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Response of the Gulf Coast Research Laboratory to Hurricane Katrina: A Personal Perspective

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Much has been said by academic and research institutions affected by Hurricane Katrina about physical and operational losses and the effects on tuition and student enrollment. Less has been noted regarding the effects on and response by students, faculty and staff of an individual institution. The experience of the Gulf Coast Research Laboratory might have been unique among Gulf South institutions affected by the storm. My perspective comes from having served as the executive director of GCRL during the time of Katrina. I retired from the University of Southern Mississippi in July 2011 with over thirty years of service all at GCRL. Now ten years later after Katrina, I am writing about those things that struck me hard enough to be etched in my memory. It's all true, at least to me, and I hope accurate.

The nail penetrated the rubber sole of my shoe and went harmlessly between the big toe and the adjacent one. *Note to self: get a pair of steel soled work boots ASAP.* It was Tuesday the day after Katrina made landfall and, unlike about 30 GCRL employees who lost their homes to the storm or had severe damage that caused them to have to relocate for a period of time our house suffered minimal wind damage and escaped the storm surge due to its elevation of 25+ feet. To get to the Halstead campus of the Gulf Coast Research Laboratory that day, we had to park on Halstead Road north of the bayou bridge and make our way over lumber strewn from blown out houses south of the bridge. At the lab entrance, we were met by an Ocean Springs policeman who asked us our business. We told him we

were with GCRL and were there to inspect the damage. He said there was no need to as the lab had been completely destroyed. Well, damn, I thought, that complicates things. As we walked onto the campus we saw that the policeman had been both right and wrong. All structures on the south waterfront were either totally destroyed or severely damaged. With the exception of the Howse Oceanography Building all other major structures around the circle had at least their ground floors inundated by the dirty debris-laden storm surge. Credit for the Oceanography Building's escape from flooding goes to Dr. Gordon Gunter and Mr. Chuck Dawson. They placed the building at the highest point on the lab property. The storm surge was probably 25 feet or more with maybe 10 feet of wave action on top of that more judging by the relocation of some unsecured small buildings. A couple of months earlier a NOAA National Geodetic Service tide gauge was placed on our pier fourteen feet above mean high tide. While dedicating the gauge, a federal representative remarked that it was placed high enough to stay above any expected storm surge. "Imagine a 14 foot storm surge," he said. Well, imagine one 10 feet higher! In the midst of the devastated lab the day after the storm we dedicated ourselves at least to conducting the 2006 GCRL Summer Field Program which had run continuously since the late 1940s and to getting all other lab operations back up and running as soon as possible.

An institution often manages disaster in two phases. The pre-event phase is mainly about planning to preserve property and limit damage. The post-event phase is about helping people recover in all phases of their lives. Because the GCRL campus is vulnerable to hurricanes we operated from a robust hurricane preparation plan activated by federal hurricane advisories and with details to be followed at different phases of storm preparation. GCRL staff secure buildings, move non-trailered boats to safe locations up bayous and rivers and trailered boats and vehicles to high ground. They cover lab equipment with plastic sheeting for protection from falling water due to roof damage. They secure data as well as possible and remove lap top and other portable computers to safe locations. They tape doors and windows of lab buildings to prevent shattered glass and test generators that will support

stored, refrigerated research material and live animals. Studies using pathogenic organisms and toxic substances are terminated. The hurricane plan worked very well, at least as well as could be expected. We lost only one boat, an aluminum skiff that was moved to high ground and chained to a tree that unfortunately fell on the vessel. Although we lost more than one hundred desktop computers, little data was actually lost as that had been secured on portable disks or retrieved from hard drives after the storm. Stored frozen and refrigerated specimens and live animals were major losses, however. Refrigerators and freezers were compromised by storm surge as were non-portable generators on the Halstead campus. Refrigerators and freezers that were undamaged by the storm and live animals were maintained for several days by portable generators at Halstead but when those ran out of fuel and none could be procured in time, samples thawed and rotted and live animals died. As the Cedar Point campus was not inundated, live animal studies were maintained for a while by large, stationary generators but those studies too had to be terminated when fuel ran out. The GCRL Herbarium was housed in a building that faced the south waterfront. What was left of the collection was relocated to the University of Mississippi.

Vessel management during storms is critical for a marine lab. Our major offshore research vessel the RV Tommy Munro with a 97-foot length and 9-foot draft is a major challenge to secure from a storm. Safe harbor for large vessels is hard to find along the Northern Gulf Coast and its slow speed means decisions for relocation have to be made well before a storm's expected landfall. Fortunately, the Lab had made previous arrangements with Stennis Space Center in Hancock County to dock the RV Munro in their lock system off the Pearl River. Captain Paul Beaugez made the call to relocate the vessel to the Stennis locks and set sail well before the storm was expected to arrive. As fate would have it, the eye of Hurricane Katrina passed directly over them as they were securely docked and protected from any wave action. Captain Beaugez recounted that during the storm they monitored marine radio transmissions and listened to many frantic calls for assistance from other vessels in distress, assistance

that would not be forthcoming, if at all, until the storm had passed. About a year later I gave a presentation to a group of marine laboratory administrators on the GCRL Katrina experience. In the presentation, I recounted the RV Munro story and was asked by another director in the audience whether I had directed captain and crew into harm's way. I was taken aback by the question and had never even considered that. To me, it was just a case of Captain Beaugez and his crew taking responsibility for and expertly managing the security of a major component of the lab and the university.

Perhaps our greatest total loss was the GCRL Marine Education Center and Aquarium in Biloxi. It was the centerpiece of Lab's presence on Point Cadet and was built in the early 1980s before casinos came onto the scene. Katrina completely washed out the bottom floor of the MEC, redistributing rare shell collections and fine marine artwork as well as killing or liberating the display specimens in small aquaria and the 50,000 gallon Gulf of Mexico Tank. Being one of the larger administrative units of GCRL, the MEC presented a management dilemma; that is, how could we maintain the vibrant programs of the MEC without a facility from which to operate and recognizing that it would be a long time before a permanent facility could be planned and constructed. We decided to relocate the MEC to the GCRL director's residence which was being used only as a meeting site at that time. Basically the program went from a 36,000-square foot facility in Biloxi to a 3600-square foot facility on the GCRL campus. Due to the diligence of the MEC staff and the addition of portable classrooms that were placed behind the Director's Residence, MEC programs were rapidly reestablished following Katrina.

The GCRL Cedar Point Campus in east Ocean Springs is home to the Thad Cochran Marine Aquaculture Center. As of this writing, work has just begun on the new Marine Education Center that will be sited at Cedar Point. Although only about a half a mile from water open to the storm, a thick forest mainly of pine and oak buffered the storm waters and the campus received only minor flooding.

This underscores the value of preserving coastal forests for storm protection. Live animal studies at Cedar Point, however, had to be terminated due to the lack of diesel fuel for generators. Being adjacent to the Gulf Islands National Seashore of the National Park Service in Ocean Springs, the GCRL Cedar Point operation has a natural and good relationship with GINS. In fact, a few days after the storm, the National Park Service set up their 'command and control' center in the Cedar Point main offices and operated their recovery from there for a while. GINS brought in recruits from other NPS operations to manage their recovery while local employees were allowed to work on the recovery of their own damaged property.

That brings us to the dichotomy of response to Hurricane Katrina by GCRL compared with other academic institutions and governmental operations. While some institutions in the region suspended operations laid off, furloughed or dismissed staff and faculty, the University of Southern Mississippi and GCRL assured employees that their jobs and pay were secure in spite of devastated offices and laboratories. Dr. Shelby Thames was the president of USM and was outstanding in his institutional management of the Katrina recovery as were Dr. Jay Grimes (GCRL Director and university provost) and Dr. Pat Joachim (CEO of the USM Gulf Park Campus). Most importantly, the University set up a fund from which we could draw to pay for cleanup and repair expenses and purchase any equipment needed. It was intended but not guaranteed that the expenditures would eventually be reimbursed by the federal government through the Federal Emergency Management Agency. This effectively bypassed, at least temporarily, the federal red tape that would have required us to wait for FEMA approval for every task. Always blunt as a sledge hammer, President Thames told me to purchase whatever I needed for the recovery of GCRL but if I made a mistake it was coming out of my paycheck! Fair enough. I firmly believe that USM under President Thames guidance managed the recovery process fom Katrina better than any other affected academic institution and the university's support for GCRL was unwavering.

Recounting how the GCRL students, staff and faculty responded to the disaster Hurricane Katrina visited on their lives, careers and property and in particular on their workplace is challenging because so many did so much that oversights and inaccuracies are inevitable. In the days following the storm myself, Jeff Lotz (chair of the Department of Coastal Sciences), Linda Skupien (public information officer), physical plant personnel and others met often. Linda was designated our 'humanitarian czar) and coordinated relief activities and helped many of our employees wade through the regulatory morass to get temporary housing and such. Jeff and I tried to visit as many GCRL employees as possible especially those who experienced substantial damage to their homes. In the days immediately after the storm, the physical plant personnel and some other lab employees cleared road and passage ways around the lab so that returning employees could access their workplaces and we generally made plans for their return such as securing water, food and cleaning supplies. On Monday two weeks after the storm, we called a general meeting of all GCRL employees and remarkably had a nearly 100% turnout. We assured the employees that they had a job with pay. We also asked that everyone who was able to help with the cleanup of GCRL buildings and labs. No one declined.

The next weeks were a blur of dust, mud, muck and unbearable late summer heat. Usually, we tried to work from early morning until mid-day to best manage the conditions of heat and humidity. For many of the employees the day at GCRL ended after a lunch provided by our cafeteria staff or a volunteer organization such as the Red Cross or the United Methodist Committee on Relief. One of our first goals was to make the second floor of our dormitory livable for those who could not return to their homes. I remember vividly the sight of our employees working daily without complaint in those disgusting conditions. Gradually some semblance of normalcy was regained- running water, inside toilets, lights and, most of all, air conditioning! By about the third week of September, a month or so after the storm, we resumed classes.

Among our research personnel, only a single individual left GCRL due to the storm, a post-doctoral associate who had relocated from New York State a few months earlier. He had to evacuate his family several times because of approaching storms during the summer of Katrina and his wife had given birth during one of those evacuations in a city she had never visited before. Understandably, he figured the Gulf Coast was not for him! Although their programs were interrupted, no graduate students left GCRL in spite of many offers of assistance from other institutions and laboratories, including one from the University of Hawaii Marine Lab. All GCRL scientific staff were engaged in getting their programs back up to speed- writing grant proposals and research publications as well as catching up on business suspended by Katrina. The week after the storm, fisheries personnel were sampling marine life in local waters for effects. There were interesting differences between the ways senior versus junior faculty perceived the impact of the storm to their careers. To a person, senior faculty, some with just a few years left in their productive careers, were resolute in their response to the loss of research resources, materials and time. Some junior faculty felt that the storm would have an indelible negative effect on their careers and considered relocating. None did.

Soon after the storm, I mentioned to someone that money for our recovery would not be a problem because it would come from lots of state, federal and private resources and we would wind up with better buildings, equipment and support facilities. I was wrong. Kris Fulton, our financial officer, deftly managed our resources keeping us within our regular budget. He learned the FEMA culture probably better than anyone in the university and with them to insure we got the relief and recovery to which we were entitled. But fiscal resources for recovery were certainly slim. Several agencies, particularly NOAA, extended project reporting deadlines and helped us find additional grant opportunities. Other kinds of help came from numerous and often unexpected sources. In addition to several institutions that offered space to our faculty and graduate students or sent emergency supplies. GCRL employees, individuals and volunteer organizations donated clothes and other items so those who

had lost everything could shop in the 'mall in the hall' of the Oceanography Building. Many volunteers and volunteer organizations helped in many ways and AmeriCorps sent several work teams to GCRL. The National Guard, mainly from Georgia, provided around the clock security during the first weeks after the storm. Mississippi State University offered the use of some heavy cleanup equipment and the Coast Guard along with the EPA helped us manage the cleanup and disposal of toxic wastes. A consortium of Arabian Gulf States, mainly Qatar, granted USM some financial support a portion of which was used by GCRL to construct and equip the Marine Environmental Research Laboratory on the Cedar Point Campus.

Although we were not back to 'normal' by any estimate, an analysis of the productivity of the faculty and scientific staff the year of Katrina showed funding, publications and student graduation rate declined very little if at all. However, a few students had to spend an extra time recovering lost data and reproducing experiments and studies interrupted by the storm. Lost biological collections and frozen specimens and suspension of live animal tests caused setbacks for several programs. No employee was let go and no one missed a pay check due to the storm. Ten years later GCRL is still in the process of reconstructing several buildings damaged or destroyed by Katrina. The rapid recovery of GCRL following the effects of the greatest natural disaster in US history is a credit to the USM administration, the State of Mississippi, federal resources and volunteer organizations. But most of the credit goes to the students, staff and faculty who all came forward and through their diligence and dedication and in spite of their own personal losses pitched in to help rebuild a great institution. I wouldn't wish anything like Katrina on anyone but just in case, don't forget to have a pair of steel soled boots handy.

Random recall. Here are a few vignettes that for some reason, good or bad, have stuck in my mind and those of a few other GCRLers or arose during the writing of this document.

- I remember Mike Ferguson of the GCRL Physical Plant up in a bucket truck working with an electrical contractor to reestablish power to GCRL. Sparks were flying and at one point a telephone pole had caught fire. I called Mike's supervisor over and asked him what the hell is Mike doing up there? He told not to worry about Mike because he knew more about electrical work than did the contractors. I learned a lot about the, sometime unexpected, skills of the GCRL faculty and staff. (William E. Hawkins)
- On a day before we brought the employees back, I was alone in my office in a trailer and heard a four-wheeler outside. I went out on our porch and a Coast Guard enlisted man came up and asked what kind of operation this was. I told him we were a marine research lab. He asked me if there were any toxic substances on site. There were and they were safely contained but I worried briefly that our recovery might be shut down while the Feds assessed our situation. Anyway, he went on to say that if we needed materials collected and disposed of that the Coast Guard would interface with the EPA to get that done so that we could continue our recovery. I accepted their offer and they were true to their word. David Burke from GCRL served as the coordinator of the operation that safely secured out toxic wastes and disposed of them at no cost to us. (William E. Hawkins)
- Several marine labs and research institutions gave GCRL assistance. Mote Marine Laboratory and the Florida Marine Research Institute sent much needed cleaning supplies. George Crozier director of Dauphin Island Sea Lab shared their disaster experiences and offered advice and moral support. The Southern Association of Marine Labs which was founded at GCRL and the National Association of Marine Labs were both very supportive of our recovery. (William E. Hawkins)

- Also during those first days, a reporter based in Rome with the international new agency Reuters showed up in my office. He commented that he had covered the Indian Ocean tsunami of 2004 and that the devastation he saw along the Mississippi Gulf Coast was much like that event. Except for the stench of decaying bodies. (William E. Hawkins)
- I remember in the days following the hurricane GCRL graciously provided me, my husband and others with temporary housing on the second floor of the dormitory. There was no hot water at first but the air conditioning worked and it was shelter. Our dorm neighbors developed a bond during that short time together, an unusual sense of community sharing stories or a meal consisting of the many donated items of food in the damaged cafeteria. Though living in a dormitory was furthest from my imagination prior to the hurricane, it was such a blessing when I knew so many other people were struggling for even the simplest of places to live. I also greatly appreciated the fact that the GCRL kept all of its employees, including me, on the payroll. The work was much different than the research to which we were accustomed. It was hot and dirty cleaning for days on end in horrible conditions. But it was work, and it was necessary to get the lab in a position to regenerate itself in the years to come. (Marie Mullen)
- Ultralow freezers are much heavier than regular -20C freezers, but, amazingly enough, they readily float in 4.5 feet of water and serve as projectiles sufficient enough to break every aquarium and fiberglass tank (raceway) in our 45,000-square foot wet lab. (Robin M. Overstreet)
- The lack of Internet after the storm resulted in our inability to find out about federal funding made available to study the effects of the storm on our biota! (Robin M. Overstreet)

- My family and I live 200 yards from the beach in Ocean Springs. We evacuated our home to stay in the local funeral home up the street from our house (I like to say we sought refuge from the storm in the local house of death!). The day after the storm we checked on our home and then walked down to the waterfront. It was a clear day and I could see across Biloxi Bay to Point Cadet to where my office at the MEC was located. A distance of almost two miles. It was a clear enough day to see that the whole southeast side of the building was gone. I spent an hour that night sitting in the dark with my wife discussing what new career I could work at since my current one as a marine educator had been washed away. Thankfully, I never missed a day of work and have had the best ten years of my life working for GCRL since then. (Chris Snyder)
- In the spring of 2005 I was working a festival at the MEC. We often conducted live animal encounters at the Center. I was holding a 24" alligator for kids to look at and touch. My coworker walked by holding a southern pine snake. The gator got excited and, jumped from my hand and latched on my lower left forearm. The sight of that gator hanging on to me by his teeth is fairly well etched into my brain. Two days after Katrina I visited the MEC location in biloxi. One of the first recognizable artifacts I stumbled upon was the dead, sun baked carcass of that gator. At least some good had come from that storm! (Chris Snyder)
- My most striking recollections of Hurricane Katrina are related to the extraordinary acts of kindness, unselfishness, and generosity I experienced. The coast after Katrina was dark, damaged, and dysfunctional. Everything was difficult—driving, getting water and food, navigating FEMA and other bureaucracies, communicating with no phones, mail, or internet, finding missing family and friends. But in spite of the hardship, there were a million blessings—a neighbor cutting the tree off my house, out of town family bringing

an ice filled cooler, friends sharing food (especially coffee!), assurances of continued employment, and seeing time and time again, people reaching out to help and comfort each other. I was blessed to work where the director put people first—and for that I am grateful. (Joyce Shaw, Head of the GCRL Gunter Library)

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