

## Floating Islands More than Decorative Water Feature

In a world that is becoming more green conscious, Floating Islands Environmental Solutions (FIES) is a company at the forefront of innovative solutions for many of the Gulf Coast's ecological problems.

The locally owned and family-run business was established in late 2008 by Ted and Alethia Martin. The Martins, along with their five children, Nicole, Chad, Monique, Melanie and Jason, were inspired by their concern for Louisiana's rapidly disappearing coast. And with the help of the LSU AgCenter and Louisiana Sea Grant, FIES hopes to expand and explore new applications for its Biohaven Floating Islands.

Made from 100-percent recycled polyethylene terephthalate (PET) plastic, the islands are buoyant, Brillo-like sheets that are designed to mimic naturally occurring wetland vegetation. The floating mats are modeled after natural islands and can be introduced into any aquatic system.

Currently, FIES supplies its product to six states in the Gulf Coast region, including Louisiana, Texas, Mississippi, Alabama, Florida and Georgia. Both private and public entities alike have found uses for these floating mats. Zoos are using them in aquatic and wetland exhibits. Small municipalities also are using them as water filtration mechanisms.

The Lincoln Park Zoo in Chicago is the company's biggest client thus far. FIES installed more than 2,000 square feet of floating islands, providing artificial habitat and water filtration for the zoo's newly renovated swan exhibit.

Initially, Biohaven Floating Islands were used in small ponds for gardening and beautification purposes. However, with continuing product development, applications for the floating islands are steadily evolving and shifting into new markets.

Researchers, like Sea Grant and AgCenter Marine Extension specialist Brian LeBlanc, are currently in the midst of field studies to fine-tune the usage of these floating mats. LeBlanc said that Biohaven Floating Islands have the potential for many other applications beyond those originally intended. He highlighted water filtration as an interesting possibility.

"It mimics some of our non-indigenous species that do a great job at cleaning up water, like water hyacinths," he explained. Water hyacinths are an invasive species introduced in the United States in the late 1800s and early 1900s. Although originally thought



Floating Islands installation. Photo courtesy FIES.

to be beneficial, water hyacinths are now considered to be a nuisance. These aquatic plants are good at absorbing water pollutants but are also fast-growing and uncontrollable. Whole ponds can be entirely inundated by these plants, reducing oxygen and blocking sunlight, turning the pond into a lifeless bog.

In contrast, LeBlanc said that Biohaven Floating Islands are controllable and easily managed.

A demonstration project is currently underway in Washington Parish involving dairy farms and the islands' use. Over the years, farming and other land practices have caused non-point source pollution in area river systems. Discharged effluent from the land has caused the water to be saturated with nutrients like nitrogen and phosphorous and bacteria. Due in large part to better education among land owners, the situation has dramatically improved. However, some problems involving water pollution still persist.

"We're now in the process of looking at these mats and their ability to clean that water up significantly before it's either irrigated onto

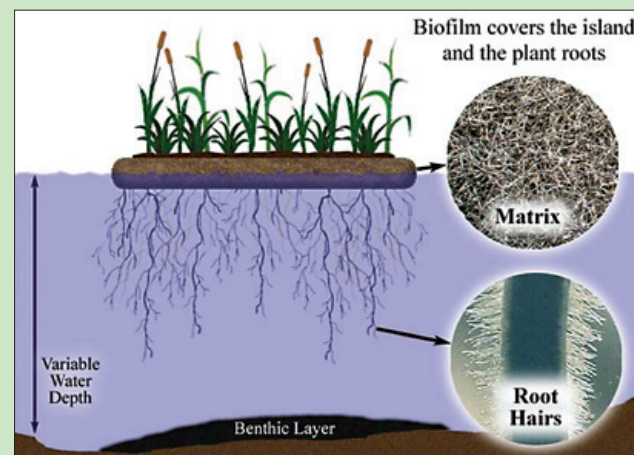
the land or discharged in some other manner. The goal is to clean that water and reduce the nutrient and pathogen loads before they get into creeks, waterways, and ultimately into the river, Lake Ponchartrain and the Gulf of Mexico," explained LeBlanc. Research is going well, he added.

LeBlanc also identified shoreline stabilization as another possible application. Pumping sediments into coastal areas and diminishing wetlands to create new land, whether by dredging or by natural river flow, is hard to manage, explained LeBlanc. "For a time, that mud flat is essentially bare because it takes a while for plant production to start," he said.

Encircling mudflats with floating islands protects new land from wave action, giving it time to be colonized and stabilized by natural plants. Such protection projects are currently underway in Lafourche Parish near Grand Isle. They are "doing extremely well," LeBlanc said.

FIES continues to grow and mature with help from local experts, said Executive Vice President Nicole Waguespack. With a better understanding and more insight about their product, Waguespack expects FIES to eventually outgrow its current headquarters in Baton Rouge.

She also identified LeBlanc as a catalyst for her company. "Brian was our first believer and promoter and has really been a godsend ever since," said Waguespack. "He's always there to answer questions for us. He's doing research, and he's opened up many doors for us."



A side view of the FIES system. Courtesy FIES.



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## COASTAL CLIPS

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## Forum Section Opens on LSG Website

Louisiana Sea Grant has a new communications venue that allows its constituents to ask questions and voice ideas anytime from practically anywhere.

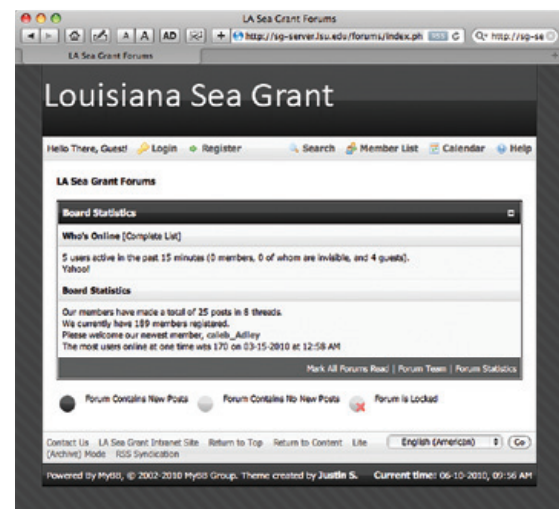
A forum section – or bulletin board system – has opened on the program's website ([www.laseagrant.org](http://www.laseagrant.org)). It can be accessed from the site's navigation bar or directly at <http://sg-server.lsu.edu/forums/>. Currently, there are four topic areas in the forum: hazard resilience in coastal communities; healthy coastal ecosystems; safe and sustainable seafood supply; and sustainable coastal development.

"Online public bulletin board systems (BBS) have been around nearly as long as the Internet," said Roy Kron, Louisiana Sea Grant communications director. "Their beauty is that they allow users to help each other, and they can be a great resource for archiving and sharing data."

Within the LSG forum, users can start discussion threads to share information and opinions, ask questions and answer questions posted by others. Users also

have the ability to upload photos and other attachments up to 500K in size.

Using the forum requires registration, which only takes a few minutes to complete. Once registered, users can post messages and maintain a profile. Louisiana Sea Grant does not share forum user information. Other registered users, however, can access certain profile information.



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## Sea Grant Responds to Gulf Oil Spill



Mark Schexnayder surveys oil on the beach at Grand Isle.

The Deepwater Horizon oil rig owned by Transocean and operated by BP roughly 50 miles off the Louisiana coast caught fire on April 20, killing 11 workers. It sank to the bottom of the Gulf of Mexico two days later and triggered the largest oil spill in U.S. history. As this economic and environmental disaster unfolds, Louisiana Sea Grant is working to assist constituents and fulfill its role as a broker of unbiased, reliable information. All programmatic areas have been activated, from research and Marine Extension to the legal program, communications department and seafood technology.

When it first became apparent that the well was discharging a significant amount of petroleum, Sea Grant Programs in four Gulf states joined together to develop the Gulf of Mexico Oil Spill Resources website (<http://gulfseagrant.tamu.edu/oilspill/index.htm>), providing a wealth of information and contacts on a variety of related topics.

Recognizing the imperative of obtaining environmental samples and data before the spill spread, the Research Sample Collection Forum was created (<http://sg-server.lsu.edu/forums/>) to allow researchers to coordinate sample collection trips and list the samples they have and those they need. LSG's seafood specialist collected archival samples of shrimp harvested before the spill and is exploring methods of detecting petroleum taint in seafood.

LSG immediately issued a call for proposals addressing the gathering of baseline

data and the monitoring of short-term impacts of the spill on Louisiana's coastal flora and fauna. The program received 56 proposals, five of which were funded. LSG is exploring funding opportunities for 13 more.

LSG personnel have called on scientists, policy makers and fishermen from Alaska to tap into their experiences in the aftermath of the massive Exxon Valdez spill 21 years ago. LSG has facilitated meetings between Louisiana residents and Alaska representatives and has taken visitors

on tours of the Louisiana coast.

Amid public confusion surrounding various contracts with BP and concern over compensation for individual, business and natural resources losses, the LSG Legal Program developed two fact sheets, "If You Suffer Damage Because of an Oil Spill" ([http://www.lsu.edu/sglegal/pdfs/Oil\\_Spill\\_Remedies.pdf](http://www.lsu.edu/sglegal/pdfs/Oil_Spill_Remedies.pdf)) and "Recovery of Public Natural Resources by the Federal and State Governments in the Event of an Oil Spill" ([http://www.lsu.edu/sglegal/pdfs/Natural\\_Resource\\_factsheet.pdf](http://www.lsu.edu/sglegal/pdfs/Natural_Resource_factsheet.pdf)) to explain pertinent law and to inform constituents who may need to file legal claims.

LSG representatives have responded to innumerable requests from local, national and international media and have facilitated community meetings to answer questions and allow residents to voice their concerns. They have provided information to the general public and state and local officials and participated in meetings with emergency planners, the U.S. Coast Guard and BP representatives.

Marine Extension agents have maintained frequent contact with local fishermen regarding closed fishing zones and provided information concerning claims, the Vessel of Opportunity Program and training meetings. They have interpreted technical reports and information

to transfer to fishermen and the public and orchestrated special outreach for members of the state's Vietnamese fishing community. They have attended site visits and collected data. LSG's Marine Extension assistant has been embedded in the Fisheries Assessment and Seafood Team at the Joint Incident Command in Houma to gather information and serve as a much-needed liaison.

One LSG agent conducted a literature review of dispersant usage, toxicity, oil toxicity and recent studies by the Environmental Protection Agency on soil sampling across the northern Gulf coast. Another Marine Extension agent used Geographic Information Systems to create a map for parish officials that identifies the location of oil-response assets such as jack-up rigs, booms and marsh openings. This map was so useful, it was submitted to the federal government as part of a regional response plan.

"Louisiana Sea Grant is committed to putting its expertise to use in the long term and short term to address the spill," said LSG Executive Director Chuck Wilson. "The Gulf coast faces yet another immense challenge, and we will continue to work



Joseph Doan, owner of Intracoastal Seafood in Intracoastal City, asks questions concerning the oil spill during a town hall meeting in Abbeville.

with our constituents, government agencies and other Sea Grant programs to put our research, education and outreach capabilities to the best use possible."



## Lindstedt Receives Coastal Stewardship Award



Dianne Lindstedt shows seashells and other natural wonders to Cameron Lewis during a recent Baton Rouge Earth Day observance.

Dianne Lindstedt is the recipient of the Coastal Stewardship Award presented by the Coalition to Restore Coastal Louisiana (CRCL). The award recognizes individuals who have made significant contributions to the preservation and restoration of Louisiana's wetlands.

Lindstedt is the education coordinator at the Louisiana Sea Grant College Program. Since taking the position in 2003, she has been a leader and trailblazer in wetlands education, guiding Louisiana's students toward a better understanding of their state's natural resources.

At Sea Grant, Lindstedt is responsible for the planning and preparation of a variety of events. She is widely recognized for her work with Ocean Commotion, a one-day coastal stewardship fair. Each year, approximately 2,500 middle and elementary school students come together to learn about the state's coast and environment through interactive exhibits.

She also participates in the Louisiana Department of Wildlife and Fisheries' Native Fish in the Classroom Project, in which middle and high school students grow native Louisiana fish from eggs to fingerlings in tanks at their schools. The fish are eventually released into the wild.

Students are not the only ones lucky enough to receive Lindstedt's help. Teachers also benefit from her in-depth understanding of the coast.

## Dockside Sales via Website Marketing

Delcambre-area shrimpers are going digital with a web-based direct marketing program. "The Twin Parish Port Commission is spearheading the effort by funding the website and making free dock space available to shrimpers and other fishermen who want to sell directly to the public," said Louisiana Sea Grant and LSU AgCenter Extension agent Thomas Hymel, who is helping with the project. "We went live in June."

The concept is essentially an online farmer's market. Licensed commercial fishermen pay \$50 to participate and get a web page where they let consumers know what fresh seafood they have in stock and where they will be on a given date and time. Consumers also can contact fishermen through the site and place orders.

"The average person eats about five pounds of shrimp a year, and there are nearly 200,000 potential customers within a short drive of

Through a series of hands-on science workshops, she introduces teachers to valuable knowledge and skills that can later be passed on to students.

Lindstedt also concurrently serves as secretary for both the Southern Association of Marine Educators and the Governor's Environmental Education Commission.

Whether it's in the classroom or the steps of the state Capitol, Lindstedt has proven to be a valuable steward of Louisiana's wetlands.

Chuck Wilson, Louisiana Sea Grant executive director, praised Lindstedt for her enthusiasm and commitment to coastal stewardship. "There's no one more dedicated to restoring and preserving our state's wetlands and coast than Dianne. She indirectly touches many thousands of students each year by providing instructors with environmental education lesson plans and introducing teachers to interesting and innovative techniques to deliver science instruction," said Wilson.

Susan Testroet-Bergeron, public outreach coordinator for the Coastal Wetlands Planning Protection and Restoration Act (CWPPRA), lauds Lindstedt for her desire to educate the public and increase awareness of Louisiana's coastal issues. "Dianne is most noted for work in education with Louisiana Sea Grant. She is a scientist by training, but a true teacher by nature. She has done a wonderful job of making abstract wetlands topics tangible, real and concrete in the minds of the learners she encounters," said Bergeron.

Lindstedt earned her bachelor's degree in marine sciences and biology at Southampton College of Long Island University in Southampton, N.Y., in 1974. She moved to Baton Rouge in 1975 and has lived in Louisiana since. She earned a master's degree in marine sciences at LSU in 1978 and a master's in science education in 1998.

Before coming to Sea Grant in 2003, Lindstedt worked as a research associate for a number of programs and departments at LSU. She's written and contributed to countless papers and reports in marine research through the years, leaving her mark on the scientific community.

Delcambre," said Jeff LeBlanc, Twin Parish Port Commission president. "When you consider that Lake Charles and Baton Rouge residents drive down for fresh shrimp on the weekends, the customer base becomes much larger.

"Shrimpers registering for the program will still sell to the processors they already use. We're just giving them the opportunity to make some extra cash by retailing a portion of their catch themselves," added LeBlanc.

An educational aspect of the website is designed to help drive retail dock-side sales. Several Sea Grant agents and specialists are preparing web pages that explain and show what quality, fresh seafood should look like.

"People don't know what real, fresh food tastes like – be it shrimp, beef, chicken or vegetables," said Sandy Kaplan, with Kaplan Advertising & Production in Lafayette, which has been hired by the Port Commission to market the website. "Fresh, wild-caught

shrimp taste better. It's local. And there are always people willing to pay for something that tastes better."

A recent meeting in Abbeville to introduce shrimpers to the program drew nearly 60 fishermen. Many were enthusiastic, and LeBlanc had 16 truly interested as of the beginning of April. But some shrimpers are worried that the processors they sell to will quit buying if they participate – seeing the niche retailing as competition. Others were concerned about the time and effort required to sell directly to the public.

"This isn't going to be for everyone," said LeBlanc. "It might be good for a small shrimper but not a larger shrimper. What it comes down to is does it make sense for that fisherman's business?"

Visit [www.portofdelcambre.com](http://www.portofdelcambre.com) to learn more about the program.

### Preparing Financially for Hurricane Devastation

How vulnerable are Louisiana's parishes and municipalities to hurricanes – not to winds or storm surge, but financial exposure?

"A number of communities that weren't impacted by Hurricane Katrina in 2005 – such as Baton Rouge – were caught off guard by debris removal costs from Hurricanes Gustav and Ike in 2008," said LSU AgCenter assistant professor of agricultural economics Matt Fannin. "Damages and debris were greater than anticipated and so were the costs."

Building on a Mississippi-Alabama Sea Grant project that evaluated the financial hit southeastern parishes experienced from Hurricanes Katrina and Gustav, Louisiana Sea Grant is funding Fannin to do similar work for south central and southwest parishes impacted by Hurricanes Rita and Ike.

"Many communities, especially smaller municipalities, don't have the financial resources to deal with the clean-up," said Fannin. "The Federal Emergency Management Agency helps with up to 75 percent of the cost, but it can sometimes take more than a year for parishes to be reimbursed. So clean-up contractors calculate that delay into what they charge the parish or town.

"These storms can have a long-term impact on a community's solvency, and that could hinder their ability to issue debt for infrastructure such as roads, sewers and fire protection," Fannin added.

Using case studies from central and south-western parishes, Fannin will estimate the optimal level of monetary reserves needed to address hurricane recovery costs. The final product will be the *Resiliency in Local Government Financing Under Coastal Risk Manual*.

"We'll put together probability data with actual losses to determine anticipated financial risk for local governments so they can have adequate reserves. The manual also could help in identifying the feasibility of insurance to cover debris removal," Fannin said.

"The goal is to provide parishes and municipalities with a tool that allows them to manage their natural hazards risk and financial health over generations – 50 years or more – not just storm season to storm season," he added.

### Best Practices for FIRM Adoption

When new Flood Insurance Rate Maps (FIRMs) are released by the Federal Emergency Management Agency (FEMA), some communities see red, while others are more accepting of the newly defined floodplain topography. FIRM adoption is required for participation in the National Flood Insurance Program (NFIP). Parish and municipal adoption of new FIRMs involves a public review process and a possible formal appeal and negotiation process to make adjustments to the maps.

## Research Update

But what ultimately drives community leaders to attempt to redraw or to readily accept new FIRMs can have long-term socioeconomic impacts. Louisiana Sea Grant researcher Melanie Gall, a research assistant professor with the LSU Department of Geography and Anthropology, is identifying the forces behind local FIRM adoption so effective guidelines for approval procedures can be developed and minimize potentially negative impacts.

"FIRMs help determine where buildings are constructed and where growth in a community will take place," said Gall. The maps are used by federally backed mortgage lenders when it comes to requiring or not requiring flood insurance and ultimately the cost of flood insurance to the homeowner or building owner.

"Many local leaders think that a change in the floodplain and subsequently prohibiting construction in an area has a negative economic impact. But we don't know that," said Gall. "It may be more beneficial to the community to restrict building and consequently eliminate flood damages."

Gall and her team will look at the social, political and economic process that six coastal communities used when adopting their new flood maps. From that, they will create a set of best practices for the approval process and share it with local and federal officials through workshops and publications.

"When we're finished, I think our findings can be applied to any parish or county in Louisiana, Mississippi, Alabama and Florida to make the FIRM adoption process better," said Gall. "In fact, the best practices we develop should apply to any community in the National Flood Insurance Program."

### Cocahoe Minnow Culture

The Gulf killifish or cocahoe minnow (*Fundulus grandis*) is a hardy and popular live marine baitfish primarily used to catch redfish, speckled trout and flounder. The vast majority sold to anglers are wild caught. Wild stocks tend to be plentiful at certain times of year, but they are not always available and usually vary in size. Commercial production of the minnow in captivity has been limited by what LSU AgCenter assistant professor of aquaculture Christopher Green describes as "known bottlenecks" in the process.

With support from Louisiana Sea Grant, Green and his colleagues at the LSU AgCenter's Aquaculture Research Station are working

to overcome these bottlenecks to facilitate the establishment of a Gulf killifish culture industry in Louisiana. They are exploring the optimum fish densities and sex ratios for breeding, what type of



Christopher Green looks at larval Gulf killifish in his lab at the LSU AgCenter's Aquaculture Research Station.

maternal feed produces the strongest offspring, what feed makes larval fish thrive, and they are studying air incubation of fish eggs.

The good news is that these minnows are relatively easy to maintain and breed in outdoor tanks and indoor recirculating systems. The larval fish accept dry feed, negating the need for more expensive live foods, and Green uses readily available rock salt for salination. One of the more interesting characteristics of the Gulf killifish is the ability of its eggs to survive outside of water for more than two weeks, as long as they are kept moist.

Green gathers eggs from special breeding mats and stores them under slight refrigeration in small plastic bins between two layers of synthetic foam to prevent hatching. This delay allows more eggs to be collected and held over several days so that they may be hatched at the same time. Cannibalism is common among larval killifish, with juveniles able to devour smaller fish only a day or two younger than themselves. Controlled, large-batch hatching reduces this problem, allows more fish to be reared in one tank and produces more consistently sized minnows.

Green and LSG Fisheries Specialist Julie Anderson held several workshops in coordination with LSG Marine Extension personnel in coastal parishes to share his findings with residents who may be interested in pursuing killifish farming.

"Aquaculture will supplement rather than replace wild-caught baitfish," Green said. "Cultured minnows are healthier and better survive transport, but the techniques won't go far until stakeholders adopt them."

The U.S. Department of Agriculture and Louisiana Department of Wildlife and Fisheries also provide funding to the project.

## Book Explores Louisiana History from Different Perspective

Louisiana has a long and rich history. Native Americans, the French, the Spanish, Acadians and Creoles have left their marks. But with so many cultural influences, it's only natural that the clarity and distinctiveness of the many inhabitants become confused and indistinguishable.

Author and retired research professor Don Davis clears away some of the gray in his newly published book *Washed Away? The Invisible Peoples of Louisiana's Wetlands*, a comprehensive review of Louisiana's coastal plain residents from the settlement of New Orleans through the year 2008.

Davis spent years reviewing and compiling literature and illustrations for his extensive, wide-ranging manuscript. "The first half of this project involved reading an enormous amount of material and then putting it into written form. At the same time, I wanted to illustrate the manuscript with graphic material many people have never seen," explained Davis.

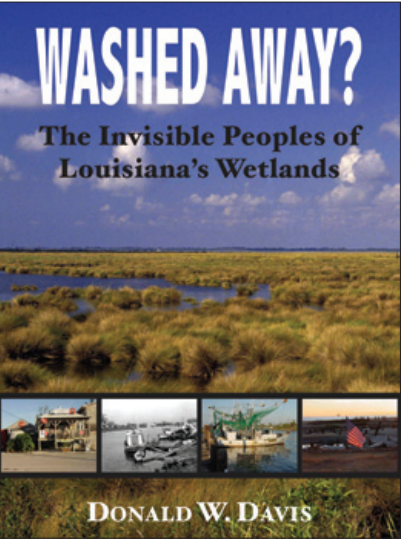
He identified family photo albums as one of the essential pieces to developing his book and expanding his understanding of Louisiana's history. "It became particularly important after the hurricane season of 2005. It became clear that many family records were lost. Individual families simply

do not realize that they may have important photography," lamented Davis. Although the photos contain mostly people in the foreground, the backgrounds may have some significant information (e.g. boat types, structures) that we have never seen before, he explained.

Writing the book has been a long endeavor for Davis. "It's been a continuous process; I've been in the field probably one or two days a week for nearly four years. I've had to reacquaint myself with the physical processes (i.e. the importance of the Mississippi River and flooding events) and the vast assortment of culture groups that have left their impacts on coastal Louisiana. You just continue to uncover pieces that we will incorporate into the final page," Davis said.

He has high hopes for *Washed Away?* and its potential effect on public understanding of Louisiana's coastal residents. "Hopefully, by publishing this book, we'll call people's attention to the dynamic character of the wetlands in a manner that you don't normally see," Davis said.

The book is published by the University of Louisiana at Lafayette Press and is available for purchase at [www.ulpress.org](http://www.ulpress.org).



## LSG Grad Assistant Lands Smithsonian Job

Catherine Sutura, a former graduate assistant in the Education Department at Louisiana Sea Grant, was recently hired as a contractor in ocean science education for the Smithsonian Institution in Washington, D.C. She helps coordinate educational events and activities for Sant Ocean Hall at the Smithsonian's National Museum of Natural History. She will help develop new educational activities and hand-outs for the hall as well as assist in the redesign of docent training. Sutura's duties include online outreach education at the

Ocean Portal ([www.ocean.si.edu](http://www.ocean.si.edu)), and she has written a blog on educational opportunities and resources for the Gulf oil spill.

Sutura earned her bachelor's degree in biological science from LSU in 2005. She completed her master's work in 2009 while employed at Sea Grant and received her diploma in May. Her thesis, "Investigating the Effectiveness of Informal Science Education through Quantitative and Qualitative Analysis: Ocean Commotion, a case study," gauged the effects of Sea



Catherine Sutura

## HACCP Training Draws National Crowd

Fishermen, aquaculturists, dock owners, seafood processors and producers of specialty foods from as far away as Alaska recently attended a three-day seafood Hazard Analysis and Critical Control Points (HACCP) training at LSU, hosted by Louisiana Sea Grant and the LSU AgCenter. "HACCP is a means of internal control for safety, consistency, awareness and correction of process deviation in the food industry," explained Lucina Lampila, LSG and LSU AgCenter associate professor. "It was first developed by Pillsbury to produce safe foods for astronauts to take into space." The 28 workshop participants came from seven states to study the Food and Drug Administration-recognized curriculum taught by LSG and LSU AgCenter researchers and professors, alongside FDA and Department of Health and Hospital inspectors. Implementation of a HACCP plan in seafood processing facilities has been a federal requirement since 1997. Pictured from left, Kimberly Tucker, John Nguyen, David LeRay, Lance Nacio and Mark Hoffmann work together to develop HACCP plans specific to their products.

