

LOUISIANA UNIVERSITIES MARINE CONSORTIUM



2008 - 2009
ANNUAL REPORT

Our Mission

“To increase society’s awareness of the environmental, economic and cultural value of Louisiana’s coastal and marine environments by conducting research and education programs directly relevant to Louisiana’s needs in marine science and coastal resources and serving as a facility for all Louisiana schools with interests in marine research and education.”

Message from the Director

As I worked with the LUMCON staff in the preparation of this report, I continued to reflect on LUMCON’s great performance in research and education in the past year, despite dwindling resources and a difficult 2008 hurricane season.

Hurricanes Gustav and Ike ravaged the northwestern coastal Gulf of Mexico. The eye wall of Gustav crossed the Cocodrie Marine Center with 157 mph wind gusts, and Ike brought the highest flooding and worst inundation of mud since the completion of the Marine Center in 1986. The Marine Center was closed from August 30 to September 24, 2008, because of lack of water and electricity. The hurricanes exacerbated facility damages from Hurricanes Katrina and Rita in 2005. As a result, many research projects suffered setbacks and required time to recuperate and rebuild, but the excellent work continues.

LUMCON’s research projects continue to serve Louisiana in its need for science that supports sound resource decisions, such as those required for guiding coastal restoration. The research conducted at LUMCON serves the public in many areas, including human health, sustainable living resources, water quality conditions, and ecosystem health.

Much of the altered coastal landscape and changes in Louisiana’s coastal ecosystem derive directly from human activities in the coastal zone or farther afield from the Mississippi River watershed. Less direct impacts result from human activities that lead to global climate change, including increasing temperatures, changes in precipitation patterns, sea level rise and changes in intensity and severity of North Atlantic Ocean tropical storms. Humans are part of the coastal ecosystem, depend on it, and mold it with their activities. Many of the LUMCON research programs described in this report develop within the interaction of scientific curiosity, hypothesis testing, management needs and sound policy decisions. Our goal is to continue research programs that are directly relevant to Louisiana’s needs in marine science and coastal resources.

Our education programs complement our research (and vice versa), by providing the public with meaningful and useful information concerning our coastal landscape and our interactions with it. LUMCON continues to serve higher education by offering formal university courses, with 37 students enrolled for 127 credits during the 2008–2009 Fiscal Year, and an additional 35 students participating in our faculty’s research programs. A total of 181 college students participated in field trips (19 universities, 8 from Louisiana). K–12 education contact hours for field trips, outreach, Bayouside Classroom, and special activities approached 18,500, with over 2000 students participating in field trips. Almost 700 teachers participated in LUMCON/BTNEP workshops.

In reading the details of LUMCON’s Annual Report for Fiscal Year 2008–2009, I think you will agree that LUMCON remains a unique and remarkable asset for the State of Louisiana and its higher education imperative.

Nancy Rabalais



The W. J. DeFelice Marine Center

- September 2008 — Hurricanes Gustav and Ike ravaged the northwest coastal Gulf of Mexico. The eye wall of Gustav crossed Cocodrie with 157 mph wind gusts, and Ike brought the highest and most mud-laden flooding since the end of Marine Center construction in 1986. The effects of the two storms—wind and water, respectively—were similar to a single Hurricane Andrew in 1992. The Marine Center was closed from August 30 to September 24 because of lack of water and electricity. The damages complicated and added to damages from Hurricanes Katrina and Rita in 2005.
- September 2008 — LUMCON added two new faculty members. Alexander Kolker from the Department of Earth and Environmental Sciences at Tulane University's School of Science and Engineering brings his expertise in coastal sediment dynamics and wetland processes. Geoff Sinclair from the Department of Marine, Earth and Atmospheric Sciences at North Carolina State University (NCSU) is a specialist in phytoplankton ecology.
- December 2008 — Water quality managers from several midwestern states and regional offices of the U.S. Environmental Protection Agency gathered in Cocodrie for a first-hand look at what causes the low oxygen area in the Gulf of Mexico, commonly called the 'Dead Zone.'
- January 2009 — LUMCON's Marine Center was home for Science Application International Corporation (SAIC) work for NOAA with computerized survey data for debris funded by FEMA. The three survey segments covered the area from Caillou Bay to Belle Pass, Louisiana.
- February 2009—Volunteers from America's Wetland Conservation Corps, an AmeriCorp program, gathered at LUMCON for three days of training and the opportunity to mingle with their counterparts from other areas of the state. The workshop featured talks from professionals from state agencies, Louisiana Sea Grant and BTNEP.
- March 2009 — LUMCON and BTNEP provide strong support for South Louisiana's Wetland Discovery Center. Nancy Rabalais and Susan Testroet-Bergeron serve on the Advisory Board; Brenda Babin, Nicole Cotten and Paul Sammarco serve on the State Commission for the oversight of the Center. Wayne Simoneaux serves on the advisory committee for building design.
- June 2009 — LUMCON's R/V *Acadiana* joined scores of boats that gathered for the America's Wetland Foundation's (AWF) Storm Warning: Last Stand for America's Wetland boat rally held at the Houma Downtown Marina. LUMCON staff provided tours of the R/V *Acadiana* and answered rally goers' questions about the scientific equipment onboard.
- July 2009—A Canadian documentary film producer and videographer visited LUMCON to complete segments for an environmental education film on eutrophication and hypoxia (low oxygen).



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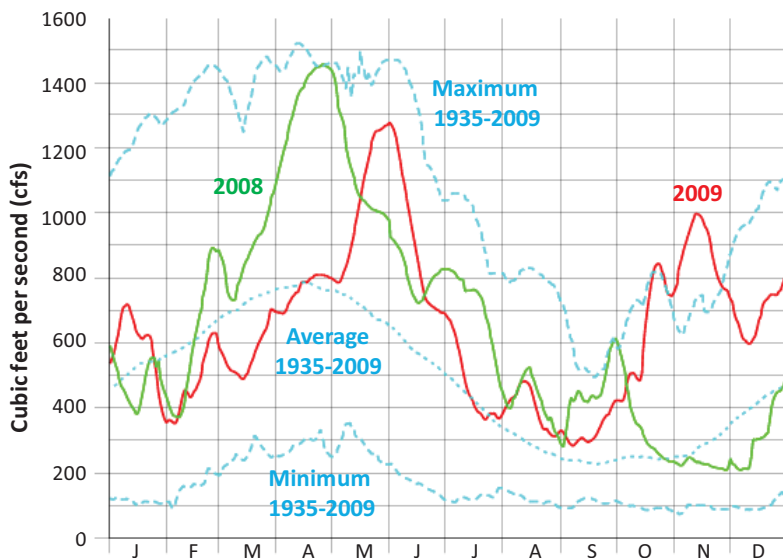
Research

The location of the LUMCON Marine Center on the upper end of Terrebonne Bay and its proximity to the Mississippi River delta, large estuaries and expansive coastal wetlands, makes it an ideal venue for the study of coastal Louisiana. LUMCON's research portfolio expands our knowledge of estuaries, coastal waters and open ocean ecosystems and supports issues of importance to both Louisiana's needs in marine science and coastal resources and those of the global ocean. Many research projects this fiscal year suffered setbacks from Marine Center damage following Hurricanes Gustav and Ike, but the excellent work continues.

THE MISSISSIPPI RIVER

The economy, culture and environmental landscape and ecology of coastal Louisiana and the nearshore Gulf of Mexico are driven by the Mississippi River (the "Big Muddy") and its tributary to the west, the Atchafalaya River.

The massive quantities of fresh water, sediments, nutrients and chemicals brought from the watershed that encompasses 40 percent of the lower 48 United States dictate the physical, geological and biological processes of the coastal zone. For example, molecular genetics of corals studied by Dr. Paul Sammarco and collaborators indicate that the river is acting as a formidable biogeographic barrier, genetically isolating coral populations that occur on either side of the delta.



High coastal productivity, including fisheries, results but the coastal system also suffers from too much nitrogen and phosphorus with the formation of a 'dead zone' (low dissolved oxygen) each spring and summer across the Louisiana shore along with noxious and toxic algal blooms. Knowledge of coastal processes and the influence of the river is critical for sustainable coastal resource management now and into the rapidly changing future.

RIVER/OCEAN INTERACTIONS

Research programs focus on aspects of the river–shelf mixing zones and human alterations of the river and its constituents that modify the coastal zone and ocean.

The Mississippi River behaved aberrantly to the long-term average (since 1935) for two successive years. The maximal flood stage occurred in spring 2008, and several researchers were able to secure NSF SGER (Small Grants for Environmental Research) awards to study this and the extensive floods in the mid-west in summer 2008. However, 2009 continued as abnormally high peak flow occurred in late spring and the all-time fall maximum was exceeded providing further opportunities. Dr. Alex **Kolker** focused on the dynamics of sediment and carbon in the Mississippi River with collaborators from Tulane University and the University of Texas, and Dr. Nancy **Rabalais** focused on the coastal ocean response to the increased flows along with researchers from Louisiana State University and the University of Iowa who calculated nutrient fluxes from multiple watersheds.

Peak flows of the Mississippi River in spring 2008 and subsequent summer floods in the mid-west delivered more than average fresh water, nitrogen and phosphorus to the Gulf of Mexico where hypoxia forms in the spring and summer. The area of low oxygen mapped by Dr. **Nancy Rabalais** and her colleagues from Louisiana State University was one of the largest to date. A similar situation was expected in 2009 following record flow again in spring, but the area covered by the low oxygen during the mapping cruise was much smaller (NOAA, NGOMEX, **Rabalais** and Turner, LSU), because of unusual wind and current conditions that pushed the low oxygen water into a smaller area, but thicker volume on the southeastern shelf. Dr. **Robert**'s research group provided further support for this phenomenon by demonstrating that extensive hypoxia was found at the edge of the Atchafalaya and Wax Lake Outlet deltas during the days immediately preceding the mapping cruise. SEAMAP (Southeast Area Monitoring and Assessment Program) ground fish surveys in June to early July 2009, however, documented a larger area. Two LSU Ph.D. students, **Melissa Baustian** and **Jenn Lasseigne**, work with Dr. **Rabalais** on benthic microalgae and oxygen dynamics, and foraminiferans as indicators of historical hypoxia, respectively. A new round of hypoxia studies were funded with Drs. **Rabalais, Roberts** and **Sinclair** and collaborators from LSU and University of Michigan and Dr. Mike **Dagg** with collaborators at Texas A&M University will begin in 2010 with a focus on modeling the causes of hypoxia, relationships with river discharge and constituents, and experimental process work to support coupled physical-biological models.



Dr. **Brian Roberts** leads a collaborative research project (Nancy **Rabalais** (LUMCON) and Gene Turner (LSU) are co-PIs and Geoff **Sinclair** (LUMCON), Brad Rosenheim (Tulane), and Alex **Kolker** (LUMCON) are other collaborators), funded by the Louisiana Board of Regents Support Fund, that is examining biogeochemical processing in the Atchafalaya River Delta

Research

Estuary Ecosystem. The Atchafalaya River transports about a third of the Mississippi system total discharge and empties into a shallow bay before entering the Gulf of Mexico. The physical and biological characteristics of the two deltas provide a unique opportunity for comparative river/ocean studies. Important rates of nutrient and organic matter loading and processing over multiple scales in water and sediments are documented along the continuum from the Atchafalaya River to the adjoining Gulf of Mexico where the oxygen-depleted 'dead zone' develops annually. **Susan Doty**, a Nicholls State University masters student, is studying the importance of the Atchafalaya River delta estuary sediments as sites of nutrient and organic matter transformations prior to delivery to the "dead zone" for her thesis project under the direction of Dr. **Roberts**.



COASTAL PRODUCTIVITY

The estuaries and coastal waters of Louisiana combine with their living resources to contribute significantly to wildlife populations, commercial and recreational fisheries, and a Louisiana way of life.

The success of these resources depends on an infrastructure of healthy, functioning ecosystems, such as salt marshes, open bay bottoms, barrier island shores, and the coastal ocean. Several research programs focus on food webs, trophic structure, and interacting biological, chemical and physical processes that support Louisiana's high biological productivity. Phytoplankton, as the base of the food web, are a critical component that receives the attention of several research programs.



The LUMCON phytoplankton group (including Dr. **Geoff Sinclair**, **Wendy Morrison**, **Nancy Rabalais** and **Danielle Richardi**) continue several projects. Data from the phytoplankton communities and HAB (harmful algal bloom) species in the area of hypoxia ('dead zone') and the Barataria Bay estuary (**Morrison**, **Richardi**) represent periods of two decades and one-plus decade, respectively, and provide critical information on current status and comparisons for altered inputs of nutrients—nitrogen, phosphorus and silica. The web-based taxonomic guide to phytoplankton of the Louisiana coastal area (**Morrison**, **Babin**, **Rabalais**) has been completed,

offering search capabilities for information on the different phytoplankton and their associated ecological parameters (<http://phytoplanktonguide.lumcon.edu>). Work on phytoplankton toxins continued with Dr. Sibel Bargu of LSU, focusing on the toxic diatom *Pseudo-nitzschia* spp. in offshore waters (**Rabalais**) and on toxins from cyanobacteria in the upper part of the Barataria estuary that accumulate in higher organisms, such as blue

crabs (**Rabalais, Morrison, Bargu**). Nicholls State masters student, **Danielle Richardi**, is investigating the phytoplankton communities, including cyanobacteria, on a Bayou Lafourche transect from its start in the upper Barataria basin near the Mississippi River to saline waters nearing the Gulf of Mexico. Dr. **Roberts** and **Sinclair** are investigating seasonal patterns in phytoplankton abundance and community composition as water flows from the lower Atchafalaya River to the northern Gulf of Mexico.

Dr. **Sinclair** is expanding his graduate research on migration behavior and physiology of toxic dinoflagellates with collaborators from North Carolina State University, NOAA and the University of Southern Mississippi. Their work includes environmental and metabolic control of the diel vertical migration of *Karenia brevis* and *Karlodinium micrum*, as well as modeling the initiation of red tides off the west coast of Florida. Dr. **Sinclair** is collaborating with Dr. Blake Schaeffer at the U.S. Environmental Protection Agency Gulf Breeze Laboratory to examine phytoplankton dynamics in coastal Gulf of Mexico waters using satellite imagery.



Drs. **Mike Dagg, Rodney Powell** and **Brian Roberts** completed their study of the temporal and spatial distribution of dissolved organic carbon (DOC) in Terrebonne Bay and nearshore coastal waters, the potential for DOC released from Louisiana's coastal marshes during periods of flooding to be transported to the bay and coastal waters, and the relative contribution of bacteria and phytoplankton to ecosystem respiration. Dr. **Roberts**, working with McNeese State University undergraduate student **Lindsey Marcantel**, expanded his component of the study to determine how the bioavailability of DOC and nitrogen varied along the Terrebonne Bay transect. Dr. **Roberts**, with Dr. Pat Mulholland of Oak Ridge National Laboratory and Dr. Walter Hill of the University of Illinois, maintains his continuous record of daily rates of primary production and ecosystem respiration in Walker Branch, a forested stream in eastern Tennessee. Dr. **Dagg** studies food web structures on the continental shelf of the Gulf of Alaska where he generates data on controls of copepod production, and how their productivity and trophic interactions might be modified by climate change.

LIVING RESOURCES

Commercial and recreational fisheries are a key component of Louisiana's environmental and economic resources.

Management of these fisheries and the food webs and habitats that support them is essential in the presence of environmental deterioration, including coastal land loss and the detrimental effects of noxious and toxic algal blooms and hypoxia. Research focuses on the early stages of fish larvae, their culture and potential for aquaculture (**Dr. Ed Chesney**). Related studies include the dynamics of benthic organisms as prey in oxygen-depleted waters (**Baustian** and **Rabalais**), mechanisms affecting the growth and health of coral reefs and the characterization of similar 'hard substrate' coral communities on offshore oil and gas platforms (**Sammarco**), and the cycling of mercury in water, sediments, and fish and effects on human consumers of seafood (**Chesney** and **Rabalais**).

Research

Fisheries scientist Dr. **Chesney**, in a collaborative effort with LSU engineer Dr. Ron Malone, Aquaculture Systems Technologies and Cargill-Burris Aqua Feeds, is testing a commercial-scale fingerling production system that uses a re-circulating bio-filtration system to maintain water quality. The goal is to refine the guidelines for the use of airlifts instead of pumps as a means to reduce the costs associated with re-circulating aquaculture grow-out systems and improve production. One of the coastal productivity responses to the nutrient-enriched waters of the Mississippi River is resulting high phytoplankton biomass in coastal waters. Further industrial ties with a private California company (**Chesney**) lie in the potential for harvesting of microalgae from these rich areas and their conversion to biofuels.



Dr. **Chesney** has been working with researchers from the Harvard School of Public Health and the University of Michigan on a NOAA Oceans and Human Health Initiative funded project studying the sources and fate of mercury within marine food webs. The group developed a unique understanding of the pathways and sources of mercury in fishes of the Gulf of Mexico. The project surveyed local fishermen to understand their fish eating habits and tested fishermen for accumulation of mercury in their hair.

Dr. **Chesney** serves as a science advisor to Louisiana's Marine Recreational Fisheries Task Force. This task force considers local problems and issues relevant to Louisiana's recreational fisheries and offers possible solutions to be considered by state regulators. As part of this service Dr. **Chesney** is helping the task force to develop catch and release guidelines that can be used by fishermen to better conserve coastal fisheries resources.

Dr. **Paul Sammarco's** research focuses on coral ecology and distribution on natural coral reefs, the Flower Gardens in the Gulf of Mexico, Bahamas and the Florida Keys, and artificial habitats offered by oil and gas platforms in the northern Gulf of Mexico. The results of the deep-water surveys of platforms indicated that some ahermatypic (non-reef-building) corals have a depth distribution to about 130 m. Other species, particularly *Tubastraea coccinea*, a highly successful invasive Indo-Pacific species, appears to be limited to 40 m depth. With Dr. Daniel Brazeau (University of Buffalo), he has applied molecular genetic techniques to determine the affinities of the most abundant corals in the northern Gulf of Mexico to natural reefs versus artificial habitats (oil platforms). The Flower Garden Banks are generally self-seeded and thus fragile and vulnerable to environmental perturbations. The reef-building corals on the platforms appear to be seeded by the Flower Garden Banks. Most non-reef building corals exhibit no affinity to the Flower Garden Banks but are generally related to each other across the Gulf. This indicates that either they are being seeded from some distant source elsewhere in the Gulf or the Caribbean, or that the populations are so old (in ecological time) that they have come to equilibrium in terms of cross-seeding. The results of his research are particularly relevant as coral reefs are threatened by increasing ocean temperatures. **Jeremy Dunn**, Nicholls State University masters student, works with Dr. **Sammarco**.

Dr. **Sammarco** and Dr. Amos Winter (University of Puerto Rico at Mayaguez) documented

and quantified micro-banding patterns in the skeletons of *Montastraea faveolata*, a Caribbean coral, that are deposited in association with the lunar period and record the number of months that occur between annual spawnings. Counts of these morphological features under-estimate the number of lunar cycles in years with cooler-than-average winters. These features may offer a new set of proxies for environmental temperatures, particularly below-average ones. In other climate change research with corals, Dr. **Sammarco** and Dr. Kevin Strychar (Texas A&M University - Corpus Christi) reviewed the effects of global warming on coral reefs, focusing on the bleaching of zooxanthellae from corals, their resultant mass mortality, and effects on coral cover. They predicted patterns of biogeographic expansion of corals into higher latitudes and the extinction of corals, both locally and globally, at the heart of the oceanic tropical zone (*versus* the continental tropics).

Dr. **Sammarco**, as Executive Director of the Association of Marine Laboratories of the Caribbean (AMLC), is initiating the AMLC “Caribbean Oceanic Governance Initiative” (COGI). COGI will draw upon the collective expertise of the 30 labs in the Association (encompassing 20 countries, from Bermuda to Venezuela) and offer scientific information and recommendations to governments regarding environmental issues that are being faced by member neighboring countries.



COASTAL CHANGE AND RELATED PROCESSES

Wetland loss and barrier island erosion continue to be major problems in the Louisiana coastal zone.

The importance of these natural lines of protection against flooding and storms was dramatically demonstrated during the 2005 hurricane season with Katrina and Rita, and were further demonstrated with Hurricanes Gustav and Ike in 2008. Better understanding of coastal processes is essential to making sound policy decisions regarding habitat protection, mitigation or restoration in an eroding landscape increasingly threatened by global change, particularly sea level rise.

Sedimentary processes are the focus of Dr. **Alex Kolker**'s research program. With collaborators from the University of Texas, the U.S. Army Corps of Engineers and the University of New Orleans, he is examining sediment dynamics of the West Bay diversion of the Mississippi River. West Bay is the largest operational diversion, and Dr. **Kolker** is quantifying patterns of seasonal and historical sediment deposition in the receiving basin. Collaborators are examining the impacts of the diversion on the hydrodynamics and morphology of the Mississippi River. Further work with University of New Orleans collaborators examines the hydrodynamics and sediment processes in river-dominated wetlands near the mouth of the Mississippi River. This work uses a suite of hydroacoustic instruments and sediment ^{7}Be analyses. Along similar lines of research, Dr. **Kolker** is examining (with University of Texas collaborators) the relationship between subsidence and sediment deposition in Barataria Bay. This work involves developing two-dimensional profiles of the shallow (<20 m) stratigraphy of the bay using CHIRP sonar and developing records of sediment accretion using the naturally abundant radioisotopes ^{210}Pb and ^{137}Cs . Other research with LSU and Tulane University employing CHIRP sonar technology for sub-bottom



profiles, *in situ* measurements of sediment resistivity, sediment grain size and salinity will examine the potential for groundwater discharge into the coastal bays of the Mississippi River deltaic plain

Dr. **Kolker**'s research in other coastal landscapes includes the changing history of hurricane impacts in Louisiana's chenier plain. With collaborators from the Woods Hole Oceanographic Institution, he is employing sediment grain size analysis and geochemical markers for *in situ* data and comparing these results with proxies of regional and global climate. He is working with University of New Orleans researchers to examine the response of the Chandeleur Islands, Breton Sound and Barataria Bay to storms. Farther afield but related to erosion studies, Dr. **Kolker** is engaged with colleagues from Tulane University to examine sediment dynamics and geomorphology on the Hawaiian Island of Lana'i where sediments accumulate along the Keomuku coastal plain. **Kristen Butcher**, a masters student

at Tulane University, is focusing on how sea level changes will affect the biogeochemistry of salt marshes.

HUMAN AND INDUSTRIAL IMPACTS

Much of the altered coastal landscape and changes in the coastal ecosystem derive directly from human activities in the coastal zone or farther afield from nitrogen and phosphorus from the mid-west to the coastal waters of the Gulf.

Some of the most intense oil and gas extraction activities in the world occur within Louisiana's wetland, coastal and offshore environments. Less direct impacts result from human activities that lead to global climate change, including increasing temperatures, changes in precipitation patterns, sea level rise and changes in intensity and severity of North Atlantic Ocean tropical storms. Humans are part of the coastal ecosystem, depend on it, and mold it with their activities. Many of the LUMCON research programs described above develop within the interaction of scientific curiosity, hypothesis testing, management needs and sound policy decisions. Our goal is to continue research programs that are directly relevant to Louisiana's needs in marine science and coastal resources.



Marine Education

K-12, Teacher

- Ms. Jennifer Robinson joined marine education in January, enabling us to accommodate more and larger groups.
- The From H-2-O water quality teacher workshop program continues to be successful. In weekend-long workshops, we train Louisiana teachers to use the Bayou-side Classroom program within their curricula. The popularity of this workshop and the Bayou-side Classroom program continues to grow, as teachers are encouraged to utilize resources that stress science education and environmental stewardship.
- Going Beyond the Bayou is the newest extension of the Bayou-side Classroom program and was funded by a grant from the Gulf of Mexico Alliance Program and the Dauphin Island Sea Lab. LUMCON was awarded over \$15,000 to bring environmental education and stewardship to students in Cameron Parish using Bayou-side Classroom.
- Wetland Ambassador Day was held at the DeFelice Marine Center to celebrate National Wetlands Month. Wetland Ambassador Day brought together the participants of the LSU Coastal Roots program and the Bayou-side Classroom program. The day's activities included a cruise aboard the R/V *Acadiana*, water sampling, introduction to the salt marsh, and a lesson on the plight and recovery of the Louisiana's Brown Pelican population.
- LUMCON's Estuary and Discovery Camp (LEAD Camp) is held each summer and is designed to allow highly qualified high school students to experience science and develop as environmental stewards.
- We participated in the Terrebonne Aquatic Clinic, which was held at the Lumen Christi Retreat Center.



University Education

- The number of participants in field trips and courses were up slightly compared to last year; however, field trip numbers are still limited by reduced dorm space due to hurricane damage.
- Nine students participated in our spring 2009 video distance learning Changing Coastal Oceans course.
- Moodle, a course management program, was implemented to enable instructors to post messages, schedule, syllabus, exams, grades and course notes online.
- Summer courses hosted 33 students for 99 earned credits. Courses taught were Bottle Nose Dolphin Biology, Marine Invertebrate Ecology, Marine Fish Ecology, Wetland Vegetation and Coastal Landscape Photography. Introduction to Marine Zoology was not taught due to lack of enrollment.
- Students from nine Louisiana universities participated in this year's university curriculum.



Vessel Operations

R/V *PELICAN*



The R/V *Pelican* continues to be the State of Louisiana's premier oceanographic research vessel as well as the busiest vessel in the Universities National Oceanographic Laboratory System (UNOLS) fleet for its size. The vessel completed 262 days in FY08-09. The current 2009 schedule is 264 chartered sea days during 44 separate cruises. The R/V *Pelican* has averaged 251 chartered days over the past four years and will continue to operate as the workhorse of the UNOLS fleet. The R/V *Pelican* is

the only UNOLS vessel operating full time in the Gulf of Mexico.

The R/V *Pelican* continued to conduct mooring operations to collect a wide variety of weather, current and bottom data from buoys for the following: Fugros/Geos, NOAA's National Data Buoy Center, Woods Hole Group, Ocean Data Technology, BMT Scientific and University of Southern Mississippi. Dr. Nancy **Rabalais** continues to conduct hypoxia surveys of the "Dead Zone." Carol Lutken, in memory of Dr. Woolsey of the University of Mississippi, continues operations for a unique ROV designed to study gas hydrates off of the Mississippi River. Louisiana Wildlife and Fisheries performed two four-day cruises in the first and second quarter of 2009 and will conduct two more cruises in the third and fourth quarters conducting trawls, plankton tows and water quality samples in support of inshore SEAMAP cruises. The R/V *Pelican* successfully conducted ROV operations using LUMCON's Phantom H2D remotely operated vessel to video the sunken SS *Virginia* during a cruise by Anna Garcia. Jim Singer with SAIC chartered the R/V *Pelican* for a 30 day Loop Current study of the southeastern Gulf of Mexico that was funded by Minerals Management Service.



In June, the vessel completed a two-day educational cruise offered to a Marine Invertebrate Ecology class taught at LUMCON by Dr. Earl Melancon of Nicholls State University. Eleven students and three instructors participated in this cruise, which allowed students to experience first-hand a fully functional oceanographic research vessel. The students conducted

CTD casts, dredging for animals on the bottom, trawls, sediment box cores and mapped the cruise with the vessel's MIDAS system.

In July the R/V *Pelican* supported two National Science Foundation funded trips, which included Dr. Alan Shiller's collaborative research project of elemental tracer distributions, chemical fluxes, and tributary comparisons in the mixing zone of the Mississippi River and Dr. Dan Kamykowski's research on benthic dinoflagellate migrations off the Florida panhandle.

In 2009 several major projects were started on the R/V *Pelican*. These include relocating the winch operator's house to the aft steering station on the 01 deck, replacing the deteriorated Interoceans winch and updating the mast of the ship with an aluminum folding mast.

R/V ACADIANA

For FY08-09, the R/V *Acadiana* supported a total of 115 trips. Forty eight of these cruises were to support scientists with coastal and inshore research projects. The R/V *Acadiana* has been used multiple times to deploy and recover Woods Hole Oceanographic Institution's Spray AUV glider. This instrument is completely automated and can survey the Gulf of Mexico for up to 6 months in a single deployment. The *Acadiana* has proven to be a perfect fit for this high-tech oceanographic tool.

The R/V *Acadiana*'s new conductivity, temperature and depth (CTD) water sampling system was utilized to support local researchers' studies of sediment movements along the Louisiana coastline. To enhance the CTD system, a new winch has been added to the vessel that will allow researchers to do deeper and faster casts. Plans for the *Acadiana* include a flow-through system similar to the R/V *Pelican*'s. The R/V *Acadiana* has a dual role at LUMCON when not on research cruises. She is used as an education platform, teaching Louisiana's children and their instructors about the wonders of Terre-



bonne Bay. To further the public's education about LUMCON and the *Acadiana*, the vessel and LUMCON's staff were on hand at the America's Wetland Foundation's Rally in Houma, Louisiana. The general public and state and local officials were given tours of the R/V *Acadiana* and answered questions about the scientific equipment onboard. The R/V *Acadiana* continues to prove to be a very productive asset for the State of Louisiana.

SMALL BOATS

The LUMCON Small Boat Fleet includes an airboat, a pontoon boat, a couple of vessels suitable for bay and offshore trips, and smaller john boats and dinghies for local trips. For FY08-09, vessel operations' ten small vessels have been utilized a total of 159 days conducting educational trips and 67 days in support of funded research. The dozen canoes served the Marine Education program throughout the year.

Barataria–Terrebonne National Estuary Program

- BTNEP staff produced, printed and distributed the **2009 Tidal Graph Calendar** that focuses on invasive species. Thirty thousand copies of this calendar were produced and distributed across the state.
- BTNEP produced the **2009 Bird Calendar** that focuses on wood warblers. This calendar was distributed to various birding organizations throughout the country to educate people about the Louisiana wetland loss crisis by connecting the importance of chenier forests for the millions of birds that utilize them.
- BTNEP entered into an agreement with Geaux Web Technology Group to continue providing program internet and email services, continuing the annual maintenance and support from an email and web-based perspective for the program.
- BTNEP played a critical role as an organizer and participant of the **Third Annual Eagle Expo** held in Morgan City in February 2009. Since its inception, BTNEP has been a lead co-sponsor of this very successful festival.
- BTNEP played the lead role again in the coordination of the **2009 Annual Grand Isle Migratory Bird Celebration**. This highly successful event brings awareness to locals and others about the importance of maritime forests (chenier forests) to the many neotropical migrant birds that utilize them.
- BTNEP partially funded four events during Nicholls State University **Annual Jubilee**. On March 15, 2009, BTNEP sponsored a concert performance by Spencer Bohre, who's music resonates with the ambience of the rivers, roads and bayous of the American South.
- BTNEP sponsored several performances by **Singers of United Lands (S.O.U.L.)**. S.O.U.L. consists of four singers from Kenya, South Korea, Latvia and Chile who perform throughout the United States. They offered workshops and presentations featuring their native cultures, languages and songs to local students and community guests.
- March 20–21, 2009, BTNEP co-sponsored the **Swamp Stomp Festival**. This festival celebrates Cajun and Creole culture at Nicholls State University with Cajun and Zydeco music, artisans displaying and selling their crafts, and Cajun and Creole food. There were approximately 800 in attendance.



- The **Folk Art Festival** and the **Blessing of the Fleet** attracted approximately 400 people to this music and art filled celebration at the Chauvin Sculpture Garden.
- BTNEP produced, reproduced and distributed "**Down the Bayou**," a 52 minute film that documents the shrimping industry in Louisiana. "Down the Bayou" presents an accurate account of a unique and endangered livelihood through the language, dialect, food, music and tradition of a truly singular culture.



- BTNEP funded the second of a three year study to **evaluate Wilson's Plover** and certain aspects of their life history. This effort took place along the ridge restoration area just north of Fourchon, LA and the beaches that front the Fourchon area.



- BTNEP **volunteer program** has held 19 events, hosting 343 volunteers. Volunteers have logged over 2010 work hours and produced over \$47,000 in matching funds.

- BTNEP hosted its annual **La Fete d'Ecologie**. This one day festival is a traditional celebration of the ecology, culture and economy of the Barataria-Terrebonne National Estuary. The festival's goal is to educate participants and encourage conservation of estuary resources. Over 3000 people attended the event, held on the grounds of Jean Lafitte National Historical Park & Preserve in Thibodaux, LA.

- BTNEP hosted its annual **Paddle Bayou Lafourche** to highlight Bayou Lafourche as a recreational, cultural and economic resource to both visitors and residents of the bayou's reaches while highlighting the importance of the BTNEP in connecting the bayou's human inhabitants with its natural resources. Over 150 paddlers participated in the four day trip.



Publications

- Boesch, D. F., W. R. Boynton, L. B. Crowder, R. J. Diaz, R. W. Howarth, L. D. Mee, S. W. Nixon, **N. N. Rabalais**, R. Rosenberg, J. G. Sanders, D. Scavia and R. E. Turner. 2009. Nutrient enrichment drives Gulf of Mexico hypoxia. *Eos, Transactions of the American Geophysical Union* 90(14): 117–118.
- Conley, D. J., S. Björck, E. Bonsdorff, G. Destouni, B. Gustafsson, S. Hietanen, M. Kortekaas, H. Kuosa, M. Meier, B. Müller-Karulis, K. Nordberg, G. Nürnberg, A. Norkko, H. Pitkänen, **N. N. Rabalais**, R. Rosenberg, O. Savchuk, C. P. Slomp, M. Voss, F. Wulff and L. Zillén. 2009. Critical Review. Hypoxia-related processes in the Baltic Sea. *Environmental Science and Technology* 43: 3407–3411.
- Conley, D. J., E. Bonsdorff, J. Carstensen, G. Destouni, B. G. Gustafsson, L.-A. Hanxon, **N. N. Rabalais**, M. Voss and L. Zillén. 2009. Viewpoint. Tackling hypoxia in the Baltic Sea: Is engineering a solution. Hypoxia in the Baltic Sea: Is engineering the solution? *Environmental Science and Technology* 43: 3407–3411.
- Dagg, M. J.**, H. Liu and S. Strom. 2008. High feeding rates on large particles by *Neocalanus flemingeri* and *N. plumchrus*, and consequences for phytoplankton community structure in the HNLC subarctic Pacific Ocean. *Deep-Sea Research* 56: 716–726.
- Dagg, M. J.**, T. Bianchi, B. McKee and R. Powell. 2008. Fates of dissolved and particulate materials from the Mississippi River immediately after discharge into the northern Gulf of Mexico, USA, during a period of low wind stress. *Continental Shelf Research* 28: 1443–1450.
- Gooday, A. J., F. Jorissen, L. A. Levin., J. J. Middelburg, W. Naqvi, **N. N. Rabalais**, M. Scranton and J. Zhang. 2009. Historical records of coastal eutrophication and hypoxia. *Biogeosciences* 6: 1707–1745.
- Green, R. E., G. A. Breed, **M. J. Dagg** and S. E. Lohrenz. 2008. Modeling planktonic response to variable nitrate loading in the Mississippi River plume. *Continental Shelf Research* 28: 1451–1465.
- Hill, W. R., S. E. Fanta and **B. J. Roberts**. 2009. Combined effects of phosphorus and light on stream algae: implications for establishing stream nutrient criteria. *Limnology and Oceanography* 54: 368–380.
- van de Koppel, J., P. Tett, W. Naqvi, T. Oguz, G. M. E. Perillo, **N. N. Rabalais**, M. Ribera d'Alcalà, S. Jilan and J. Zhang. 2008. Threshold effects in semi-enclosed seas. pp. 31–47 in E. R. Urban, Jr., B. Sundby, P. Malanotte-Rizzoli and J. Milello (eds), *Watersheds, Bays, and Bounded Seas: The Science and Management of Semi-Enclosed Marine Systems*. Island Press, Washington, D.C.
- Levin, L. A., W. Ekau, A. Gooday, F. Jorissen, J. Middelburg, W. Naqvi, C. Neira, **N. N. Rabalais** and J. Zhang. 2009. Effects of natural and human-induced hypoxia on coastal benthos. *Biogeosciences* 6: 2063–2098.
- Liu, B., L. A. Schaider, D. B. Senn, R. P. Mason, M. S. Bank, P. W. Swarzenski, J. P. Shine, T. Hollweg and **N. N. Rabalais**. 2009. Hurricane impacts on mercury dynamics in the northern Gulf of Mexico sediments. *Journal of Geophysical Research - Biogeoscience* G00C07, doi:10.1029/2008JG000752, 12 pp.
- Lohrenz, S. E., D. G. Redalje, W.-J. Cai, J. Acker and **M. J. Dagg**. 2008. A retrospective analysis of nutrients and phytoplankton productivity in the Mississippi River plume. *Continental Shelf Research* 28: 1466–1475.
- Mulholland, P. J., **B. J. Roberts**, W. R. Hill and J. G. Smith. 2009. Stream ecosystem responses to the 2007 spring freeze in the southeastern United States: unexpected effects of climate change. *Global Change Biology* doi:10.1111/j.1365-2486.2009.01864.x.
- Rabalais, N. N.** and D. Gilbert. 2008. Distribution and consequences of hypoxia. pp. 209–225 in E. R. Urban, B. Sundby, P. Malanotte-Rizzoli and J. Milello (eds.), *Watersheds, Bays, and Bounded Seas: The Science and Management of Semi-Enclosed Marine Systems*. Island Press, Washington, D.C.
- Rabalais, N. N.**, R. E. Turner, D. Justić, and R. J. Díaz. 2009. Global change and eutrophication of coastal waters. *ICES Journal of Marine Science* 66: 1528–1537.
- Rabouille, C., D. Conley, M. Dai, W. Cai, C.T.A. Chen, B. Lansard, R. Green, K. Yin, P. Harrison and **M. Dagg**. 2008. Hypoxia in river-dominated ocean margins: a comparison among four river-coastal systems, the Changjiang (Yangtze), Mississippi, Pearl and Rhône. *Continental Shelf Research* 28: 1527–1537.



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- Sammarco, P. W.** and K. B. Strychar. 2009. Effects of climate change on coral reefs: Adaptation/exaptation in corals, evolution in zooxanthellae, and biogeography shifts. *Environmental Bioindicators* 4: 9–45.
- Sammarco, P. W.** 2008. Crises on coral reefs and in coral reef science in the 21st century: The need for a new peer-review system. *Ethics in Science and Environmental Politics* 8: 108–119.
- Sammarco, P. W.** 2008. Journal visibility, self-citation, and reference limits: Influences on impact factor and author performance review. *Ethics in Science and Environmental Politics* 8: 121–125.
- Schaeffer, B. A., D. Kamykowski, **G. Sinclair**, L. McKay and E. J. Milligan. 2009. Diel vertical migration thresholds of *Karenia brevis* (Dinophyceae). *Harmful Algae* 8: 692–698.
- Schaeffer, B. A., D. Kamykowski, L. McKay, **G. Sinclair** and E. Milligan. 2009. Lipid class, carotenoid and toxin dynamics of *Karenia brevis* (Dinophyceae) during diel vertical migration. *Journal of Phycology* 45: 154–163.
- Schaeffer B.A., D. Kamykowski, L. McKay, **G. Sinclair** and E. Milligan E. 2009. A comparison of photoresponse among ten different *Karenia brevis* (Dinophyceae) isolates. *Journal of Phycology* 43: 702–714.
- Sinclair, G.**, Kamykowski, D. and Glibert, P. M. 2009. Growth, uptake and assimilation of ammonium, nitrate, and urea, by three strains of *Karenia brevis* grown under low light. *Harmful Algae* 8: 770–780.
- Snelgrove, P. V. R., M. Flitner, E. R. Urban, Jr., W. Ekau, M. Glaser, H. K. Lotze, K. Phillipart, P. Sompongchaiyakul, E. Yuwono, J. Melillo, M. Meybek, **N. Rabalais**, and J. Zhang. 2008. Governance and management of ecosystem services in semi-enclosed marine systems. pp. 49–76 in E. R. Urban, Jr., B. Sundby, P. Malanotte-Rizzoli, and J. Milello (eds.), (eds), *Watersheds, Bays, and Bounded Seas: The Science and Management of Semi-Enclosed Marine Systems*. Island Press, Washington, D.C.
- Strychar, K. B. and **P. W. Sammarco**. 2008. Exaptation in corals to high temperatures: Low concentrations of apoptotic and necrotic cells in host coral tissue under bleaching conditions. *Journal of Experimental Marine Biology and Ecology* 9: 31–42.

Reports, Articles

- Cahoon, D. R., D. J. Reed, **A. S. Kolker**, M. Brinson, J. Donnelly, M. Kearney, L. L. Leonard, R. O. Orson, and J. C. Stevenson. 2009. Coastal Wetland Sustainability. U.W. Climate Change Science Program. Synthesis and Assessment Product 4.1.
- National Research Council. 2009. Nutrient Control Actions for Improving Water Quality in the Mississippi River Basin and Northern Gulf of Mexico. Committee: D. H. Moreau (Chair), D. A. Dzombak, P. Freedman, O. Doering, **N. N. Rabalais**, R. Craig, T. Simpson, R. Wolf. National Academy Press, Washington, D.C.
- Sammarco, P. W.** 2009. Review. Tunnell, J. W. Jr., E. A. Chavez, and K. Withers. Coral Reefs of the Southern Gulf of Mexico. 2007. Texas A&M University, Corpus Christi, TX. 194 pp., *Quart. Rev. Biol.* 84: 112–113.

Governance

The LUMCON Executive Board

Dr. E. Joseph Savoie, Chair

President, University of Louisiana Lafayette

Dr. Stephen Hulbert, 1st Vice Chair

President, Nicholls State University

Dr. Michael Martin, 2nd Vice Chair

Chancellor, Louisiana State University

Dr. Robert Stewart

University of Louisiana Lafayette, Director of Research and Sponsored Programs

Dr. David Boudreaux

Nicholls State University, Vice President for Institutional Advancement

Dr. Brooks Keel

Louisiana State University, Vice Chancellor of Research and Graduate Studies

The next rotation of the Executive Board will occur in January, 2010.

Grants

- Chesney, E.**, Principal Investigator, Intensive propagation of marine finfish in recirculating systems: Improving survival and grow-out efficiency during the larval stage. Louisiana Sea Grant College Program, \$109,548, Feb 06 – Dec 08.
- Chesney, E.**, Propagation of marine finfish: Commercial scale performance and economics for profitable grow-out in recirculating systems. Louisiana Sea Grant College Program, \$160,000, Feb 08 – Jan 10.
- Chesney, E.**, Principal Investigator, Assist in the Environmental Impact Determination at the MC-20 Site in the Gulf of Mexico, Waldemar S. Nelson, \$51,000, Apr 08 – Dec 08.
- Conover, J.**, Principal Investigator, Promoting awareness of innovative education strategies and published research to educators of the BTES, BTNEP-EPA Mini-grant Program, \$2,500, Jun 08 – Jun 09.
- Conover, M.**, Principal Investigator, **N. N. Rabalais**, Co-Principal Investigator, Bay-Watershed Education and Training (B-WET), National Oceanic and Atmospheric Administration, \$10,000, Oct 08 – Sep 09.
- Dagg, M. J.**, Principal Investigator, U.S. GLOBEC: NEP Phase IIIb-CGOA: Links between climate and planktonic food web dynamics, NSF Biological Oceanography, \$116,194. Sep 06 – Aug 10.
- Dagg, M. J.**, Principal Investigator and **R. T. Powell**, Co-Principal Investigator, Long-term estuary assessment group (LEAG): River and estuarine contributions to coastal hypoxia in the northern Gulf of Mexico, NOAA, \$49,000, Sep 05 – Aug 08.
- Dagg, M. J.**, Principal Investigator, PICES North Pacific Ecosystem Status Report, 2nd edition, NOAA, North Pacific Research Board, \$15,701, Apr 09 – Mar 10.
- Kolker, A. S.**, J. P. Donnelly and L. Giosan, Co-Principal Investigators, The changing history of hurricanes along Louisiana's coast and their implications to coastal restoration and revitalization, NOAA, Coastal Restoration and Enhancement through Science and Technology Program, \$148,004, \$74,241 to LUMCON, Sep 08 – Aug 10.
- Kolker, A. S.** and B. Rosenheim, Co-Principal Investigators, Fate and transport of carbon and sediments during a Mississippi high water event, National Science Foundation, SGER, \$34,095, Feb 09 – Nov 09.
- Kolker, A. S.** and B. Rosenheim, Co-Principal Investigators, Sediment and carbon dynamics during the Mississippi River flood of 2008, \$20,000, \$12,000 to LUMCON for vessel rental, Jul 08 – Jun 09.
- Malbrough, J.**, Principal Investigator, Ship operations, National Science Foundation, \$32,220, \$30,000, \$264,247, \$110,810, \$48,330, Mar 05 – Feb 10.
- Malbrough, J.**, Principal Investigator, Oceanographic instrumentation, National Science Foundation, \$7098, \$27,000, Aug 08 – Jul 09.
- Malbrough, J.**, Principal Investigator, Ship time for Navy projects, Office of Naval Research, \$632,549, ext through Dec 08, \$114,015 ext through Dec 09.
- Malbrough, J.**, Principal Investigator, Oceanographic technical services, National Science Foundation, \$30,208, \$17,602, ext through Apr 10.
- Rabalais, N. N.**, Principal Investigator, Clarke Prize, National Water Research Institute, \$50,000, Jul 08 – Dec 20.
- Rabalais, N. N.**, Principal Investigator, **W. Morrison**, Project Manager, Toxin detection in potentially harmful algae and their consumers in the Barataria Bay system: Implications for humans, EPA, Gulf of Mexico Program, \$138,244, \$69,848, Oct 06 – Dec 09.
- Rabalais, N. N.**, Principal Investigator, NGOMEX06, Integrated observational studies of hypoxia in the northern Gulf of Mexico, NOAA, Center for Sponsored Coastal Ocean Research, \$2,260,022, subcontract of \$906,320 to R.E. Turner et al., LSU, Aug 06 – Jul 10.
- Rabalais, N. N.**, Principal Investigator, **W. Morrison**, Project Manager, Guide to phytoplankton (including harmful algae) from Louisiana estuarine and coastal waters, EPA Gulf of Mexico Program, \$91,400, Dec 05 – Sep 09.
- Rabalais, N. N.**, Principal Investigator, MULTISTRESS: Cumulative coastal stressors: northern Gulf of Mexico. NOAA Coastal Ocean Program, Nancy Rabalais, \$1,123,711, collaborative award to lead LSU, R. E. Turner et al., \$4,990,832, Sep 02 – May 09.
- Rabalais, N. N.**, Principal Investigator, **M. Conover**, Co-Principal Investigator, Gulf of Mexico literacy project: Louisiana component, State of Florida Department of Environmental Protection, \$20,860, Sep 07 – Mar 09.
- Rabalais, N. N.**, Principal Investigator, with S. Bargu, LSU, The potential effects of environmental stressors on the diatom *Pseudo-nitzschia pseudodelicatissima* and Cyanobacteria – Common HAB Species in Louisi-

ana, Louisiana Sea Grant College Program, \$26,454, Nov 07 – Oct 09.

Rabalais, N. N., Principal Investigator, and **B. L. Babin**, Co-Investigator, Standardization of local data network nodes in the GCOOS-RA, Texas A&M University Foundation, DOC/NOAA, \$22,701; \$22,156, \$21,547, Jan 08 – Dec 10.

Rabalais, N. N., Principal Investigator, and **B. L. Babin**, Co-Investigator, Operation of LUMCON doppler radar profiler, Minerals Management Service, Coastal Marine Institute, Louisiana State University, \$215,472, Dec 07 – Oct 09.

Rabalais, N. N., Principal Investigator, and **D. Daigle**, Co-Investigator, Coastal Restoration through Enhanced Science and Technology (CREST), NOAA Office of Response and Restoration, \$909,686 through 2007, \$1,442,000 through 2008, May 06 – Apr 11.

Rabalais, N. N., PI/PD, Iowa floods, Nitrate and hypoxia cycling in a river-dominated continental margin, with **J. Schnoor**, **R. E. Turner**, National Science Foundation, SGER, \$26,409 to LUMCON, Aug 08 – Jul 09.

Rabalais, N. N., PI/PD, Refining knowledge of hypoxia dynamics: Physics and biology, with **G. A. Stone**, LSU, EPA, Gulf of Mexico Program, \$154,165, Dec 05 – Dec 08.

Rabalais, N. N., Principal Investigator, and **J. Malbrough**, Co-Investigator, Oceanographic instrumentation, NSF, \$96,400, May 06 – Apr 08.

Rabalais, N. N., Principal Investigator, and **J. Malbrough**, National Science Foundation, Oceanographic instrumentation, \$31,612; \$27,000, Aug 07– July 09.

Roberts, B. J., Principal Investigator, **N. N. Rabalais** and **R. E. Turner**, Co-Investigators, Critical biogeochemical processes in the Atchafalaya River delta. LA BoR Support Fund Contract # LEQSF (2008-11)-RD-A-22, \$137,457, Jun 08– Jun 11.

Sammarco, P. W., Principal Investigator, Deep-water coral distribution and abundance on active offshore oil and gas platforms and decommissioned 'Rigs-to-Reefs' platforms, Minerals Management Service, LSU-Coastal Marine Institute, \$351,723, Sep 06 – Dec 10.

Sammarco, P. W., Principal Investigator, Determining the geographical extent, maximum depth, and genetic affinities of corals on offshore oil and gas platforms, northern Gulf of Mexico, extension \$49,000, Oct 06 – Sep 10.

Sinclair, G., Principal Investigator, **N. N. Rabalais**, **B. J. Roberts**, **P. Sammarco** and **M. Dagg**, Enhancement of phytoplankton surveys in Louisiana waters, Louisiana Board of Regents Support Fund Traditional Enhancement Program; \$126,000 (equipment only), 2009.

Sparks, S., Principal Investigator, The Gulf of Mexico Program 2008, EPA/Gulf of Mexico Program, \$78,950. Oct 07– Dec 09.

St. Pé, K., Principal Investigator, BTNEP, Effects of stormwater discharge at Pointe aux Chenes pumping station, EPA, Gulf of Mexico Program, \$214,200, Sep 02 – Dec 09.

St. Pé, K., Principal Investigator, BTNEP, Barataria Basin marine debris removal project. EPA, Gulf of Mexico Program, \$121,331, Jun 06 – Aug 09.

St. Pé, K., Principal Investigator, BTNEP, Louisiana exotic invasive species symposium, US EPA, \$27,000, Jul 05 – Sep 09.

St. Pé, K., Principal Investigator, BTNEP, US EPA, FY03, \$510,000; FY04, \$506,685; FY05, \$506,984; FY06, \$511,966; FY07, \$492,600, FY08, \$418,000, Oct 03 – Sep 10.

St. Pé, K., Principal Investigator, BTNEP, Maritime forest ridge restoration at Fourchon, Louisiana, La-Fourche Parish Council Government, U.S. Minerals Management Service, \$700,000, Jan 09 – Dec 12.

Visser, J., Principal Investigator, Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA), Priority Project List Number 18, Dept. of Defense, Army Corps of Engineers, \$113,835, Jan 09 – Dec 09.

Awards/ Honors

Dr. Nancy Rabalais, Clarke Prize, National Water Resources Institute

Dr. Brian Roberts, Hynes Award for New Investigators, North American Benthological Society



Community Contributions

Brenda Babin

Member, Gulf of Mexico Hypoxia Monitoring Technical Committee
Member, GCOOS-RA Data Management and Communication Committee
Consultant, Nicholls State University, Computer Science and Computer Information Systems Curriculum Advisory Board
Nicholls State University Career Day
Quality Assurance of Real-time Oceanographic Data , Oxygen sensor technical lead
Grand Caillou Middle School Career Day

Mike Dagg

Chairman, Biological Oceanography Committee – North Pacific Marine Science Organization (PICES)
Member, North Pacific Research Board (NPRB) Science Advisory Panel
Associate Editor, Continental Shelf Research (appointed June 2009)

John Conover

LALINC Grants Committee
BTNEP Bird Action Team
BTNEP Management Conference Alternate

Alex Kolker

Panel Member, Greater New Orleans Foundation, Environmental Fund
Member, US Coastal Change Research Program: Coastal Wetlands Group

Joe Malbrough

Vice Chair, Research Vessel Operators Committee, University Naval Oceanographic Laboratory System (UNOLS)

Nancy Rabalais

Member, American Geophysical Union, Books Board, 2008 – present
Member, National Sea Grant Advisory Board, 2008 – present
President– Elect, former Member–at–Large, Executive Board, Southern Association of Marine Laboratories, 2007 – present
Member–at–Large for UNOLS Council, University–Naval Oceanographic Laboratory System, 2007 – present
Inside Trustee, Consortium for Ocean Leadership, 2008 – present
Member, Advisory Committee, NSF Environmental Research and Education directorate, 2007 – present
Member, Board of Directors, GCOOS, Gulf of Mexico Regional Association, 2005 – present
Co–Chair, Gulf of Mexico Coastal Ocean Observing System–RA, HABIOS working group, 2007 – present
Representative, National Federation of Regional Associations, IOOS, 2008 – present
Member, National Research Council, Committee on Applying the Clean Water Act across the Mississippi River Basin, 2009 – present

Member, National Research Council, Committee on The Mississippi River and the Clean Water Act: Scientific, Modeling, and Technical Aspects of Nutrient Pollutant Load Allocation and Implementation, 2008 – 2009

Member, National Research Council, Review of Water and Environmental Research Systems (WATERS) Network Committee, 2007 – present

Member, National Research Council, Evolution of the National Oceanographic Research Fleet, 2008 – 2009

Chair, Executive Board, NOAA's CREST program, Coastal Restoration and Enhancement through Science and Technology, 2007 – present

Member, Advisory Board, College of Math and Science, Baton Rouge Community College, 2007 – present

Co–Chair, with Jack Middelburg, Continental Margins Task Team, IMBER/LOICZ Continental Margins, 2007 – 2009

Co–Chair, Scientific Steering Committee, Land Ocean Interactions in the Coastal Zone, International Geosphere Biosphere Programme, 2006 – 2009, member SSC since 2004

Member, SCOR Working Group #128 on Natural and Human–Induced Hypoxia and Consequences for Coastal Areas, 2006 – 2009

Co–Chair, Steering Committee, Gulf of Mexico Hypoxia Monitoring Implementation plan, 2006 – present

Brian Roberts

ASLO Early Career Committee Member, Co–organized 2 workshops and early career mixer at ASLO Aquatic Sciences Meeting in Nice, France in January 2009, Co–planning workshop activities for 2010 ASLO Meetings

Member of NSF funded Metabolic Theory of Ecology in Stream Ecosystems Working Group, Spring 2007–present

Paul Sammarco

Associate Editor, *Aquatic Biology*

Co–Editor, *Environmental BioIndicators*, Special Issue on Environmental BioIndicators of Climate Change

Associate Editor, *Marine Biology*

Member, Advisory Committee, Coral Reef Conservation Program, Performance Measures Working Group

Executive Director, Association of Marine Laboratories of the Caribbean

South Louisiana Wetlands Discovery Center:

Brenda Babin, Commissioner

Nicole Cotten, Commissioner

Nancy Rabalais, Member Advisory Board

Paul Sammarco, President and Commissioner

Wayne Simoneaux, Member Building Steering Committee

Susan Testroet–Bergeron, Member Advisory Board

Terrebonne Parish Science Fair Judges:

Dr. Rodney Powell, Dr. Brian Roberts, Brenda Babin, Murt Conover, Nicole Cotten, Trudy Hebert, Wendy Morrison, Lora Pride, Danielle Richardi, and Kristen Sinclair, and LUMCON students, Melissa Baustian and Jenn Lasseigne

2008—2009 Employees

Brenda Babin, Information and Technology Manager
Andrew Barron, BTNEP Water Quality Coordinator
Bruce Benoit, Information and Technology Specialist
Matthew Benoit, BTNEP Plant Materials Coordinator
Susan Testroet–Bergeron, BTNEP Education Coordinator
Tad Berkey, Able–Bodied Seaman R/V *Pelican*
Dean Blanchard, BTNEP Habitat Enhancement Coordinator
Shanna Bonvillain, Assistant Librarian
Michael Bordelon, Deckhand R/V *Pelican*
Heidi Boudreaux, Finance Manager/Human Resources
Ivy Boudreaux, Facility Technician
Beth Bourge, Purchasing/Accounts Payable
Nicole Broussard, Student Laboratory Assistant
Edward Chesney, Jr., Associate Professor
Debra Cologne, Cafeteria/Dormitories
Jennifer Conover, Marine Education Associate/Aquarist
John Conover, Librarian
Nicole Cotten, University Education Coordinator/
Instructor
Valerie Cruz, Research Assistant
Michael Dagg, Professor
Dinah Daigle, Cafeteria/Dormitories
Nina DeLuca, Senior Research Associate
Wilton Delaune Jr., Facility Technician, Fourchon
Richard DeMay, BTNEP Senior Scientist
Van Domangue, Captain R/V *Acadiana*
Quay Dortch, Adjunct Professor
Gwendolyn Duplantis, Cafeteria/Dormitories
Reid Endsley, Facility Technician
Kai–Felix Fiand, Instrument Technician
Roseline Foret, Cafeteria/Dormitories
Daniel Guidry, Administrative Assistant, Vessel Operations
Holly Hebert, Public Information Specialist
Jaimee Hebert, Personnel/Payroll Officer
Trudy Hebert, Public Information Specialist
Sandra Helmuth, BTNEP Office Manager
Joseph Hughes, Relief Mate R/V *Pelican*
Randal Hughes, Chef R/V *Pelican*
Carolyn Johnson, Cafeteria/Dormitories
Steven Joltki, Chef R/V *Pelican*
Alexander Kolker, Assistant Professor
Melvin Landry, BTNEP Public Involvement Coordinator
Owen Langman, Information and Technology Specialist
Craig Leboeuf, Captain R/V *Pelican*
Samuel Leboeuf, Vessel Technician R/V *Pelican*
Kenneth Lecompte, Security Guard
Charo Luke, Grants/Contracts Officer
Joseph Malbrough, Jr., Marine Superintendent
Russell Martin, Jr., Facility Technician
Michael Massimi, BTNEP Invasive Species Coordinator
Jeremy Miller, Research Assistant
Wendy Morrison, Senior Research Associate
Jack Pennington, Chief Engineer R/V *Pelican*
Gene Pontiff, Security Guard
Rodney Powell, Associate Professor
Lora Pride, Research Associate
Nancy Rabalais, Executive Director & Professor
Danielle Richardi, Research Assistant
Brian Roberts, Assistant Professor
Richard Robichaux, Facility Technician
Jennifer Robinson, Marine Education Assistant
John Rolison, Marine Technician R/V *Pelican*
Paul Sammarco, Professor
Carrie Semmler, Research Assistant
Carl Sevin, Vessel Technician
Cindy Sevin, Receptionist
Wayne Simoneaux, Marine Center Superintendent
Geoffrey Sinclair, Assistant Professor
Kristen Sinclair, Research Associate
Shelley Sparks, BTNEP Media Relations Coordinator
Kerry St. Pé, BTNEP Program Director
Maria Suarez Baltodano, Information and Technology Specialist
Keith Thibodeaux, Security Guard
Joseph Thomas, Jr., First Mate R/V *Pelican*
Yahsuan Tung, Research Assistant
Gerald Walker, Facility Technician
Jordan Westmoreland, Marine Technician R/V *Pelican*
Tanya Whatley, Cafeteria/Dormitories
Lillian Wicher, Administrative Assistant
Thomas Widgeon, Research Assistant
Max Wike, Relief Crew R/V *Pelican*

Financial Report

EXPENDITURES				
	FY 2008-09 BUDGET	FY 2008-09 ACTUAL EXPENDITURES THROUGH 6/30/2009	FY 2008-09 BUDGET BALANCE - 6/30/2009	REMAINING FUNDS
STATE FUNDS				
Salaries and Wages	1,811,083	1,811,083	0	0.0%
Student Wages	15,000	15,000	0	0.0%
Fringe Benefits	491,105	491,105	0	0.0%
Travel	15,500	15,500	0	0.0%
Operating Services	261,655	261,655	0	0.0%
Supplies	101,863	101,863	0	0.0%
Professional Services	0	0	0	
Acquisitions:				
Library	152,464	144,541	7923	5.2%
Scientific	0	0	0	0.0%
Other	59,526	67,449	-7,923	-13.3%
IAT-UPS TRANSFERS, OTM Charges	341,734	341,734	0	0.0%
STATE FUNDS EXPENDITURES*	3,249,930	3,249,930	0	0.0%
*With Statutory Dedication Funds				
OTHER FUNDS				
Barataria-Terrebonne National Estuary	1,030,134	961,110	69,024	
Restricted Fund (Research, IDC, FEMA)	2,830,511	1,860,289	970,222	
Vessel Operations	2,000,000	1,905,906	94,094	
Cafeteria / Dormitory	130,000	114,602	15,398	
TOTAL EXPENDITURES	\$9,110,575	\$14,736,238	\$1,156,661	

SOURCE OF REVENUE:	FY09 BUDGET	FUNDS DRAWN OR COLLECTED	FY09 BUDGET BALANCE
State General Fund	3,202,071	3,202,071	0
Restricted Fund: (Research, IDC, FEMA)			
Federal Funds	2,940,645	2,562,826	377,819
Self Generated Fees	70,000	70,000	0
Interagency Trans.	850,000	190,019	659,981
Ancillary Funds:			
Vessel Operations	2,000,000	1,943,998	56,002
Cafeteria Dormitory	130,000	76,511	53,489
Statutory Dedications: Fac. Pay	47,859	46,412	1,447
Statutory Dedications: Higher Ed Init	0	0	0
TOTAL REVENUE	\$9,240,575	\$8,091,837	\$1,148,738

Prior Year-End Fund Balances:

Restricted Fund: (Research)	
Federal/Self-Gen. Fees, IAT, IDC Funds	539,999
Ancillary Funds:	
Vessel Operations w/ IDC	800,899
Cafeteria / Dormitory	94,474
Act 971 Carryover (Prev. Maint.)	0
	1,435,372





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