JASON Expedition Visits South Louisiana in Search of Disappearing Wetlands

Program developed by Dr. Robert Ballard, discoverer of the H.M.S. Titanic, focuses its attention on educating young students about coastal landloss.

Ask Amy McDowell or Taylor Landry, seventh grade students from Montegut Middle School, to tell you why people should learn about Louisiana’s wetlands and without pause they will flood you with answers.

“They’re like disappearing,” said McDowell. “They won’t be here for the next generation. People need to pass on their importance.”

“It’s a home for animals,” said Landry. “And it’s our home too. It’s where we trap, hunt and fish. In five to ten years, will the land still be here? We need a lot of people to help.”

Help, in the form of education, is exactly what the JASON Foundation for Education is providing by focusing on Louisiana’s Disappearing Wetlands for its 2004–2005 JASON Expedition. A talented crew of local wetland scientists, JASON Student and Teacher Argonauts, and production technicians recently wrapped up filming for their live broadcasts that brought the importance, complexity and fragility of south Louisiana’s wetlands to over 33,000 teachers and 1.7 million students worldwide. Included in this viewing audience were students from Montegut Middle School and Houma Junior High School, who visited LUMCON’s DeFelice Marine Center to watch the broadcasts and venture behind the scenes to meet the production team.

JASON Expeditions filmed thirty live interactive broadcasts January 31–February 5, 2005, at LUMCON’s DeFelice Marine Center in Cocodrie, LUMCON’s Field Laboratory in Port Fourchon, and the Jean Lafitte National Historic Park and Preserve, Barataria Preserve. Live transmissions are just one part of JASON’s hands-on standards-based science curriculum for fourth–ninth grade teachers and students that has focused on a different scientific location each year for the past sixteen years. Using the latest broadcast technology, JASON Expeditions have virtually transported students across the globe from the depths of the hydrothermal vents in the Guaymas Basin in the Sea of Cortez (1993) to the International Space Station orbiting the earth at a speed of more than 17,000 mph (2001).

The four research teams of the Disappearing Wetlands Expedition were...
copepod nauplii, which are known to feed on algae and are common in the Barataria Basin.

"Somewhat unexpectedly, we found that microzooplankton are not as significant consumers of algae in these lakes as they are in open oceans and coastal areas," said Wong. "Many of the dominant algal species were forming colonies that were too large for the microzooplankton to ingest. In lower nutrient environments, such as in the open ocean, these species typically don’t form colonies and microzooplankton are major consumers."

Wong has since switched his focus to the larger mesozooplankton (200 micrometers–2 centimeters) and Rangia clams (Rangia cuneata), organisms that can ingest larger prey items. Wong chose to focus on the Rangia clam after his faunal surveys showed that it was the dominant benthic organism in his research areas. Clams feed by pumping water through their gills, efficient filters that remove both edible plankton and non-edible material such as silt from the surrounding water. Indigestible material is trapped in mucous on the gills.

The Effects of Multistressors within the Barataria Basin is a five-year study that began in 2002 and is funded by the National Oceanographic and Atmospheric Administration. The project involves an examination of pre-existing long-term data, laboratory and field experiments, and observations made before and after the opening of the Davis Pond Diversion in March 2002. The diversion project is designed to improve the health of the Barataria Basin by reintroducing freshwater, sediments and nutrients from the Mississippi River. The Multistressor project will help to identify the effects of these changes within the system and may provide observations for restoration scientists to use in future diversion projects.
LUMCON Offers Marine Education Classes for Summer Enrichment

Don’t let those brain cells go dormant this summer! LUMCON is offering exciting classes for university students, high school students, middle school teachers and photographers of all levels. Visit the Marine Education website at www.lumcon.edu/education for more information or contact Summer Program Coordinator Nicole Cotten (ncotten@lumcon.edu, 985-851-2845) for information on the university courses or Marine Education Instructor Dr. Jessica Kastler (jkastler@lumcon.edu, 985-851-2848) for information on LUMCON’s other summer offerings. Application deadline for university classes is April 1, 2005.

University Classes

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<thead>
<tr>
<th>Coastal Landscape Photography (1 credit)</th>
<th>Invertebrates in Their Environment (3 credits)</th>
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<tbody>
<tr>
<td>Dates: May 16–20</td>
<td>Dates: June 20–July 8</td>
</tr>
<tr>
<td>Prerequisites: Basic photography background; 35 mm camera</td>
<td>Prerequisites: Junior or senior; Introductory Invertebrate Zoology, Marine Ecology or permission of instructor</td>
</tr>
<tr>
<td>Instructors: Dr. Gary LeFleur (Nicholls State University), Mr. Dennis Sipiorski (Southeastern Louisiana University)</td>
<td>Instructors: Dr. Chris Finelli (LUMCON), Dr. Nazan Atilla (LUMCON)</td>
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<tr>
<th>Introduction to Marine Zoology (4 credits)</th>
<th>Marine Fish Ecology (3 credits)</th>
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<tr>
<td>Dates: June 6–July 1</td>
<td>Dates: July 11–29</td>
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<tr>
<td>Prerequisites: Sophomore; 8 hours of biology or permission of instructor</td>
<td>Prerequisites: Junior or senior; 16 hours of biology or permission of instructor</td>
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<tr>
<td>Instructor: Dr. Lewis Deaton (University of Louisiana at Lafayette)</td>
<td>Instructors: Dr. Ed Chesney (LUMCON), Dr. Donald Baltz (Louisiana State University)</td>
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<tr>
<th>Introduction to Marine Environmental Chemistry (3 credits)</th>
<th>Marine Plankton Processes (3 credits)</th>
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<tr>
<td>Dates: June 20–July 8</td>
<td>Dates: July 11–29</td>
</tr>
<tr>
<td>Prerequisites: Junior or senior; 2 semesters of chemistry</td>
<td>Prerequisites: Junior or senior; Introductory Oceanography or Marine Biology, Introductory Ecology or permission of instructor</td>
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<tr>
<td>Instructor: Dr. Rodney Powell (LUMCON)</td>
<td>Instructors: Dr. Michael Dagg (LUMCON), Dr. Hongbin Liu (LUMCON)</td>
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K–12 and Teacher Enrichment

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<tr>
<th>Center for Ocean Sciences Education Excellence Teacher/Science Institute (3 graduate credits, LSU)</th>
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<tr>
<td>Dates: June 12–17</td>
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<tr>
<td>Prerequisite: Science teacher of grades 5–9</td>
</tr>
<tr>
<td>Instructor: Dr. Jessica Kastler (LUMCON)</td>
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Louisiana middle school teachers and marine scientists will spend several days immersed in field-based studies and lab work at LUMCON's DeFelice Marine Center. Six sessions of online marine science coursework are required.

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<tr>
<th>LUMCON Estuarine Awareness and Discovery Camp (LEAD)</th>
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<tr>
<td>Dates: July 31–August 6</td>
</tr>
<tr>
<td>Prerequisite: Student entering grades 9–12</td>
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<td>Fee: $200.00</td>
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This camp is an excellent opportunity for any high school student considering a career in marine or environmental science or simply looking to understand the connections between south Louisiana wetlands and its inhabitants. Students will conduct plant and animal surveys, analyze sediment cores, perform standard water chemistry, investigate the threats of pollution and land loss and learn what steps they can take to be responsible environmental stewards.
Twenty marine science graduate students from ten universities across the southern United States converged at LUMCON’s DeFelice Marine Center in Cocodrie January 28–30, 2005, to participate in the sixth annual Graduate Student Symposium. Many of the students were returning for their second or third time to participate in this intensive weekend event that aims to provide graduate students with a supportive environment for presenting their research, sharing information and ideas, and building relationships among their peers.

For Lesley Baggett, a master’s degree candidate in marine biology at Dauphin Island Sea Lab, Dauphin Island, Alabama, the symposium was the perfect venue for her first oral presentation at a conference. “I came here because I wanted practice,” said Baggett. “I wanted to take advantage of the reason why the symposium is held. It’s a great low-key, friendly environment.”

This year was the first time the Symposium was held at the Marine Center and the first time it was organized by the Marine Environmental Researchers (MER) graduate student organization at Louisiana State University (LSU). In previous years, the Symposium has been organized by marine science graduate students at the University of Southern Mississippi or the University of South Alabama. After the success of this year’s event, MER Vice President Melissa Baustian, hopes MER and LUMCON’s Marine Center will be permanently added to the rotation as symposium organizer and hosting facility.

“It was great to see all these students come down to LUMCON,” said Baustian. “A lot of the students told me they thought the facility was fantastic and they liked its location. They thought it was great having the symposium held at a facility that’s actually in the marsh.”

LUMCON Interim Administrator and Barataria-Terrebonne National Estuary Program (BTNEP) Director Mr. Kerry M. St. Pé was the Symposium’s keynote speaker. He spoke on the BTNEP’s efforts to strive for restoring Louisiana’s coastal ecosystem to a point where local communities and lifestyles are sustained.

MER held the symposium’s award banquet at the Coco Marina Restaurant where students feasted on fried fish and danced to live music by the Lost Bayou Ramblers. Their music had the students tapping their feet all the way back to the Marine Center, where LUMCON hopes to accommodate the students for future symposia.

“We truly appreciated the opportunity to contribute to the fulfillment of LUMCON’s marine education mission,” said St. Pé. “And we are grateful to the graduate students, faculty advisors, LUMCON staff and to all others who contributed to its resounding success.”
Dr. Nancy Rabalais is Nominated for a Second Term on the Ocean Research Advisory Panel

LUMCON professor Dr. Nancy Rabalais has been invited to continue her service on the Ocean Research Advisory Panel (ORAP), a committee of ocean scientists, state government officials, ocean industry leaders, ocean policy makers and educators that stands to gain influence in the upcoming years as an advisory group on national ocean policy. She has served on ORAP since January 2002, when she became Chair of the Ocean Studies Board (OSB) and was automatically appointed to ORAP as the representative from the National Academies.

Rabalais will step down as the Academies’ representative to ORAP in March 2005, when her three-year term as Chair of the OSB expires; however, if her nomination is confirmed by the Secretary of the Navy in June 2005, she will continue to serve on ORAP for another term, this time as a member from an oceanographic research institute (LUMCON).

Rabalais is enthusiastic about the opportunity to continue serving on the Panel, especially since ORAP’s role in advising the President may strengthen under the Bush Administration’s U.S. Ocean Action Plan that was released in December 2004. The Plan recommends the expansion of ORAP by several members, a growth that reflects the Panel’s increasing advisory responsibilities. The Plan designates ORAP as an advisor of the newly-created Interagency Committee on Ocean Science and Resource Management Integration. This Committee reports directly to the Cabinet-level Committee on Ocean Policy, a newly-formed group under the Plan that reports directly to one of only four Special Assistants to the President.

“The creation of these committees and their close-ranking hierarchical structure shortens ORAP’s communication line to the President,” said Rabalais. “ORAP could play a strengthened role in conveying important oceanographic issues to the White House.”

ORAP is an advisory committee of the National Oceanographic Partnership Program (NOPP) that was established by Congress in 1977. NOPP is a collaboration of fifteen Federal agencies that promotes and coordinates national oceanographic research and education programs.

Julie Prerost

Julie Prerost, a doctoral student in Louisiana State University’s (LSU’s) Department of Biological Sciences, is digging beneath the surface to uncover the secret life of ghost shrimp. These elusive shrimp spend nearly all of their lives in underground burrows. Prerost is looking at how their burrowing activity affects surrounding water flow and whether water exchanged between burrows carries chemical cues for use in ghost shrimp communication. She is also examining other possible means of shrimp communication, such as sound generation.

Prerost is focusing on three species of ghost shrimp that occur locally but live in two different types of sediment—Lepidophthalmus louisianensis burrows in a fine-grained muddy substrate, while Callichirus islagrande and Callichirus major set up camp in a coarser-grained sandy environment. By choosing shrimp that burrow in two distinct sediment types, Prerost can observe how the water chemistry within burrows and the water flow into and out of burrows differ between muddy and sandy substrates.

The U.S. Ocean Action Plan contains several recommendations that pertain to Louisiana and the Gulf of Mexico and may directly affect LUMCON’s research programs. Continued development of a global environmental monitoring system, advancement of harmful algal bloom and hypoxia research, conservation and restoration of coastal habitats, surveying and protection of deep-sea corals, and the potential development of offshore aquaculture facilities are all addressed under the Plan. The complete document can be viewed at www.ocean.ceq.gov. The U.S. Ocean Action Plan is the Bush Administration’s response to the U.S. Commission on Ocean Policy’s An Ocean Blueprint for the 21st Century. The Commission’s final report is posted online at www.oceancommission.gov.
Time to Update the Newsletter Database

Please send any changes in mailing information to drichtad@lumcon.edu. As always, we welcome your comments and suggestions regarding LUMCON News.

Recent Publications


Recent Grants

Title: T-1 Line for Compressed Video Room
P.I.: Dr. Jessica Kaster
Start–End Dates: 12/31/04–12/31/05
Grantor: Louisiana Board of Regents, Louisiana Education Quality Support Fund
Amount: $8,100
Title: Coastal Eutrophication and Hypoxia: Implications for Mercury Methylation, Mercury Biomagnification and Human Health
P.I.: Dr. David Senn (Harvard School of Public Health)
Co-P.I.s: Dr. Ed Chesney, Dr. Nancy Rabalais
Start–End Dates: 9/1/04–8/31/05
Grantor: NOAA, Harvard School of Public Health
Amount: $44,190
Title: Determining the Geographical Distribution, Maximum Depth and Genetic Affinities of Corals on Offshore Platforms, Northern Gulf of Mexico
P.I.: Dr. Paul Sammarco
Start–End Dates: 9/1/04–8/31/06
Amount: $302,850

Barataria-Terrebonne National Estuary Program Update

By Leslie Robichaux Suazo, BTNEP Community Relations Coordinator and Michael Massimi, BTNEP Invasive Species Coordinator

Three New Employees Bring Their Talent and Enthusiasm to the BTNEP

It’s an exciting time to join the fight against invasive species, just ask New Orleans native Michael Massimi, the BTNEP’s new Invasive Species Coordinator. Massimi has been busy uniting forces with programs across the Gulf South to manage current invasive species and prevent future invasions. “Fighting invasive species will be an ongoing battle well into the foreseeable future,” said Massimi.

One way the BTNEP is participating in this fight is by hosting an upcoming public symposium that will introduce the recently released Louisiana Aquatic Invasive Species (LAIS) Management Plan and facilitate the implementation of its management and control efforts. The Plan was produced by the LAIS Council and Advisory Task Force and is available for viewing at http://is.cbr.tulane.edu/Louisiana AIS.html.

The BTNEP will also be helping to organize a rapid assessment of flora and fauna in the Barataria-Terrebonne Estuary. Scientists from Louisiana and other Gulf States will team up with educators, state agents and volunteers for a week of intensive field surveys. These rapid assessments provide invaluable baseline data for future invasive species management efforts.

Some of this data may eventually be posted on the BTNEP’s Invasive Species webpage (http://invasive.btnep.org), an ongoing project that is currently being reorganized and updated. The BTNEP aims to make this site a comprehensive source of information on invasive species management, including the promotion of native species.

Joni Blanchard, a native of Labadieville, Louisiana, has joined the BTNEP program office as the new Public Involvement Coordinator. Joni’s main focus will be the development of a comprehensive volunteer program for the BTNEP. Formerly a park ranger with the Jean Lafitte National Historic Park and Preserve, Joni’s wide range of interpretive skills will be a tremendous asset in her endeavors. Joni graduated from Nicholls State University with a B.S. in mass communications.

AmeriCorps Vista volunteer Annie Bergelin, a native of Brooklyn, New York, began her one-year term of service at the BTNEP office in December 2004. Annie received a B.A. in environmental design and a B.S. in sociology from the University of Massachusetts at Amherst. Her main task will be the development and implementation of a mini-grants pilot program that is similar to ones established at other National Estuary Programs.

Water hyacinth (Eichhornia crassipes), overrun Davis Pond during summer 2004. The invasive aquatic plant was imported from South America for the 1884 World’s Fair in New Orleans. Photograph by Michael Massimi, BTNEP.
each composed of a Host Researcher, a Teacher Argonaut and three 14–15 year-old Student Argonauts. Each year JASON Expeditions selects a small number of Teacher and Student Argonauts from a large pool of applicants across the world to participate in the Expedition’s development and broadcasts.

The four Host Researchers for this Expedition were Dr. Denise Reed, a geology professor at the University of New Orleans and an adjunct professor at LUMCON, Dr. Earl Melancon, a marine science professor at Nicholls State University, Dr. Jacoby Carter, an ecologist with the United States Geological Survey National Wetlands Research Center and Mark Schexnayder, a marine biologist with Louisiana State University AgCenter. In addition to participating in the broadcasts, the researchers helped to develop the Disappearing Wetlands curriculum and scheduled live online question and answer sessions with students across the globe.

For one of the live broadcasts, Reed led her research team into the brackish marsh behind LUMCON’s DeFelice Marine Center to take sediment core samples and map marsh elevation. Students learned that sediment cores are a lot more than just dirt. Much as an archaeologist finds clues to a past civilization at an archeological dig, Reed finds clues from sediment cores that explain the history of the marsh and how it was formed—she can even detect significant weather events such as hurricanes. Reed points to the marsh around the Marine Center as an example of a healthy marsh that is holding its ground.

“Not all of the marshes are falling apart,” said Reed. “It’s important to understand how these ecosystems work and why some are doing better than others. Then you can have a better idea about how to fix those that are in trouble.”

Oysters are one vital component of Louisiana’s coastal wetland ecosystem. Host Researcher Dr. Earl Melancon, whose research focuses on these bivalves, explained the important role that oysters play in the ecology and economy of coastal Louisiana, all the while stressing the need for proper salinity to maintain the health of oysters and the entire estuarine system.

“Salinity defines an estuary,” said Melancon. “The oyster is a good biological indicator of salinity since it only exists in certain salinity gradients. It’s important for coastal restoration plans to bring in this concept of salinity regime.”

Through the efforts of many individuals and organizations such as the JASON Foundation for Education, the immense value of wetlands and the extent of their loss in Louisiana is reaching a national and international audience. This growing awareness is one reason to be optimistic for their future.

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Shell Oil Company is providing free Disappearing Wetlands teacher packs and professional development training for all seventh and eighth grade science teachers in Louisiana. For information on this program, contact Brenda Nixon at bnixon@lsu.edu or 225-578-4082.

For more information about the JASON Foundation for Education and JASON Expeditions, please visit their website at www.jason.org.

Rangia clams (Rangia cuneata) live in estuarine environments along the northern Gulf of Mexico and mid and south Atlantic seaboard. Photograph by Danielle Richardi.

Wong and his collaborators will be conducting feeding experiments at LUMCON’s DeFelice Marine Center and in the field to determine what algal species the mesoplankton and clams are eating and at what rate they are filtering them from the water. They are particularly interested in determining whether they are consuming the potentially toxic species of algae that exist within the Barataria Basin. Wong’s results from this study, combined with the results from the numerous other ongoing projects that compose the Multistressors project, will provide useful information for future estuarine and coastal restoration projects.

The pink-stained organisms on the first page of this article are Daphnia lumholtzi. Daphnia sp. is an example of mesozooplankton found in the Barataria Basin. Photograph by David Wong.