

## New Sea Grant Employees

John Davis and Hamady Diop have joined the ranks at Louisiana Sea Grant.

Diop is an assistant professor of fisheries and economics. He earned his doctorate in agricultural economics at Louisiana State University, master of science degrees in economics and agriculture economics at LSU and his bachelor of science degree in economics from Université d'Abidjan, Ivory Coast. His interests are fisheries economics and modeling, and natural resource economics.

"I look forward to the challenge of applying my experience in analyzing the socio-economic impact of fisheries and the regulations under which they operate to the real-life situations that Louisiana fishermen face," Diop said. Prior to coming onboard at Sea Grant, Diop was an assis-

tant professor in the Coastal Fisheries Institute at LSU.

Davis is a research associate with the Sustainable Coastal Communities/

*John Davis and Hamady Diop*



Smart Growth Project. He earned his master of arts degree in geography from the University of New Orleans and his bachelor of science degree in marine transportation from Texas A&M University. His interests are Geographical Information Systems and GI science related to hazard mitigation and urban analysis.

"My goal is to support current and future Louisiana Sea Grant research agendas from an uncommon perspective," Davis said.

Davis comes to Sea Grant from Technical Marine Associates in New Orleans, where he was a marine surveyor. He holds an unlimited third mate license from the U.S. Coast Guard, and was a lieutenant in the U.S. Navy Reserve.



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## COASTAL CLIPS

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## Designing Disaster-Resistant Communities

When Dennis Hwang arrived in Banda Aceh, Indonesia, following the December 2004 tsunami, he was impressed by structures that survived the pounding force of the Indian Ocean's earthquake-driven waves. In several coastal locations, mosques were the only buildings left standing. While all nearby homes and businesses were crushed, the mosques' traditional open construction style permitted water to pass through, diffusing the hydrostatic and hydrodynamic pressure on their walls and sparing the buildings. This also saved lives, as survivors fled to the upper floors to escape water swirling around them.

Hwang is a natural hazards mitigation expert with a background in coastal geology and land use law. He used these disciplines to write the *Hawaii Coastal Hazard Mitigation Guidebook*, which covers the interaction between the hazard phenomenon and the development process. Hwang says that the "hazard risk is a function of the hazard itself and where and how you develop." Concepts developed in the Hawaii guidebook are being implemented in Hawaii and



Homes near the London Avenue Canal floodwall breach in New Orleans were inundated with water, mud and debris.

elsewhere. As a member of a team guiding Indonesia's recovery, he is helping apply these concepts so that individuals, villages and the country's government can design more hazard-resistant communities.

At the invitation of Louisiana Sea Grant Legal Program Director Jim Wilkins and Legal Coordinator Lisa Schiavinato, Hwang traveled to Baton Rouge in mid-October to discuss "Coastal Hazards Mitigation: Models for Katrina and Rita Recovery." He presented his ideas and research at a seminar complementing the Presidents'

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## Addressing Wastewater Issues

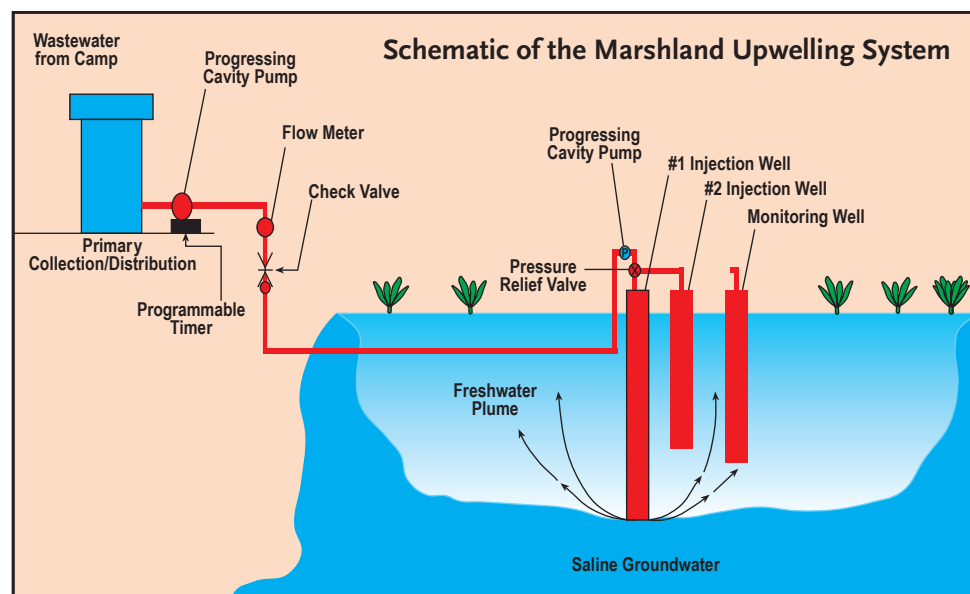
Algal blooms and pathogens have increased while overall water quality has decreased in rural coastal Louisiana, in part due to sewage disposal from camps. As more people live year-round and enjoy recreational facilities in the marsh area, poor water quality issues will continue to grow.

One solution to the sewage issue is the marshland upwelling system (MUS) investigated by Louisiana Sea Grant researcher Kelly Rusch, professor of civil and environmental engineering at Louisiana State University.

"We have the data that shows the MUS works," said Rusch. "The next step is getting the system certified by the Department of Health and Hospitals for general use."

The MUS, an alternative to septic systems, which don't work in high water table areas, utilizes the natural ecology of the subsurface environment of coastal marshes to remove contaminants in camp sewage, such as fecal coliform, *E. coli*, organic matter and nutrients.

Wastewater generated at a camp flows into a collection tank behind the building. From there, it is pumped to a well location in the marsh and then down the well into the subsurface sediments. As the wastewater gradually



makes its way toward the surface, contaminants are scrubbed from the discharge.

At Bayou Segnette near Westwego, one MUS in Rusch's research project has been used on a daily basis for more than three years. "One of the questions that continues to be raised is clogging. How long until the system clogs? The Bayou Segnette site shows that the system can run for an extended

period of time without a problem," she said.

To address any future clogging issue, a backup well is drilled when the MUS is installed. Since the system's plumbing is on the surface, switching to the backup well is an easy task.

The MUS also is relatively inexpensive – costing \$1,500 to \$2,000 for materials.

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Executive Director

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Nearly 2,200 visitors – grade K-8 students, teachers and chaperones – attended the 8th Annual Ocean Commotion at LSU on Oct. 27, hosted by the Louisiana Sea Grant College Program. About 100 of the students were displaced by Hurricanes Katrina and Rita and now are enrolled in Baton Rouge area schools. Ocean Commotion exhibitors offered more than 50 interactive displays that taught children about the resources of the sea and coast and encouraged them to become good stewards of Louisiana's unique ecology. Motiva Enterprises provided financial support for this year's event.

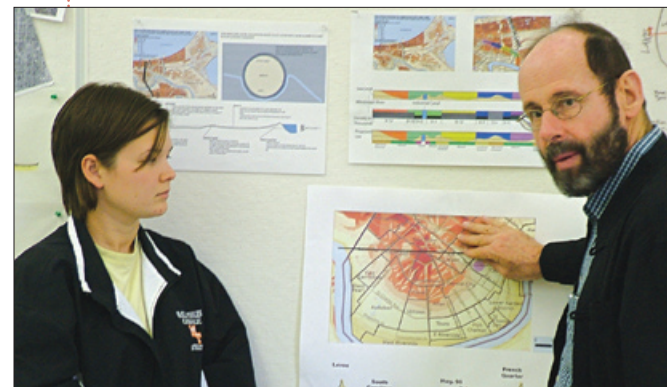
## Rebuilding New Orleans

A group of landscape architecture students at Louisiana State

University focused their efforts this fall on a development plan and design for a new New Orleans.

"The students explored a range of alternatives for rebuilding the city," said Bruce Sharky, professor of landscape architecture and one of the class' instructors. J. Kevin Risk, assistant professor of landscape architecture at LSU, is the class' other teacher.

"Safe and sustainable growth concepts that explore a more disaster-prepared community are a principal aspect of their



Bruce Sharky reviews landscape architecture senior Catherine Cannon's design project.

urban design plans, along with alternative transportation concepts."

The students' designs, according to Sharky, provide a range of attractive economic alternatives, with the goal of bringing back relocated residents to more livable, more attractive neighborhoods.

The 25 students involved in the project are seniors in the LSU School of Landscape Architecture. Louisiana Sea Grant provided funding support for the project.

"Students produced two- and three-dimensional plans and supporting materials that demonstrate a number of alternatives for rebuilding a safer and even more engaging and vibrant New Orleans," added Sharky. The class also is establishing a Web site to publish its recommendations and plans.



Forum on Meeting Coastal Challenges. Hwang also spoke to Louisiana Sea Grant/LSU Agricultural Center marine agents and LSU students in the School of Landscape Architecture.

"I think that Louisiana Sea Grant can play a major role in helping the area to recover by providing information on better construction techniques, safer siting options, as well as flexible implementation strategies for recovery of the area," Hwang said. "There are options for individuals rebuilding as well as for parishes."

While tsunamis are one threat Louisiana does not face, some of the lessons Hwang learned in Indonesia and his extensive work in Hawaii can be useful for Louisiana's recuperation in the wake of this year's hurricanes. For instance, construction styles that can resist storm surge are applicable in Louisiana and around the world.

Hwang toured areas in St. Tammany leveled by storm surge and assessed flood damage caused by levee breaches in Orleans Parish. He also made a brief survey of St. Charles Parish to examine

Dennis Hwang



## Hurricane Recovery Resources Online

Responding to the need for information in the aftermath of Hurricanes Katrina and Rita, the Louisiana Sea Grant College Program launched a resources Web site at [www.laseagrant.org/hurricane/index.htm](http://www.laseagrant.org/hurricane/index.htm).

The Louisiana Hurricane Recovery Resources site offers visitors information on topics such as wetlands, seafood and water quality, ports, economic impacts and rebuilding concerns. Through a question-and-answer format with experts from a variety of fields, residents, business owners and community leaders can



Displaced earth and concrete show that the forces of Hurricane Katrina were more than the London Avenue Canal floodwall in New Orleans could withstand.

elevated houses in a flood-prone neighborhood and to view wind damage wrought by the successive storms.

"It's good to rebuild the levees," Hwang said of the New Orleans area, "but it could take quite a long time to do that. In the meantime, a lot of people will be rebuilding their homes from scratch. If they're going to rebuild anyway, they might as well try to put as many hazard mitigation features in as is feasible."

In all locations, Hwang advocates a "light-handed" approach to mitigation, which involves educating the public, providing guidance and incentives, while rallying communities to voluntarily change how and where their homes are built instead of imposing strict government regulations. He also emphasizes the necessity of seeking citizen input in the process and respecting community, cultural, religious, economic and social concerns.

"Louisiana has some of the same problems we see in Hawaii – coastal erosion, sea level rise, hurricanes, subsidence, flooding, high winds and storm surge,"

Hwang said. "On top of that, our state also has to be prepared for tsunamis, earthquakes, volcanoes and lava. After a natural disaster, it's important to take the time to rebuild better. It can be done in an efficient manner, and when the next hurricane comes, people will be glad they did it."

Hwang's recommendations include flexible strategies for implementation coupled with scientific standards that seek to protect all members of the public. He said homes should be rebuilt farther away from hazards and in lighter densities in high-hazard zones. Homes constructed in the coastal zone need to withstand multiple threats such as wind and water.

"It may take a little longer to rebuild this way, but when a hurricane hits again, it won't be as devastating," Hwang said. "It is certainly possible for New Orleans and the Gulf Coast to recover, but it's important to do it wisely and follow the correct path."

Hwang's presentation is available online at <http://www.laseagrant.org/forum/index.html>.

and also offers visitors a search engine function. The revised anchor site is the first step in a project to redesign several Louisiana Sea Grant Web sites. Other Louisiana Sea Grant sites provide information on fish species, aquaculture, commercial and recreational fishing regulations, relevant legal information, data on state tourism industry trends and resources for science and marine educators.

## Marsh Mission Accomplished

Two Baton Rouge artists are nearing completion of their self-appointed mission with the publication of the coffee table book, *Marsh Mission: Capturing the Vanishing Wetlands*, and with the opening of a traveling exhibit of the pair's Louisiana landscape paintings and environmental photographs titled "Vanishing Wetlands: Two Views."

Naturalist, author and photographer CC Lockwood teamed up with painter Rhea Gary in 2003 to begin the four-year project – an artistic exploration crafted to draw attention to both the beauty and the tragedy of the state's eroding coastal zone.

Sue Lockwood, CC's wife and an 18-year teaching veteran, added an extra educational element to Marsh Mission with the Coastal Classroom, offering online teacher tips and frequent reporting about Louisiana's natural resources. She communicated live from the wetlands with teachers and children from 20 schools via the Internet.

The Lockwoods lived and worked aboard the houseboat the "Wetland Wanderer" for a year, plying Louisiana waterways from the Pearl River to the Sabine River and above and below the Gulf Intracoastal Waterway, continually shooting color photographs, writing and teaching along the way. Gary used her own small boat to reach the vistas she captured on canvas in vibrant oil paint and made occasional wetland visits with the Lockwoods. The Lockwoods' dog even contributed to the project with online articles for children written under her name in "Annie's Critter Corner."



Baton Rouge artists CC Lockwood and Rhea Gary prepare to greet the public at a recent book signing at the LSU Bookstore in the Student Union.

Louisiana Sea Grant is one of more than two dozen corporate, government and educational sponsors that helped make the mission possible.

Hurricanes Katrina and Rita took an appalling toll on the fragile, degraded wetlands that inspired Lockwood and Gary's art. Lockwood surveyed the coast by airplane after the storms.

"The destruction slaps you like a bull-whip across the face," he said. "We've got to make returning Mississippi River sediment back to the wetlands a priority."

"The book now seems prophetic, since it came out one week before Hurricane Katrina," Gary said. "We are more vulnerable now than we've ever been."

"Vanishing Wetlands: Two Views" features 30 of Lockwood's photographs and 30 of Gary's paintings and is on display through Feb. 17, 2006, at the LSU Museum of Art in the Shaw Center for the Arts in downtown Baton Rouge. The exhibit is scheduled to travel to other cities from March 2006 through October 2007. Lockwood and Gary will continue to lecture and make appearances to discuss their work and the importance of saving Louisiana's wetlands.

Visit [www.marshmission.com](http://www.marshmission.com) to learn more about the project, obtain a copy of the book and view a schedule of book signings and lectures with the artists. Information on the LSU Museum of Art and special coastal programs related to the exhibit are available online at <http://www.lsumoa.com>.



"Calcasieu Marsh" by Rhea Gary



"Marsh Flight" by CC Lockwood

## Pumping Up Wetlands

At the bottom of Louisiana's coastal water bodies lies a resource for marsh restoration – the water bottom sediments.

Dredged material has been used for years to create wetlands, but little attention has been given to using sediment slurries produced by dredging to restore degraded marshes. The slurries, a thick soup of material taken from near shore or from deeper regions in the Gulf of Mexico, can be piped great distances to bolster dying marshes. But questions, such as how much sediment slurry is needed to help re-establish the marsh, were unanswered.

Enter Irving Mendelssohn and his team.

Mendelssohn, a Louisiana Sea Grant researcher and professor in the Department of Oceanography and Coastal Sciences Wetland Biogeochemistry Institute at Louisiana State University, recognized an opportunity in 2001 when the Louisiana Department of Natural Resources (DNR) wanted to conduct a large-scale, experimental addition of sediment slurries. Working with DNR, Mendelssohn planned to determine if slurries would have a positive impact on marsh health and what quantity of slurry is best for vegetation growth.

Researchers divided an area slightly larger than 12 acres about 3.5 miles southwest of Leeville, La., into five par-

cels and added varied amounts of sediment slurry to each parcel. The amount of slurry was categorized into high (28-39 cm), medium (20-26 cm) and low (13-18 cm) deposit areas. All three categories were devoid of vegetation following the addition of the slurry. As a control, an area of healthy marsh and brown (unhealthy) marsh received no slurry but were observed.

Three years following the application of sediment deposits, the low areas – where approximately 6 inches of slurry was added – experienced the highest level of re-vegetation. The medium and high areas experienced less vegetation growth. Healthy and brown marsh areas used as a control saw little change.

"What we learned is that creating areas of low elevation with slurry is a viable way to restore brown marshes in south Louisiana," said Mendelssohn. "We determined what elevation of sediment is best short-term for spurring vegetation growth, but there still are unanswered questions."

"In our next Louisiana Sea Grant project, we'll be going back to see if there was any degradation of the marsh over time. We'll measure elevation change and identify which sediment level helps most with long-term marsh sustainability."

