T. D. 1966. A preliminary seasonal survey of the pelagic Copepoda off Horn Island in the Mississippi Sound. Master's thesis, University of Southern Mississippi, Hattiesburg, MS.

McIlwain, T. D. 1978. An analysis of saltwater angling in Biloxi Bay, 1972–1974. Unpubl. Ph.D. diss., University of Southern Mississippi, Hattiesburg, MS.

Mir, G. N. 1971. Pharmacological investigation of some poisonous and venomous marine animals of the Gulf of Mexico. Unpubl. Ph.D. diss., University of Mississippi, Oxford, MS.

Mulkana, M. S. 1968. Seasonal changes in the nutritional components of the standing plankton biomass in Mississippi Sound. Unpubl. Ph.D. diss., Mississippi State University, Mississippi State, MS.

Perret, W. S. 1964. Occurrence, abundance, and size distribution of fishes and crustaceans

collected with otter trawl in Vermilion Bay, Louisiana. Master's thesis, University of Southwestern Louisiana, Lafayette, LA.

Perry, H. M. 1970. Seasonal and areal distribution and abundance of the Copepoda in a Mississippi estuarine system. Master's thesis, University of Southern Mississippi, Hattiesburg, MS.

Perry, J. A. 1970. A study of the bottom fish population in the offshore waters of Mississippi by trawl survey. Master's thesis, University of Mississippi, Oxford, MS.

Phillips, P. J. 1967. Substrate as a factor in habitat isolation of Mississippi Sound mudshrimps, *Callinassa jamaicensis louisianensis* Schmitt and *Callinassa islagrande* Schmitt. Master's thesis, Mississippi State University, Mississippi State, MS.

Roberts, N. L. 1966. Morphology and histology of the stomach of the white shrimp *Penaeus fluviatilis* (Say, 1817). Unpubl. Ph.D. diss., University of Southern Mississippi, Hattiesburg, MS.

Rohr, B. A. 1964. A comparison of the growth rings in the scales, otoliths, dorsal rays, and second anal spine as related to growth of the red drum, *Sciaenops ocellata*. Master's thesis, University of Southern Mississippi, Hattiesburg, MS.

Shearer, J. A. 1959. Factors affecting the return of stranded *Fundulus similis* to water. Master's thesis, University of Mississippi, Oxford, MS.

Steen, J. P. 1981. Spatial and temporal distribution of zooplankton in a low-salinity Mississippi bayou system. Unpubl. Ph.D. diss., University of Mississippi, Oxford, MS.

Subrahmanyam, C. B. 1969. The relative abundance and distribution of penaeid shrimp larvae off the Mississippi Coast. Unpubl. Ph.D. diss., Mississippi State University, Mississippi State, MS.

Wall, J. 1969. Some factors of the marine interstitial biotope in selected beaches of the Mississippi Sound area. Master's thesis, Vanderbilt University, Nashville, TN.

Weber, W. C. 1983. A comparison of mainland and island pine-forest bird communities in coastal Mississippi. Unpubl. Ph.D. diss., Mississippi State University, Mississippi State, MS.

Welford, R. F. 1970. Electrocardiograph responses of the toadfish *Opsanus beta* to environmental stresses. Master's thesis, University of Southern Mississippi, Hattiesburg, MS.

Whatley, E. C., Sr. 1966. A study on *Syngnathus scovelli* in fresh waters of Louisiana and salt waters of Mississippi. Unpubl. Ph.D. diss., Mississippi State University, Mississippi State, MS.

The Summer Field Program under Gunter's watch had an enrollment of 40 in 1955 and

doubled to 80 by 1971. The process for an out-of-state college or university becoming affiliated with GCRL for students in the summer classes was crafted by Gunter and Harry Bennett of Louisiana State University (LSU) in Baton Rouge. Bennett was an early supporter and taught a summer course beginning in 1955 called "Zoology for Teachers" at GCRL. Because of these negotiations, LSU became the first out-of-state university to be affiliated with GCRL (Howse, 1992).

Gulf Research Reports.—*Gulf Research Reports* (GRR) would be the second journal founded by Gordon Gunter, the first being *Contributions to Marine Science*, the journal he started at his previous position in Texas. GRR, begun in April 1961 with Gunter as founder and editor, described its mission as "a journal devoted primarily to publication of the data of the marine sciences, chiefly of the Gulf of Mexico and adjacent waters." Still in publication and under the editorship of Dr. Mark S. Peterson, and since 2000 titled *Gulf and Caribbean Research* to indicate its expanded disciplinary depth, the scope of papers, and international contributions and reviews, the journal issued its 22nd volume March 2010 (Peterson, 1999). Gunter had a twofold purpose for the journal: to disseminate research, but also to use it as a way to build a research library by exchanging it with other marine science and research institutions.

CHARLES DAWSON AND THE GCRL MUSEUM

Charles "Chuck" Dawson arrived at the fledging GCRL in 1958 as one of Gunter's early hires. His job title was Marine Biologist and Curator, but he served as Gunter's administrator and was involved with designing new buildings and overseeing building construction, physical plant, vessels, and the library until 1969 when he chose to be limited to Curator and Senior Ichthyologist. After Hurricane Camille in August 1969, Dawson's considerable and time-tested administrative skills were marshaled as he deployed the staff for campus cleanup and recovery. He began publishing in the late 1940s, producing 150 publications, most of them without coauthors. Blinded in one eye during World War II while serving in the Royal Canadian Army, he used a modified microscope for his work (Overstreet and Poss, 1993). Dawson founded a short-lived serial publication, *Publications of the Gulf Coast Research Laboratory Museum* (vols. 1-4, 1969-1974). His successor at the Museum, Dr. Stuart Poss, generated a bibliogra-

phy of Dawson's publications (Poss and Heal, 1994).

The creation of a formal, catalogued specimen archive at GCRL began with the arrival of Charles Eric Dawson to the laboratory in 1958. Dawson's vision, competence, and energy resulted in the building of one of the most important regional collections of fishes in North America (Poss and Collette, 1995). Dawson focused his studies on several groups of fishes during his tenure at the laboratory, most notably the gobies, sand stargazers, and pipefishes. In addition, he spent an extensive amount of time collecting nearshore marine and estuarine fishes in South and Central America and made numerous collecting trips to other parts of the world as well. As a result, the GCRL Museum collection contains a very strong Latin American component, as well as an excellent worldwide representation of the pipefishes and their relatives (Dawson, 1985; Anonymous, 2010a).

LIBRARY

In the early days of the GCRL, three people had the vision to recognize that a research institution needed a library and the determination to establish one on the campus. The three people, Dr. Richard Caylor, Dr. Gordon Gunter, and Mr. C. E. Dawson, were instrumental in the establishment and operation of the library. Both Caylor's and Gunter's earliest reports to the MAS mentioned a library (Caylor, 1951–1953; Gunter, 1954–1960). Caylor recognized the need for one; Gunter made establishing it one of his first activities as director; and Dawson set to improving its quality and usefulness. A voracious reader, Gunter accumulated a significant reprint collection that became the foundation of the current 27,000+ piece collection (May 2010). In a 1962 report, Dawson said about the library "...much has been done to improve the quality of this facility and to increase its usefulness to both student and research worker." (Dawson, unpubl. data). Beginning in 1963, the library has been continuously staffed by dedicated men and women who have worked to build, organize, and make accessible the wealth of materials in its collections. During Gunter's tenure, the library would grow from being a collection of books and reprints in the Director's office into a comprehensive research library occupying about a third of the first floor of the Caylor Building (1971).

HURRICANE CAMILLE

In his quarterly report for June–August 1969, Gunter summed up the activities at the labora-

tory in relation to Hurricane Camille in his "General and Miscellaneous" Section:

Our classes all stopped on August 17 as we tried to prepare for the hurricane. We did very well with our boats because we are all old sailors in one way or another. However, the immovable structures could not be protected. As one man said to me, with regard to the big three storey [sic] white house, which we called the 'Big House', 'Is it really gone?' Yes, it is, plus three brick buildings [including the Hopkins Labs built in 1955] and three wooden buildings. These matters are all explained in the following account and I must apologize for this report is a bit disorganized and a bit incoherent.

On August 18 the writer requested the indulgence of all students and asked them to go away because we no longer had the buildings or facilities to care for them. This was one of the sadder duties of my life, because those young people stood around somewhat stunned and did not wish to leave."

The laboratory is protected by the islands offshore that separate Mississippi Sound from the Gulf of Mexico, plus Deer Island, which separates the Bay of Biloxi from Mississippi Sound, plus Marsh Point, thin and peninsular, and the intervening area is only 2-feet deep. Nonetheless, the storm tide got to 18.5 feet on these grounds. On other parts of the Mississippi Coast, according to the Weather Bureau it got to 31.5 feet. In any case, we had three brick buildings and four wooden buildings completely destroyed. A fifth wooden building, our dining hall, was severely damaged and probably will have to be taken down. Our heavy boating equipment came through well because we took it upstream and took care of it in a seaman-like fashion. Destruction at this laboratory amounted to approximately 50% of its holdings.

Several of our people suffered terrible losses. One man, Lionel Eleuterius, botanist, lost his office, his laboratory, and nearly all of his data. Additionally, he lost his home and all personal effects. Our financial secretary, Mrs. C. E. Rasor, who lives next door, lost her home and all personal belongings, including her fine collection of antique furniture that she had reworked herself over the past several years. The home of Mr. William J. Demoran, marine biologist for the Mississippi Marine Conservation Commission and this laboratory, was flooded to a depth of several feet. The home of Mr. Robert P. Ochsner, Administrative Officer, was severely damaged by a fallen tree and rising waters. Mr. and Mrs. Allison Perry, both marine biologists who lived in a house on East Beach, lost their total personal belongings. Mr. David Green, electron microscope technician, lost all of his belongings except his automobile. Mr. Adolph Oliver, one of

our boatmen, lost his home and personal effects also.

The writer has three orders of reaction to stress. In the first place he curses like a sailor and because of his proficiency in the language arts, a bit better than most; second, as chaplain of Jefferson Davis Camp 786, Sons of Confederate Veterans, he prays—both of which he did very carefully on the night of 17–18 August, which ushered in a 200-mile-per-hour hurricane and which he rode out at home on his 60th birthday with his wife and two little boys.

His third reaction to stress is the elevation of the old Confederate battle flag, which shone beautifully here in the evening sun. We have been through these things before. (Gunter, 1969a)

GUNTER'S LEGACY

Dr. Gordon Gunter's legacy to science is widespread and lasting. He guided the development of the GCRL from 1955 to 1971, served as an advisor to 23 Master's and Ph.D. students, wrote over 300 scientific publications with 19 of those appearing in the journal *Science*, founded two scientific journals (*Publications of the Institute of Marine Science* and *Gulf Research Reports*), and coined the phrase "fertile fisheries crescent" to describe the incredible productivity and biodiversity of the Mississippi Sound and adjacent waters (Gunter, 1963b).

Gunter's impact on the GCRL would be so significant that by the mid 1970s, contributions by his predecessors were largely overshadowed. G. A. Rounsefell, in writing of Gunter's achievements, said, "Although he published extensively on almost every phase of Gulf Coast fisheries, I consider his chief accomplishment the founding and development of the Gulf Coast Research Laboratory at Ocean Springs, Mississippi." (Rounsefell, 1975).

Over his long career as a marine biologist, Gordon Gunter received numerous honors, awards, and special recognitions. In 1969 Gunter, an early proponent of aquaculture, hosted the first organizational meeting of the World Mariculture Society, now the World Aquaculture Society, and he was a charter member and a president of the society (1973–1974). The first paid Life Member of the National Shellfisheries Association (1959), Gunter was named an Honored Life Member in 1973 and further honored by the association with the eponymous Gordon Gunter Poster Award. The American Fisheries Society named Gordon Gunter an Honorary Member, a title reserved for those whose achievements in the field merit special

distinction and recognition (Frank, 2006). On December 21, 1972 the library at the GCRL was designated "The Gunter Library" by the Board of Trustees of the IHL. In 1975, Gunter, a past president of the MAS, was presented with the prestigious "Outstanding Contributions to Science in Mississippi" award by the Academy. In 1998, the National Oceanic and Atmospheric Administration renamed a former naval ship newly commissioned as a research vessel the *Gordon Gunter* (Trier-Rourke 2009). Colleagues say that he was instrumental in urging the U.S. Army Corps of Engineers to require environmental impact statements. Gunter's considerable influence and enduring presences carry on into the 21st century at the GCRL and in the discipline of Marine Sciences.

THE HOWSE ERA

With a firm foundation set by Gordon Gunter, the transition of directorship passed to Dr. Harold D. Howse. Howse, a Korean War combat medic, came to GCRL in 1962 as a graduate student from Tulane University on a summer research grant to study the microanatomy of the marine copepod *Anomalocora ornate*. Hired by Gunter in 1967 to head the microscopy section, Howse was appointed Director in 1972 and served in that position until 1989. Howse was at the helm when the Laboratory continued to undergo rapid growth in several significant areas: its educational efforts reached beyond the summer field program and graduate students working with senior scientists by opening a marine education center and aquarium; its public outreach component expanded to include a formal Public Information Office; its research program grew to over 124 simultaneous projects; and its collaborative influences grew as other agencies shared the campus. A modern oceangoing 97-foot research vessel, the R/V *Tommy Munro*, joined the fleet in 1981. A significant cooperative multiagency research program, the U.S. Marine Shrimp Farming Consortium, was established in 1984. Two major hurricanes damaged the campus during the Howse administration, Hurricane Frederic in 1979 and Hurricane Elena in 1985 (Fig. 7).

J. L. SCOTT MARINE EDUCATION CENTER AND AQUARIUM

In early 1972 GCRL established at Point Cadet in Biloxi an Environmental Education Center (EEC) dedicated to the education and training of professional marine scientists and to stimulat-

ing interest in the natural environment among persons of all ages. The need for an educational unit for school groups was recognized by Gordon Gunter during his tenure as noted in his March–May 1969 report:

During the spring quarter, 23 school groups, ranging from 3–6-year-old Head Starters to graduating college students, toured the Laboratory. Due to the interest in marine science being created in the schools and the large number of small children expected during the last month of school, a temporary exhibit of specimens, with four microscopes for viewing, was placed in the zoology classroom. With the aid of J. Y. Christmas and Malcolm Ware, film and slides were shown in the lounge of the dormitory building. Therefore, it was arranged for the elementary and junior high school children to be allowed a ‘tour’ without actually going through the research Laboratory, which is disruptive.... A total of 1,041 people toured the Laboratory or saw the temporary exhibit. (Gunter, 1969b).

The early EEC was a small prefabricated metal building with a big impact, averaging 13,000 visitors of all ages and backgrounds. In late 1972 the name was changed to Marine Education Center to more readily identify it with the marine environment (Anonymous, 1973). Planning for a permanent home for public educational programs began in 1975. The J. L. Scott Marine Education Center and Aquarium (MEC&A), a 32,700-square-foot building, was named and opened on June 20, 1984 at Point Cadet in Biloxi. It had a 42,000-gallon Gulf of Mexico tank with 48 aquariums that showcased native fish and other small wildlife in habitats from coastal streams to open ocean. The MEC&A provided a full buffet of educational offerings including marine science camps, classes for precollege students, a public lecture series, and specialized courses and workshops for teachers. Gerald Corcoran was the first curator of the center. Dr. Sharon Walker would follow in 1990 as Center Administrator until her retirement in 2007.

PUBLIC INFORMATION OFFICE

One of the first efforts to spread the word about the activities of the GCRL and to provide better service to the commercial and recreational fishing industry was the publication of a newsletter, *Marine Briefs*, beginning in May 1972. By its second year, it had become a black and white professionally written and designed monthly publication with a focus on research and people



Fig. 7. Aerial view of the campus in 1971.

at the GCRL, local, regional, and national news and issues concerning fisheries, and later activities of the MEC&A. It was published until July 1996.

With the hiring of Catherine Campbell as Public Information Officer, the Laboratory began generating press releases as well as handouts and brochures of a popular nature for the general public, produced a local 15-min radio program called *On Course*, and now had a managing editor for *Gulf Research Reports*.

RESEARCH ACTIVITIES

The research enterprise during the 1970s and 1980s included 15 sections including anadromous fisheries, analytical chemistry, botany, ecology, environmental chemistry, fisheries management, fisheries research and development, geology, microbiology, microscopy, oyster biology, parasitology, physiology, systematic zoology, and toxicology. (Anon, 1975) As many as 124 separate research projects were underway, funded by an assortment of private, state, and federal grants and contracts. Several researchers and fisheries biologists who remained at the laboratory until retirement or are still currently on staff were hired during this growth period, including Dr. Robin Overstreet, Dr. Jeffery Lotz, Dr. William Hawkins, Dr. Richard Heard, Ms. Harriet Perry, Mr. Larry Nicholson, and Mr. Jim Franks, and retirees Dr. Ervin Otvos, Drs. Tom and Judy Lytle, Dr. Adrian Lawler, Dr. Tom McIlwain, Dr. William Walker, Mr. Dick Waller, and Mr. James “Tut” Warren.

SHARING THE CAMPUS

During the 1970s and into the 1980s as many as five agencies were located on the campus of the GCRL. They included the Mississippi–Alabama Sea Grant Consortium (MASGC), the

fishery reporting specialist with National Marine Fisheries Service, the Regional Office of the Mississippi Air and Water Pollution Control Commission, the biology consultant for the Mississippi Marine Conservation Commission, and Gulf States Marine Fisheries Commission. MASGC has had a continued presence on the campus since 1969 when the GCRL was designated as the headquarters by IHL of MASGC's predecessor, the Universities Marine Center. In 1972 the first bistate Sea Grant program in the nation, the unification of the Mississippi Sea Consortium and Alabama's Marine Environmental Sciences Consortium created the MASGC housed in the Caylor Building at GCRL (Howse, 1992). The Gulf States Marine Fisheries Commission moved onto the campus in 1977 and stayed in residence until 1989.

R/V TOMMY MUNRO

The R/V *Tommy Munroe* (Official Number 634430) was constructed at Bender Shipyard in Mobile, AL and commissioned in 1981. Originally named the *Sail On*, the vessel was redesigned and moved to Mobile after the original shipyard in Tampa, FL went out of business in 1976. It is a well-equipped offshore research vessel available for public and private charter. It has been widely used in a variety of research and engineering projects within the Gulf of Mexico. Onboard research activity has included trawling surveys, long-lining, deployment and recovery of arrays, structures, buoys, and moorings, cable laying and sea/shore interface installation, submarine and diverless systems support, seismic research, camera platform and tracking assignments, oceanographic surveys and logistics, and diving support (Fig. 8).

U.S. MARINE SHRIMP FARMING PROGRAM

The U.S. Marine Shrimp Farming Program was formed in 1984 to accelerate the development of a national shrimp farming program for the U.S. Department of Agriculture. Its purpose was to research, develop, and transfer technology, products, and information for the domestic shrimp aquaculture industry. The goal was to make shrimp farming competitive in world markets. Called the GCRL Consortium, it was composed of GCRL; the Oceanic Institute of Waimanalo, HI; and Tufts University of Boston, MA. The partnership was enlarged to include Texas A&M and the Waddell Mariculture Center by the late 1980s. GCRL's primary research

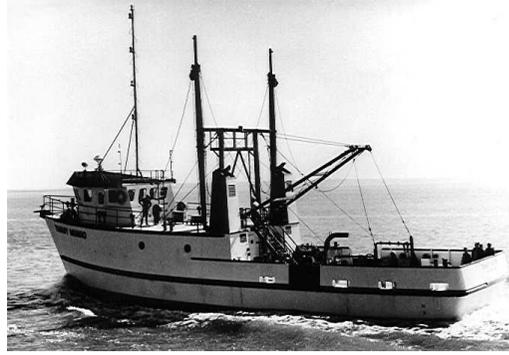


Fig. 8. R/V *Tommy Munroe*, Gulf Coast Research Laboratory's 97-foot oceangoing research vessel.

efforts included maturation, reproduction, and disease control (Anonymous, 1988a).

THE BAD YEAR AND THE GCRL/UNIVERSITY OF SOUTHERN MISSISSIPPI (USM) UNIFICATION

An event still remembered by long-time staffers occurred in mid-1986. As reported on the front page of the June 1986 issue of *Marine Briefs*: "Lab cuts employees and services in wake of reduced state funding."

"Gulf Coast Research Laboratory is being forced to terminate 34 staff positions at its main campus in Ocean Springs and the J. L. Scott Marine Education Center in Biloxi due to drastic cuts in funding for higher education by the state legislature."

"Total reduction of the Laboratory staff because of the appropriation cuts will amount to approximately 39%, counting the terminated positions, combination of staff duties necessitated by the layoffs, and the elimination of several vacant positions. GCRL currently employs 120 permanent employees. Layoffs will be staggered beginning June 18."

"GCRL's 1987 appropriation is \$2.6 million, down from \$3.1 million for the 1986 fiscal year. Lack of a cash reserve and library fund setbacks make the budget shortfall even more severe, amounting to a 24% loss, rather than the 17.3 difference between the two appropriation figures."

"This funding reduction will greatly reduce our capability to provide services to the seafood industry and other coastal interests," said Dr. Harold Howse, GCRL director. "Cutting personnel will have a negative effect on our ability to respond to research needs and responsibilities. Our ability to provide educational service to students and teachers through our Marine

Education Center will also be drastically reduced.”

“The future of the Laboratory depends on money,” Dr. Howse continued. “Until our funding situation improves, through state funding increases, other grants and contracts, and private donations, our hands are tied.”

“The real tragedy is the fact that many people who have been trained to perform highly skilled tasks and who have devoted their lives and careers to research and higher education in Mississippi are being abruptly displaced,” Dr. Howse stated.

In part due to the financial crisis in 1986, talks began at the IHL about placing GCRL under the administrative control of USM with a bill brought before the state legislature in 1987 that was not approved. However, this administrative shift was resurrected in early 1988. According to Dr. Ray Cleere, State Commissioner of Education, the merger was “only one option open to them” and that work at GCRL was excellent, despite operating on limited resources. He said, “In my opinion, the laboratory has not realized its potential. I hope this is an educational rather than a political subject. If there’s any bad guys in this, it’s me for bringing it up.” (Ruddiman, 1988)

In the May–June 1988 issue of *Marine Briefs*, one small front-page article informed readers of a change in the reporting and administrative functions of the Laboratory. The Board of Trustees of the State IHL approved an inter-agency agreement between the GCRL and USM at its May 19 meeting that transfers direct administration of the Laboratory from the Board of Trustees to USM President Dr. Aubrey Lucas.

“We expect this closer relation with USM to provide greater research opportunities in the marine sciences, especially at the graduate level, and to enhance the continued development of our joint marine science programs,” said GCRL director Dr. Harold D. Howse.

“This can bring a closer relationship between scientists on our campus and those at the Gulf Coast Research Laboratory,” Dr. Lucas said. “We can have more significant research by joining forces.”

“We have the marine science degree program at the University of Southern Mississippi,” he continued. “It’s logical that we need a close affiliation with the Lab to fulfill our mission in graduate work.”

Both officials anticipated that the agreement will lead to increased marine research at GCRL, as well as more state and federal money to fund research projects (Anonymous, 1988b).

Near his retirement in 1989, Howse was honored for his scientific contributions by the MAS when he received their “Outstanding Contributions to Science in Mississippi” award during the Academy’s 1988–89 annual meeting. Howse was a past president of the Academy, served as the first president of the South Association of Marine Laboratories, and was a member of the Board of Directors of the MASGC (Anonymous, 1989).

McILWAIN YEARS

With the passage of administrative responsibility of the Lab to USM and the retirement of Harold Howse, Dr. Thomas McIlwain, another student of Gordon Gunter, was appointed to lead the GCRL in July 1989 following a national search. The Assistant Director of fisheries research and management since 1983, McIlwain served until 1994 when he retired from state service and took a position with National Marine Fisheries Service.

During his 5-yr tenure, he weathered a 1991 financial crisis when the state appropriation for the Laboratory was reduced 13.1%, acquired state support for design and construction of a new dining hall, and implemented a team approach to research that allowed the Laboratory to bid on larger projects.

One of the greatest challenges he faced as GCRL administrator was severe budget reductions due to the recession in the late 1980s and early 1990s. “It was baptism by fire to deal with budget cuts and terminating employees right off the bat,” he said. “But these financial constraints presented us with an opportunity to streamline our organization, and our operations have become much more efficient.”

“As GCRL’s director, it has been my goal to provide my staff with chances to excel, and they have met the challenge every time,” Dr. McIlwain said. “I implemented a team approach which has enabled our Laboratory to bid on more complex projects by cooperating with experts at other research institutions and collaborating on joint research programs (Anonymous, 1994a).”

The dining hall completed in 1995 was the first new construction since the addition to the Toxicology Building in the mid 1980s. It replaced one of the last wooden World War II buildings from the Caylor years (Fig. 9).

After retiring from the position of Coordinator of Research Programs for the National Marine Fisheries Service Southeast Fisheries Center in Pascagoula, MS, McIlwain returned to the GCRL as a project coordinator for the



Fig. 9. Dining hall opened in 1995 that replaced a World War II-era wooden building.

Thad Cochran Marine Aquaculture Center at Cedar Point. The R/V *Tom McIlwain*, a 22-foot vessel, was named in his honor.

Following McIlwain's retirement, USM appointed two acting directors: Dr. Donald R. Cotton, who was assistant vice president for the research and planning and director of the university's Office of Research and Sponsored Programs and served about 1 mo before announcing his departure from the university to take the position of executive director of the Public Education Forum of Mississippi, and Dr. Robert T. van Aller, dean of the university's graduate school, who would represent the laboratory while the university took a strategic look at its marine science interests on the Mississippi Gulf Coast.

According to Dr. Karen M. Yarbrough, USM vice president for research and planning, McIlwain's retirement coincided with university plans to conduct a comprehensive study aimed at strengthening all of the university's marine science interests. The university's marine science interests under review and consolidation included GCRL and its two centers and two units at Stennis Space Center in Hancock County, the Center for Marine Science, and the Center for Ocean and Atmospheric Modeling (Anonymous, 1994b). In March 1996, IHL approved the university's newly consolidated entity named the Institute of Marine Sciences (Anonymous, 1996). During the van Aller time, the Jackson County Board of Supervisors purchased a 214-acre plot adjacent to the Gulf Islands National Seashore and located to the east of the main campus in Ocean Springs for future GCRL expansion (Anonymous, 1995). The site later would be called Cedar Point (Fig. 10).



Fig. 10. Map of the Cedar Point campus.

INSTITUTE OF MARINE SCIENCES 1996–1999
COLLEGE OF MARINE SCIENCE 1999–2001

In 1997, Dr. D. Jay Grimes became Director and dean of the newly created Institute of Marine Sciences and held the simultaneous appointment of Director of the GCRL. Dr. Grimes, a microbiologist and experienced administrator, came from both academia and government. Under his leadership, two academic departments would be formed, first the Department of Marine Science crafted from the Center for Marine Science and the Center for Ocean and Atmospheric Modeling at Stennis Space Center, and second the Department of Coastal Sciences (COA) composed of most of the research scientists at the GCRL. In 2001 Grimes was named Dean of the College of Marine Sciences composed of the two academic departments plus the centers and units of GCRL including the J. L. Scott Marine Education Center, the Center for Fisheries Research and Development, and the marine aquaculture program at Cedar Point. From 2002 until 2007, Grimes would serve as Director of the GCRL and as Provost and Vice President for Academic Affairs at the university. In 2003, the College of Marine Sciences was moved into the College of Science and Technology and became the School of Ocean and Earth Sciences. During this time because of a budget reduction in the late 1990s,

all research technicians were removed from the state appropriation budget and shifted to grant project funding exclusively. With the cost of supporting technical personnel 100% with soft money, the impetus to write more grants and to find outside sources for revenue became significant factors in the rapidly expanding research enterprise. With a new academic department, the number of graduate students increased from about 15 in 1995 to 50 in 2009. COA faculty were reviewed for faculty status and required to apply for tenure. Other events during the Grimes administration included developing plans for the Cedar Point campus and breaking ground on the first buildings there. GCRL celebrated its 50th anniversary in 1997 with a well-attended open house. In 2002 because of his university commitments, Dr. Grimes appointed Dr. William Hawkins to serve as executive director to oversee day-to-day operations and management of the GCRL three campuses. After stepping down as director and provost, Dr. Grimes returned to his first love, teaching, and is a faculty member of the Department of Coastal Sciences.

HURRICANE KATRINA

Perhaps no one person was better suited to take on the ambiguous position of executive director than Dr. William Hawkins. Having arrived at GCRL in the early 1970s, Hawkins studied under Dr. Harold Howse and completed his Ph.D. research on the ultrastructure and cytochemistry of the nervous system of the blue crab in 1972. He was hired as a member of the senior research staff to help build a research program based on electron microscopy (Anonymous, 1974). With a research directive that cut across all disciplines on the campus and 30 yr of experience at GCRL, Hawkins was intimately familiar with all the scientists, programs, history, and the workings of the lab. Research scientist, grant writer, negotiator, and leader, Dr. Hawkins would need all those skills and more to manage the event that would change the campus and lives of the employees for years to come. Hurricane Katrina, one of America's most devastating natural disasters, made landfall on 29 Aug. 2005, 58 yr to the date of the founding of the Laboratory. Recovering from Katrina and then setting the campus back on course to being a fully functional laboratory would take more than just an administrator; it would take a man of great compassion, perseverance, determination, and will.

On the ground within a day of landfall of Katrina, Hawkins quickly marshaled his manage-

ment team via cell phone texting and established a base of operations in one of the only structures not damaged or flooded by the estimated 24-foot storm surge that completely destroyed the Hopkins Instructional Labs, the physical plant offices and maintenance shop, the anadromous fisheries building, half of the toxicology building, greenhouses, and pier on the Halstead Road campus in Ocean Springs. The MEC&A was destroyed on Point Cadet in Biloxi. The Cedar Point campus was largely unscathed, with some minor flooding and some damage to exterior grow-out areas and tanks. The R/V *Tommy Munro* and crew rode out the storm in the locks at Stennis Space Center. The eye of the hurricane actually went right over them. Captain Paul Beaugez said the vessel was so well secured that it hardly rocked during the storm. Hawkins' first action was to have the dormitory, which received about 6 inches of surge, thoroughly cleaned and prepared as temporary housing for staff members whose homes were lost or uninhabitable, which amounted to about 30 GCRL employees. Working with the Red Cross and with a local church, he arranged for food to be provided to the campus to help sustain employees engaged in 12-hr days working to recover their offices, laboratories, and data. He set the Public Information Officer to working with disaster agencies to expedite receiving Federal Emergency Management Agency (FEMA) travel trailers for displaced staffers and other services. Graduate classes began about 3 wk after the storm hit using spaces and furniture cleaned by lab personnel. The MEC, minus the Aquarium, relocated from Point Cadet and was re-established in the unused director's residence on campus. The experience of the Gunter Library is illustrative of the disaster's impact and the recovery process:

About 30–36 inches of water originating from the Halstead Bayou entered the Caylor Building as Hurricane Katrina's storm surge pushed onto the coast and then receded. Water entered the library through four door vents and under the doors. Upon inspection the morning of 30 Aug., debris line evidence revealed that 13 to 15 inches of water had flowed into all library rooms and offices. Damage included the loss of all library furnishings, a photocopy machine, computers, 14 filing cabinets, and all library materials on bottom shelves or stored lower than 13 inches. Collection losses in the library included all or parts of 137 journal titles, 1,188 books, and 2,964 reprints. All library materials held at the J. L. Scott MEC&A in Biloxi were lost. A considerable amount of materials on loan to faculty, staff, and students and housed in several campus buildings was also lost.

Significant recovery efforts began on 8 Sep. when laboratory employees were called back to work. Library staff, with the help of two graduate student volunteers, began mucking out the library, inventorying losses, and removing materials from the three offices. Having arrived at 1830 hr Saturday, 10 Sep., technicians from Blackmon Mooring Steamatic began surveying the damage and planning the cleanup the following morning. After their departure on 14 Sep., three dehumidifiers from the main campus library and one dehumidifier donated by Mote Marine Laboratory were set into continuous operation. Between the removal of mold-contaminated materials, the dehumidifiers, and library staff and volunteers cleaning books and bound journals by hand, the remainder of the scientific collections was 100% recovered from the destructive aftermath of the storm.

Classes began on campus on 19 Sep., requiring the library to re-establish a baseline of operations for students. A temporary reference desk was set up in the portico of the building with library staff retrieving books and journals for students. Reference and research services were maintained by using laptop computers and other campus computers with Internet access.

Library recovery has been assisted by generous donors. Rotary International zones 29 and 30 provided funds for purchasing equipment and supplies. Funds for book purchases came from a SOLINET/Mellon grant. Other donors included the National Network of Libraries of Medicine Southeastern Region, who purchased two desktop computers and a scanner for the library, and many individuals who sent books and journals (Shaw, 2008).

Physical cleanup of flooded offices and laboratories continued for several months after the storm, and included repainting; installing new floors, doors, and cabinetry; and salvaging equipment and furniture. To be reimbursed for losses, personnel had to document and price all contents of each building that was flooded. To supplement records of items on state inventory, each person had to recall individual pieces such as chairs, office supplies, desks, and other items for which there were no records. Each item had to be documented with values located in catalogs to verify replacement costs, by the end of December 2005. Chief Financial Officer Kris Fulton worked with several FEMA Project Officers to develop project worksheets for 19 destroyed or damaged buildings for three locations, 32 projects for lost contents, and 28 projects for debris removal and infrastructure losses. About 100 computers and 40 vehicles



Fig. 11. Employees working after Hurricane Katrina.

were lost to the storm. The FEMA estimate for total damages was \$18 million (Fig. 11).

In 2010 the GCRL and its physical plant supervisor, Michael Funk, were honored by receiving the Ocean Springs Chamber of Commerce Pat and Ethelyn Connor Tree Canopy Award for their efforts to replace trees lost because of Hurricane Katrina. The 250 trees planted on the Halstead Road campus are a visual sign of the campus' recovery from the storm (Coleman, 2010).

Uniting damaged people on a damaged campus in a disaster area of terrible proportion takes enormous skill, time, and patience. The times showed the measure of the man; he did not falter or fail. Dr. Hawkins was officially appointed Director in March 2008. The following years of his administration show the same steadfast push forward.

GULF COAST RESEARCH LABORATORY TODAY

In a typical year, the GCRL derives less than 25% of its budget from its state appropriation (about \$3 million/yr), with the remainder received from grants, contracts, and self-generated funds. This yields about a direct \$12–15 million annual contribution to the region. With 210 employees and graduate students, the laboratory is one of the top seven employers in Ocean Springs.

The scientific disciplines identified by Gunter during his tenure sustain at GCRL today and can collectively be described as applied marine biology. Laboratories for marine geology and oceanography have been replaced by expansion of efforts in marine ecology and aquaculture. A strong emphasis has been made on the application of modern tools of inquiry, particularly molecular technologies and satellite imagery

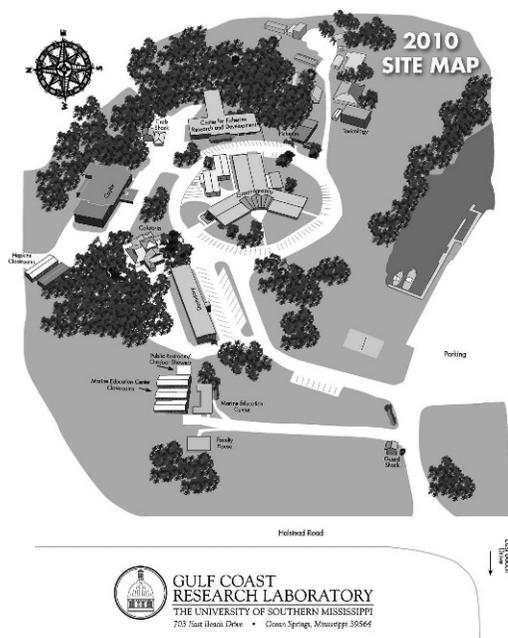


Fig. 12. Map of Gulf Coast Research Laboratory main campus.

along with modeling and quantitative analyses of ecological and fisheries processes. (Anon 2010b)

Today all the elements originally conceived by the founding fathers, the Summer Field Program with over 60 affiliate colleges and universities managed by Samuel Clardy, the museum curated by Sara LeCroy, and the Gunter Library headed by Joyce Shaw, are in place and work in unison with the Department of Coastal Sciences chaired by Dr. Jeffrey Lotz, the Marine Education Center under the leadership of Christopher Snyder, the Center for Fisheries Research and Development directed by Harriet Perry, and the Thad Cochran Marine Aquaculture Center headed by Lotz. These activities are the heart and soul of the GCRL and the efforts of the faculty, staff, and students working in these areas continue to fulfill the laboratory's mission of research, education, and service in the marine sciences (Fig. 12).

ACKNOWLEDGMENTS

My deep thanks to Marjorie Williams for reading the manuscript and copyediting it; to Ray Bellande for directing me to census information on his website <http://oceanspringsarchives.net>; and to Gulf States Marine Fisheries Commission and Mississippi-Alabama Sea Grant for verifying dates.

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