

Liffmann Appointed to National Sea Grant Position



Mike Liffmann

Mike Liffmann, associate executive director of Louisiana Sea Grant, is the new Extension leader for the National Sea Grant College Program. Liffmann began his one-year appointment in Washington, D.C., in August.

"Mike's new position as national Extension leader is a reflection of his commitment to helping Sea Grant fulfill its mission of maintaining a healthy coastal environment

and economy," said Charles Wilson, Louisiana Sea Grant College Program executive director and Louisiana State University vice provost. "The national office has called on Mike before for assistance with various projects, so they recognize the value of his more than 20 years of experience with Louisiana Sea Grant."

As national Extension leader, Liffmann will work to enhance communication between the National Sea Grant Office and its Extension network, provide coordination and leadership for fisheries Extension enhancement programs and initiate collaborations with various Sea Grant partners. Since 2001, he has

served as Louisiana Sea Grant/LSU AgCenter Marine Extension project leader.

Liffmann earned a B.A. in economics and political science from Lamar University in Beaumont, Texas, and a M.A. in Latin American and regional economics from LSU.

Sea Grant Extension staff work with communities in countless ways – to improve tourism opportunities, help fish farmers develop environmentally-sound farming practices, explain the impacts of land use on water quality, and provide technical assistance to communities planning for, and dealing with, hurricanes and other natural disasters. •



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COASTAL CLIPS

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Oyster Hatchery Operational for First Time Since Katrina

It was early Saturday afternoon when John Supan hastily adjourned the annual convention of the Louisiana Oyster Dealers & Growers Association in New Orleans. A hurricane in the Gulf of Mexico was headed toward Louisiana's coast.

Some of those at the meeting immediately headed north. Others went to make safe their homes and their oyster boats. Supan, Louisiana Sea Grant associate research professor and director of the LSG oyster hatchery, headed to Grand Isle to secure the facility and remove whatever equipment he could fit in his truck.

Two days later, on Aug. 29, 2005, Hurricane Katrina swept the hatchery buildings, remaining research equipment and 69 million oyster larvae away.

Nearly two years after that devastation, the oyster hatchery on Grand Isle is operational again. Since 1990, the hatchery has focused on improving Louisiana's oyster production through research and technological innovations.

"After reopening this May, the hatchery has been temporarily fitted to produce triploid oyster seed for projects this summer," said Supan.

Triploid oysters are sexually sterile and have three sets of chromosomes, unlike normal (diploid) oysters that have two. From June through November when diploid oysters are expending energy to spawn and shedding fat stores, triploid oysters remain meaty.

"The goal is to develop a summer crop of oysters that retains high meat yields and gives growers a higher quality product to market in the second half of the year," said Supan. "Right now, triploid oysters are commercially produced at hatcheries in Oregon and Washington, and programs along the Atlantic coast are working toward triploid production."

Triploids can be created artificially by manipulating oyster chromosomes. A chemical may be used to trick the developing fertilized egg to keep a set of chromosomes it would normally eject – resulting in a triploid. But this method, as well as heat shock and

pressure methods, doesn't make all the treated oysters triploid.

The chemical manipulation method can also be used to create tetraploid oysters, which have four sets of chromosomes and can sexually reproduce. When bred with diploid oysters, tetraploid oysters produce 100 percent triploid offspring. This summer, Supan collaborated with Stan Allen and Gene Bureson at the Virginia Institute of Marine Science for the first-ever production of 100 percent triploid progeny in the Gulf region. These oysters will be distributed among cooperating oyster industry members while further research continues to produce tetraploid broodstock at Grand Isle.

Although Hurricane Katrina interrupted the hatchery's work, it also provided an opportunity to install some cutting-edge technology. Oyster larvae now can be grown in tanks that use "flow-thru" rather than recirculated water, allowing more larvae to be grown per liter of water. The hatchery now boasts a high-tech water filtration system that is only the second saltwater application of the equipment in the U.S. And researchers have secured state-of-the-art genetic testing equipment.

One piece of Supan's research did survive the storm – an adjustable longline system that grows oysters in mesh bags suspended off the water bottom. The bags protect oysters from predators and can be periodically raised for aerial drying to dramatically reduce fouling from barnacles, wild oysters and algae. The bags also make harvesting easier.

"It can be a labor and money-saving system," said Supan. "The longline system, which is commercially used in Australia, allows you to grow oysters in areas where they don't normally survive, such as high salinity waters. But it should only be used in a controlled setting with limited access, such as in an aquaculture park that applies industrial park concepts, to reduce user conflicts." Together with the Grand Isle Port Commission, a coastal use permit

(Continued next page)



John Supan prepares algae cultures at Louisiana Sea Grant's oyster hatchery on Grand Isle. The algae are used to feed oysters grown at the facility.

Coastal Engineer Joins Louisiana Sea Grant

Hassan Mashriqui has joined Louisiana Sea Grant and the LSU AgCenter as an assistant professor in coastal engineering.

Mashriqui will develop a comprehensive outreach program to support community needs related to hurricanes, storm surge, floods and building or rebuilding levees. He also will provide support to training programs for levee boards.

"Hassan brings to Sea Grant a wealth of information and capabilities in coastal hurricane surge modeling," said Charles

Wilson, Sea Grant executive director. "He will help fill the need for expertise in coastal processes and restoration, and will aid in developing critical information for community, parish and levee district officials."

Mashriqui is a licensed professional engineer in civil engineering. He most recently was involved in developing coastal hydrologic and hydraulic modeling capabilities for the LSU Hurricane Center. His research interests include coastal

and inland flooding from hurricanes, hydrodynamic and sediment transport modeling, wetland restoration, river management, and using geographic information systems (GIS) and Light Detection and Ranging (LIDAR) technology-based environmental modeling. •



Hassan Mashriqui

UROP Participant Researches Her Options

LSU's Undergraduate Research Opportunities Program (UROP) is giving Nita Clark a chance to test the waters, both literally and figuratively, to help her decide if a research track is a good fit for her. The LSU chemistry junior's goals include earning a doctorate in coastal environmental management and landing a job with an institution like the Environmental Protection Agency. However, a lack of experience can make choosing and following a career path difficult, so Clark is getting a taste of real-world science with the help of LSG.

"I wanted to do research and try it out before going to graduate school," Clark said. "I needed to see if this is what I want to do for the next five or six years of my life."

Exclusively for undergraduates, UROP's goal is to increase the number of students pursuing careers in marine science by encouraging research activities related to an existing project funded by Sea Grant. Since 1992, the program has supported investigative work for more than 50 students at LSU, who propose, design, carry out and report on their own projects.



Nita Clark

Advised by LSG-funded professor Jaye Cable, Clark is examining trace metal loading in LSU's Campus Lake near Highland Road and South Stadium Drive. Clark collected monthly water samples from September 2006 through February 2007 and prepared them for testing by a LSU biogeochemistry laboratory, looking for metals like copper, nickel, manganese, iron and arsenic. For her efforts, UROP pays Clark a small stipend and covers the cost of her supplies.

Cable said that trace metals can contribute to making the water column or sediments toxic, but so far, results from the LSU lake are showing very low levels, likely less than those found in a study of the entire lake system conducted in the late 1970s.

"This project gives Nita an opportunity to see how you develop an idea and how you carry out research – taking samples, plotting data, presenting it, effectively conveying your message," Cable said. "It's more of a learning exercise in how to do research. You learn a lot when you take ownership of your

own project and must prepare for field trips and calibrate meters. That's a huge learning curve to overcome."

UROP coordinator David Nieland said, "Program participation increases undergraduates' competitiveness as graduate students, helps them make career-related decisions and lets them establish a working relationship with a faculty mentor."

Clark is from Baker and has the distinction of being LSU's first recipient of the \$5,000 merit-based national Morris K. Udall Undergraduate Scholarship. She recently participated in summer research in the School of Public Health at the University of North Carolina at Chapel Hill. She is a member of the Louisiana Science, Technology, Engineering and Mathematics Research Scholars Program (LA-STEM).

"Nita is very conscientious, and she follows through on the work that she needs to do," said Cable. "She is enthusiastic and smart. I think that she's going to accomplish a lot. Much to her credit, she's pretty tenacious."

More information on UROP is available online at <http://www.lseagrants.org/urop/index.htm> or by contacting Nieland at dniela@lsu.edu or 225.578.6373. •

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Maxwell Named Knauss Fellow

Louisiana State University doctoral graduate Vanessa Maxwell has been selected as a 2008 Knauss Fellow. She was nominated for the fellowship by the Louisiana Sea Grant College Program.

Maxwell completed her Ph.D. in wildlife and fisheries sciences with a minor in environmental planning and management in August. During her doctoral studies, she assisted Louisiana Sea Grant researcher John Supan with a proposed aquaculture park that will demonstrate longline oyster farming in coastal Louisiana.

Longlines are an off-bottom cultivation technique, used widely in Australia, in which oysters are grown in flexible plastic mesh bags suspended from a cable. Maxwell's graduate assistantship on the project was funded by Sea Grant's Gulf Oyster Industry Program.

"I'm hoping to stay involved with the aquaculture industry, helping develop policies that are beneficial to both it and the fisheries industry," said Maxwell about her fellowship.

"I'm not sure at this point of all the options that are available. But I'm happy to have this opportunity."

The Knauss Fellowship, sponsored by the National Sea Grant College Program, provides a unique educational experience to students who have an interest in ocean and coastal resources and national policy decisions affecting those resources. The program matches graduate students with hosts in legislative or executive branch offices in Washington, D.C., for one year. Maxwell will be in an executive branch office.

Her fellowship will begin in February. She is one of 52 Knauss Fellows for 2008.

Graduate students at any Louisiana University interested in applying for a Knauss Fellowship should contact Dave Nieland at dniela@lsu.edu. •



Oyster Hatchery . . .

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application is in review to create a five-acre park on Caminada Bay to test the concept.

Even though the hatchery is functional, it is far from the facility it was before the 2005 hurricane season. Two tiny trailers serve as both laboratory and storage space where the original building, which included lab and living quarters, once stood. For now, Supan and his staff rent an apartment further down the island for housing at a

distance that hinders some of the around-the-clock monitoring they were able to conduct while living on-site.

In addition to the loss of work space and creature comforts, Supan is encountering a few technical difficulties in re-establishing hatchery operations, like the algae culture system that generates food for the juvenile oysters he grows. "It takes time and a bit of trial and error to get some of these systems back to work," he said.



One of the many oyster seed raised at the hatchery.

Ocean Commotion Turns 10

Pam Blanchard was the newly hired education coordinator at Louisiana Sea Grant in 1998 when she was asked to brainstorm on a local commemoration of the United Nations' declaration of the International Year of the Ocean.

The idea of an observance at LSU began with University Relations personnel, who first approached LSG seeking a way to showcase the university's marine research.

"We thought about doing something for teachers like a science fair conducted by faculty and researchers," said Elizabeth Coleman, LSG communications director from 1980 to 2002. "We discussed a lot of ideas. I had something very modest in mind."

A former middle school math and science teacher in Texas, Blanchard remembered the isolation she sometimes felt and the lack of educational activities at schools with limited resources. So, she suggested a celebration that would focus on students rather than educators.

"For this event, I saw a nice marriage between K-8 students and researchers," Blanchard said. "I wanted a hands-on way to show to kids something they're not going to see at their schools."

As Blanchard helped researchers tool their messages and design interactive presentations to explain ocean science to young people, she was working to complete her own Ph.D. in geology at LSU. As local Year of the Ocean plans fermented over about nine months, Blanchard couldn't stop thinking about the title of a journal article she had read for her dissertation. The piece on land bridges and ocean currents was called *Commotion in the Ocean*.

With some tweaking from Coleman, the name stuck, and Ocean Commotion was born. It hosted 3,000 students in the LSU Field

House that first year. The supposedly "one-time" event celebrates its 10th anniversary on Oct. 25.

"It was really Pam's energy and her initiative that got this thing started," Coleman said. "She ran with it."

"It was so successful that Sea Grant and LSU University Relations agreed to go forward and do it again," Blanchard recalled. "We worked the bugs out and developed a formula. There was a steady commitment from important

people to make this happen. In those early days, it really was University Relations that stepped up in a big way, and over the years, Sea Grant got more involved."

Many things have changed since 1998 – the one-day educational fair is now directed exclusively by LSG and receives corporate funding from Motiva – but it remains a lively, hands-on learning opportunity. Topics extend beyond ocean-exclusive themes to subjects like coastal marshes, Louisiana geology and wildlife. Exhibitors come from area businesses as well as government, public, private, non-profit and educational organizations. Ocean Commotion is still held at LSU, but the location moved to the concourse of the Pete Maravich Assembly Center.

LSG's current education coordinator, Dianne Lindstedt, first experienced Ocean Commotion as a presenter while working as a research associate in LSU's School of the Coast and Environment. This year's is the fourth Ocean Commotion she has directed.

"Over time," Lindstedt said, "I've seen the exhibits become more sophisticated and kid-friendly. They are more interactive and hands-on. The exhibitors love the event. I don't know who likes Ocean Commotion more, the exhibitors or the students."

Another change has been the age of some exhibitors. With an explosion in peer

teaching, middle and high school students have become an integral part of the event, either by assisting presenters or by running booths with demonstrations and experiments of their own. At least one New Orleans high school student decided to become a teacher after spending a day educating younger pupils at the University of New Orleans' aquatic animals exhibit.

"Ocean Commotion exposes a lot of kids to the coast – a place many of them have never been," Lindstedt said. "The message also reaches their teachers and chaperones. The first step in learning and caring is knowledge. Ocean Commotion gives them that initial contact so they can make more connections in the classroom throughout the school year. It's a good portal to education, science careers and stewardship."

"It takes a while for people to learn that they can impact big issues, like climate change," Lindstedt continued. "It's like throwing pennies in a jar – over time it adds up and makes a difference."

Blanchard works as an assistant professor at LSU now, but still serves as an Ocean Commotion exhibitor and holds a special fondness for the event and the lessons it taught her.

"I think one of the interesting things I learned is that no matter how complicated research is, you can always pull something from it and simplify it for children," she said. "I just love it. It's a great chance to show kids what real researchers are doing."

"It's a big deal that they come to the LSU campus. It shows them they can have a place here as well as career options. I've been in the classroom. I know it is hard for them to access these resources in the classroom." •

Delcambre Turning Devastation into Redevelopment

A prospering coastal village for generations, Delcambre has seen its shrimping industry and economy struggle in recent years. Then, in September 2005, a 10-foot storm surge from Hurricane Rita swept through the



Shrimp are weighed as they are unloaded from boats via a conveyor belt at a dock in Delcambre.

community, creating more hardships and flooding all but two dozen of the town's nearly 1,000 buildings. Damages totaled \$9.9 million. Businesses along LA 14 closed. The shrimping industry was crippled further. Two years after the storm, several buildings still sit empty.

"The community itself was devastated," said Delcambre resident Connie Landry. "Only about 12 to 15 homes weren't flooded. There are still multiple blocks along the waterfront

that are uninhabited. We have a number of empty houses and empty lots that were traditional family homes."

Although weary from Rita's physical and economic devastation, a group of businessmen, elected officials and other professionals see an opportunity to rebuild the town and its prospects.

Straddling Vermilion and Iberia parishes, Delcambre is only about a half-hour drive from Lafayette, while other coastal communities are an hour or more away. The Delcambre Canal and Bayou Carlin provide easy access to the Gulf of Mexico for commercial and recreational activities, as well as other maritime interests.

Town leaders want to capitalize on their location. They envision a revitalized Delcambre as a destination with a working waterfront.

Following the 2005 hurricane season, the state hosted nationally acclaimed planners and other experts to develop proposals for coastal recovery. But the visions presented didn't inspire Delcambre residents, who felt the plans didn't capture the local culture and weren't sensitive enough to local needs.

A loose coalition of elected and community leaders formed the Delcambre Town/Ports Steering Committee and contacted Louisiana Sea Grant to see how it could assist.

"We were more than happy to help and have worked with other communities on similar issues," said Thomas Hymel, watershed educator for LSG and the LSU AgCenter.

Sea Grant connected the committee with Kevin Risk, associate professor of landscape architecture at Louisiana State University. With Sea Grant funding, Risk's

senior landscape architecture students in the fall of 2006 met with Delcambre residents, walked the town and developed a conceptual redevelopment plan for the waterfront and

surrounding area. Those plans were presented during a public meeting in November 2006.

But things didn't end there. The University of Louisiana's Community Design Workshop continued the effort this spring, again with Sea Grant funding. UL architecture and design



The proposed working waterfront for Delcambre includes commercial fishing, restaurants, retail and residential development.

professor Tom Sammons' students presented their ideas in July.

Design concepts include a public marina, open-air markets, waterfront residential areas for second homes, al fresco dining, boardwalks, and possibly a hotel to accommodate tourists. All of the plans include capitalizing on the town's annual Shrimp Festival as an attraction.

"Shrimping will remain an important part of the redevelopment," said Rod Emmer, Louisiana Sea Grant research professor. "But to be viable, the waterfront ultimately needs a mix of uses with parks and cultural attractions, retail, industry, and an updated safe harbor for watercraft seeking refuge from hurricanes."

"Economic success means providing a range of coastal-oriented activities that will attract people from Lafayette, Opelousas or even farther," said Emmer.

Money also is essential to redevelopment. Steering committee members are applying for grants through the local congressional delegation, Army Corps of Engineers and state and federal programs. The committee is soliciting other sources of support, such as donations of land, parcel swapping, special taxes, the sale of fuel and fishing supply concession rights, and partnerships with the parish and Twin Parish Port Commission.

"Delcambre is going to change – Hurricane Rita guaranteed that," said Landry, who sits on the steering committee. "We can sit back and allow change to occur from external forces, or we can step-up and create some of that change in the direction we think it should go." •

Extension Agents Receive National Recognition

Three Louisiana Sea Grant/LSU AgCenter Extension agents are the recipients of the Superior Outreach Award from the national Assembly of Sea Grant Extension Program Leaders (ASGEPL) for their response and continuing recovery work following Hurricanes Katrina and Rita.

The three receiving the national award are Albert "Rusty" Gaude', associate area agent for St. Bernard, Plaquemines and Orleans parishes; Kevin Savoie, area agent and fisheries agent for the Southwest Louisiana Region; and Mark Schexnayder, area fisheries agent and hurricane program coordinator for Southeast Louisiana. In March, the trio received the Gulf of Mexico and Caribbean

Sea Grant Extension Network's Outstanding Group Achievement Award.

"Their work is a magnificent example of what a few dedicated Sea Grant people can accomplish working in a Sea Grant fashion – addressing a critical need in a timely, professional manner, and enlisting and involving multiple agencies and citizens' groups," said Jack Thigpen, ASGEPL chair. "What distinguishes their work from the other truly excellent nominees this year is that the Louisiana project was conceived, started and carried out while the agents themselves were in *extremis* due to the personal impact of Hurricanes Katrina and Rita on them."

The 2005 hurricane season brought

unprecedented devastation to the U.S. Gulf Coast. Despite all three agents being displaced by either Hurricanes Katrina or Rita, they quickly returned to assist their constituents, most notably fishermen and local governments.

"The agents were innovative and adaptive in their methods, particularly since the world as they and coastal residents had known it had been shattered by the storms," said Thigpen. "The significance of their effort is two-fold. It has profound implications on the ability of the commercial fishery and coastal communities to rebound in Louisiana. It also is a working demonstration of the significance of Sea Grant Extension work." •

Researchers Working on Aquafeed Fishmeal Substitute

Florida pompano is often described as one of the best-tasting fish in the sea. On average, commercial fishermen land about 730,000 pounds annually in the United States – not nearly enough to meet consumer demand.

Since the 1960s, pompano has been identified as a strong candidate for commercial aquaculture because of its popularity. Other advantages to raising pompano include its tolerance for a wide range of salinities, resistance to low dissolved oxygen

"The economic need to replace fishmeal in aquafeeds is driving research around the world for alternative ingredients," said Robert Reigh, professor with the LSU AgCenter's Aquaculture Research Station. Reigh's Louisiana Sea Grant-sponsored research explores pompano nutritional needs.

"Fishmeal supply is near maximum yield, and the price is high," said Reigh. "A diet that contains little or no fishmeal could affect the profitability of pompano farming and the development of that industry."

Commercially manufactured animal feeds are made up of a relatively small number of all-purpose ingredients. How efficiently a fish uses the nutrients in feed varies with each species. Nutrient requirements for many cultured fishes, pompano included, have not been established. So a general purpose feed may provide pompano more essential nutrients than actually needed.

Ascertaining quantitative nutrient requirements is a time-consuming process – sometimes taking years. But digestibility measurements can be determined in a short period of time and that data used to make dietary improvements. That is where Reigh and his team started.

They created a comprehensive database – using digestibility measurements they made for a number of feed ingredients – that provides a foundation for developing more nutritionally efficient pompano diets. They also identified appropriate levels of dietary protein and calories. Step two started the process of replacing fishmeal in the pompano diet.

"The objective was to determine to what extent purified amino acids should replace intact proteins found in dietary fishmeal.



As part of the study, researchers mix specialty pelleted food. Photo by Craig Gothreaux.

Ideally, plant products and amino acid supplements could replace fishmeal in pompano feed and reduce feed costs," said Reigh. Purified amino acids are added to many animal feeds to overcome essential amino acid deficiencies that can occur when plant-based proteins are substituted for animal proteins.

Reigh and his team have determined the previously unknown essential-to-nonessential ratios for amino acids for pompano. They also determined and formulated desired dietary nutrient levels to begin the process of replacing fishmeal for upcoming feeding trials.

Step three, which begins in 2008, will determine minimum lysine and methionine dietary requirements – both essential amino acids.

"Results of the research will, again, aid in the increased use of plant protein supplements such as soybean meal as a replacement for fishmeal. Burriss Mill & Feed in Franklinton already is interested in the project because of how it could be applied to its marine feed business," Reigh noted. •



A residential waterfront concept proposed for Delcambre by ULL students. Additional concepts can be found at www.lasagrants.org/adserv/delcambre.htm.