Gulf of Mexico Science

Volume 28
Number 1 *Number 1/2 (Combined Issue)*

Article 14

2010

The Dauphin Island Sea Lab – A Tale of Four Laboratories

George F. Crozier
Dauphin Island Sea Lab

Michael R. Dardeau
Dauphin Island Sea Lab

DOI: 10.18785/goms.2801.14

Gulf of Mexico Science, 2010(1–2), pp. 127–134

The Dauphin Island Sea Lab – A Tale of Four Laboratories

George F. Crozier and Michael R. Dardeau

The early years. Most histories of marine labs are really about the people that had the curiosity and fortitude to inhabit the usually remote locations—none riskier than the coast of the Gulf of Mexico. The history of marine science in Alabama began with the first laboratory belonging to the Seafood Division of the Department of Conservation and Natural Resources, a small green building on pilings in Heron Bay where Drs. Everett Bishop and Ralph Chermock began bringing students from the University of Alabama in 1960. Their efforts caught the attention of the director of the University of Alabama Extension campus in Mobile, Dr. Fred Whiddon. The University of Alabama floated a bond issue which led to the construction in 1963 of a modern marine laboratory on Dauphin Island after the new bridge to the island was completed.

Dr. Whiddon negotiated a unique arrangement providing for joint ownership of the facility by the University's Marine Science Program and the Seafood Division of the Alabama Department of Conservation and Natural Resources. Codirectors were appointed: Mr. George Allen led the Seafood Division and the University hired Dr. George Rounsefell, a retired Bureau of Commercial Fisheries laboratory director who had served all over the world and had already published one of the better-known fishery science texts (*Fishery Science, 1953*). While the concept of pairing an academic unit with a state management and enforcement agency may have appeared innovative, differences in personalities eventually led to the separation of the two programs. The Marine Science Institute moved to Tuscaloosa for a year or so and the University of Alabama in Birmingham joined with its Tuscaloosa parent campus in searching for a new location for an academic marine laboratory.

Dr. Rounsefell and the University of Alabama at Birmingham representative, Dr. E. Carl Sensenig, eventually settled on the purchase of the southernmost portion of Point aux Pins, 256 acres of maritime forest and emergent salt marsh on the northern side of Mississippi Sound populated only by biting yellow-flies. Although there was only the most marginal of roads from Grand Bay and no ready boat access, Rounsefell recognized the value of the pristine waters of Grand Bay. He had long espoused the eventual necessity of mariculture for the development of sustainable fisheries and planned to build a series of polyculture ponds on Point aux Pins and discharge the waste waters into Portersville Bay.

Dr. Rounsefell and a small crew of graduate students, led by Hugh McClellan, later a leading biologist with the Mobile District of the Corps of Engineers, engineered a road from the town of Bayou La Batre and personally dynamited (Fig. 1) a boat channel into the property from Portersville Bay. To top that feat of modern engineering, he then constructed an elevated platform within a diked boat harbor and floated in a Corps of Engineers' quarters boat that became the third Alabama marine laboratory and offices in one package, two stories high, with galley and dormitory facilities, and lots of working rooms!

Dr. Rounsefell set up shop at Point aux Pins in 1966 and hosted summer programs, which accommodated a dozen or so students. Following a seminar, he hired Dr. George Crozier (Scripps Institution of Oceanography, Ph.D., 1966), from the University of Southern Mississippi as assistant director. He also hired a Ph.D. candidate from the University of Alabama, Judy Stout, to assist him in writing his new book, *Ecology, Utilization, and Management of Marine Fisheries*, which was eventually published a year before his death in 1975.

The facility at Point aux Pins was supported by a remarkable Bayou la Batre native, May Tillman, who served as administrative assistant, registrar, and cook—jobs that she eventually carried with her to Dauphin Island where she established the cafeteria as the hallmark of the fourth Alabama Marine Laboratory! At Point aux Pins, Dr. Crozier joined her in the galley for lunch and dinner but had to prepare breakfast before she got there. Her counterpart on the logistic side was an irascible, double-retired, Army motor pool sergeant named George Oakes. George provided maintenance on everything stationary and mobile, and fabricated all manner of bizarre research tools out of baling wire and duct tape—also creating a tradition of technical support that carried over to the present day Dauphin Island Sea Lab. Dr. Crozier filled the role of assistant plumber as well as sous chef.

By 1968, Dr. Whiddon had tired of repeatedly and futilely petitioning the University of Alabama for a new campus in Mobile and started a new university of his own—the University of

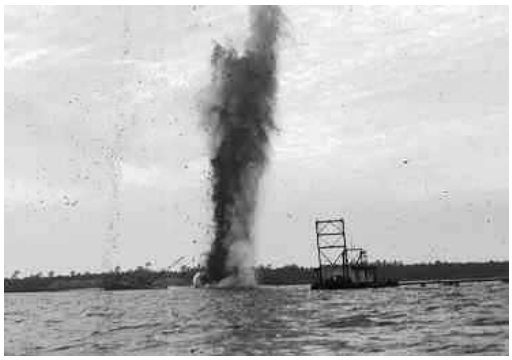

Fig. 1. Dynamiting the boat channel from Portersville Bay to Point aux Pins.

South Alabama. Never having lost his interest and enthusiasm for things maritime, he steered his new department of biology in the direction of marine biology by hiring several young faculty with marine interests, including Dr. Bob Shipp. The obvious confluence of interests of the young faculty members provided the early stimulus for the creation of what was to become the Marine Environmental Sciences Consortium (MESC).

The sturdy band of yellow fly survivors at Point aux Pins also survived Hurricane Camille in 1969 but not an electrical fire that destroyed the entire building (and the nearly complete Stout dissertation) during the Christmas break of 1971. That event coincided with the with the U.S. Air Force declaring the radar station on the east end of Dauphin Island as surplus in the wake of the Vietnam War. The facility—with acres of land and dozens of buildings including dormitories, gymnasium, bowling alley, and a cafeteria—was just the impetus that several universities needed to push through legislation creating the MESC as a state-funded, not-for-profit entity. Led by the University of Alabama and the University of South Alabama, Troy State University and Auburn University quickly joined the effort and 13 other institutions of higher learning became the founding institutions; the consortium eventually grew to 22 members, including several private colleges and universities. The presidents of the member institutions were designated as the Board of Directors and they joined Governor George Wallace in his office for the signing of the enabling legislation. Governor Wallace remarked then that he had never seen all of them in the same room together before—and they haven't managed that remarkable attendance since!

Just prior to the catastrophic fire in 1971, the Marine Science Institute had hired Barry Vittor, a newly minted Ph.D. from the University of Oregon. Drs. Vittor, Crozier, and Rounsefell, with their intrepid band of survivors, got access to the former Air Force base in April of 1972 with a commitment to host the first MESC summer program. After spending half the year in a four-room building in Bayou La Batre, which was acquired in the divorce from the Seafood Division years before, the faculty of three was ecstatic at getting the former Air Force base. The keystone to the facility was the 10,000–square foot, atomic bomb–proof building which was to house the instructional and research facilities. Shortly after naming several buildings after each other, they noticed that the main building, most of which had housed a vacuum tube computer system (1950's vintage) had no 110 V power, and a single bathroom (male, of course) that provided the only hot water to the entire building! That summer featured wooden picnic tables and hanging shop lights, courtesy of George Oakes and some leftover Air Force civilian caretakers that came with the base.

The facility was named the Dauphin Island Sea Lab (DISL) (Fig. 2a & b) by the first named director, Dr. C. Everett Brett, a geologist based at the University of Alabama. The University's Marine Science Institute was considered a tenant at the time and had a budget separate from the magnificent sum of $100,000 per year provided to the consortium by the Alabama state legislature to run the Laboratory. The research programs at the Laboratory were stimulated by the early hiring of two remarkable individuals. Dr. Will Schroeder, oceanographer and Diving Safety Officer, was hired after completing his Ph.D. at Texas A&M University, and Dr. Tom Hopkins moved from the University of West Florida where he served as chair of the Biology Department. Tom brought with him the first major research program of the young facility—a benthic assessment associated with the expanding lease sale of the Mississippi, Alabama, and west Florida shelf funded by the Minerals Management Service. Both Schroeder and Hopkins had trained in scientific diving at Scripps with Crozier under the direction of Jimmy Stewart, the diving officer emeritus there.

The diving program was the recipient of the next meaningful program at the Laboratory thanks to a grant from the Russell Foundation of Alexander City, AL. The foundation provided 5 yr of funding in the early 1970s for faculty and graduate students to take part in saturation diving and research in the Bahamas through the Hydrolab program. For many years, Hydrolab and the Alabama project were featured in the Smithsonian National Museum of Natural Histo-

DOI: 10.18785/goms.2801.14

Fig. 2. Dauphin Island Sea Lab (a) circa 1970 and (b) today.

ry. A tradition of employing scientific diving for research and training was carried forward by Mike Dardeau, an early graduate from the University of South Alabama, who incorporated it into the technical support unit that eventually succeeded George Oakes and carries on to this day.

The National Sea Grant Program had recently established a new effort in Mississippi and discussions were initiated in 1971 to examine

the potential of a Sea Grant program in Alabama. Dr. Crozier directed the program with the assistance of Ms. Stout, who had joined them on Dauphin Island and started her second dissertation dealing with the ecology of the *Juncus* marshes of the area. In 1972 the two states created one of the few bistate Sea Grant programs and Dr. Sidney Upham, a marine pharmacologist, headed the office. Dr. Upham recognized the potential of the new laboratory and negotiated a move to become the second director of the DISL. Conflicts with the University of Alabama tenancy emerged and upon Dr. Upham's retirement, Dr. Bob Shipp became acting director. Dr. Shipp had attended courses at Heron Bay while an undergraduate at Spring Hill College and has since built and become the chair of the Department of Marine Sciences at the University of South Alabama. A formal search ended with the 1977 hiring of Dr. George Crozier as the executive director.

By this time Judy Stout had completed her second dissertation and become the leading expert on the Gulf Coast emergent salt marshes. She was given the task of developing the academic programs at the Laboratory and successfully created the year-round activities that became the foundation of the MESC's instructional programs. Her outstanding performance eventually led to her selection as assistant vice president of academic affairs at the University of South Alabama.

Even from the early days at Point aux Pins, Dr. Crozier had been aggressive in courting interaction with local high schools. For example, biology classes from Davidson and Murphy high schools in Mobile Bay had been taken aboard an elderly and rather small shrimp boat with the dubious name of the *Mickey's Fin*. The facilities at Dauphin Island allowed significant expansion of these actions and Dr. Crozier petitioned the Board of Directors to approve such an action at the kindergarten–grade 12 (K–12) level, (Fig. 3) based on the presumption that this might ultimately benefit the higher education institutions. The first programs were led by Mr. Tommy Walker and Fred Rees, a former steel worker from New York and graduate student at the first island laboratory. Mr. Rees served as an Alcohol, Tobacco, and Firearms agent in northern Alabama for some time after receiving his M.S. and his diverse background was well suited not only to establishing Discovery Hall, but to later becoming director of operations at DISL, just in time for the massive damage caused by Hurricane Frederic in 1979. Fred later left DISL to become the manager of the Brookley campus of the University of South Alabama.

Fig. 3. George Crozier with one of the early Discovery Hall Program groups.

John Dindo had a B.S. in fisheries from Alaska when he came to DISL to work first on his M.S. thesis and eventually a Ph.D. dissertation at the University of Alabama at Birmingham. He immediately showed boundless enthusiasm for fieldwork, education, and the Laboratory at every level. He and Johnny Booker, another early University of South Alabama graduate, made Discovery Hall, which had been initiated by Tommy Walker in 1975, the preeminent K–12 marine education program in the country. Dindo's enthusiasm and commitment to the Laboratory crossed every discipline and affected everyone at DISL.

Dauphin Island was cut off from the mainland by Hurricane Frederic and access was by ferry (a 4-hr round trip) or the Laboratory's boats for the next 39 mo. For most of the first year following the hurricane, electricity was provided by generators. This was a difficult time and the summer session of 1980 was actually at Spring Hill College in Mobile because repairs at DISL had not yet been completed. The storm was a mixed curse; although given the military construction, the island facility was structurally sound, the state had been unable to provide funds for necessary conversions and upgrades. Insurance and hurricane relief provided much-needed funding and DISL emerged much improved from the aftermath of the massive storm.

It was with some consternation in 1985 that the State of Alabama ''found'' the laboratory, which had assumed financial independence from the University of South Alabama just prior to the storm, with the creation of the new administration. The state auditor began a 7-yr review of the laboratory's funding and performance (including the post-Frederic years) and another remarkable personality emerged to advance the mission of the institution. Ms. Georgia Mallon had originally been hired in the cafeteria but had gradually assumed the

DOI: 10.18785/goms.2801.14

business management responsibility as May Tillman began the task of making food services the best known feature of DISL! Ms. Mallon endeared herself, and DISL, to the auditors when they learned that she kept rubber bands around the records and recycled the expensive heavy binders used to keep the accounts in the days before computers. Her common sense and unwavering dedication to the Laboratory provided the solid foundation upon which it survived for the almost 30 yr that she served the institution. The cafeteria also produced Ms. Rita George who, as the facilities scheduler, became the welcoming voice and face to hundreds of thousands of students visiting the Laboratory.

The middle years.—The consortium concept, while an excellent way to avoid duplication of state programs, meant that most of the faculty at DISL worked for member universities. This arrangement had advantages, as well as disadvantages. Neither DISL nor MESC can grant degrees; the degrees are granted by the member institutions, so the advantage of having designated graduate faculty on site was required. On the other hand, expansion of graduate and research programs was dependent on distant and diverse institutions.

With strong academic programs in place at the high school and undergraduate level, the modern era at DISL began with the conscious decision to invest in bringing scientists to the laboratory that had already distinguished themselves in their field. This was initiated in 1986 with the hiring of Dr. Ken Heck from the Academy of Natural Sciences of Philadelphia. Dr. Heck, an acknowledged researcher in seagrass ecology and predator–prey relationships, was hired by DISL to provide the foundation of a research program that was less dependent on the member universities.

Heck's standing in the scientific community elevated the image of the Laboratory and he was quickly selected for the newly created position of research coordinator. One of his first acts was to coordinate development of a 5-yr plan providing for (1) new space, instructional materials, and funding for graduate studies; (2) additional space, equipment, and programs for research; and (3) an expanded role in public outreach for both the research and the teaching components. Much of the plan consisted of a commitment to hire new faculty through DISL rather than waiting on member institutions to fund expansion. Another aspect of the plan was the introduction of post-doctoral associates through the establishment of a budget line, a small beginning which led to a cadre of many over the past decade.

State funding cycles being what they are, the promise of the 1988 5-yr plan probably took closer to 10 yr to realize. By 1989, DISL resident researchers had been increased by two full-time faculty and a postdoctoral fellow; an additional two faculty lines followed over the next 2 yr. During that time, new faculty hires established programs in biogeochemistry and fisheries biology/larval ecology that are carried on to the present. Also, in the early 1990s, the University of South Alabama initiated a Ph.D. program in their new Marine Sciences department and placed one of their new hires in residence at Dauphin Island. This began a trend that continued over the years and five University of South Alabama faculty are currently housed at DISL. By 2006, the last of the original two University of Alabama Marine Science Institute faculty had retired and they were eventually replaced by a new University of Alabama hire, preserving the ties to that founding institution. The current faculty is diverse, with ties to universities throughout the state, and active research programs in ecosystem-level trophic interactions, microalgae, marine microbes, restoration ecology and ecosystem response, in addition to the programs mentioned above.

Renovation of existing space and new construction, funded by Field Station and Marine Laboratory grants as well as equipment grants from the National Science Foundation (NSF), created and equipped new laboratories and classrooms for the rapidly expanding faculty and graduate student population. The main laboratory building, Marine Science Hall, was renovated twice, once in-house by plant operations staff in the late 1980s and a second time in 1993, when a NSF Facilities Renovation grant funded a two-story addition to increase the number of offices and consolidate the tech support facilities as well as to update laboratories in the main building. A second two-story addition in 2006, a joint venture with the University of South Alabama to house some of their faculty, added five more laboratories and additional office area. The new addition was named Wiese Hall, in honor of a long-time supporter of the Marine Science Program at University of South Alabama.

As classrooms were being converted to laboratory space in Marine Science Hall, plans were made to construct a new classroom building on the south side of campus. Horizon Hall debuted in 1991 with four classrooms, two offices, and two laboratory prep areas. Aggressive scheduling allows this space to be shared between the high

Fig. 4. (a) Wet lab, 1978, and (b) mesocosm, 2011.

school visitors, summer undergraduate sessions, and graduate classes.

Wet-lab facilities (Fig. 4a, b) also went through several versions; the first was mostly children's swimming pools fed by a head tank made from a coffin housing, the second was installed in an existing building in 1987, one of the last of the old Air Force buildings to be occupied. NSF and private foundation money supported construction of the current 3,600–square foot facility with recirculating systems in eight separate work areas in 2001.

From the earliest days of DISL, a library, highly specialized in marine sciences, was available in some form. This function has evolved over the years, as technology has advanced and has been supplemented since 1993 by the computer center and its staff. Information technology now provides for interactive connections with data, search engines, and libraries worldwide.

Large-vessel operations began out of the Bayou La Batre lab, in the early 1970s with the shrimp boat soon replaced by the 65-foot steel-hulled *R/V Aquarius*. This vessel was later renamed the *R/V Rounsefell*, after Dr. George Rounsefell (Fig. 5), the early lab director, and moved to Dauphin Island. Used about 100 d a year for both offshore research and class trips, the *Rounsefell* was retired in 1980. Following several abortive attempts to acquire another large vessel, DISL purchased a 65-foot steel-hulled vessel originally built in 1966 as a research vessel for Woods Hole Oceanographic Institute. After being sold by Woods Hole, she had been renamed and refitted as a long-liner working out of Puerto Rico. DISL restored the original name, *R/V A.E. Verrill*, and its function, that of introducing scientists and students to marine science, in 1986. The research community acquired a vessel used primarily for research, the *R/V E.O. Wilson*, named for the famous Alabama native, in 2005. A large fleet of overused and underappreciated smaller boats have also served the DISL and its mission during past 30+ yr.

Another opportunity to engage and interact with consortium members arose in 2002 when Auburn University reconsidered plans to open an oyster hatchery in Bayou la Batre. DISL offered land to locate the hatchery on the south side of the Dauphin Island campus. The building and flow-through seawater system were constructed by Auburn, fulfilling Dr. Rounsefell's dream to help sustain a commercial fishery using mariculture techniques. Auburn students can stay at the facility, take classes at DISL, and/or

Fig. 5. George Armytage Rounsefell, 1905–1976.

DOI: 10.18785/goms.2801.14

pursue their research locally. The hatchery conducts research on all aspects of oyster biology and has supplied oysters for several experimental programs at DISL.

DISL has always tried to balance the three goals of research, education, and public service. Dr. Crozier in particular has made himself available to city, county, state, and national officials as a resource for questions about coastal policy, activities which resulted in him receiving the 1999 Coastal Steward of the Year from the National Oceanic and Atmospheric Administration (NOAA). These services evolved into a Coastal Policy Center which applied for an Environment Protection Agency grant to establish Mobile Bay as a National Estuary Program. Successfully funded in 1996, the Mobile Bay National Estuary Program now cooperates with DISL in a variety of outreach efforts.

In the arena of public outreach, a trial version of a public access aquarium and visitors center operated in the shell of the Air Force's old radar dome from 1994 to 1996. Although completion of the much larger Estuarium in 1998 resulted in conversion of the radar dome to an animal husbandry building, the 2-yr period proved the concept, educating and delighting over 71,000 visitors with displays of coastal ecosystems. The Estuarium guides the visitor from the freshwater of the Mobile–Tensaw Delta down through Mobile Bay to the waters of the Gulf of Mexico using displays of native plants and animals. Some 70,000 visitors annually visit the Estuarium. The Baymobile, a truck outfitted with similar educational displays and staffed by Discovery Hall educators, started visiting K–12 classrooms around the state in 1995.

When an organization occupies surplus military property, full ownership is not conferred for 25 yr. During that 25-yr period, the occupant must submit annual utilization reports about the condition of the property and buildings. Year after year, these reports substantiated that DISL has improved and added to the facilities in an effort to enhance the production of students, research and service. In 2001 full ownership was turned over to DISL by the United States government.

The most recent and future years.—With the venerable *A.E. Verrill* well past its 40th birthday, a replacement was necessary. In 2010 DISL took delivery of a 65-foot twin-engine fiberglass research vessel built by Chesapeake Boats to continue the tradition of taking students of all ages on voyages of discovery, hence the name, *R/V Discovery Alabama*.

Yet another collaborative effort, this time with NOAA's National Marine Fisheries Service, has led to a series of firsts—construction of the first National Marine Fisheries Service building in Alabama and the first building on Dauphin Island to be certified by the Leadership in Energy and Environmental Design, the Richard C. Shelby Center for Ecosystem-Based Fisheries Management. The mission of the Shelby Center is to encourage fisheries management that examines links between organisms and their environment in the context of human activities and their economic and ecological impacts. Effective ecosystem-based management implies integration of diverse data sets, another developing area at DISL. The Shelby Center, which opened in late 2009, also includes a 100–5,000-gallon flow-through seawater experimental mesocosm.

Fig. 6. Newly appointed Director John Valentine and retiring Director George Crozier.

Recently established distance-learning setups in both the new Shelby building and in Wiese Hall allow graduate students to take classes on their home campus without leaving Dauphin Island, and students at schools throughout the state take advantage of classes offered by both University Programs and Discovery Hall via the Internet.

One of the pleasures of maturity is watching students come full circle; students who visited DISL as elementary students may return as undergraduates and again as graduate students. Students from the Discovery Hall summer program for high school students have received advanced degrees in science or education and returned to teach at Discovery or as classroom teachers, bringing their classes to visit. An NSF Research Experiences for Undergraduates program was initiated in 1997 and many of these students have returned for advanced

degrees. It is therefore accurate to say that students at DISL have the opportunity to participate from cradle to grave and these students, whether they return or go on to other endeavors, are our future and the legacy of the DISL.

One recent example nicely demonstrates the Sea Lab legacy: in summer 2011 Dr. John Valentine was selected to replace (re)retiring Executive Director George Crozier (Fig. 6). Valentine, who has been at DISL since 1988, studied at the Sea Lab as a doctoral student at the University of Alabama before earning a junior faculty appointment at DISL and later becoming chair of University Programs. Thus, a former graduate student has risen through the academic ranks at DISL to eventually become its leader and assume responsibility for charting its course for the future.

Dauphin Island Sea Lab, 101 Bienville Blvd., Dauphin Island, Alabama 36528.

DOI: 10.18785/goms.2801.14