

LOUISIANA UNIVERSITIES MARINE CONSORTIUM

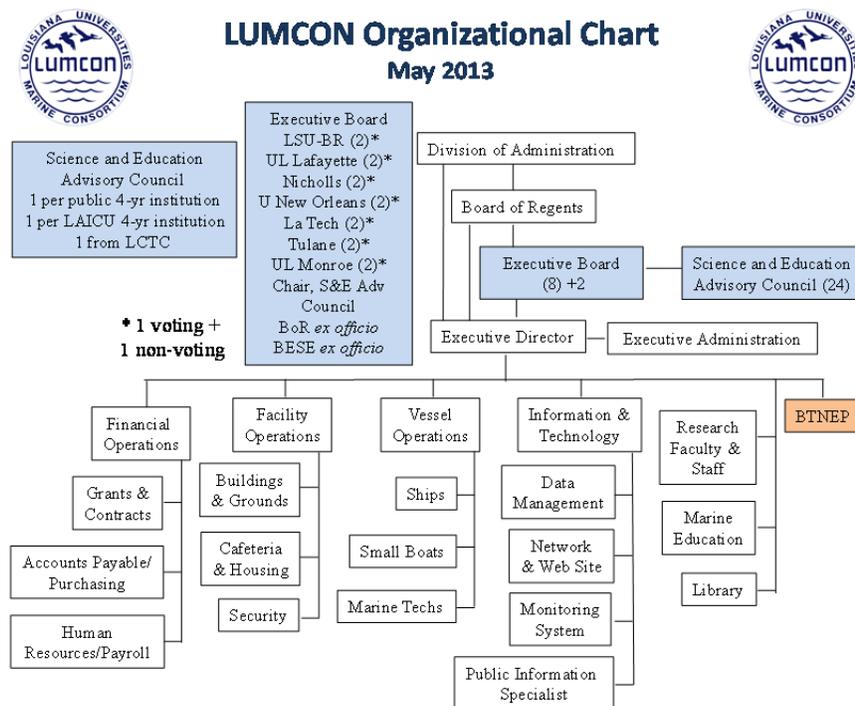
STRATEGIC RESEARCH PRIORITIES REPORT

July 1, 2013



INTRODUCTION

The Louisiana Universities Marine Consortium for Research and Education is an institution of higher education directly under the Board of Regents and governed by an Executive Board of seven universities and the chair of the Science and Education Advisory Council. Ex-officio members of the Executive Board are the Louisiana Board of Regents and the Louisiana Board of Secondary and Elementary Education. All public and private four-year institutions of higher learning are members of LUMCON along with a representative of the Louisiana Community and Technical College system.



The mission of LUMCON (as currently stated in a draft Strategic Plan) is:

To promote and facilitate research and education collaborations in marine and coastal sciences as well as their related technologies at Louisiana's colleges and universities; develop initiatives to educate local, State and national audiences; facilitate expertise to agencies; and conduct research and education relevant to the coastal and marine environments of the Gulf of Mexico.

LUMCON provides undergraduate and graduate education for students at the member universities through semester and summer courses. The students enroll at the member universities, to which the tuition and credits accrue. Resident faculty at the LUMCON Marine Center also carry adjunct status at various member universities and financially support and advise graduate students at member universities. The relevant member university accrues the research credits and the tuition. Thus, while not a degree-granting institution, LUMCON is an active member of the Louisiana higher education and research enterprise.

Facilities supported by the LUMCON annual budget (state general, ancillary support, federal grants, and fees and services) are the Woody J. DeFelice Marine Center in Cocodrie, LA, associated laboratories, housing services for visiting researchers, faculty and students, and a fleet of vessels. The 116-ft Research Vessel *Pelican* is a member of the National Science Foundation's University National-Oceanographic Laboratory System (UNOLS). A smaller coastal vessel, the R/V *Acadiana*, is 57-ft. Additional small boats include offshore outboards, inshore outboards, an airboat, and a pontoon boat. LUMCON also maintains a bare bone charter with Louisiana State University's Coastal Studies Institute, for the operation of its R/V *Coastal Profiler*.

LUMCON serves as the fiscal agent and contracting officer for the U.S. Environmental Protection Agency, Barataria-Terrebonne National Estuary Program at \$800,000 per annum, the U.S. Army Corps of Engineers, Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) Science Advisory Team at \$1.0 million per annum, and previously the NOAA, Office of Response and Restoration program Coastal Restoration through Enhanced Science and Technology (CREST) at \$900,000 to \$2.0 million per annum. LUMCON is the fiscal agent, as well as a research partner, in one of eight Gulf of Mexico Research Initiative BP-funded awards to study the effects of the Macondo oil spill on coastal habitats (Coastal Waters Consortium, <http://cwc.lumcon.edu>).

LUMCON's **research vessels** provide avenues for **ocean-related industries** to conduct marine and coastal research in the Gulf of Mexico.

Section I WATER MANAGEMENT

Within Higher Ed and Economic Development: Opportunities for Collaboration – emerging Growth Sectors includes

Leveraging The Water Institute of the Gulf (TWIG) to help foster industry-university collaborations in coastal and river protection.

Water management includes the sustainability of clean and adequate water supplies for multiple uses including human use.

Coastal Louisiana is faced with complex and critical decisions for managing the water in the Mississippi River and its adjacent receiving waters (fresh water to Gulf of Mexico) in support of coastal restoration and management of natural resources for the benefit of socio-economic structures. The Coastal Protection and Restoration Authority (CPRA) Master Plan aims to use the Mississippi River as a critical tool in coastal restoration. Funds from the RESTORE Act will be designated to the CPRA and TWIG for development of projects that should mitigate, enhance, and possibly generate coastal landscape improvements.

In support of this overall goal, LUMCON is prepared to partner with industry representatives (as it is currently doing) with **developing adequate and appropriate water quality monitoring networks** for the overall health of the coastal environment and monitoring in response to restoration activities. Current activities are being developed in collaboration with XYLEM for

water quality stations at the LUMCON Marine Center in Cocodrie and another site in Terrebonne Bay. Once these systems are installed and adequately working, these systems can be built across the coastal zone of Louisiana to monitor salinity regimes and other aspects of water quality.

The LUMCON Marine Center Phytoplankton Taxonomy group is poised to provide the CPRA and the LA Department of Environmental Quality with quality enumeration of phytoplankton communities that would indicate healthy or unhealthy conditions of ambient waters resulting from movements of Mississippi River waters into the coastal zone as part of the CPRA Master Plan. **By joining with industry**, these quality **phytoplankton assessments** can be joined with **chemical assessments** of nutrients and phytoplankton toxins in receiving waters.

Acknowledging that there may be detrimental effects of river diversions and the push to ensure that clean Mississippi River is received from upstream states and subsequently delivered to Louisiana estuaries should be a high priority for the state.

There are opportunities for **industries and waste water treatment facilities** for LA DEQ to forge cooperative agreements for the **reduction of excess nitrogen disposal** into the Mississippi River. LUMCON could play a role in facilitating these opportunities.

LUMCON, if adequately funded to fill faculty positions in **hydrology and coastal restoration** that would support existing faculty in **sedimentology and biogeochemistry** for collaborations with **private industry (consulting) in support of TWIG activities**.

Finally, should TWIG become the Center of Excellence for the RESTORE Act funds in Louisiana, LUMCON is experienced and poised to serve as a facilitator and contractor for research awards. As noted in the introductory remarks LUMCON serves as the fiscal agent and contracting officer for several programs—for example, the U.S. Environmental Protection Agency, Barataria-Terrebonne National Estuary Program at \$800,000 per annum and the U.S. Army Corps of Engineers, Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) Science Advisory Team at \$1.0 million per annum. Previously LUMCON managed the NOAA, Office of Response and Restoration program, Coastal Restoration through Enhanced Science and Technology (CREST) at \$900,000 to \$2.0 million per annum. During the latter years of this program with more involved LUMCON oversight, the projects were more critically reviewed, contracted, and eventually reviewed for outcomes. LUMCON is the fiscal agent, as well as a research partner, in one of eight Gulf of Mexico Research Initiative BP-funded awards to study the effects of the Macondo oil spill on coastal habitats (Coastal Waters Consortium, <http://cwc.lumcon.edu>).

In summary, LUMCON is highly experienced and qualified to oversee, review and contract on behalf of research projects that would provide insight into coastal restoration activities. The LUMCON oversight has proven to be objective and of high quality in the CREST program.

PRODUCTIVITY MEASUREMENTS

These measures remain with the Louisiana institutions of higher education with the course credits and graduation of students with the appropriate skills and understanding to proceed in the described industry-academic endeavors.

Section 2 LIFE SCIENCES

Promote Statewide Commercialization Mechanisms and Advance Enabling Technology

One of the unique capabilities of the LUMCON faculty and staff at the Marine Center in Cocodrie is the propagation of **larval fish for aquaculture and experimentation**. There have been several industry-academic partnerships in developing systems to support aquaculture, stocking of aquaculture facilities, assessment of offshore aquaculture possibilities, development of techniques to foster the development of aquaculture for more difficult coastal species, such as pompano and tuna. With collaborative industry ties, the LUMCON Marine Center staff stands to **improve culturing and raising facilities, and development of standard toxicological techniques** for determination of effects of oil spill or other toxicant exposures.

Two research programs of the LUMCON Marine Center faculty work with the oil and gas industry. One is related to **water quality monitoring (hypoxia and related parameters)** and delivery of real-time data from multiple offshore stations. Oil and gas platforms provide ready access to study sites and the industry benefits from the data collected and transferred. Federal waters off Louisiana continue to be plagued by hypoxia, and the state waters now include segments that do not meet the U.S. EPA's water quality standards.

The second is related to the use of **decommissioned oil platforms for artificial reefs**. There is growing evidence from surveys and genetic studies that toppled platforms provide mechanisms for the continued recruitment of sessile organisms including corals and their associated communities. Thus, the platforms provide a necessary connectivity among reef-associated communities in the Gulf of Mexico.

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