

LUMCON 2017 ANNUAL REPORT





EXECUTIVE DIRECTOR'S MESSAGE

During the last two years, LUMCON has experienced tremendous change and growth. This new era for LUMCON is a testament to the innumerable hours invested and the limitless dedication of LUMCON's faculty and staff. Continued support from the Board of Regents and strengthened partnerships with Consortium members has placed LUMCON on firmer ground to tackle new and old challenges as well as expand with new opportunities. In viewing the last year, we can certainly recite facts and figures:

- A substantial portion of the DeFelice Marine Center has been renovated including the library, auditorium, shared equipment room, R/V *Acadiana* dock, and executive administrative offices. Renovations and updates are currently underway on the student lounge, aquaculture and experimental facilities, boardwalks, and the building's exterior.
- The R/V's *Pelican* and *Pt. Sur* each spent over 200 days at sea, making them both two of the busiest vessels in the nation's research fleet.
- Overall, we have seen increased usage of LUMCON infrastructure across the consortium
- I have visited all but 8 of the 24 consortium universities and colleges (and plan to visit the others in the coming year), and in many cases multiple visits to a campus, to strengthen relationships, build new collaborations, and capitalize on opportunities that strengthen both institutions.
- During 2017, LUMCON hosted four scientific meetings that focused on major questions and research areas in coastal and marine science and education with a goal of removing barriers to science and building up Consortium networks. In the spring of 2018, LUMCON will launch its Synthesis Center and announce an open call for proposals.
- For the first time since its inception, LUMCON prepares to greatly expand its campus. In partnership with Fletcher Technical Community College and Southern Louisiana Community College, LUMCON will begin expansion and development of a Houma Marine Education Campus.
- In the last year, LUMCON's university educational programs went from annual net loss of ~\$50,000 to the program's first financial sustainable year generating a net profit of ~\$17,000. These funds will be reinvested into the university educational programs to realize further growth.
- With three recent hires, the total faculty of LUMCON in 2017 grew to eight members. A faculty search is currently underway to add two additional faculty.
- LUMCON held its first ever biennial Meet the Fleet event seeing over 3000 visitors to the Baton Rouge water front to tour the R/V's *Pelican* and *Acadiana* and interact with educators and scientists at multiple booths.
- Under a new brand of the White Boot School, LUMCON revamped its summer camps, university courses, and visiting research programs into a cohesive and collaborative community.
- With the hire of a Director of Development, LUMCON began a new era of fundraising and more diversified funding portfolio.



- New and revamped programs--Cafeteria, Social Media, Education, Administration, Dive Operations, Environmental Monitoring, and Reservations--have led to more efficient and effective operations that allow LUMCON to better meet its missions.
- A newly designed website with improved aesthetics, structure, and content was brought online in September.
- The science group published 31 new papers and witnessed a tremendous amount of grant success including over \$8 million in active grants, \$2 million in submitted grants, and \$4 million in new grants.

These are great statistics but, in my opinion, they don't capture all the accomplishments of the last year of LUMCON as both an institution and a group of passionate and dedicated people.

This previous summer during LUMCON's White Boot School, I walked through LUMCON. As I passed a classroom, a marine fisheries class was in session, co-taught by faculty members from Nicholls State University and Louisiana State University. A group of excited 9-12th grade campers passed me in the hallway, ready to head for a day of activities in the marsh. I chatted with a researcher from Louisiana Tech University and her graduate students conducting research on marsh grasses. A group of LUMCON staff were chatting and chuckling in a hallway. The research labs were abuzz with resident scientists and suite of visiting undergraduate researchers. Outside, the construction of a mesocosm facility was underway. At the boat ramp, USGS and Louisiana State Fisheries were ready to launch. A few days later, the owner of a local pizza restaurant and a parish council member, tells me the community can see and feel the change in LUMCON. This, I think, is the essence of LUMCON's success: it is place with renewed energy and optimism.

It is difficult to convey exactly how much different LUMCON *feels* now, especially in the dry numbers and words of an annual report. You will just need to come to Cocodrie and experience it for yourself.

A handwritten signature in black ink, appearing to read "Craig R. McClain".

Craig R. McClain
December 2017



CONNECT

Enhance research collaboration and exchange by linking the Consortium through stronger partnerships

The core to LUMCON's mission is collaboration and support of marine science across Consortium members. As LUMCON's mission states, to promote, facilitate and conduct research and education collaborations among Louisiana's universities in marine and coastal sciences relevant to the sustainability of coastal and marine environments of the Gulf of Mexico. Over 2017, the connectedness of the Consortium grew and has never been stronger. Increases in participation, collaboration, and support from Consortium partners has strengthened LUMCON and more fully realized our mission. The rest of this annual report details the strides LUMCON has made in better serving the Consortium--increased capacity through new science assets and programs; updating of equipment, facilities, and vessels; building a culture of collaboration; realigned education programs; and increased dialogue. Several notable areas of growth occurred in 2017.

- **Consortium Highlights:** Although it is difficult to cover the full the scope of LUMCON's consortium activities in last year there are several notable highlights.
 - **Grambling State University:** After a campus visit by LUMCON's Executive Director and Associate Director of Education, the university set aside institutional funds to support a continued summer research opportunity at the DeFelice Marine Center for a Grambling Undergraduate. The student conducted research with Dr. Marshall Bowles in marine microbiology during the summer of 2017. A dialogue continues about partnerships to build summer camps for underrepresented K-12 groups. In 2017, Grambling faculty member, Dr. Dagne Hill, agreed to serve on the LUMCON Advisory Council.
 - **Louisiana Tech University:** Research collaborations are strong between LUMCON and LA-Tech including continued research by LUMCON's Dr. Brian Roberts and LA-Tech's Dr. Jennifer Hill. Executive Director McClain and computer science faculty are currently discussing collaborating on a proposal and program to manage and curate LUMCON's wealth of environmental monitoring data. The Biology Department invited, and Dr. McClain currently serves on their advisory board. In 2017, LA-Tech faculty member, Dr. Jennifer Hill, agreed to serve on the LUMCON Advisory Council. New discussions are occurring with the Science and Technology Center at LA-Tech about possible methods of building marine science programming into activities the center currently offers. Possible collaborations would also support activities that would bring their students and teachers to the Marine Center for workshops about remote operated vehicles (ROVs).
 - **McNeese State University:** A campus visit resulted in better alignment of LUMCON's summer course offering with the university's requirements. Two faculty members will be attending the microbiology catalysis meeting (discussed below) in



the Spring of 2018. Conversations continue between the leadership of both institutions about the potential of Meet the Fleet in 2019 occurring in Lake Charles.

- **Nicholls State University:** The proximity and strong historical relationship with Nicholls has led to several collaborations. Masters students are often involved in research at LUMCON and several former Nicholls students are employed in either education or research here at the Marine Center. Nicholls frequently brings classes on field trips as well as the annual Biology Department Graduate Student Retreat to LUMCON. Currently the process is underway for LUMCON's new faculty, including Dr. McClain, to hold appointments at Nicholls and serve as masters student advisors. Nicholls Professor, Dr. Gary LeFleur currently sits on LUMCON's Advisory Council. New faculty Dr. Aimee Hollander and Dr. Solomon David are actively involved with the building of LUMCON's social media outreach program. In October of 2017, the Associate Director of Education and Outreach made 9 different visits to the NSU campus to speak to all the freshman biology students about the opportunities for students at LUMCON.
- **Northwestern State University:** Continued campus visits have yielded a renewed and exciting relationship between LUMCON and Northwestern. Discussions about summer courses, design of special topic courses at the Marine Center, and service learning opportunities have been very positive. President Dr. Chris Maggio is currently considering the possibility of setting aside institutional funds to support activities at the Marine Center.
- **University of Louisiana-Lafayette:** An agreement with ULL made registration for summer courses easier for students and allowed LUMCON to cover the costs of the summer program through tuition remission. Institutional support funds set up by ULL has helped cover the financial burden of ULL researchers to use the Marine Center and its assets. Partnership with Dr. Heather Stone of the education department has resulted in LUMCON's first non-biology credit course and potential grant opportunities. Drs. McClain and Dr. Rieucan from LUMCON have both been granted adjunct and graduate faculty status through the Biology Department. Drs. Stauffer, Nelson, and Robinson, among others, have all conducted research at the DeFelice Marine Center and continue collaborations with marine center faculty.
- **University of Louisiana-Monroe:** Progress continues to be made in a strong partnership with ULM faculty to develop a coastal atmospheric science course. This in collaboration with be of benefit to LSU's implementation of an atmospheric science curriculum. Visits to the campus also resulted in opening up the possibility of ULM researchers utilizing more LUMCON assets for research.
- **University of New Orleans:** Campus visits have yielded a stronger connection between LUMCON and UNO. Teacher education and the development of a LUMCON teacher resource packet are being planned for the next year. UNO students have enrolled for the spring course Changing Coastal Oceans, and summer courses are now more promptly advertised by UNO faculty. Dr. Bowles delivered a seminar in the biology department. Marine Center faculty, Dr. Roberts submitted a



DOE pre-proposal with Drs. David Podgorski and Phoebe Zito. Conversations continue with the chemistry department about stronger links. LUMCON hosted Dr. Brandon Travella, School of Marine Architecture, for the first Director's seminar.

○ **Louisiana State University and A&M College:**

- Active research collaborations and grants, as well as new collaborations and grants, between LUMCON and LSU faculty remain frequent. For example, the continued collaboration between LSU faculty (DOCS: Dr. Gene Turner, Dr. Dubravko Justic, Dr. Mike Polito, Dr. Haoshen Huang, and Dr. Giulio Mariotti; ENVS: Dr. Ed Overton and Dr. Linda Hooper-Bui; SRNR: Dr. Phil Stauffer, Dr. Sabrina Taylor) on GoMRI-funded Coastal Waters Consortium-II (CWC-II) project with LUMCON/LSU PI Nancy Rabalais and LUMCON co-PI Brian Roberts. Project supports 9 PhD graduate students (Daniel Alt (Roberts), Linlin Lui (Huang), Mario Hernandez (Polito), Lauris Hollis (Turner), Greg Olson (Overton), Alireza Payandeh (Justic), Anna Perez-Umphrey (Taylor), Elizabeth Robinson (Rabalais), Kendall Valentine (Mariotti)) and 3 MS students (Karen Callicot (Hooper-Bui), Ron Scheuermann (Roberts), Allison Snider (Taylor)). Continued collaborations continue between LSU faculty and staff (Dr. Mike Polito (lead PI), Dr. Linda Hooper-Bui Erick Swenson) with LSU/LUMCON faculty member Nancy Rabalais and LUMCON lead PI Brian Roberts on a NOAA RESTORE funded project as well as between the research groups of Dr. Kanchan Maiti (DOCS) and Dr. Roberts on ongoing ocean acidification project and NSF RAPID grant examining impact of 2017 hurricane. Dr. McClain is collaborating with Dr. Mark Benfield on the impacts of the Deep-Water Horizon Oil Spill on deep-sea, Gulf of Mexico ecosystem and Dr. Kristine DeLong on submerged forests. The three new faculty members at LUMCON have also initiated contact and collaborations with faculty in both the DOCS and Natural Resources programs.
- The addition of a field coastal meteorology class in the summer of 2019 will align with DOCS's new program in meteorology.
- A partnership with Louisiana State University School of Architecture Research Studio had students investigating the LUMCON facility and environment, and re-imagined both the building and landscape as a cutting-edge (albeit remote) research and educational destination. In "The SEA Is Coming", students of the Integrative-Design Studio investigated LUMCON's ability to continue functioning in its changing environment and further its indispensable research capabilities of the rapidly changing coastal landscape. This resulted in several exceptional, and often out-of-the-box, suggestions for LUMCON's growth in the face of coastal loss and continued flooding.

<http://www.theplanjournal.com/article/sea-coming-future-marine-research-facility>



- **Louisiana State University in Alexandria:** Campus visits have demonstrated a strong desire to make LUMCON useful to the faculty and staff of LSU-A.
- **Louisiana State University in Shreveport:** Students are being made more aware of the opportunities at the Marine Center. Courses are now advertised more widely to the students.
- **Centenary College of Louisiana:** After a campus visit the relationship between Centenary and LUMCON has been re-established. The Coastal Narrative course being offered in 2018 is of particular interest to the faculty as a way for their students to earn their culture credits. Other courses are an opportunity for the students to expand their experiences to more biology areas.
- **Tulane University:** Marine center faculty member Dr. Alex Kolker continues to provide a strong bridge between LUMCON and Tulane. Kolker supports two current students and one recently graduated PhD and teach courses. A visit by Drs. McClain and Kolker to Tulane began a dialogue on support of newly formed programs and departments addressing coastal issues. The ByWater Institute continues to partner with LUMCON and the two jointly hosted an annual UNOLS meeting this year at the ByWater Institute campus in New Orleans. In addition, the NOAA RESTORE project on Central Role of Mississippi River in Gulf lead by Kolker and Robert held meetings at the ByWater Institute campus.
- **Fletcher Technical Community College and Southern Louisiana Community College:** The three institutions are forming a formal partnership to establish and build a new Houma Marine Education Campus with the goals of: Leveraging the expertise of several established academic institutions to create a new educational and economic opportunity, Increasing marine and coastal science infrastructure, especially as related to vessel operations, to support research and educational programs in the state of Louisiana, Creating educational programs in workforce retraining and development in marine, coastal, and restoration disciplines, and Building academic, government, non-government agency and corporate partnerships through a new multi-use campus.
- **Marine Synthesis Center:** LUMCON is committed to providing opportunities for scientific teams to explore ideas that are risky, require novel combinations of expertise, or simply require people to be in the same room. Several models already exist and have proven successful for establishing collaborative networks and promoting synthesis (e.g., National Center for Ecological Analysis and Synthesis, Santa Fe Institute, National Humanities Center, National Evolutionary Synthesis Center). LUMCON seeks to provide such a center for marine science, conservation, management, or education and outreach. Funding and processes were put in place to allow for an open call for proposals for LUMCON to begin synthesis meeting in 2018.
 - **Working Groups** will involve small groups of scientists (~10-12 participants) collaborating intensively on the analysis or synthesis of data, models, or both, in order to address a major question in marine science, conservation, management, or education and outreach. The working groups will typically meet 3-4 times over one



to two years, with each meeting lasting 3-7 days. However the number of participants, number of meetings, and duration of each meeting is flexible, depending on the needs and goals of the group. The Working Group is intended as a mechanism for scientists to collaborate productively. Products could include software, databases, manuscripts, and/or education materials.

- **Catalysis Meetings** will involve large groups of scientists (~ 30 participants) from diverse disciplines focusing on a major question or research topic in marine science, conservation, management, or education and outreach. Catalysis meetings are one-time meetings that typically occur over 2-4 days. They are intended to increase the scale and ambition of scientific vision, to define avenues for scientific synthesis, to identify classes of primary data that must be collected before grand-scale synthesis is possible, and to facilitate the assembly of networks to realize grand-scale synthesis.
- LUMCON will also be welcoming meetings funded by external agencies. These meetings will follow the working group or catalysis meeting format and align with LUMCON's mission.
- In 2017, LUMCON began hosting pilotsynthesis meetings including
 - **GRAPPLE Working Group:** LUMCON's Growth & Planning Panel explores the future of LUMCON and its facilities under coastal loss and flooding. The group is composed of coastal scientists, planners, engineers, local politicians, designers, levee administrators, building maintenance, and emergency responders including Consortium representatives from Tulane, LSU, UNO, and ULL.
 - **GeauxDeep Catalysis Meeting:** This catalysis meeting, funded with an NSF grant, brought together Gulf Mexico researchers studying Gulf of Mexico, deep-sea ecosystem. The three day meeting allowed for networking and exchange of ideas, both new grants and papers are emerging from the group. Participants included Consortium faculty from LSU, ULL, and Tulane.
 - **Bayou Microbio Catalysis Meeting:** LUMCON's new faculty, Marshall Bowles is leading a group in May of 2018 to bring together Gulf Coast microbial ecologists to discuss major research themes of their respective groups and their visions for the future. The goals of the workshop are to: 1) become more aware of the related research going on in Louisiana or other parts of the Gulf coast, 2) identify collaborations that can aid in generating breakthrough research, 3) identify research themes that could likely be funded, 4) identify equipment needs at LUMCON (or home institutions) that would aid in this research. Participants included Consortium faculty from LSU, McNeese, Northwestern, Nicholls, and UNO
- **Institutional Support Funds:** In lieu of subscription or membership fees for Consortium members, the Executive Director began a dialogue with Consortium partners about institutional support funds to facilitate usage for students and faculty. ULL established the



first set of support funds to allow graduate students and research faculty to collect pilot data utilizing LUMCON's facilities and vessels as well as faculty writing retreats at the DeFelice Center. Grambling University set aside support funds to providing a stipend, room, and board for a Grambling undergraduate to conduct research with a LUMCON faculty member every summer. Currently discussions are underway with LSU, LSUS, LSUA, Northwestern, LA-Tech, McNeese, Tulane, Nicholls, UNO, ULM, and Centenary about similar funds.

- **Increased Dialogue and Exchange with Consortium Partners:** Since the summer of 2016, the Executive Director and/or members LUMCON's leadership team have made numerous visits to consortium partners looking to bridge missions and programs.

Consortium Partner	Total Campus Visits by Executive Director or Management Team (July 2016-December 2017)
Grambling State University	1
Louisiana Tech University	2
McNeese State University	1
Nicholls State University	13
Northwestern State University	2
Southeastern Louisiana University	Scheduled for spring of 2018
University of Louisiana-Lafayette	4
University of Louisiana-Monroe	1
University of New Orleans	1
Louisiana State University and A&M College	14
Louisiana State University in Alexandria	1
Louisiana State University in Eunice	Scheduled for spring of 2018
Louisiana State University in Shreveport	1
Southern University in Baton Rouge	1
Southern University in New Orleans	Scheduled for spring of 2018
Centenary College of Louisiana	1
Dillard University	Scheduling for fall of 2018



Louisiana College	Scheduled for spring of 2018
Loyola University	Scheduled for spring of 2018
Our Lady of the Holy Cross	Scheduled for spring of 2018
Our Lady of the Lake College	Scheduled for spring of 2018
Tulane University	3
Xavier University	Schedule for spring of 2018
Fletcher Technical Community College	2

The Consortium in 2018

- **Equal But Different:** In the next year, LUMCON seeks to continue to build strong partnerships with our Consortium institutions, especially seeking to serve those institutions with limited or no interactions with LUMCON in the past. With each partnership, finding ways to bridge the missions of both institutions will be essential, as well as realizing that every institutional partnership will be unique.
- **Further Breaking Barriers for Collaboration:** In 2018, LUMCON’s Marine Synthesis Center will be in full operation. We anticipate with the call for proposals to host several groups that will spark further inter-institutional relationships in Louisiana and help bolster marine and coastal science in the state.
- **Aligning Course Offerings and Opportunities:** LUMCON will seek greater dialogue and better processes for aligning our summer courses with the needs of our Consortium partners. Increased exposure of LUMCON’s summer offerings to students will be vital.
- **Institutional Support Funds:** Key to the consortium’s continue growth will be investment from the Consortium partners. Pools of institutional support funds will ensure student and faculty engagement with LUMCON. Moreover, these will create opportunities for researchers to gather the pilot data or proof of concepts they need for larger and further funding, benefiting LUMCON and Consortium Institutions alike.

ENRICH

Giving back to the community through education and outreach initiatives

In 2017, Education and Outreach (E&O) became one of the three main pillars of LUMCON’s new focus captured in the new CONNECT, ENRICH, TRANSFORM terminology. With a move

Louisiana Universities Marine Consortium
CONNECT | ENRICH | TRANSFORM
 A Division of the Louisiana Board of Regents
 8124 Highway 56 | Chauvin, LA 70344



to a focused education and outreach program, LUMCON formalized a mission statement for the programs that embodied the true spirit and previously unarticulated purpose.

Our purpose is to enable the next generation of marine scientist and ocean literate citizen. We will reach this goal by providing meaningful and relevant place-based and skill-based experiences for all visitors, while aiming to have significant impacts on Louisiana's diverse citizenry including those populations underrepresented and underserved in marine science.

It is difficult to know where to start with the refinement and growth of the E&O Program. Initially targeted to be dramatically scaled back in the 2015 Strategic Plan, E&O has instead become financial success and integral in LUMCON's core mission, identity and purpose.

University Education

The university summer program achieved many successes in the past year. Some of these achievements were monumental to greater success of the program, while others were smaller and better utilize the assets and talents of the marine center and consortium members. LUMCON is activity seeking to be more competitive among Gulf Coast marine labs for students from nearby states that have little access to marine science education opportunities.

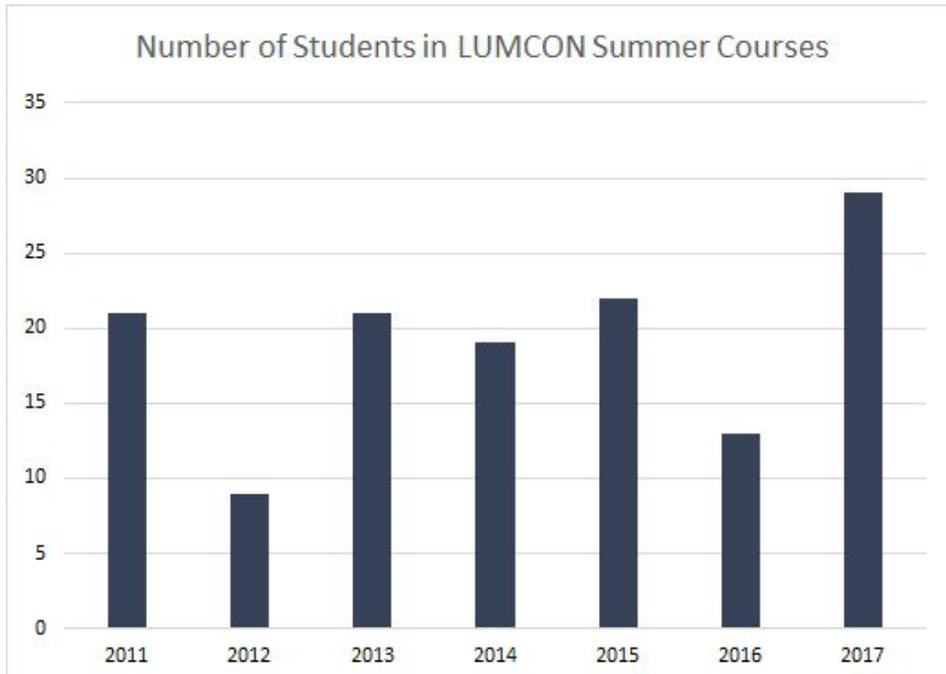
- **Tuition Remission and University of Louisiana-Lafayette Memorandum of Understanding:** Last year LUMCON entered into an agreement with the University of Louisiana-Lafayette in which LUMCON would set and receive all the tuition for courses offered at the Marine Center. This means that LUMCON university summer courses are no longer a net revenue loss, but can operate at or above cost neutral. From 2011-2016, the university education programs operated at net losses between \$32,000-\$83,000 annually. In 2017, the programs generated \$16,961. These funds allow us to sustain and reinvest into the program. The biggest advantages to the new MOU directly benefit students. This agreement streamlined the process of student registration, grade submittal, and how students receive credit for the courses taken at the Marine Center. Course registration is now a one-step process for students as opposed to the multi-step process that differed for each Consortium member. Credits granted through ULL are easily transferred to other consortium members. Through this agreement LUMCON is also able to set the tuition rates for the courses making them more affordable to the students. Currently, LUMCON course fees (including tuition, supplies, texts, room and board) are some of the most inexpensive in the nation allowing LUMCON to better serve its educational mission to underrepresented groups in marine science. A broader impact of this agreement is that ULL credits are also accepted and easily transferred to out-of-state institutions, setting LUMCON up as a marine science education opportunity for students in neighboring land-locked states.
- **New Course Development and Structure:** It was apparent that a change in the structure of the courses themselves was needed. Two of the biggest hurdles to students taking courses at the Marine Center were the length and cost for the courses. The agreement with ULL helped to alleviate some of the financial burden from students, but more was needed. To reduce costs to students (and LUMCON) it was decided that all credit courses could be offered for 3 credits (at a duration of 3 weeks) resulting in reductions in room and board fees, and instructor salaries, both of which are the two most significant costs to students and



LUMCON. Currently courses are offered two per session with one session in June and the other in July. This structure also afforded a new opportunity to offer 2-weeks of skill-based courses in between the pair of 3-week sessions. These courses are 1-week, non-credit courses that help participants gain important skills that are vital to being successful in marine science-related fields.

- **New Course Proposal Process:** LUMCON has the ability to offer innovative and transformative summer courses, but to do that we need to rely on the expertise and talents of LUMCON and consortium member faculty. Moreover, decisions on which courses are taught and which consortium faculty teach them should be a fair and transparent process. The new proposal process makes this possible. With the proposal process in place LUMCON can set courses on a 2-year cycle, meaning that courses can be announced and advertised much earlier than in previous years. Students and their advisors will be able to see what will be available so they can plan their academic semesters more thoroughly.
- **Campus Visits/Student Recruitment Efforts:** In the past year, LUMCON staff and consortium faculty have placed more emphasis on student recruitment efforts. Visits to campuses have become, and will remain, a priority to reach students and faculty advisors on campuses. In the fall of 2017, visits were made to LA Tech, Nicholls, and Tulane specifically to talk to students about LUMCON summer courses. To help with course promotion, LUMCON now designs and distributes course posters to our consortium members and to universities in neighboring states. One-pagers for each course are also developed and distributed to provide more detailed course information.

Numbers: During the summer of 2017 LUMCON had a 7-year record enrollment of 29 summer students from 5 consortium member intuitions and one 1 out-of-state university. However, more work is needed to increase enrollment to the maximum of 60.



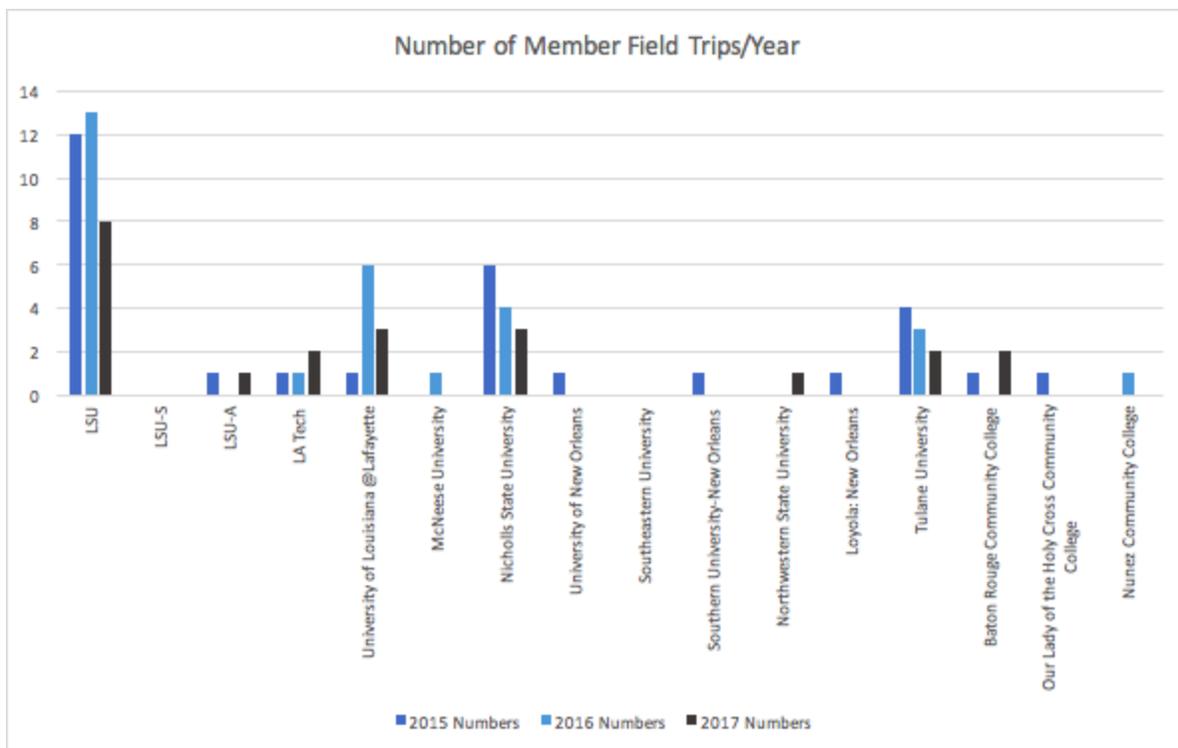


More (including early) advertising and campus visits are expected to greatly expand enrollment. In the summer of 2017, the Wetland Vegetation and Coastal Biogeochemistry courses were cancelled because of low enrollment. Although it is difficult to determine the exact reasons, low enrollment in the Wetland Vegetation maybe due to the fact that vegetation courses are regularly offered at Consortium campuses. The low enrollment for the Biogeochemistry course may be that students did not understand the course’s content. Better promotion of this new course will help with future enrollment if offered again. With the new course proposal process in place, LUMCON will be able to offer courses that are more relevant to degree requirements of a given institution.

Semester Field Trips

LUMCON has excelled at providing consortium member faculty with the assets needed to offer their student field experiences in marine science.

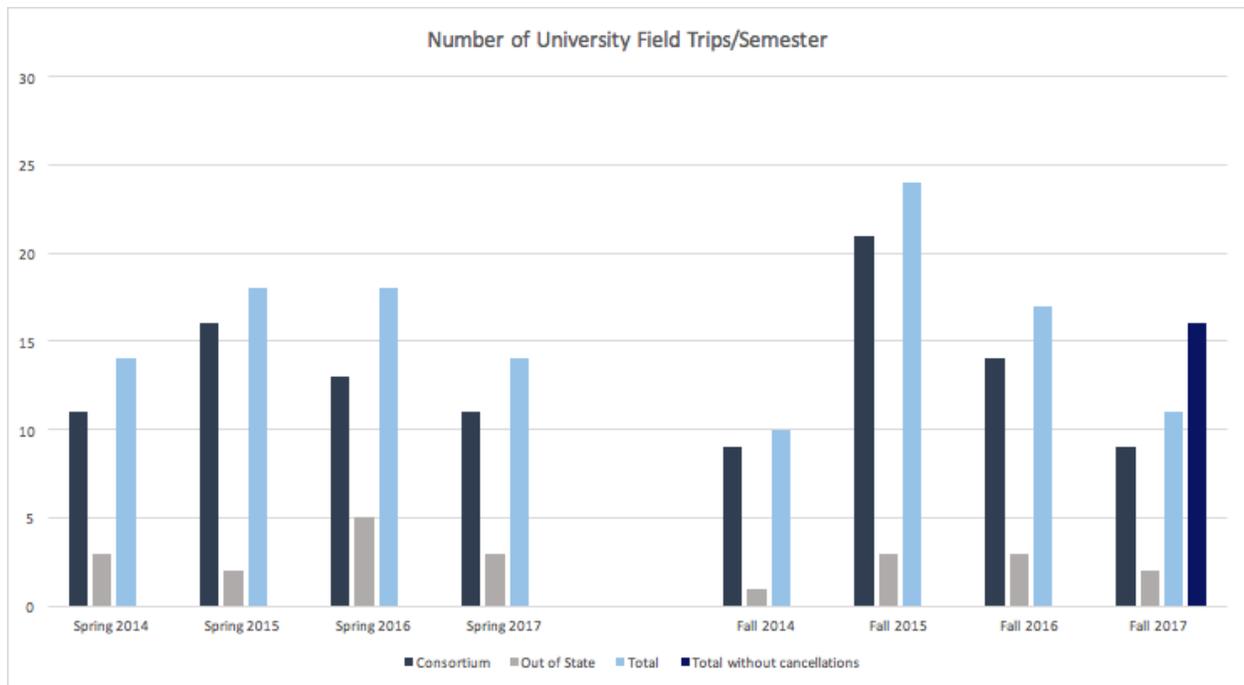
- **New Fees/Deposit Policy:** The new structure helps to offset the cost of the University program. Educator fees now better reflect the cost of educator time spent with groups. The new deposit policy helps to cover the lost expenses when a group cancels and the dates cannot be filled by another group.



- **Numbers:** This year, 25 classes from 8 consortium members, and 5 out-of-state schools visited the Marine Center to participate in field trips. The graph above shows the number of field trips of consortium members from 2015-2017. Six of the trips were new, unique courses in addition to those that typically utilize LUMCON. All together, 392 university students were reached with the use of the Marine Center, vessels, and education staff during field trips. The number of trips per semester are shown below. There was a decrease



in the number of trips in both the fall and spring of 2017. The decrease in the number of trips for the fall is easily explained by the extremely active 2017 hurricane season. Because of hurricanes and tropical storms, 5 field trips had to be cancelled due to flooding events at the Marine Center or unfavorable offshore conditions (for boat trips). The “Spring Break Effect” could explain the rise and fall in the number of field trips in the spring semester. It appears that in years where there is more time in the academic calendar between spring break and final exams (such as 2015 and 2016) we have more groups that book trips. In other years when spring break is closer to final exams (2014 and 2017), less trips have been scheduled. One additional issue should not be overlooked. With many Consortium members increasing enrollment, the number of students per course has increased. This year many instructors have commented that with the increase student numbers it is difficult to arrange a comprehensive field trip that every student could participate in or could be covered by the Consortium member.



LUMCON's
WHITE BOOT SCHOOL

White Boot School

The White Boot School was initiated during the 2017 summer semester. The goal of this initiative is to make summers at the Marine Center a chance to build a stronger community of people that are interested in coastal and marine science. LUMCON seeks to provide a place of innovation in research and education, while providing a research environment for networking and collaboration. The core of the White Boot School are LUMCON's credit and skill-based summer field courses. To create a broader community atmosphere, LUMCON

held a series of events that provided opportunities for exploration of ideas and the physical landscape while encouraging time for informal discussion and networking for people in residence during the summer. In the summer of 2017 several events were hosted to bring together users of the Marine Center. 2017 events included a summer concert given by the Babineaux Sisters Band, cosmic bowling night in Houma, a summer lawn party at the Marine Center, movie nights, and the summer seminar series. Plans to expand community offerings in 2018 are underway.

Research Experiences for Undergraduates (REU) Program



2017 saw the completion of the 7th year of LUMCON’s Research Experiences for Undergraduates (REU) Program on Interdisciplinary Research Experiences in Changing Coastal Environments. This year’s REUs were supported from a variety of sources including the direct support of an intern by Grambling State University, in addition to research grants to Craig McClain from NSF and Brian Roberts and Nancy Rabalais from the Coastal Waters Consortium via the Gulf of Mexico Research Initiative. The 2017 cohort consisted of 6 students from across

the country that completed a 10 week internship from June through mid-August during which they worked with a mentor and/or mentor team to identify a research question, develop and orally present a research proposal, conduct their research project, and participate in series of career and skill-building workshops and activities. The program is directed by Dr. Brian Roberts and this year’s mentors included Drs. Craig McClain, Clif Nunnely, Marshall Bowles, Abigail Bockus, Guillaume Rieucan, Ari Chelsky, Anthony Reitl, and Brian Roberts. The program concluded on August 11th with the annual LUMCON Summer Student Research Symposium. All 6 REUs gave presentations in the research conference style symposium. The presentations were:

- Ashley MacDonald, Eckerd College, REU Intern in the Roberts Lab, “The Effects of *Geukensia granosissima* on *Spartina alterniflora* in a Louisiana Salt Marsh”
- Katie Ebinger, University of Colorado, REU Intern in the Roberts Lab, “Impacts of *Geukensia granosissima* on nitrogen cycling in salt marsh soils”
- Sara Gholson, Eckerd College, REU Intern in the McClain Lab, “Investigation of Patch-Mosaic using Alpha and Beta Diversity in the Deep Sea of the Gulf of Mexico”
- Charles Cilek, Lake Superior State University, REU Intern in the Rieucan Lab, “The Effect of Water Flow on Collective Reactions in Gulf Menhaden (*Brevoortia patronus*): A Simulated Predator Encounter Experiment”
- Isaac Rosenthal, Washington and Lee University, REU Intern in the Bockus Lab, “How salinity stress affects aerobic performance of Gulf brown shrimp”



- Robynn Hadley, Grambling State University, REU Intern in the Bowles Lab, “Sulfide controls on nutrient cycling in marine environments: Denitrification vs. Dissimilatory Nitrate Reduction to Ammonia”

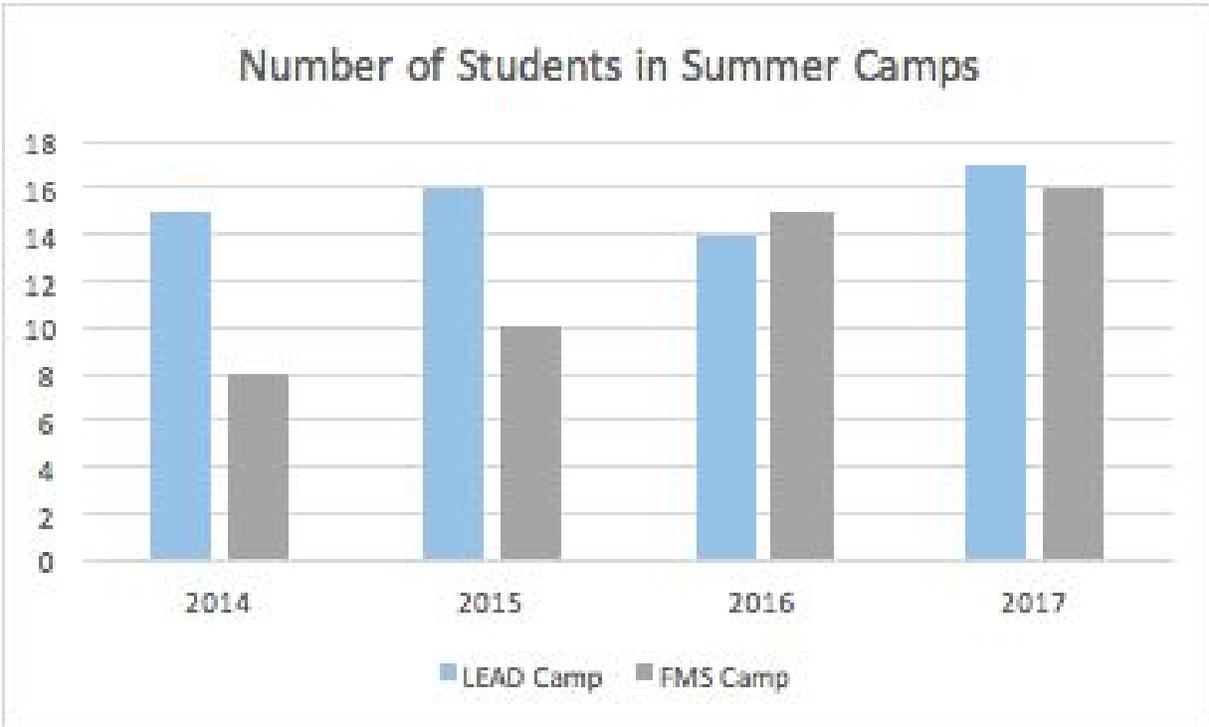
K-12 Education

Placing more emphasis on the education programs within the last year has led to some very positive changes.

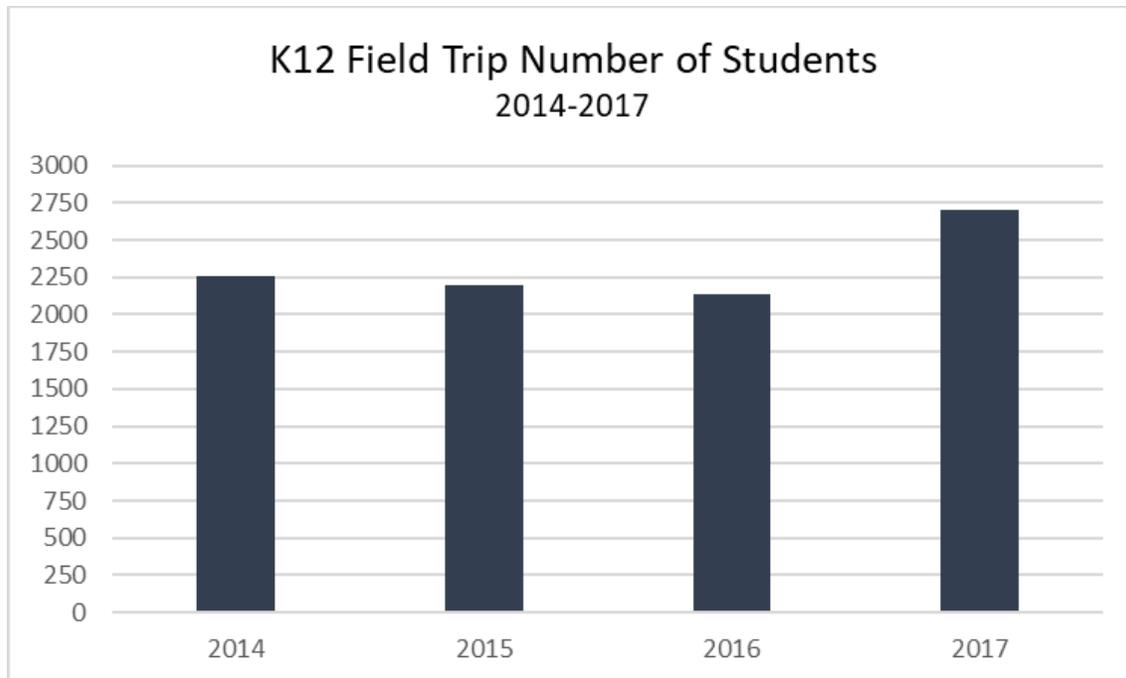
- **New Educators:** In 2016, the LUMCON marine education had a turnover of educators. During the hiring of the new educators, more emphasis was placed on hiring people that had increased knowledge and skill-sets. The goal was not to be the first job in an educator’s career, but to be the next step in their careers. Using this philosophy for hiring has elevated the program status within the state. Now, students are not coming to LUMCON just to learn from an educator, they are coming to learn from proven marine scientists. To support the educator’s career goals, more resources are used to provide training that will advance their skill-sets and benefit LUMCON education programs in the long term.
- **Focus and New Louisiana Science Standards and Mentorship:** This year the state of Louisiana adopted new classroom standards for science. These new standards are based off the Next Generation Science Standards and put more emphasis on question-driven learning. Marine education activities are a natural fit for this new way of teaching science. The skill-based, place-based focus of the education program will become an even more important asset to educators within the state. While the type of activities and delivery style currently used within marine education will need to be changed very little, the marketing and packaging of materials will look vastly different within the next year.
- **Collaborations:** LUMCON marine education continues to be a strong asset to LUMCON and Consortium faculty and state partners. The ability to offer high quality education experiences with in-house education staff and leverage the assets of the Marine Center (dorms, cafeteria, vessels, easy access to the saltmarsh) makes LUMCON the ideal partner for broader impacts often sought within RFPs. Currently, LUMCON marine education is partnered with the Coastal Waters Consortium (funded by GoMRI). Murt Conover submitted a pre-application for a \$480,000 NOAA Environmental Literacy grant. Co-Principal Investigators on the grant are Dr. Heather Stone, ULL Assistant Professor; Kristin Buter, LUMCON Marine Education Associate, and Amanda Fontenot, LUMCON Environmental Monitoring Technician. If funded, this grant would strengthen LUMCON’s connection to two local Native American Tribes through environmental education opportunities, and would provide funding for 2 new environmental monitoring stations that would be added to the existing network of stations. With a strong commitment to education by the LUMCON faculty, future collaborations are also planned to design and implement broader impact projects that are suited to the interests and strengths of each faculty member.
- **Summer Camps:** LUMCON summer camps continue to be popular for high schools who are interested in marine science. During the summer of 2017, LUMCON had its largest number of students attending LEAD camp and Field Marine Science camp. Most of the students that attended the 2017 camps were students that otherwise do not have access to



marine science education either because they come from lower income households or live in areas that are not near the coast. These camps continue to be important feeder programs into the LUMCON university education program.



- **New Fees/Deposit Policy:** In an attempt to decrease the expense of the marine education program, new fees were instituted for marine education activities (and other LUMCON programs and assets). A new deposit policy was also put in place to eliminate the financial burden experienced when a group cancels at the last minute. This policy makes it a requirement that groups pay a 30% deposit on the original estimated total for a trip. Since the policy was put into effect only one K-12 group has had to cancel and has lost their deposit.



- Field Trip Numbers:** The number of groups for 2017 (74 groups) were about where they were expected compared to numbers for 2015 (74 groups) and 2016 (77 groups). However, the number of students that participated in field trips to the Marine Center increased to 2700 from 2136 the year before. As a result, teaching hours spent with students and the number of hours that students received marine science education were lower than in past years. This indicates that more students attended field trips, but spent less time at the Marine Center than they have in past years. Reasons reported by teachers include: 1) Louisiana schools and parents have less money so they are reducing the costs of field trips by reducing the time spent at the Marine Center and 2) schools are resistant to letting students have as much time out of the classroom as they did in the past. On the other hand, LUMCON’s K-12 programs are attracting the attention of teachers from schools that have never brought students to the Marine Center on field trips. There is a growing number of “new schools” that are reserving field trip dates, and often they are ones that serve lower income, minority students. With the adoption of the new science standards and the re-packaging of LUMCON activities, we could see a surge in the diversity of the groups using the Marine Center.

K-12 Field Trips 2015-2017				
<u>Year</u>	<u>Number of Trips</u>	<u>Number of Students</u>	<u>Hours Spent with Students</u>	<u>Contact Hours</u>
2015	74	2201	639	18,856
2016	77	2136	554	16,010
2017	74	2700	539	14,362



Public

- **Meet the Fleet:** Meet the Fleet was a multiday public event in Baton Rouge featuring the flagship vessels of Louisiana's scientific research fleet. The Research Vessel (R/V) *Pelican* and the R/V *Acadiana*, owned and operated by LUMCON, were featured and open for public tours given by the vessels' crews and event volunteers. The two vessels were the centerpiece of the event while LUMCON scientists and education staff, along with area consortium partners, displayed hands-on activities and provided information about marine research at booths set up dockside. The event culminated with the vessel crew and LUMCON staff being recognized at the State Capitol. LUMCON was presented with a resolution declaring May 22, 2017 as LUMCON Day. LUMCON also hosted a booth at the Capitol on the 22nd. Consortium partners in attendance included The Water Institute of the Gulf, Louisiana Sea Grant, and Southern University-Baton Rouge. On the first two days of the event nearly 1400 people toured the vessels and interacted with the booths. Sunday's activities were shortened because of the threat of severe weather and uncertain river conditions, yet another 100 people toured the R/V *Pelican* that morning before it was moved to an alternative location for the Legislative Day events.
- **2018 Open House Plans:** Plans for the 2018 Open House (April 22, 2018) started in September 2017. A committee representing all the departments has been formed. As in the past, the public will be invited to come to the Marine Center and tour the research areas and vessels, where there will be hands-on activities highlighting the science done by LUMCON faculty. The vessels will also be at dock and available for tours. A concert will be held at the end of the day from the back deck of the R/V *Pelican*.
- **Carnival and Festival Booths:** Education and Outreach had a regular attendance at several carnivals, festivals, and events in 2017 including: Ocean Commotion, Chauvin Heritage Festival, The Blessing of the Fleet, Rougarou Festival, and the Voice of the Wetlands.

Teacher Professional Development

LUMCON hosted two different teacher professional development workshops in the summer of 2017. Teacher training, while a very small part of the education programs at LUMCON, is vital. In past years, LUMCON teacher workshops have built a reputation for having the highest quality of teacher training about environmental science in the state. The workshops educate teachers not only about marine science topics, but about the scientific process as well. Teachers have come to rely on LUMCON to provide the most current, relevant, and evidence-based content and activities. Another result of the workshops is increased awareness of the educational opportunities available to students. Many of the students that attend camps and summer courses were introduced to LUMCON through a teacher that participated in a LUMCON workshop.

- **From H-2-O:** is a BTNEP-funded workshop that trains teachers to implement and use the LUMCON Bayou Side Classroom program in their classrooms. This year LUMCON also partnered with the National Park Service to train 13 teachers in this workshop. From H-2-O training has impacted over 800 students this year alone.

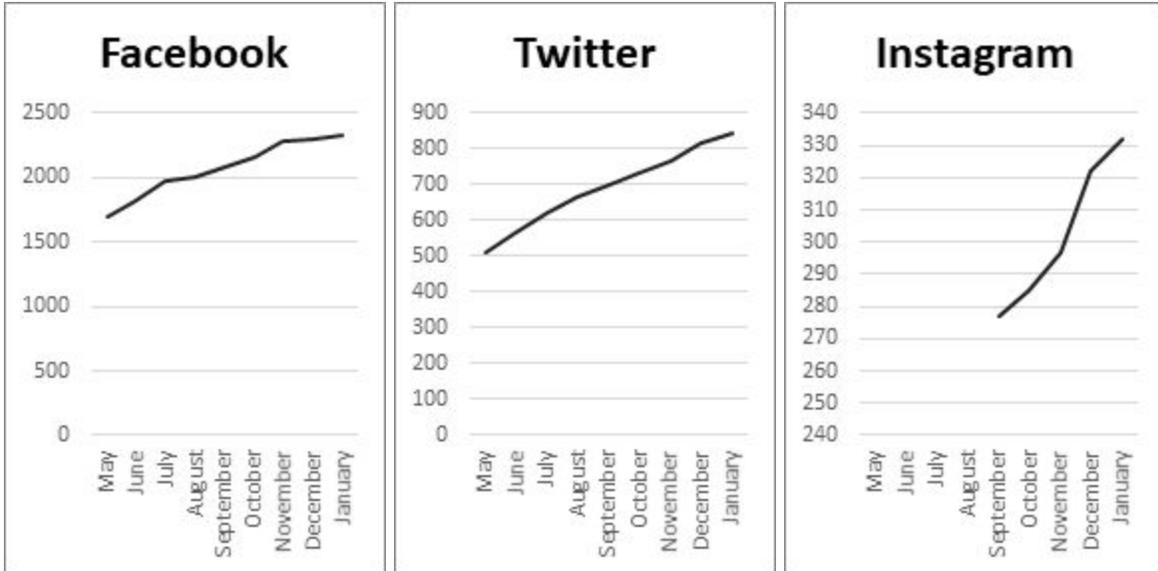


- **Ship Time and Shoreline:** This CWC-funded workshop taught 10 teachers from Louisiana and New York about research methods employed by scientists on the Gulf Coast. The student impact number is estimate at just over 600 for 2017.
- In February, Murt Conover traveled to Baton Rouge for the **Louisiana Environmental Education Symposium**. During the symposium, Murt trained 32 teachers how to make, edit, and use videos as a teaching tool in their classrooms.

Social Media

With the ability and in-house social media knowledge and talent, LUMCON is positioned to become a sustainable influencer in how science communicators use social media to translate science to diverse audiences. While use of social media by individuals, commercial franchises, and pop culture have moved forward and expanded in ways to engage people, scientific academia has not. Online science communication is still, for the most part, using platforms and content much the same way as they were a decade ago. The lack of ability to reach beyond boundaries of disciplines, science communication is lagging behind in its ability to reach audiences in the 21st century. LUMCON is striving to help develop more meaningful methods.

- **Growth:** From May 1 to December 22, we increased our social media followings substantially; by 37% on Facebook, 66% on Twitter, and 20% on Instagram (see graphs below). Using what academic research there is and following trends on other institutions feeds to determine what what works and doesn't work to engage different audiences. What is being seen is that the engagement on posts that highlight activities that are happening in real time do better than those that happen after an event has already taken place. Post that showcase field or lab activities do well, while posts that review of scientific papers are the least popular. A new method (for an institution) to gain a connection with LUMCON was the "live" broadcast of the Christmas Tree Showdown. Another example of a successful use of social media was the Readit Ask-Me-Anything done on the R/V Pelican during Dr. McClain's reach cruise. Both of these examples are good indicators that people seem to really like the real-time connection with researchers and marine center staff. While the engagements with each of the facebook live posts were about average (for LUMCON) the number of people reached was higher than all other posts. Future efforts to study the reach and engagement levels with the different audiences represented by each platform will be made in the next year.



- OCEANDOTCOMM:** OCEANDOTCOMM is a collaborative, storytelling, social media event hosted by the Louisiana Universities Marine Consortium (LUMCON). This multi-day, residential event is geared toward science communicators from any background that want to innovate new models in science communication. This is the biggest event for science communicators of its kind. Planning for the event started early in 2017 and continues as the March dates approach. Sponsorships and partnerships (Peer J, Sigma Xi) have already been found and more are actively being sought. The goals for the event are
 - to increase the visibility of LUMCON with professional science communicators that use social media;
 - to make LUMCON known to everyone the networks of the participants;
 - connect LUMCON to the local community;
 - to tell the story of the Louisiana coast with a positive spin to reflect all the successes in the face of environmental change.

Education and Outreach in 2018

- LUMCON has made great strides in increasing our reach and exposure over the last year but it still suffers from a visibility issue. More efforts need to be placed on informing students and faculty advisers about LUMCON opportunities. A greater effort is needed to visit campuses, on outreach to out-of-state schools, and encouraging faculty to help recruit. In addition, with credit courses for 2019 planned and set, earlier marketing can be conducted to inform students and Consortium members.
- Students often need to work in the summer to fund their education making it difficult for many of students to attend courses at LUMCON. With the new Development program, LUMCON hopes to alleviate the financial barrier for some of these students.
- Usage in terms of university field trips appears to be low in 2017. Reasons for lower numbers have been discussed earlier in this report. In 2018 while monitoring



mentioned effects, LUMCON will more proactively reach out to school to both increase numbers of field trips and increased participation by additional Consortium members.

- The distance to Cocodrie for many consortium members does impact the cost of bringing a large group of students and the amount of time that can be spent at the Marine Center. Instructors have often mentioned that the cost of travel is sometimes difficult to overcome. The creation of institutional support funds already in place at some Consortium members, e.g. ULL, may alleviate this financial issue.
- Teachers and schools have less money to devote to field trips. Some teachers have reported the LUMCON fees for field trips are reasonable, but the costs of the travel to the Marine Center can be prohibitive. With the establishment of our Development Program, in 2018 LUMCON will seek patrons to sponsor classroom to visit the Marine Center.
- Currently little is done to promote the field trip programs for K-12 groups. An active effort in 2018 to promote these opportunities may result in more field trips dates being scheduled.
- For LUMCON's social media program, more strides toward innovation are needed. Experimentation means taking risks. However, establishing experimental procedures to minimize the negative impacts of trying new things will be key to maintaining LUMCON's reputation as a rigorous scientific institution while building its digital impact. This experimentation will also allow LUMCON to be seen as innovator in science communication. LUMCON's social media presence has a wider audience and has established a regular following. In the next year, the goal will be to move beyond account "maintenance" (putting out traditional and expected types of content) to more deliberate experimentation in how social media can be used to communicate science in new and profound ways. Experimenting will help identify how scientific institutions use social media and how we might change those norms to better achieve our goals. By the end of 2018, we plan to have earned a reputation as forward-thinking in how we use digital assets to meet our institutional goals.

TRANSFORM

Contribute to science and conservation in meaningful and profound ways

LUMCON supports an active and productive resident research faculty at the DeFelice Marine Center in Cocodrie. These faculty work to support LUMCON's scientific mission to promote, facilitate, and conduct research in marine and coastal sciences relevant to the sustainability of coastal and marine environments in the Gulf of Mexico.

The DeFelice Marine Center's location on the upper end of Terrebonne Bay and its proximity to the Mississippi River and Atchafalaya River deltas, extensive estuaries and coastal wetlands, and coastal waters to the deep-water Gulf makes it an ideal venue for field- and experimental-based marine science. An emerging delta (Atchafalaya) and a degrading delta (Mississippi) combined with complex coastal processes (coastal erosion and wetland degradation, and continued nutrient inputs into the coastal zone provide diverse opportunities and challenges for both pure and applied research that have implications for coastal restoration,

flood control, and the vast living resources (oysters, shrimp, crabs, and fin fisheries) in the area. The Marine Center resident faculty and associated research staff comprise a group of established and talented scientists focused on basic research with broad societal applications. Focal areas of research currently include:

- river/ocean interactions
- delta formation and degradation
- coastal loss and restoration
- Biodiversity
- physiological, behavioral and general ecology
- biogeochemistry and microbial ecology
- acute and chronic anthropogenic and environmental impacts including climate change, eutrophication/hypoxia, ocean acidification, and oil spills on coastal and marine systems

LUMCON Marine Center Senior Faculty

	<p>Dr. Craig McClain Executive Director, Associate Professor Deep Sea Biology <u>Research Interests:</u> Deep-sea biodiversity and ecology, Energetics and metabolism, Body size evolution and ecology, Invertebrate zoology, Climate change impacts on marine invertebrate communities</p>
	<p>Dr. Brian Roberts Associate Director of Science, Associate Professor Ecosystem Ecology and Biogeochemistry <u>Research Interests:</u> Broad focus on how human activities influence the ability of ecosystems to retain and transform carbon, nutrients, and energy and how restoration activities may help ameliorate some of these impacts.</p>

	<p>Dr. Nancy Rabalais Distinguished Research Professor Biological Oceanography <u>Research Interests:</u> continental shelf ecosystems influenced by rivers; benthic ecology; distribution and dynamics of hypoxia; eutrophication, environmental effects of habitat alterations; integration of science & policy</p>
	<p>Dr. Ed Chesney Associate Professor Fisheries Ecology <u>Research Interests:</u> fisheries and fish ecology, especially as they relate to the early life history or larval stages of fish.</p>
	<p>Dr. Alex Kolker Associate Professor Coastal Geology <u>Research Interests:</u> geological oceanography, impacts of climate change, sediment dynamics in the coastal zone, groundwater flow in river deltas, coastal restoration</p>

LUMCON Marine Center Junior Faculty

	<p>Dr. Abigail Bockus Assistant Professor Physiological Ecology Research Interests: fish physiology, marine finfish aquaculture, digestion and feed enhancement, physiological ecology of invertebrates and fishes, and environmental adaptations</p>
	<p>Dr. Marshall Bowles Assistant Professor Geomicrobiology Research Interests: geomicrobiology and microbial ecology, especially understanding how microbial communities function and influence geochemical cycles in the coastal and open ocean.</p>
	<p>Dr. Guillaume Rieucan Assistant Professor Behavioral Ecology Research Interests: fish ecology and behavior, especially understanding how predation, environmental conditions, anthropogenic disturbances, and fisheries affect the behavior of fish in marine and estuarine ecosystems</p>

LUMCON Faculty Expansion:

LUMCON hired three new assistant professors that began during the summer of 2017. The Marine Center is currently engaged in a recruiting effort to also hire a chemical oceanographer and/or a physical oceanographer during 2018 in the second phase of a multi-year cluster hire to



expand the research faculty in residence at the Marine Center. The three new assistant professors include Dr. Abigail Bockus, Dr. Marshall Bowles, and Dr. Guillaume Rieucou.

Dr. Abigail Bockus earned a BS in Biology from the University Kansas and a PhD in Biological and Environmental Sciences (specialization in Integrative and Evolutionary Biology) from the University of Rhode Island. Her dissertation was entitled “Eco-physiological adaptations to salinity, temperature, hypoxia, acidification and hydrostatic pressure in marine organisms” and completed under the supervision of Dr. Brad Seibel. Dr. Bockus was a postdoctoral fellow at the US Fish and Wildlife Service Bozeman Fish Technology Center under the mentorship of Dr. Gibson Gaylord prior to joining the LUMCON faculty. The Bockus laboratory uses comparative physiology to address questions in two key areas: aquaculture production and biological oceanography. She is currently developing aquafeeds, feeding protocol, and environmental conditions for enhanced production of marine finfish. She is especially interested in advancement of commercial target species for offshore production in the Gulf of Mexico. Research in her laboratory is also focused on the physiological mechanisms driving species success and distribution. A variety of coastal and pelagic invertebrates, fishes, and sharks are used to examine adaptations to environmental parameters (such as temperature, salinity, acidification and hypoxia) and how these interactions affect metabolic performance and ecosystem stability. They use analyses from the biochemical to the whole-organism level to determine the regulatory, environmental, and evolutionary factors affecting physiological plasticity. This work also allows her to identify specialized adaptations for life in extreme environments.

Dr. Marshall Bowles earned a BS in Integrated Science and Technology: Environment and Engineering & Manufacturing from James Madison University. He then earned a Master of Environmental Management in Water & Air Resources from Duke University. His thesis was entitled “Fault-related hydrothermal breccias at 22°40’ N on the Mid-Atlantic Ridge”. Dr. Bowles received a PhD in Marine Biogeochemistry from the University of Georgia under the supervision of Dr. Samantha (Mandy) Joye. His dissertation was entitled “Carbon, nitrogen, and sulfur cycling interaction in organic carbon rich extreme environments”. Dr. Bowles was a postdoctoral fellow at Universität Bremen and an adjunct faculty member at Allied American University prior to joining the LUMCON faculty. Dr. Bowles’s research focuses on microorganisms living in coastal and marine environments. He is interested how microbial processes change in response to environmental influences. This includes not only how their collective activities change, but which microorganisms perform processes, how active they actually are, and finally how many of them are performing a process. These data can tell us a great deal about the ecological physiology of microbes and help us predict how they will change with, and also change the geochemical landscape of our planet. To do this work Dr. Bowles often employs diverse analytical techniques borrowed from the fields of inorganic and organic chemistry, and molecular microbiology.

Dr. Guillaume Rieucou earned a BA in Organisms and Populations Biology and MS in Populations and Ecosystems Biology from Paul Sabatier University in France. He then earned a MS and PhD in Biology from Université du Québec à Montréal. His dissertation was completed under the supervision of Dr. Luc-Alain Giraldeau and entitled “Social foraging in Nutmeg Mannikins (*Lonchura punctulata*): group size effect and social information use”. Dr.



Rieucou completed postdoctoral and/or visiting scientist appointments at the Fyssen Foundation at Paul Sabatier University (France), Purdue University, Princeton University, Florida International University, and Institute of Marine Research (Bergen, Norway). He served as an assistant scholar at Florida International University prior to joining LUMCON's faculty this summer. Dr. Rieucou's research examines the functions and mechanisms of collective behaviors in animals with a particular focus on marine and estuarine fishes. He explores how fish schools form, maintain and collectively react to external factors such as predators, environmental factors, human disturbances and habitat structure. Dr. Rieucou's main research goal is to gain deeper understanding of how group-living animals collectively respond to a fluctuating environment over ecological and evolutionary timescales to address ecological and conservation issues.

LUMCON Marine Center Faculty Grantsmanship in 2017

Grants Continued into 2017:

- Chesney EJ; "Evaluating the Importance of Shallow Water "Rigs" as Habitat for Newly Recruited Reef Associated Fishes in the OCS off Louisiana"; BOEM; \$352,904
- Kolker AS; "Analysis of sediment cores from the Barataria Basin"; US Geological Survey; \$17,875
- Kolker AS; "Penchant Basin Discharge Study"; Louisiana Coastal Protection and Recovery Authority; \$143,744
- Kolker AS, Roberts BJ +4 other co-PIs; "Restore Science: The Central Role of the Mississippi River and its Delta in the Oceanography, Ecology, and Economy of the Gulf of Mexico Large Marine Ecosystem"; NOAA RESTORE ACT SCIENCE PROGRAM; \$268,756
- McClain CR; "The energetic assembly of invertebrate communities: A test with experimental wood fall systems"; NSF OCE 1634586; \$833,270 (LUMCON portion)
- Rabalais NN; "Collaborative Research: pH Dynamics and Interactive Effects of Multiple Processes in a River-Dominated Eutrophic Coastal Ocean"; NSF Chemical Oceanography; \$177,413 (LUMCON portion)
- Rabalais NN; "2017 and 2018 Shelfwide Hypoxia Cruise Support"; NOAA, Gulf of Mexico Research Initiative, Mississippi State University; \$255,000
- Rabalais NN, Roberts BJ + 24 co-PIs including 5 from LSU DOCS, 2 from LSU Environmental Sciences, and 2 from LSU School of Renewable Natural Resources; "Coastal Waters Consortium-II: Effects of the Macondo Oil Spill on Coastal Ecosystems"; Gulf of Mexico Research Initiative; \$16,100,000
- Roberts BJ "Influence of river diversions on carbon and nitrogen cycling in Louisiana freshwater, brackish and salt marshes"; Coastal Protection and Restoration Authority (CPRA) Coastal Science Assistantship Program (CSAP); \$75,000
- Roberts BJ, Chesney EJ, Rabalais NN, Kolker AS, Sammarco PW; "Enhancement of capabilities to analyze environmental changes in Louisiana's coastal ecosystems"; LA Board of Regents Support Fund Traditional Enhancement Program; \$44,350 (equipment only)



Grants Awarded in 2017:

- Bockus AB, “Exploring the use of trimethylamine oxide as a feed additive to combat soy-induced enteritis in farmed rainbow trout”; Soy Aquaculture Alliance, \$75,000
- Bowles MW and co-PIs; “The Deep Carbon Cycle (DCC) through geological time: an interdisciplinary synthesis of the carbon cycle in the Earth’s lithosphere-biosphere system”; Alexander P. Sloan Foundation via the Deep Carbon Observatory; \$100,000 to support workshops plus technician and computer time at the University of Sydney
- Bowles MW and co-PIs from ETH-Zurich and the University of Arizona; “Deep Life Modeling and Visualization” module to the Deep Life component of the Deep Carbon Observatory; Alfred P. Sloan Foundation; funding to support two postdoctoral fellows and synthesis meetings
- Kolker AS, “Analysis of sediment cores from Breton Sound”; Lake Pontchartrain Basin Foundation, \$15,000
- Polito MJ (LSU) (PI/PD), Roberts BJ (LUMCON lead), Rabalais NN, 2 LSU co-PIs, and 5 other co-PIs; “RESTORE: Linking Community and Food-Web Approaches to Restoration: An Ecological Assessment of Created and Natural Marshes Influenced by River Diversions”; NOAA RESTORE Act Science Program; \$2,040,845
- Rabalais NN (PI/PD), Roberts BJ, 6 LSU co-PIs, 2 LSU Ag Center co-PIs, plus 13 other co-PIs; “Coastal Waters Consortium-III: Oil spills as stressors in coastal marshes: the legacy and the future”; Gulf of Mexico Research Initiative; \$4,800,000
- Rieucou, G; “SWARM: From swarming behaviour to trophic interactions: Forecasting krill dynamics in ecosystem hotspots using behaviour-based models”; Norwegian Research Council--Norwegian Antarctic Research; \$950,000
- Roberts BJ, Chelsky A, Rietl A; “Core Research Project- Incorporating life into Living Shorelines: Can Gulf Ribbed Mussels reduce shoreline erosion and enhance restoration practices?”; Louisiana Sea Grant; \$144,000
- Roberts BJ; “Collaborative Research: A RAPID response to Hurricane Harvey’s impacts on coastal carbon cycle, metabolic balance and ocean acidification”; NSF Chemical Oceanography Award 1760687; \$40,933 (collaboration with Wei-Jun Cai (University of Delaware), John Lehrter (Dauphin Island Sea Laboratory), Kanchan Maiti (LSU), and Steven Lohrenz (University of Massachusetts-Dartmouth))

See Appendix 2 for 2016-2017 scientific publications by LUMCON Marine Center Faculty

LUMCON Marine Center Faculty Mentorship of Graduate Students and Postdocs

Graduate students advised by LUMCON faculty at consortium institutions in 2017:

- Completed degree in 2017
 - Alex Ameen, Tulane University, Ecology and Evolutionary Biology, PhD, received August 2017, advisor: Dr. Alex Kolker
 - Natalie Ceresnak, Louisiana State University-Baton Rouge, Oceanography and Coastal Sciences, MS, received August 2017, advisor: Dr. Brian Roberts
- Continuing student through 2017



- Daniel Alt, Louisiana State University-Baton Rouge, Civil and Environmental Engineering, PhD, co-advisor: Dr. Brian Roberts
- Catherine Fitzpatrick, Tulane University, Earth and Environmental Science, MS, advisor: Dr. Alex Kolker
- Molley Koegh, Tulane University, Earth and Environmental Science, PhD, advisor: Dr. Alex Kolker
- David Reeves, Louisiana State University-Baton Rouge, Oceanography and Coastal Sciences, PhD, advisor: Dr. Ed Chesney
- Elizabeth Robinson, Louisiana State University-Baton Rouge, Oceanography and Coastal Sciences, PhD, advisor: Dr. Nancy Rabalais
- Ronald Scheuermann, Louisiana State University-Baton Rouge, Oceanography and Coastal Sciences, MS, advisor: Dr. Brian Roberts
-

Postdoctoral Research Associates mentored by LUMCON Marine Center faculty in 2017:

- Ariella Chelsy, mentor: Dr. Brian Roberts
- Anthony Rietl, mentor: Dr. Brian Roberts
- Shivakumar Shivarudrappa, mentor: Dr. Nancy Rabalais

Scientific Facilities Infrastructure Upgrades:

2017 marked the initiation of several efforts to expand and upgrade the experimental and scientific facilities infrastructure available at the Marine Center. This effort has initially consisted of three complementary efforts focused on developing a shared equipment room, a reorganization of aquaria and aquaculture facilities, and the construction of a large marsh mesocosm facility. LUMCON is dedicated to using these and all of our research facilities for novel applications and expanding our experimental capacity over time. Researchers interested in using and/or learning more about the DeFelice Marine Center experimental facilities should contact our Associate Director of Science, Dr. Brian Roberts.

- **Shared equipment room:** Thanks to the efforts of LUMCON's facilities staff, we were able to convert the former graphics and dark rooms that have had limited use in recent years into a larger combined room that has been converted into a shared equipment room. This room now contains a series of illuminated, temperature-controlled incubators; multiple low-temperature BOD incubators; and a temperature-controlled shaker table incubator available for culturing and experimental applications. Additionally, the room houses a new -80° freezer, a new autoclave as well as several freezers, refrigerator, ovens, muffle furnaces, as well as other shared equipment.



- Aquaculture and aquaria experimental facilities:** LUMCON's DeFelice Marine Center has nearly 50 tanks, aquaria, and mesocosms with running seawater and filtration. These assets include an assortment of tank sizes and designs housed in a variety of locations that allow for customized environmental control during experimental research. LUMCON's systems are able to provide both high- and low-salinity as well as filtered and unfiltered seawater to any tank, aquarium, or mesocosm on campus. In fall 2017, we began a multi-phase reorganization and upgrade of these facilities to better optimize their utility to resident and consortium faculty needs. The first phase of this renovation and modernization effort has begun with the lab at the end of the wet wing of the Marine Center. This effort is being led by Dr. Abigail Bockus and Dr. Guillaume Rieucan with input from Dr. Brian Roberts, Dr. Ed Chesney, and Dr. Craig McClain. This phase is scheduled for completion in spring 2018.



- Marsh mesocosm facility:** One of the highlights of LUMCON's experimental infrastructure is a marsh mesocosm facility that has been under construction throughout 2017 on the Marine Center grounds with funding to the Coastal Waters Consortium research team from the Gulf of Mexico Research Initiative. The facility consists of 12 experimental tanks (10' diameter, 5' tall) and paired tidal surge tanks (6' diameter, 5' tall) enclosed in aviary-proof netting. Briefly, water is pumped from the bayou adjacent to the Marine Center through two settling tanks, then to the tidal surge tanks. Water is moved between each tidal surge tank and its paired mesocosm via air blowers on each tidal cycle. The computer-controlled flushing rate is currently designed to be 10% per day (water residence time of Terrebonne Bay). The facility is initially being designed to conduct a long term study of impacts of oil exposure on *Spartina alterniflora* (smooth cordgrass) salt marsh ecosystems. Oiled water will be treated with a combination of biofilters, carbon filters, and UV lights to degrade any oil-related products in the outflow water before release. Three replicate mesocosms are set up for each of four treatments (control plus light, moderate, and heavy oiling). This study will include measurements of oil degradation pathways, water and soil quality, *Spartina alterniflora*, microphytobenthos, meio- and macrofauna, microbial communities, biogeochemical processes, and predator-prey interactions over multiple years after oiling.



Science and Research in 2018

- LUMCON will continue to grow its faculty ranks in the next few years. A search is currently underway for a field chemical or physical oceanographer with a start in the summer of 2018. A new faculty search will begin in the summer of 2018 for additional faculty member. An assessment of the weaknesses in the state's and Consortium's marine and coastal expertise is currently underway to identify what disciplines LUMCON should search for.
- Upgrades to the aquaculture and experimental facilities are underway. LUMCON will continue to move forward with the updates and renovations seeking to provide the infrastructure that both Consortium and Marine Center faculty need.
- LUMCON seeks to also build stronger collaborative science, and identify funding for this ventures, between Consortium and Marine Center faculty.

INFRASTRUCTURE

Providing the tools and the place for science and education

In 2017, both numerous upgrades and new assets were made to the infrastructure and programs needed for research and education by Consortium members. These are expansive and it would be difficult to find an area not untouched by LUMCON's growth in this year.

Facilities

Facilities and the Maintenance Department were extremely productive during 2017. Along with normal operational inspections and preventative maintenance of the DeFelice Marine Center and the Fourchon Lab, landscaping and gravel driveways were maintained, vehicles maintained and commercial receiving were performed by the maintenance department. All dorms and apartments were kept in serviceable condition with very minimal down times for repairs. A total of 382 work order ticket requested items were completed during 2017. The work orders varied from maintenance repairs, special projects, storm preparations, contractor projects and any employee requests. This occurred all on a backdrop of three tropical storms and six high water events. Preparations for these events take considerable time including closing of shutters, securing of all floatable objects, and equipment/vehicle transportation to safer areas. Along with these preparations, post-cleaning procedures most also occur including pressure washing underbuilding areas, stairwells, and storage facilities. LUMCON's safety and facilities teams impressively managed an OMR Safety Audit score of 99.1% and earned an Annual State Fire Marshal inspection with no "No Deficient/Cautious Codes cited".

Major Completed Projects for 2017 include:

- The water side of the Marine Center received caulking and waterproofing.
- A LUMCON power outage due to a short in the underground main power lines was repaired with a temporary fix. Electrical lines between the main building and the maintenance building



were also tested for additional brakes and shortages. A replacement project will be conducted in 2018.

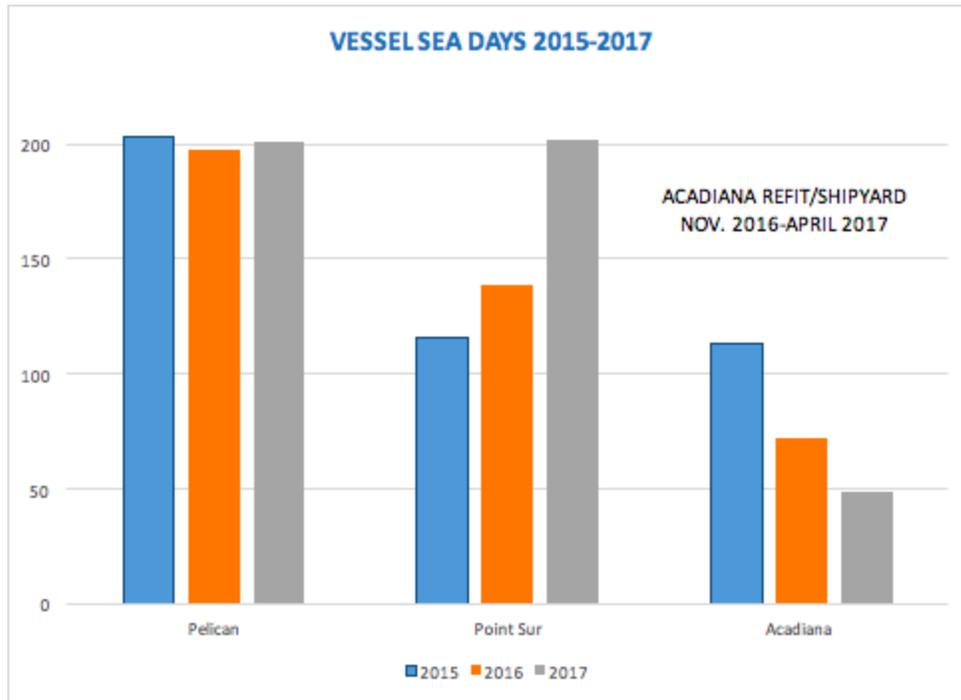
- Emergency repairs were made to the cooling tower fan gear drive and motor shaft couplings.
- New drinking water fountains and plumbed coffee maker were added.
- Hallway, doors, and ceiling renovations were completed in the immediate area of the environmental chambers.
- A complete boiler replacement and main air compressor replacement in the maintenance building.
- The dark room was converted to a shared use equipment lab with two wall removals, floor repairs, new ceiling grid with tiles, and installation of new lights and electrical outlets, two floor drains, a sink, and chemical-resistant flooring.
- Remodeling of the library was completed with new carpet, electrical outlets, and an additional study area with a view fabricated and constructed using recycled materials.
- Three 6'X10' scientific storage cages were built in the downstairs pump room for new faculty.
- A stairwell remodel began with removal of the old flooring and rebuilding with new steel, concrete steps and rubber flooring.
- The completed construction of a 210 foot-length, 8 foot-high sewage treatment plant fencing with three gates.
- At the Fourchon Laboratory, the construction of a washer/dryer room and additional restroom was completed.
- Six fume supply and exhaust fans were installed as well as additional HVAC system needs.
- The LUMCON water and weather-proofing project of the DeFelice Marine Center with FP&C was designed, submitted, and a project manual completed with specifications. The project went out for bid and a vendor was awarded the project.
- LUMCON's maintenance crews worked with vendors for a rebuild of the 500 foot nature boardwalk around the LUMCON front pond and a repair of the sand volleyball court.
- The LUMCON tower roof replacement was successfully awarded with construction beginning in February 2018.
- The storm shutters were repaired and their conditions are being evaluated for replacement.

Vessels

2017 proved to be a very dynamic year for the Gulf of Mexico, and in consequence an excellent one for LUMCON's fleet.

- **R/V Pelican:** LUMCON's flagship UNOLS vessel spent 201 days offshore in support of marine science. Her season ran the gamut in support of various data collection cruises of both the physical and chemical environments in the Gulf. In addition, the R/V *Pelican* had two major inspections: her bi-annual NSF inspection and an OVID (Offshore Vessel Inspection Database). NSF Inspectors noted how well the vessel had been maintained since her last inspection. The R/V *Pelican* ended the two day inspection with a green light for a minimum of two years of unlimited service to support federally funded ocean going research. Additionally, the R/V *Pelican's* crew were awarded with the fastest Man Overboard Recovery in the UNOLS fleet. This is great accomplishment when evaluating the competition. As the R/V *Pelican* concentrated her efforts on scientific missions, she was only able to conduct 6

days of educational support. This was due in part to the unprecedented amount of funding released by NSF in support of Rapid Response cruises involving Hurricane Harvey impact research. The R/V *Pelican* was fully subscribed with research work in response to oceanographers eager to discover and document an array of factors brought on by one the busiest hurricane seasons in recent years.



- **R/V Acadiana:** The R/V *Acadiana's* mid-life retrofit was completed in time to support a busy educational season. She conducted 32 days total of education cruises. The R/V *Acadiana* had her interior completely re-outfitted, including the wheelhouse, galley, state rooms, seating area, and science lab. Additionally, all of her electronic systems were upgraded with state of the art Simrad systems. All electronics on the R/V *Acadiana* are now fully integrated. This retrofit will allow many more years of service. The total cost for all her upgrades were just slightly under \$100,000. The funds came from a legal settlement with Taylor Energy. In addition, the R/V *Acadiana* recorded 15 days in research cruises which included a RAPID NSF-funded 5 day cruise for Dr. Wei-Jun Cai of the University of Delaware investigating ocean acidification impacts from Hurricane Harvey.
- **Small Boat Fleet:** In 2017 LUMCON's small boat fleet aided researchers at an astounding total of 254.5 days. Vessel Operations and LUMCON have been diligent in their efforts to accommodate boating needs of scientists. Drawing from years of scientific boating experience our fleet of small vessels have been thoughtfully combined. This year, we added the R/V *Camillia*, a 22' Hanko. She has an aluminum hull and can safely and comfortably carry six scientists. Her shallow draft, coupled with her jack plate, allows this small boat to access very shallow water while protecting the propeller. The funds to pay for the R/V *Camillia* came from the Taylor Energy legal settlement.
- **R/V Point Sur:** The R/V *Point Sur* provided tremendous support this year, logging 202 days at sea. The R/V *Point Sur's* presence in the Gulf was critical in aiding the scientific community needs. NSF released an unprecedented amount of funds in support of research



concerning hurricane effects. During the year R/V *Point Sur* also supported three NSF cruises, as the R/V *Pelican* was fully committed. As with the R/V *Pelican*, the crew of the R/V *Point Sur* provided excellent service. A client wrote: “Other vessels and other crews will do their jobs, but only the best of them make the current clients project their own...I consider this cruise to be among the best of my (35+yrs.) at-sea experiences” --Carl Stevens, Einhorn Engineering.

Vessel Name	Total Charters	Total Invoiced Dollars	Total Days	Education Days	Research Days
<i>Pelican</i>	33		207	-	-
<i>Point Sur</i>	40		210	-	-
<i>Acadiana</i>	40	\$97,538.20	47	32	15
<i>Caillou Boca</i>	25	\$39,940.31	44	10	34
<i>Whiskey Pass</i>	9	\$5,615.97	20	8	12
<i>Blue Runner</i>	44	\$18,564.03	72	9	63
<i>Camellia</i>	24	\$8,740.37	39	5	34
<i>Gator Tail</i>	25	\$8,213.20	37	3	34
<i>Safe Boat</i>	12	\$4,298.11	20	5	15
<i>Dos-Gris</i>	6	\$3,897.64	12.5	2.5	10
<i>Silver Bullet</i>	1	\$224.16	1	0	1
<i>Air Boat</i>	0	\$0.00	0	0	0
<i>Gray Goose</i>	2	\$4,382.06	13	0	13
<i>Barracuda</i>	15	\$18,013.12	18	0	18
Kayaks	19	\$1,312.00	22	10	12
Grand Totals (not including <i>Pelican</i> or <i>Point Sur</i>)	263	\$2,292,752.71	553.5	52.5	246
Small Boat totals	182	\$113,200.97	298.5	52.5	246

Environmental Monitoring

Under the banner of new mission statement, LUMCON’s Environmental Monitoring Program was solidified as program to better able identify the changes that are occurring along Louisiana’s coast. LUMCON can serve as a leader in how society deals with some of the world’s most pressing environmental issues by providing data that quantifies that change. The Environmental Monitoring program is centered on monitoring stations that are equipped with meteorological and hydrographical instrumentation. The stations collect and archive real-time data to provide a broad community of scientists, educators, students, and the public. Overseeing the operations of the program is a restructured and dedicated staff that has made it their mission to employ the latest technologies, data collection methods, and a boots-on-the-ground approach to collect a multitude of datasets to document change.

LUMCON’s goal is to document and quantify the changing landscape by leveraging high-resolution monitoring in the coastal southeastern Louisiana region. This will include the



design and implementation of scientific surveys, monitoring programs, and investigations of the chemical, geological, atmospheric, and biological environments.

- **Program Modification:** 2017 was a year of growth for our monitoring program, and with that growth came the need for more support. Environmental Monitoring Technician Amanda Fontenot moved into a full time position to allow more time to be devoted to growing, expanding, and improving our current program. Amanda works collaboratively with the vessels program, under the supervision of Alex Ren, to utilize experience and skills employed during use of oceanographic instruments aboard LUMCON research vessels.
- **Program Achievements:** Environmental monitoring has updated their quality control protocol per current industry standards. This plan includes a more frequent rotation of hydrographical instruments to avoid excessive fouling. Monitoring has also begun taking water samples at the beginning of each instrument rotation. These samples are analyzed for dissolved oxygen, chlorophyll, and salinity in the laboratory to corroborate the data that is recorded on our instruments. The monitoring staff will be undergoing training to improve quality assurance and quality control (QA/QC) procedures in the department and to develop the necessary skills to proof large, historic datasets. This will help to ensure that quality data is delivered to the public and researchers.
- **Funding:** Environmental Monitoring was awarded \$35,000 from the Wisner Foundation to construct a monitoring station in Port Fourchon. The station is anticipated to be completed in early 2018. There will be a dedication ceremony held at LUMCON's Port Fourchon lab in March 2018 for the generous Wisner Foundation donation for this monitoring station. This will be the first step in expanding the program to monitor a broader area of the Louisiana coast. A pre-application for a \$480,000 NOAA grant was submitted by staffs of Environmental Monitoring and Education. With this grant, Monitoring and Education will be collaborating with local Native American tribes for the construction and maintenance of two new monitoring stations. One station would be near the Isle de Jean Charles community and the other near the Pointe-au-Chien Tribe. Environmental Monitoring has submitted a \$10,000 proposal to the Waitt Foundation, to assist in the development of additional stations.
- **Diversifying Data Types:** The Environmental Monitoring page of LUMCON's website features four new cameras that give viewers the ability to see conditions at the facility in real-time. These cameras broadcast views from the DeFelice Marine Center tower in all directions. These cameras give our monitoring staff the ability to keep records of images during flooding events on LUMCON property. Environmental Monitoring has also begun to document and record notable environmental events on and around the property. These notable events include increased flooding of LUMCON property, hypoxia in upper estuaries, and the presence of fish species not normally observed in salt marshes, such as Bluegills. Monitoring is also beginning a long-term project to document erosion rates along the marsh edge around LUMCON. Environmental Monitoring will also begin to utilize data collected in the Education Department to provide supplementary information to the program.

Dive Operations

A newly revamped Dive Program offers increased training and research capacity for the Consortium.



- **A New Dive Safety Officer (DSO)**, Ben Acker from vessel operations, was appointed in January. Ben attended the American Academy Underwater Sciences (AAUS) New DSO training workshop in Durham, NC, which is one of the required events to be attended in order to instruct scientific diving.
- **New Manual and Courses:** Work immediately began updating LUMCON's current dive manual and developing a basic level scuba and scientific diving course which will be offered online through a learning management system with field work at the LUMCON campus. Class offerings for First Aid, CPR and Emergency Oxygen training and AAUS Scientific Diving are currently being advertised. The DSO has been completing updates to the dive safety manual which will be reviewed by the LUMCON Dive Committee for implementation.
- **New Partnerships:** The dive program gained partnerships with four different dive product manufacturers allowing the program to help cut the costs of program development. The dive program gained divers from LSU and Texas A&M Galveston who will utilize LUMCON's diving program for data collection. Additional partnerships are being explored with other state and federal agencies including Louisiana Sea Grant, NOAA and LDWF.
- **Dive Operations:** LUMCON's Dive Program completed a total of 14 separate dive operations. Dive operations supported the recovery of a benthic lander for Dr. Vernon Asper and divers to support of rotation and maintenance of sensors on a weather buoy for Kevin Martin associated with ECOGIG at the University of Southern Mississippi. The Dive Program supported Dr. Cai, from the University of Delaware, scientific dive operations deployment of sensors and equipment to the submerged leg of an oil platform as well as a search for equipment that had been compromised by a shrimp boat's trawl net. LUMCON dive operations in conjunction with vessel operations conducted monthly dive operations assisting Dr. Nancy Rabalais with dive operations servicing submerged sensors in the Gulf of Mexico. LUMCON's Dive Program was on display during a CBS national news reporting as they covered Dr. Rabalais' research on hypoxia. One LUMCON diver, a student at LSU, conducted underwater research off a NOAA research vessel. The DSO was aboard the R/V *Point Sur* for a NSF RAPID Grant cruise for Jason Sylvan. Dive Operations were successfully conducted on the Flower Garden Banks National Marine Estuary to sample corals and sponges for metazoan biology, ecology, and microbiology. The DSO conducted dive operations aboard the R/V *Acadiana* located a scientific instrument for Doctoral Student Michael Scaboo (U. of Delaware). During the month of November, the LUMCON Dive Safety Officer approved a group of Phoenix International divers working with Coastal Studies Institute of LSU to complete operations off the R/V *Acadiana*. These divers were tasked with cleaning the marine growth off a portion of a platform leg to place collars and wire conduits to install sensors which will be used by scientists at LSU.
- **Equipment:** Among other aspects, there has been a focus on obtaining funding for equipment and overall program operation. 30 SCUBA tanks were purchased for the LUMCON Dive Program. The amount of cylinders was based on the anticipated class size and operational needs. A compressor stand was constructed to fit the compressor and placed in the pump room at the LUMCON facility. LUMCON's dive compressor was serviced in order to replace air filters, change the oil and test the air quality. The air test passed and the compressor is currently operational which significantly adds to the LUMCON Dive Program the ability to facilitate diving education and operations.



Information Technology

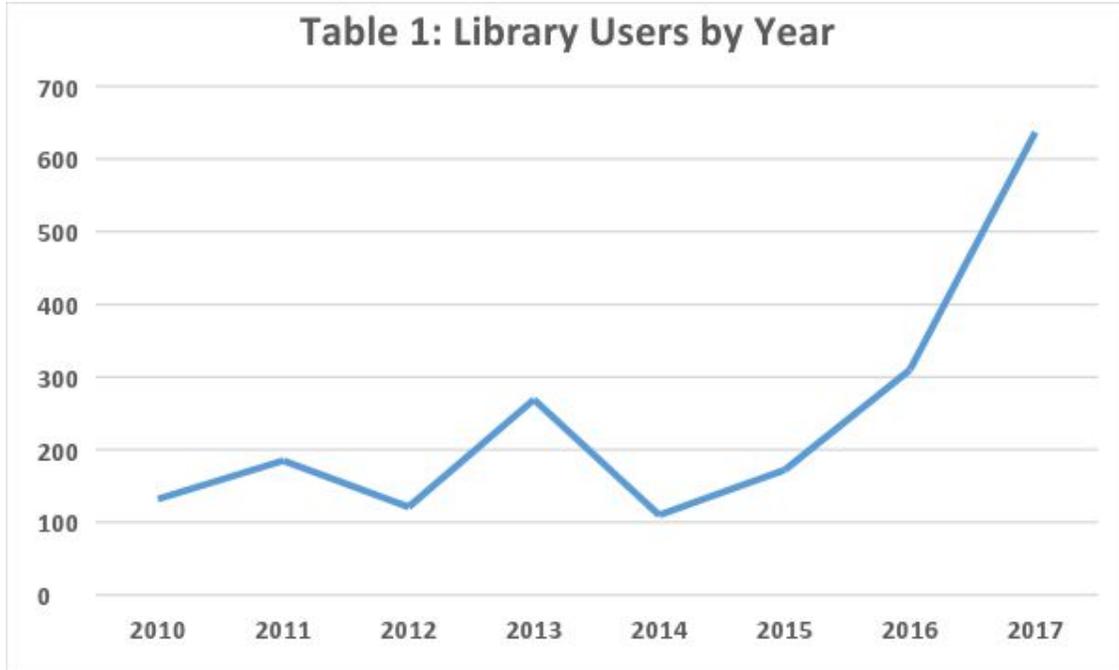
Essential to LUMCON's 2017 growth was increasing IT capacity for expanded operations, visitors, education, and research. This included:

- Installation and setup of Electronic Signage Displays in lobby
- Installation of new wireless access points throughout LUMCON for improved wireless internet coverage in the building and on the grounds
- Installation and configuration of several network switches throughout LUMCON for improved networking capabilities
- Remodeling of the server room for more efficient cooling and improved access to IT equipment
- Acquisition and usage of numerous new computers acquired through Board of Regents transfers
- Redesigning and launching the new LUMCON website on Wordpress
- Migration of the LUMCON Website to Google cloud servers for improved stability and uptime
- Pushing backups to Google Drive for offsite storage
- Setup and utilization of an Issue Tracking System for better management of day-to-day tasks and workflows
- Installation of new security cameras and a security network interface
- Installation and configuration of 4 new tower cameras

Library

LUMCON'S library continues to prove it worth as a valuable asset to on-site researchers as well as Consortium and Gulf wide scientists.

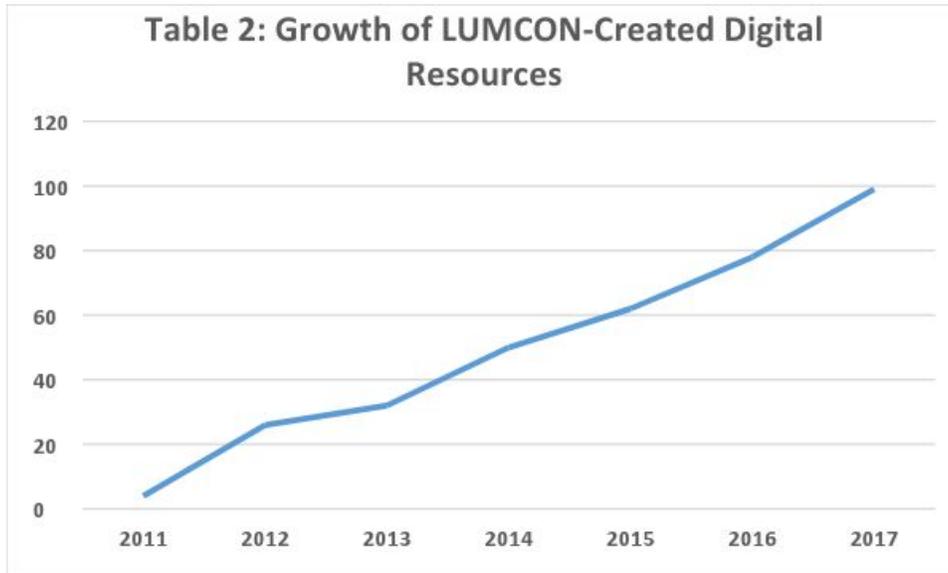
- **Remodel:** The remodel of the library, begun in August 2016, continued into 2017. In spring of 2017, new furniture was ordered, and a long table was constructed by LUMCON maintenance personnel so that visitors could study and be able to view the marsh from the row of windows along the back of the department. A computer lab was also moved to the library in early 2017 and set up with computers obtained from the Board of Regents. These three components of the remodel added 30% more seating to the library.
- **Visitors:** Use of the library, as seen in physical visits, doubled in 2017 compared with 2016 (see Table 1). 2017 saw the highest use of the library recorded at LUMCON since 2001 (surpassing 624 recorded visitors in 2005). It is believed that the remodeling of the library drove a significant portion of this increase, as there are now multiple spaces available for group study. Another factor increasing library visitation was the addition of the computer lab to the department.



- **Usage:** Overall Interlibrary Loan use (both borrowing and lending) decreased 6.8% from 2016, while a roughly 60% surge in requests by LUMCON staff for off-site material was noted in 2017. Interlibrary demand from LUMCON staff is expected to double (at a minimum) next year due to several factors. In 2017, the library was used by at least 119 patrons from the following Louisiana Universities and Colleges:
 - Louisiana State University
 - Louisiana State University at Alexandria
 - Louisiana Tech
 - Nicholls State University
 - Tulane
 - University of Louisiana at Lafayette
 - University of New Orleans
- **Collections Growth:** In early 2017, LUMCON Library got permission from LOUIS to access Affordable Learning LOUISiana funds. LUMCON spent approximately \$750 of an allotted \$1,000 for eTextbooks to support summer instruction. Courses that requested book purchases included Coastal Biogeochemistry and Wetland Vegetation. Discussions with faculty are underway regarding FY2018 money available for Affordable Learning LOUISiana-related purchases. The library also spent \$2,500 on the print collection to strengthen areas of focus of new faculty hires. This includes books on geomicrobiology, sediments, fish behavior, taxonomy and aquaculture. LUMCON’s Library has seen steady growth in locally-created digitized materials to build up its Institutional Repository (IR) and other digital archives of interest to researchers (see Table 2). The Library has expanded its digitization project to include classic research done on coastal Louisiana but not previously owned by LUMCON, as well as focusing on older research done in the immediate area which has not been readily available to potential users. A project has also been initiated to digitize print versions of LUMCON Annual reports from 1979 to 2000. A generous donation by retired LSU professor John Fleeger was incorporated into the collection. This



zooplankton-heavy collection of works greatly adds to the depth of the LUMCON holdings in biology and zoology.



- **Uniqueness:** Associate Librarian John Conover began an assessment of the monographs in the collection. Taking a 30-year window (1987-2016), a listing of all books published during this period was collated and then compared on a title-by-title basis against holdings at LSU. Results show that 55% of LUMCON's collection from this 30-year period are not housed at LSU, which demonstrates the strong and unique collection of resources that LUMCON has available to scientists in the state (and region). Further analysis is ongoing to determine the percentage of unique titles held at LUMCON when compared to all libraries in Louisiana (academic, public, agency, etc.).

Infrastructure in 2018

- **Facilities:** The main efforts of the facilities will focus on renovations of aquaculture and experimental systems areas, external facade, and creating new laboratory spaces. Upgrades of the roofs and storm shutters are needed before the 2018 hurricane season. A renovation plan will also be created for updating the dormitories and apartments.
- **Vessels:** The main areas of focus will be obtaining designs for a R/V *Pelican* replacement and building the Houma Marine Educational dock and port facilities.
- **Environmental Monitoring:** Monitoring will be completing the construction of the Wisner Station at Port Fourchon during early 2018. This is an exciting first step into expanding the coverage area of our weather stations. We will be constructing an additional two stations located near the Isle de Jean Charles community and near the Pointe-au-Chien Indian Tribe if we are awarded the NOAA grant. We are aiming to increase our data request by offering the public and researchers a broader area of monitored environmental conditions with the addition of new stations. Our Marine Center station structure will be upgraded to help our monitoring team change out instrumentation more efficiently. The monitoring team will be advancing their knowledge by attending Campbell Scientific CR1000/LoggerNet training,



data proofing training, and a GIS class. During 2018, monitoring will continue to bring our stations and practices up to industry standards by maintaining communications with various companies and research facilities to gain knowledge from new technology and experiences. Monitoring is committed to continually exploring new funding options to help expand our footprint of weather stations along the Louisiana's coast.

- **Dive Operations:** Efforts will focus on increased training and certification of Consortium researchers. Courses will be established that both provide scuba diving certification and research diving certification. A plan will be established to provide advanced coursework in navigation, research methods, and low visibility diving.
- **Library:** The library will continue to expand the print collection to reflect interests of new faculty hires and taxonomies of species found in coastal open waters of the Gulf of Mexico. Expansion of the electronic collection will continue for papers and reports, focusing on LUMCON faculty (IR), as well as classic and regional research done in past decades.

FINANCES AND DEVELOPMENT

Building a sustainable future for marine science and education

Development

LUMCON established an Office of Development in the fall 2017. The search for a Director was concluded in November, when Matt Isch, who had previously managed fundraising efforts at the Tulane University Health Sciences Center, the University of Cincinnati, and the University of Mississippi Medical Center, was named Director of Development. During his short time in the position, the Development Program has seen considerable growth.

- Building and expanding on the connections the Executive Director made, Isch and McClain have met with and begun to cultivate a number of LUMCON potential donors.
- A rudimentary database of 2100 addresses for LUMCON friends, former sponsors, and other potential donors has been established.
- Isch has met with LUMCON fundraising partners at BTEF and the Board of Regents to begin coordinating efforts.
- LUMCON's first-ever end-of-year solicitation to more than 400 potential donors was mailed.
- The entire Management Team has developed materials to be used in future fundraising efforts.
- The Executive Director has met with Congressional staff in Washington, D.C as well as Louisiana State Representatives and Senators for LUMCON's (and surrounding areas) districts.
- Isch submitted five grant solicitations of \$10,000+ to charitable foundations.
- A \$30,000 grant was received from the Wisner Foundation to install a new environmental monitoring station at LUMCON's Port Fourchon facility.
- The donation of *M/V Madam*, a 120 foot yacht and support vessel, is being finalized. The vessel will be auctioned off and funds applied to a replacement vessel for the *R/V Pelican*.
- Meetings with CPRA, Louisiana State Representatives and Senators, the Governor's Office, and various other partners, to begin raising funds for the *R/V Pelican* replacement.

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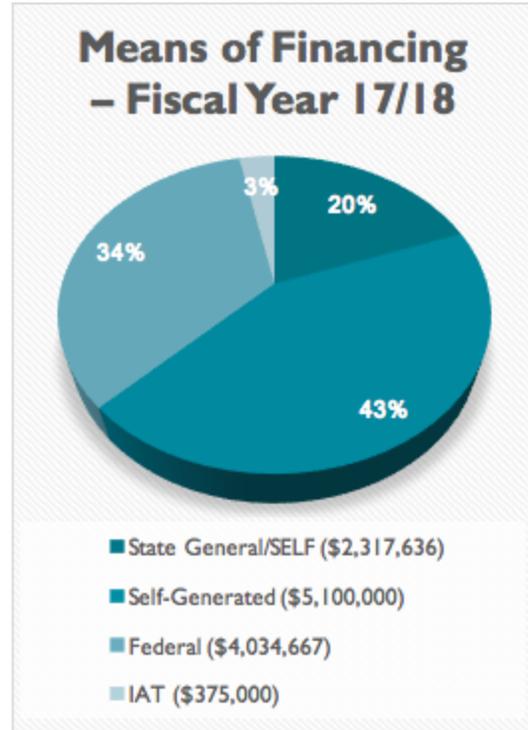
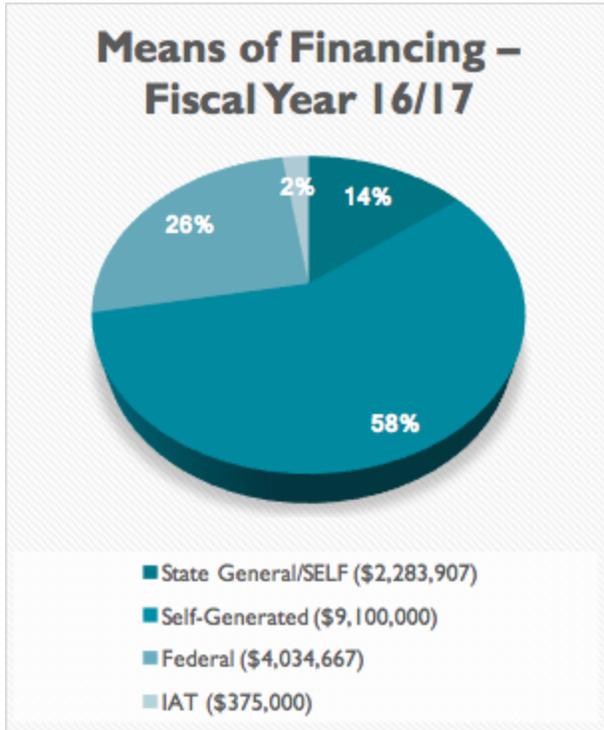
Administration, Finance, and Budget

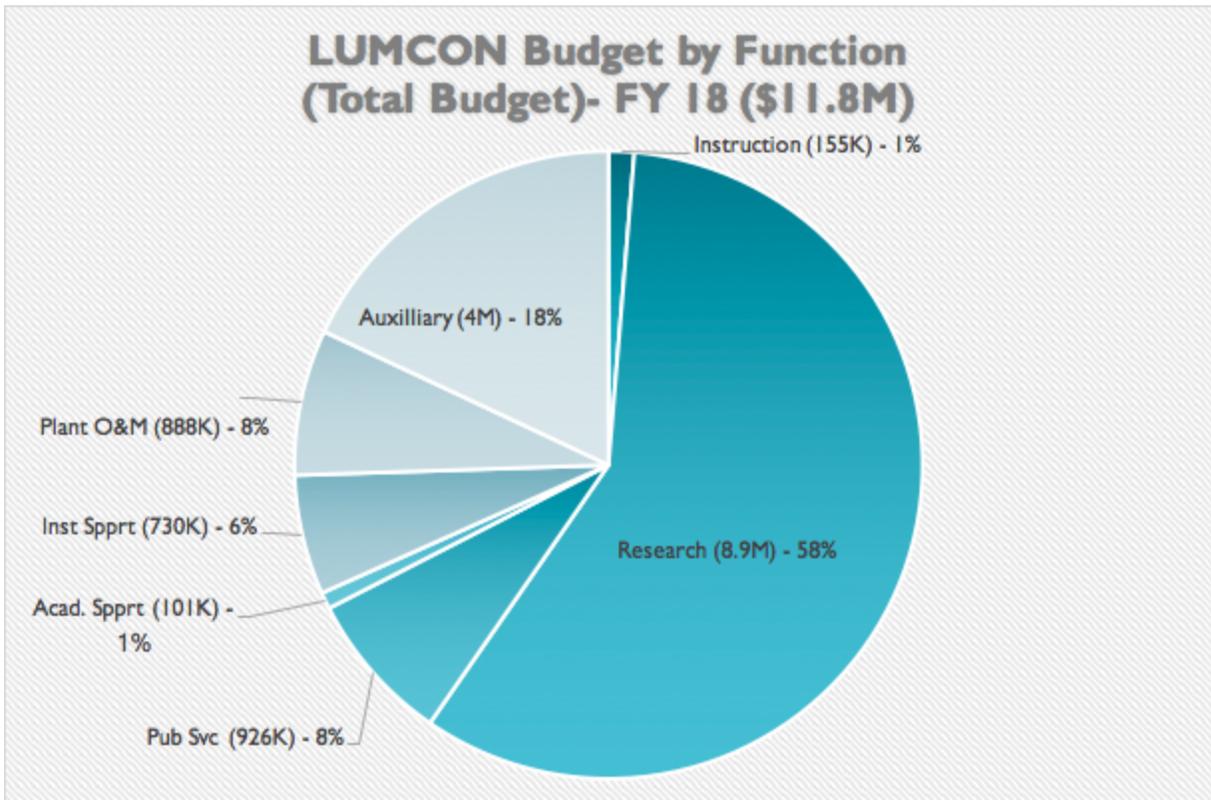
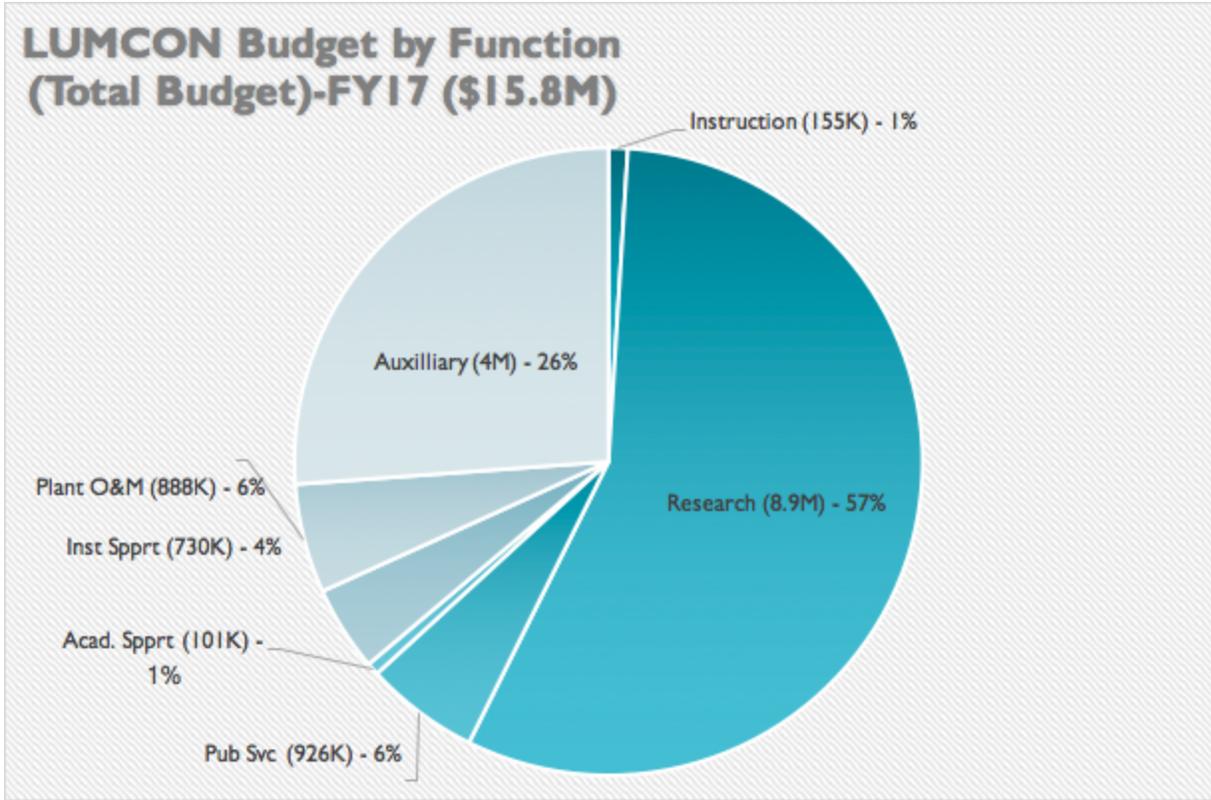
In an effort to improve all areas of LUMCON departments, the Administration Department including Finance and Human Resources also experienced restructuring to increase efficiency, workload, and operations. Changes to these departments are outlined below:

- **Administrative Processes and Staff:** All shipping/receiving functions were transferred to the Property Department under Finance. LUMCON implemented the use of P-Cards at the start of the new fiscal year (July 1). This implementation helped alleviate excessive paperwork and payment processing by the Finance Department. Due to the increased workload and growth of LUMCON over the past year, an additional finance position was added in July 2017. The position was for an Accounts Receivable/Accounting Assistant. Ms. Deana Corbitt joined the Finance Department staff in September 2017. Ms. Corbitt came to LUMCON with over 20 years experience in the accounting field. She worked for various accounting and offshore firms over her professional career which has been a benefit to the LUMCON Finance Department.
- **Reservations and Bookings:** The LUMCON Front Desk Department was reorganized in September 2017. To increase efficiency and customer relations, the reception area was moved from the Facilities Department to the Administration/Executive Department. The position was reconfigured as a Receptionist/Point of Service Contact. The position reports directly to the Executive team handling reservations, gift shop, front desk, and greeting the public when visiting the DeFelice Marine Center. Ms. Melanie Holly-Morgan joined LUMCON in October 2017 as the Receptionist/Customer Service Point of Contact. Melanie comes to LUMCON with considerable experience in logistics and administration and is a welcome addition to the team. A new booking system, Checkfront, was also implemented in the fall of 2017. The system is a multi-user interface system that was configured to include all areas of LUMCON booking capabilities. Administration has already recognized quicker payment turnaround and better communication between customers and departments.
- **Overall Growth in Staff:** LUMCON Finance and Human Resources have grown and changed through the past year. LUMCON's Finance Department is known for their efficiency, quality of work, and reliability. The department grew with the hire of two members, Dena Redmond (A/P, Travel) and Deana Corbit (A/R/Accounting Assistant). The Finance Department has gone through a change of specializing in certain areas while still being cross trained to improve efficiencies.
- **Changes in Budgets:** The Legislature requested agencies to increase self-generated funding and diminish reliance on state support. Over the past years, LUMCON has seen an increase in self-generated and non-federal support and revenue. Year after year, LUMCON has met this goal increasing these financial resources to the point of asking the Joint Legislative Budget Committee for approval to increase Self Generated Means Of Financing above the Legislative statute (currently at \$5.1M before). The \$4M difference from FY17 to FY18 reflect a waiting on LUMCON Means of Finance Increase approval. In FY17, LUMCON carried over \$7M from FY 17 to FY18. These monies were for support of research and vessel operations. In Fiscal Year 19, the increase in MOF for Self Generated Financing (due to Vessel support and research funding) will be in legislative statute for LUMCON. This shows that LUMCON over the past years has increased Self-Generated Revenue to \$9M. This also shows the \$2M budget (nearly a 5:1 return) from the state is well invested.



- **Other Areas of Importance:** LUMCON Finance Department over the past years have transitioned to working with the Board of Regents/LOSFA (Louisiana Office of Student Financial Assistance Team). Despite the challenges of agencies merging, the LUMCON finance department worked diligently to combine and revise policies, financial processes, and various every-day financial processes and procedures. This process of transmission of information and resources has been expedient and smooth.







Finances and Development in 2018

- **Administration and Budget:** LUMCON Administration and Finance Department will be processing and seeking support for continued deferred maintenance projects through the facilities planning process for funding approval. The projects of top priority for safety concerns/ infrastructure integrity are:
 - Safety Issues:
 - Main Electrical Wiring to Building \$85,000
 - Hurricane/Storm Shutters Replacement \$ 275,000
 - Waste Tank Demolition/Replacement \$25,000
 - Priority List:
 - Chiller Replacement \$350,000
 - Dorm/AC System Upgrade \$242,600
 - Air Handler Replacement \$168,000
 - LED Light Conversion \$98,630
 - Continuation Automation Upgrade \$46,000
 - Aquaculture Infrastructure \$250,000
 - Aquarium \$35,000
 - Flooring Upgrade \$250,000
 - Facilities Outlay:
 - Roof Replacement \$1,000,000
- **Development:** Development efforts will seek on five main areas for support.
 - *R/V Pelican Replacement*
 - LUMCON Houma Campus Initiative
 - Renovations of dormitories and apartments
 - Replacement of display aquariums
 - Scholarship funds for summer courses and campus



Appendix 1: Cumulative Visitors, Days of Small Boat Usage, and Days of Dormitory and Apartment Usage

Dorms	2015	2016	2017
January - March	881	787	886
April - June	1367	1625	1308
July - September	1501	1145	1410
October - December	1061	903	644
Visitors (from sign in sheet)	2015	2016	2017
January			266
February			67
March			186
April			380
May			1238
June			784
July			321
August			301
September		400	328
October		573	644
November		478	430
December		246	78
Small Boats and Kayaks	2015	2016	2017
Jan - March	72	67	47
April - June	193	188	176
July - September	68	73	58
October - December	57	72	37

Appendix 2: 2016-2017 Scientific Publications

1. Allison, M. A., B. T. Yuill, E. A. Meselhe, J. K. Marsh, **A. S. Kolker** and A. D. Ameen. 2017. Observational and numerical particle tracking to examine sediment dynamics in a Mississippi River delta diversion. *Estuarine, Coastal and Shelf Science*, 194:97-108. doi:10.1016/j.ecss.2017.06.004
2. Antonelli, P. L., S. F. Rutz, **P. W. Sammarco** and K. B. Strychar. 2016. Evolution of symbiosis in hermatypic corals: A model of the past, present, and future. *Nonlinear Analysis: Real World Applications*, 32:389-402. doi:10.1016/j.nonrwa.2016.05.004
3. Amer, R., **A. S. Kolker** and A. Muscietta. 2017. Propensity for erosion and deposition in a deltaic wetland complex: Implications for river management and coastal restoration. *Remote Sensing of Environment*, 199:39-50. doi:10.1016/j.rse.2017.06.030
4. Anders, N., A. Fernö, O. B. Humborstad, S. Løkkeborg, **G. Rieucou** and A. C. Utne-Palm. 2017. Size-dependent social attraction and repulsion explains the decision of Atlantic cod *Gadus morhua* to enter baited pots. *Journal of Fish Biology*, 91(6):1569-1581. doi:10.1111/jfb.13453
5. Bargu, S., M. M. Baustian, **N. N. Rabalais**, R., Del Rio, B. Von Korff and R. E. Turner. 2016. Influence of the Mississippi River on *Pseudo-nitzschia* spp. abundance and toxicity in Louisiana coastal waters. *Estuaries and Coasts*, 39(5):1345-1356. doi:10.1007/s12237-016-0088-y
6. Bernhard, A. E., R. Sheffer, A. E. Giblin, J. M. Marton and **B. J. Roberts**. 2016. Population dynamics and community composition of ammonia oxidizers in salt marshes after the Deepwater Horizon oil spill. *Frontiers in Microbiology*, 7:854. doi:10.3389/fmicb.2016.00854
7. Briggs, K. B., J. K. Craig, S. Shivarudrappa and T. M. Richards. 2017. Macrobenthos and megabenthos responses to long-term, large-scale hypoxia on the Louisiana continental shelf. *Marine Environmental Research*, 123:38-52. doi:10.1016/j.marenvres.2016.11.008
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Appendix 3: 2017 Media and Press

- Dr. Alex Kolker
 - 2 articles in Houma Today about river diversions, for example “More evidence builds for large river diversions”
<http://www.houmatoday.com/news/20170820/more-evidence-builds-for-large-river-diversions>
 - Interviewed more than 4 times on the “Delta Dispatches Radio Show”, for example on August 24
 - <http://wgso.com/podcast/delta-dispatches-082417/>
 - “Old accident in Mississippi Delta holds lessons for saving Louisiana's coast”
http://www.nola.com/environment/index.ssf/2017/08/lessons_from_an_old_accident_i.html
 - Quoted in “Louisiana’s plan to punch a hole in the Mississippi River”
https://motherboard.vice.com/en_us/article/vbb38a/louisianas-plan-topunch-a-hole-in-the-mississippi-river
 - Quoted in “Louisiana Is Restoring Its Barrier Islands to Defend Against Hurricanes and Rising Seas”
 - <http://www.audubon.org/magazine/fall-2017/louisiana-restoring-its-barrier-islands-defend>
 - Appeared on WVUE (Fox 8 TV): “Scientists set out to answer a question that has plagued them since Hurricane Katrina”
<http://www.fox8live.com/story/36468527/scientists-set-out-to-answer-a-question-that-has-plagued-them-since-hurricane-katrina>
 - International interviews and documentaries, including with Belgian National Television and a Dutch freelance journalist
 - Outreach linking public consumption to environmental issues, including:
 - Interview with the Mosquito Supper Club
 - Vanishing Paradise Dinner Cavan, New Orleans
 - New Harmony High, XQ School Event
 - Appeared in Waterway Films (about coastal Louisiana). World Premier, New Orleans, October 18.
 - Flew over Morganza to the Gulf levee with WWNO Radio News Director Tegan Wenland
 - “Study: rebuilding wetlands could help fight climate change”
http://www.nola.com/environment/index.ssf/2017/11/rebuilding_wetlands_could_create.html
 - Quoted in “For climate relocation, the dollar math is hardly settled”
http://www.realclearinvestigations.com/articles/2017/11/06/climate_relocation.html?utm_source=rcp-today&utm_medium=email&utm_campaign=mailchimp-newsletter
 - Quoted in “Port of New Orleans proposal ignites debate over wetlands inside the levees”



<http://thelensnola.org/2017/11/20/port-of-new-orleans-proposal-ignites-debate-over-wetlands-inside-the-levees/>

- o "Letters: A coastal plan for a global audience"
http://www.theadvocate.com/baton_rouge/opinion/letters/article_f03eb0b2-df5e-11e7-afdc-cbc1fc415f63.html
- Dr. Craig McClain
 - o "My first visit to the seafloor"
 - <http://discovermagazine.com/2017/may-2017/deep-dive>
 - o "Jason Bradley: The Science of the Deep Sea" A piece by a professional photographer Jason Bradley following his grant-funded trip aboard the R/V *Pelican* to document Dr. McClain's research cruise in the Gulf of Mexico
http://www.wetpixel.com/full_frame/jason-bradley-the-science-of-the-deep-sea
 - o "New science series connects local scientists with community"
<http://www.houmatoday.com/news/20170911/new-science-series-connects-local-scientists-with-community>
- Dr. Rabalais
 - o Completed numerous interviews with media concerning the results of her 2017 Shelfwide Hypoxia cruise including with the Associated Press, National Geographic, Louisiana Public Radio Network, Houma newspaper WRKF 89.3, Washington Post, NBC Today Show, CBS Morning News, Sioux City IA NPR, BYU Radio, Pacifica Radio; for example:
<http://news.nationalgeographic.com/2017/08/gulf-mexico-hypoxia-water-quality-dead-zone/>
 - o CBS This Morning on-location onboard the R/V *Acadiana*: "Gulf of Mexico dead zone is "largest" ever recorded in U.S."
<https://www.cbsnews.com/news/gulf-of-mexico-largest-dead-zone-ever-measured-fertilizer/>
 - o Two other stories currently in production were filmed on-location about Dr. Rabalais's hypoxia research:
 - A segment of a Planet Earth series on Wild Rivers
 - A story on NBC's Today Show
 - o Television France filmed on-location about hypoxia in the Gulf of Mexico
http://www.francetvinfo.fr/monde/usa/golfe-du-mexique-un-paradis-empoisonne_2432269.html
 - o "LSU Researchers awarded final round of BP Oil Spill Grants"
<http://www.brproud.com/news/local-news/l-su-researchers-awarded-final-round-of-bp-oil-spill-grants/816419190>
- Dr. Brian Roberts
 - o Appeared in multiple press releases and news articles in conjunction with a funded NOAA RESTORE grant focused on Louisiana coastal wetland food webs (led by LSU and involving LUMCON faculty Nancy Rabalais as well). A LUMCON press release about this grant was picked up by local radio and in-state news outlets.



- o “How does coastal work affect food chain?”
<http://www.houmatoday.com/news/20170723/how-does-coastal-work-affect-food-chain>
- o “Study Identifies Key Species that Influence Marsh Ecosystem Responses to Oiling”
 - <http://gulfresearchinitiative.org/study-identifies-key-species-influence-marsh-ecosystem-responses-oiling/>
- LUMCON
 - o Meet the Fleet event in Baton Rouge in May was covered by several local news outlets (print and radio) and by several outlets farther afield, for example:
 - <https://www.usnews.com/news/best-states/louisiana/articles/2017-05-02/2-science-research-vessels-to-dock-for-tours-in-baton-rouge>
 - o Dr. Roberts was interviewed for an article highlighting LUMCON’s Research Experiences for Undergraduates Program Career Panel:
<http://www.houmatoday.com/news/20170805/panel-discusses-environmental-science-education>
 - o “LUMCON advances marine research on national level”:
<http://www.houmatoday.com/news/20170708/lumcon-advances-marine-research-on-national-level>
 - o “Living here: 5 things to do at LUMCON”
<http://www.houmatoday.com/lifestyle/20170917/living-here-5-things-to-do-at-lumcon>
 - o CNN interviewed Consortium member faculty Gary LaFleur Jr. on location for a story about southern Louisiana culture
 - o Press release: “LUMCON researchers receive \$4.8M grant” was picked up by several news outlets in Louisiana and California, for example:
<http://www.sfchronicle.com/news/article/Scientists-get-4-8M-to-keep-studying-2010-oil-12243082.php>
 - o Mesh, a film company from Baton Rouge, was on campus to scout out the areas around LUMCON for background shots to use in documentaries
 - o An associate of the History Channel called to scout out LUMCON as a filming location
 - o Institutional profile to the American Society for Limnology and Oceanography’s Bulletin that was accepted for publication
<http://onlinelibrary.wiley.com/doi/10.1002/lob.10220/full>



Appendix 4: Vessel Operations Schedule

SHIP OPERATING SCHEDULE CY 2017 FOR R/V *PELICAN*

Cruise Dates	Map Index/Area/ Purpose	P.I./Institution/ Proposal No.	Ports	Days/ Agency/ Status/Clearance
5 FEB 23 FEB	NA09/GOM Turbulence in OSBL	Jarosz, E/NRL_SSC/ 73-P006-16	Cocodrie Cocodrie	19/NAVY-NRL/ F/No
26 FEB 28 FEB	NA09/GOM Coastal OA	Cai, W/UDEL/ 1559279	Cocodrie Cocodrie	3/NSF-OCE-CO/ F/No
1 MAR 2 MAR	NA09/GOM Lander retrieval	Asper, V/USM/ N/A	Cocodrie Cocodrie	2/GOMRI/ F/No
6 MAR 6 MAR	NA09/GOM Education cruise	Hill, J./LaTech/ N/A	Cocodrie Cocodrie	1// F/No
11 MAR 11 MAR	NA09/GOM Education cruise	France, S./ULL/ N/A	Cocodrie Cocodrie	1// F/No
12 MAR 12 MAR	NA09/GOM Education cruise	Aguillard, J./ECA/ N/A	Cocodrie Cocodrie	1// F/No
19 MAR 19 MAR	NA09/GOM Education cruise	Aronhime, B./LSU/ N/A	Cocodrie Cocodrie	1// F/No
2 APR 2 APR	NA09/GOM Education cruise	Burns, P./Renew Schools/ N/A	Cocodrie Cocodrie	1// F/No
6 APR 16 APR	NA09/GOM Coastal OA	Cai, W/UDEL/ 1559279	Cocodrie Cocodrie	11/NSF-OCE-CO/ F/No
22 APR 1 MAY	NA09/GOM DWDE	Perez-Brunius, P/CICESE/ NA	Cocodrie Cocodrie	10/OTHER/ F/No
4 MAY 13 MAY	NA09/GOM Si cycle in nGoM	Krause, J./MESC/ 1558957	Cocodrie Cocodrie	10/NSF-OCE-CO/ F/No
14 MAY 16 MAY	NA09/GOM Coastal OA	Cai, W/UDEL/ 1559279	Cocodrie Cocodrie	3/NSF-OCE-CO/ F/No
24 MAY 4 JUN	NA09/GOM Assembly of Woodfall	McClain, C/LUMCON/ 1634586	Cocodrie Cocodrie	12/NSF-OCE-BIO/ F/No
8 JUN 17 JUN	NA09/GOM LADC	Sidorovskaia, N./ULL/ N/A	Cocodrie Cocodrie	10/GOMRI/ F/No
23 JUN	NA09/GOM	Ogle, M./FGEOS/	Cocodrie	4/OTHER/



26 JUN	Mooring Rotation	N/A	Cocodrie	F/No
27 JUN	NA09/GOM	Campbell, L/TAMU_CS/	Cocodrie	3/NSF-OCE/
29 JUN	REU: Ocean Observing	1455851	Cocodrie	F/No
1 JUL	NA09/GOM	Rooker, J/ TAMUG/	Cocodrie	5/GOMRI/
5 JUL	LF2017	N/A	Cocodrie	F/No
7 JUL	NA09/GOM	Cai, W/UDEL/	Cocodrie	15/NSF-OCE-CO/
21 JUL	Coastal OA	1559279	Cocodrie	F/No
24 JUL	NA09/GOM	Rabalais, N/LUMCON/	Cocodrie	8/INST-LUMCON/
31 JUL	Hypoxia survey	N/A	Cocodrie	F/No
1 AUG	NA09/GOM	Aronchick, E/WHGRP/	Cocodrie	3/OTHER/
3 AUG	Mooring rotation	N/A	Cocodrie	F/No
4 AUG	NA09/GOM	Ogle, M./FGEOS /	Cocodrie	4/OTHER/
7 AUG	Mooring rotation	N/A	Cocodrie	F/No
8 AUG	NA09/GOM	Mendlovitz, H/UNC/	Cocodrie	2/GOMRI
9 AUG	Lander recoveries	N/A	Cocodrie	F/No
10 AUG	NA09/GOM	Roberts, B./LUMCON/	Cocodrie	1//
10 AUG	REU Education cruise	N/A	Cocodrie	F/No
15 AUG	NA09/GOM	Cai, W/UDEL/	Cocodrie	3/NSF-OCE-CO/
17 AUG	Coastal OA	N/A	Cocodrie	F/No
8 SEP	NA09/GOM	Wang, Z/WHOI/	Cocodrie	10/NSF-OCE-CO/
17 SEP	NICP Gulf of Mexico	1635388	Cocodrie	F/No
20 SEP	NA09/GOM	Aronchick, E/WHGRP/	Cocodrie	3/OTHER/
22 SEP	Mooring rotation	N/A	Cocodrie	F/No
28 SEP	NA09/GOM	Cai, W/UDEL/	Cocodrie	14/NSF-OCE-CO/
11 OCT	Coastal OA	1559279	Cocodrie	F/No
12 OCT	NA09/GOM	Sidorovskaia, N./ULL/	Cocodrie	4/GOMRI/
15 OCT	Mooring deployment	N/A	Cocodrie	F/No
16 OCT	NA09/GOM	Ogle, M./FGEOS/	Cocodrie	10/OTHER/
25 OCT	Mooring rotation	N/A	Cocodrie	F/No
26 OCT	NA09/GOM	Parsons, M./EPA/	Cocodrie	7/OTHER/
01 NOV	Benthic Survey	N/A	Cocodrie	F/No
4 NOV	NA09/GOM	Perez-Brunius, P/CICESE/	Cocodrie	11/OTHER/
12 NOV	DWDE	N/A	Cocodrie	F/No



14 NOV	NA09/GOM	KNAP, A/TAMU_CS/	Cocodrie	9/NSF-OCE-PO/
22 NOV	Harvey Impacts	N/A	Cocodrie	F/No
9 DEC	NA09/GOM	Reynolds, C./USGS St. Petersburg	Cocodrie	2/USGS/
10 DEC	Sediment Trap	N/A	Cocodrie	T/No
17 DEC	NA09/GOM	Ogle, M./FGEOS/	Cocodrie	4/OTHER/
20 DEC	Mooring rotation	N/A	Cocodrie	F/No

SHIP OPERATING SCHEDULE CY 2017 FOR R/V *POINT SUR*

<u>Cruise Dates</u>	<u>Map Index/Area/Purpose</u>	<u>P.I./Institution/Proposal No.</u>	<u>Ports</u>	<u>Days/ Agency/ Status/Clearance</u>
02 FEB	NA9/GOM/	Reynolds, C. /USGS/	Cocodrie	2/USGS/F
03 FEB	Sediment trap	N/A	Cocodrie	No
09 FEB	NA9/GOM/	Kuhn/Ion/	Cocodrie	1/ Other /F
09 FEB	Glider	N/A	Cocodrie	No
15 FEB	NA9/GOM/	Hamden, L. / USM/	Gulfport	8/INST/F
20 FEB	ROV-Mooring	N/A	Gulfport	No
24 FEB	NA9/GOM	McCaffery/Leidos/	Gulfport	3/ Other /F
26 FEB	Glider/Mooring	N/A	Gulfport	No
27 FEB	NA9/GOM	Fitzpatrick/Fugro/	Gulfport	2/Other/F
28 FEB	Mooring Deployment	N/A	Gulfport	No
06 MAR	NA9/GOM/	McCaffery/Leidos/	Gulfport	3/ Other /F
08 MAR	Glider/Mooring	N/A	Gulfport	No
09 MAR	NA6/GOM/	Hursh, M. / BAE/	Gulfport	21/Other/F
29 MAR	Tow Package	N/A	Gulfport	No
02 APR	NA9/GOM/	Milroy, S./ USM/	Gulfport	2/INST/E
03 APR	CTD, Net tow, Trawl	N/A	Gulfport	No
08 APR	NA9/GOM/	Fitzpatrick/SeaMar/	Cocodrie	3/ Other /F
10 APR	Mooring	N/A	Cocodrie	No
13 APR	NA9/GOM/	Asper, V./USM/	Cocodrie	6/INST/F
18 APR	Moorings/Landers	N/A	Cocodrie	No
20 APR	NA9/GOM/	Zarajowski/Fugro/	Cocodrie	6/Other/F
25 APR	Mooring	N/A	Cocodrie	No
01 MAY	NA9/GOM/	Sutton/ NSU /	Gulfport	12/ GOMRI /F
12 MAY	Mochness	N/A	Gulfport	No
13 MAY	NA9/GOM/	Asper,V./USM/	Gulfport	4/INST/F



16 MAY	Mooring Deployment	N/A	Gulfport	No
19 MAY	NA9/GOM/	Chaytor./USGS /	Gulfport	8/USGS /F
26 MAY	Survey, Package tow	N/A	Gulfport	No
30 MAY	NA9/GOM/	Asper, V./USM/	Gulfport	4/INST/F
02 JUN	AUV	N/A	Gulfport	No
03 JUN	NA9/GOM/	Bentley,S./LSU/	Gulfport	7/INST/F
09 JUN	MultiCore/ Piston Cores	N/A	Gulfport	No
11 JUN	NA9/GOM/	Hamdan, L./USM/	Gulfport	6/INST/F
16 JUN	MultiCorer	N/A	Gulfport	No
17 JUN	NA9/GOM	Hernandez, USM/	Gulfport	1/INST/E
17 JUN	Education Trip	N/A	Gulfport	No
18 JUN	NA9/GOM/	Andres, M./USM/	Gulfport	1/INST/E
18 JUN	Education Trip	N/A	Gulfport	No
19 JUN	NA9/GOM/	Shiller/USM/	Gulfport	1/INST/E
19 JUN	Education Trip	N/A	Gulfport	No
25 JUN	NA9/GOM	Miller, J./LaWLF/	Cocodrie	3/INST/F
27 JUN	Trawl	N/A	Cocodrie	No
29 JUN	NA9/GOM/	Constable,S./Scripps/	Cocodrie	13/INST/F
11 JUL	Package Tow	N/A	Cocodrie	No
13 JUL	NA9/GOM/	Conover,M./LUMCON/	Cocodrie	1/INST/E
13 JUL	Education Trip	N/A	Cocodrie	No
14 JUL	NA9/GOM/	Martin, K./USM/	Cocodrie	1/INST/F
14 JUL	Buoy deploy	N/A	Cocodrie	No
17 JUL	NA9/GOM/	Open House/USM/	Gulfport	1/INST/E
17 JUL	Outreach	N/A	Gulfport	No
18 JUL	NA9/GOM/	Lee/USM/	Gulfport	2/INST/E
19 JUL	Mooring	N/A	Gulfport	No
20 JUL	NA9/GOM/	Hernandez/USM/	Gulfport	9/INST/F
28 JUL	Net tows	N/A	Gulfport	No
31 JUL	NA9/GOM/	Martin, K/USM/	Gulfport	1/INST/F
31 JUL	Glider	N/A	Gulfport	No
17 AUG	NA9/GOM/	Polzin, K./Scripps/	Cocodrie	20/INST/F
05 SEPT	HRP & VMP	N/A	Gulfport	No



16 SEPT	NA9/GOM/	Milroy, S./ USM/	Gulfport	2/INST/F
17 SEPT	Education trip	N/A	Gulfport	No
18 SEPT	NA9/GOM/	Asper, V./ USM/	Gulfport	3/EcoGig/F
20 SEPT	Mooring/ Glider	N/A	Gulfport	No
22 SEPT	NA9/GOM/	DiMarc.&Camp.&Thy.(TAMU)	Cocodrie	11/NSF/F
03 OCT	Acrobat	N/A	Cocodrie	No
08 OCT	NA9/GOM/	McHaney, B./Fugro/	Cocodrie	4/Other/F
11 OCT	Mooring	N/A	Cocodrie	No
15 OCT	NA9/GOM/	Giffon, K./ CSA/	Cocodrie	4/Other/F
18 OCT	CTD	N/A	Cocodrie	No
19 OCT	NA9/GOM/	Sylvan, J./ TAMU/	Galveston	8/NSF/F
26 OCT	Diving	N/A	Galveston	No
27 OCT	NA9/GOM/	Martin, K./ USM/	Cocodrie	1/INST/F
27 OCT	Glider	N/A	Cocodrie	No
28 OCT	NA9/GOM/	Robinson, K./ULL/	Cocodrie	8/NSF/F
04 NOV	Mochness	N/A	Cocodrie	No
05 NOV	NA9/GOM/	Thyng, K./ TAMU/	Cocodrie	5/NSF/F
09 NOV	CTD	N/A	Cocodrie	No
11 NOV	NA9/GOM/	Buijsman/ USM/	Gulfport	2/ INST/E
12 NOV	Education Trip	N/A	Gulfport	No
15 NOV	NA9/GOM/	Miller, J./ LaWLF/	Cocodrie	2/ INST/F
16 NOV	Trawl	N/A	Cocodrie	No
05 DEC	NA9/GOM/	Martin, K./ USM	Cocodrie	1/ INST/F
05 DEC	Gliders	N/A	Cocodrie	No