O'Leary Honored with Coastal America Partnership Award

LSG nonindigenous species coordinator Marilyn Barrett O'Leary was part of a team that received the 2006 Coastal America Partnership Award, presented at the national meeting of the Association of Zoos and Aquariums (AZA). The award was presented to O'Leary and the other development team members of Aquatic Invaders, an entertaining, educational tool to demonstrate simple steps to avoid the spread of invasive species.

"Through this outstanding effort, nearly 140 million people annually may learn how

to protect our environment from aquatic invasive species, which cost our nation nearly \$138 billion per year to control," said Timothy R.E. Keeney, deputy assistant secretary for oceans and atmosphere, U.S. Department of Commerce, who presented the award.

Aquatic Invaders is an engaging 20minute program that includes audience participation. During the program, attendees learn how just one person can bring an invasive species into an ecosystem.

ecology. He served as the director of the

project office in the Guatemalan National

Trust for the Conservation of Nature, where

he coordinated and monitored conservation

The Knauss Fellowship

Lead partners for the Aquatic Invaders program include North Carolina Sea Grant, North Carolina Aquariums, the University of Georgia Marine Extension Service and Georgia Sea Grant. Other partners include the Louisiana, Illinois-Indiana, California, Oregon and Connecticut Sea Grant programs, among others.

The Coastal America Partnership was established in 1992 to protect, preserve and restore coastal watersheds by integrating federal, state and local government efforts. For information, visit www.coastalamerica.gov.



Louisiana Sea Grant College Program Sea Grant Building • Baton Rouge, LA 70803-7507

Knauss Fellow Is D.C. Bound

A recent master's graduate of LSU's Department of Oceanography and Coastal Sciences, Pablo Granados-Dieseldorff's next move is to learn all he can as one of 45

members of the class of 2007 in the National Sea Grant College Program's John A. Knauss Marine Policy Fellowship.

While in the nation's capital for the yearlong paid fellowship, Granados-Dieseldorff's goal is to enhance his ability to "explain politics to scientists and science to politicians." He will work in the Biological Oceanography Program of the National Science Foundation

A native of Guatemala City, Guatemala, Granados-Dieseldorff earned his undergraduate degree from the University of San Carlos in Guatemala, specializing in aquatic

Wolcott Joins LSG

Maurice Wolcott, geospatial systems specialist in the Department of Plant Pathology at Louisiana State University, has joined the Sea Grant staff.

At Sea Grant, Wolcott will help with creation of educational materials as well as provide data analysis, all revolving around Geographic Information Systems (GIS) technology. He has already made a mark at LSG by assisting ports specialist Justin Farrell with compiling data and mapping debris in Calcasieu Lake after Hurricane Rita. During 2007, Wolcott would like to continue his work on "The Next Storm Surge" public education programs in which he uses GIS and elevation data to show parish residents in southwestern Louisiana how vulnerable they are to a storm surge of any given size or strength.

"Maurice will serve as a campus liaison between University Geographic Information



Pablo Granados -Dieseldorff

first fellowship. Granados-Dieseldorff's interest in government policy was piqued when he worked for two years as a

> manager of Punta de Manabique, the largest marine protected area in Guatemala. He says the job gave him an insider's view on the ways science, policy

and socioeconomics work together – and sometimes at odds – to influence resource management and international cooperation on conservation projects. He was selected as

a fellow of the World Wildlife Fund and served as a representative from the Mesoamerican barrier reef system. That fellowship helped fund Granados-Dieseldorff's graduate studies under Donald Baltz at LSU.

"I've always found that there is something lacking - scientists don't have a lot of influence in politics, and politicians don't always understand science," Granados-Dieseldorff said. "I want to better understand the links between science and politics to improve natural resource management."

After completing the Knauss Fellowship, he plans to remain in the marine science field by either landing a fisheries management job or pursuing a doctorate degree.

Information on Granados-Dieseldorff and his work is available at www.lsu.edu/faculty/ dbaltz/pablo.htm. To learn more about the Knauss Fellowship, visit www.seagrant.noaa. gov/knauss/knauss.html.

Systems resources and Sea Grant Extension faculty located along the coast," said Mike Liffmann, LSG associate executive director.

"Maurice is extremely well versed on the subject matter, and he is certain to help those who continue to recover from the effects of the 2005 hurricanes."

Wolcott owned and operated Wolcott Farms for 20 years. He came to the LSU AgCenter in February 1998 to assist in the collection and analysis of spatial data relating to the applications of

certain pesticides. He has also collaborated with the Farm Service Agency in order to implement a sugarcane disaster program using GIS technology.



Maurice Wolcott prepares to ground-truth marine debris coordinates as part of the Calcasieu Lake Marine Debris Marking and Mapping Program in September 2006.

COASTAL CLIPS





Louisiana Sea Grant College Program Louisiana State Universit Sea Grant Building Baton Rouge, LA 70803-7507 Charles A. Wilson,

Executive Director Editors: Roy Kron, Paula Ouder. Art: Robert Ray

Circulation: Jessica Schexnayder

The Louisiana Sea Grant College Program is part of the National Sea Grant College Program maintained by the National Oceanic and Atmospheric Administration of the U.S. Department of Commerce. Sea Grant, a unique partnership with public and private sectors, combining research, education and technology transfer for public service, is the national network f universities meeting changing environmental and economic eeds of people in our coastal, ocean and Great Lakes regions

© Louisiana Sea Grant College Program. Articles within this publication or quotations from them may be used or reproduced for educational purposes with a formal credit to the Louisiana Sea Grant College Program. This publication or portions of it may not be used, printed or electronically transmitted for other purposes without authorization from the Office of Communica-tions, Louisiana Sea Grant. Please send a copy of all materials in which this publication or any portion of it is reproduced to the Office of Communications, Louisiana Sea Grant.

Please send change of address, subscription request and corres pondence to Coastal Clips, Louisiana Sea Grant Communications Office, Louisiana State University, Baton Rouge, LA 70803. (225) 578-6564. Coastal Clips is published four times a year. Subscriptions are free on request. Visit us online at www.laseagrant.org.

Jacqueline Mills, assistant professorresearch and coordinator of the Louisiana State University Geographic Information Systems (GIS) Clearinghouse Cooperative, has joined the Louisiana Sea Grant staff.

At Sea Grant, Mills will be working on integrating GIS technology for coastal community planning. Her goal is to create an online hazard mapping resource so that coastal residents can make informed decisions about how to develop land and plan for future storm threats. Mills also wants to develop online seminars for LSG personnel that demonstrate how GIS can enhance research and outreach efforts.

"Dr. Mills provides a needed link between Sea Grant Extension and LSU's Department of Disaster Science and Management and the CADGIS laboratory," said Mike Liffmann, LSG associate executive director. "Louisiana Sea Grant is committed to what will certainly be a lengthy recovery and rebuilding process following the 2005 hurricane season, and we are confident that her work will be one of the many links between university-based research and our coastal communities' needs."

Non-Profit Org. U.S. Postage PAID Permit No. 733 Baton Rouge, LA

COASTAL CLIPS

Coastal Clips is a quarterly publication of the Louisiana Sea Grant

onsos c.

Cryopreservation Could Be the Next Advancement in Aquaculture

Aquaculture is on the threshold of change, and Terry Tiersch and his research team are poised to guide it through the doorway.

Tiersch, professor of aquaculture genetics with the LSU AgCenter and a Louisiana Sea Grant researcher, has been studying the cryopreservation of fish and shellfish sperm. The process entails collecting sperm from a live male, placing the sample in straws and preserving it in a tank filled with liquid nitrogen. Research on preservation of livestock and fish sperm began more than five decades ago, but that early work took two different paths.

For terrestrial species, it developed into a multibillion dollar industry in genetically improving and maintaining livestock breeds - essentially high-tech animal husbandry. For aquatic species, the commercial application of the research never evolved. Tiersch believes that is about to change, spearheaded by his team's work.

"The use of cryopreserved sperm allows you to develop fish populations with distinctive traits in less time and with a smaller investment in resources than if you attempted the same work using traditional breeding methods," Tiersch said. "To enhance characteristics such as growth rate, disease resistance or vigor through traditional techniques, you'd need hundreds of ponds, and it would take years to reach your goal."

For example, cyropreserved sperm from a dozen males selected for their superior qualities, could be used to inseminate countless females and pass along desirable genetic qualities in a relatively short period of time. Outside the lab, those males - depending on the species – may mate only once per season with one female. So the same end results would take years, possibly decades, to accomplish.

Cryopreservation also could be used to improve fish hatchery operations where sperm would be available on demand, simplifying the timing of induced spawning. Use of cryopreserved sperm could eliminate the need to maintain live males at hatcheries, allowing

farmers to redistribute their resources and refocus their efforts.

"Hatcheries wouldn't have to worry about feeding and maintaining males," Tiersch said. "They simply could send off for sperm for spawning and devote more time to developing product. If a hatchery had several quality males, sperm could be collected from 30-2004 DPISOS C-F HE

4-30-2004

them, preserved and used for spawning for

"In one sense, this is like time travel.

Cryopreserved sperm will be as good 50 years

The technology also is valuable for pro-

tecting genetic lineages of endangered species

Although there are fish sperm reposito-

and fish species used for medical research.

ries at universities and research laboratories

sperm is manually prepared for storage; and

different methods of recordkeeping are em-

ployed. Often those records are handwritten.

That's where Tiersch enters the picture.

around the globe, they are small; the harvested

years, even after those males are dead.

from now as it is next year." he said.

After investigating how the livestock industry commercially cryopreserves sperm, he set out 10 years ago with collaborators LSU AgCenter dairy scientist John Chandler and Genex Custom Collections Inc. to see if the same methods could be used with aquatic species. Genex has a long history of processing and storing cattle sperm for dairy and beef producers. Tiersch and his team discovered that same technology also works with fish and shellfish, such as oysters.

"When processing samples, you have a small window to fill the sperm straws, only about 15 minutes," Tiersch said. "If you're good, you can fill about 10 to 15 straws per minute by hand."

Automated machinery can fill hundreds of straws in that same 15 minutes, label each straw, as well as barcode the straw and

No. Winter Mills Offers Sea Grant GIS Capabilities

> After completing her Ph.D. in geography, Mills collaborated with the College of Art and Design, the Department of Geography and Anthropology and the Federal Emergency Management Agency (FEMA) to develop the LSU GIS Clearinghouse Cooperative to centralize and distribute geospatial data for the response and recovery efforts of federal, state and local governments. She also has developed a course in the Disaster Science Management program at LSU and continues to expand the utility of the Clearinghouse.



Jacqueline Mills



Cryopreservation . . . Continued from page one

enter all relevant data about a specimen in a database simultaneously. Adoption of this technology and standardization of the processes for commercial aquaculture could have an enormous impact on hatchery product quality, production levels and overall industry efficiency.



Huiping Yang, a member of Terry Tiersch's research team, places filled sperm straws in a tank of liquid nitrogen for storage.

It also has the potential to spawn a new industry, one that provides sperm to fish hatcheries, as well as stores brood stock sperm collected from hatcheries. "What we could see is a new industry providing products and services. The product would be the fish sperm sold like seed. The service would be providing research, freezing and storage capabilities to hatcheries that want to preserve their genetic lines," he said.

Tiersch cautioned there are still important issues that need to be addressed, such as biosecurity to ensure potentially harmful diseases aren't introduced from one part of the country or globe to another. But he believes that if aquaculture wants to see advances in production through genetic improvement, it will adopt the use of cryopreserved sperm.

Your Opinion Matters

Louisiana Sea Grant is conducting a readership survey. Please visit www.laseagrant. org and click on the Coastal Clips Survey box to complete the guestionnaire. Responses will be used to determine future content of the publication. Your information will not be shared with anyone.

LSG Research Looks at Mercury Concentrations in Gulf of Mexico

Like any mother. Aixin Hou is concerned about what her daughter eats. The LSU assistant professor in the Department of Environmental Studies knows that seafood is good for her child, but worries about mercury in finfish.

That concern and Hou's research exploring total mercury and methylmercury in sediment and fish at offshore platforms overlap.

"I feel mercury in some species of fish is truly a problem," said Hou. "A colleague has a friend who became alarmingly forgetful during her pregnancy. The woman ate a lot of seafood and shellfish. When she went for a checkup, she had a high level of mercury in her system."

Although her example is anecdotal. studies have found that methylmercury levels in many species of Gulf of Mexico fish are comparatively high. The more fish a person eats, the greater their exposure to methylmercury, which can have long-term health consequences.

Methylmercury is a neurotoxin formed from inorganic mercury by anaerobic organisms (those that don't require oxygen for growth) living in lakes, rivers, wetlands, soils and the open sea. Because methylmercury is not easily eliminated from living tissue, it is biomagnified in the food chain. At each step, the concentration increases as anaerobic bacteria are consumed by macroinvertebrates, macroinvertebrates by small fish, small fish by

large fish, and fish by humans.

The concentration of mercury in fish also depends on the species, age and size, as well as the type of water in which it lives. Fish-eating species such as shark, swordfish, marlin, tuna, largemouth bass and walleye have higher levels of methylmercury than herbivorous fish, such as tilapia, mullet and herring. Older and larger fish have higher concentrations, as well. The primary source

of methylmercury in humans is fish consumption.

In the first phase of her research, Hou looked at mercury and methylmercury concentrations in sediment at oil and gas platforms in the Gulf, where fish and other aquatic species are known to congregate in large numbers. What she discovered is that methylmercury concentrations are higher at the platforms and decrease, along with organic matter, with distance from the rigs.

"The increased methylmercury in the sediment was likely attributed to the higher concentration of organic matter (fish and other aquatic species) near the platforms,' Hou said. She also discovered seasonal spikes in methylmercury.

"The next step in Aixin Hou's work will show if the seasonal hypoxic incidents occurring off the Louisiana coast and the increase in organic matter associated with phytoplankton production results in an increase in the amount of methylmercury in sediment," said professor Ron DeLaune, LSU Wetland Biogeochemistry Institute. "If an increase is discovered, it would suggest that there is an increase in the mercury level in fish from the region."

If summer hypoxia in the Gulf stimulates methylmercury formation, addressing the causes of the Dead Zone could significantly reduce mercury in fish That, in turn, may mean a safer seafood supply for the nation.



Aixin Hou, pictured in her lab, is researching total mercury and methylmercury in sediment and fish at offshore platforms.



Sea Grant, FEMA Personel Push for Partnership

Louisiana Sea Grant Extension agents and Federal Emergency Management Agency (FEMA) community relations personnel made a good team in helping the commercial fishing industry in Plaguemines and St. Bernard parishes following Hurricanes Katrina and Rita Now those boots on the ground want to see their spirit of cooperation become standard operating procedure in responding to fisheries disasters along the nation's coasts.

FEMA workers Wayne and Nancy Weikel and Louisiana Sea Grant/LSU AgCenter Extension agent Rusty Gaudé broke new ground when they began working together following the Grant officials.

2005 hurricanes. "It had never been done before," said Gaudé about the partnership.

"As a Sea Grant agent, I had the local experience that the FEMA people needed, and the Weikels had the insights into the federal assistance system. Together, we were able to accomplish more than either one of us could alone.

"Initially, we were going to call ourselves the Three Musketeers, but we decided on the Triad Fishery Liaison Team," he guipped.

State and local leaders, along with Louisiana's Congressional delegation, took note of the Triad's success. To date, former Plaquemines Parish President Benny

Rousselle, the St. Bernard Parish Council, Louisiana Sea Grant Executive Director Charles Wilson and U.S. Senator David Vitter have sent letters to FEMA and the National Sea Grant Office requesting that a recovery protocol, modeled after the Triad, be established at the national level for the fishery sector following a natural disaster.

"The team has demonstrated success in working with the fishing communities to identify problems and solutions embedded within the fishing industry," stated Sen. David Vitter in his letter to FEMA and National Sea

National Sea Grant Deputy Director Jim Murray (left) discusses a Sea Grant/FEMA natural disaster fishery response partnership with Louisiana Séa Grant Extension agent Rusty Gaudé, Louisiana Sea Grant Associate Executive Director Mike Liffmann, and FEMA response personnel Nancy and Wayne Weikel

arsh Maneuvers is an educational program for high school students presented by the Louisiana Sea Grant College Program and LSU AgCenter in cooperation with the Louisiana Department of Wildlife and Fisheries, sponsored in part by the America's Wetland campaign. Sixty students from 16 parishes attended one of four weeklong sessions in southwest Louisiana at Rockefeller Refuge this July and learned about the marshes of the Chenier Plain ecosystem and Teche-Vermilion, Mermentau and Calcasieu watersheds. Left, campers participate in a hands-on stewardship project replanting marsh grasses. 🔹

"I believe that duplicating the recovery team's success after Hurricanes Katrina and Rita and establishing a similar format at the national level between FEMA and the National Sea Grant Program would be a valuably productive move for the fishing industry and would help streamline federal assets and resources," Vitter continued. "With Sea Grant fishery agents in all of the coastal areas of North America, the National Sea Grant Program is truly poised for alliances with any recovery group targeting the fishery sector."

commercial fishing sector, which includes



"The impact to the recovery of the charter fishing, of this Triad Fishery Team cannot be

overstated," said Rousselle in his support letter. "The team became trusted and expected voices of fieldbased experience. This Triad Fishery Team became the backbone of the fishery recovery process for my office."

The letters of support went to Washington, D.C., this winter. Additionally. Gaudé and the Weikels shared their experience with Sea Grant Extension agents from across the country during a conference in October, and national policy makers in the nation's capital during November.

Challenges on the Half-Shell

"It's been interesting," says Vanessa Maxwell of the pursuit of her doctorate. "Between seeking permits and having my research facility destroyed by a hurricane, there have been some challenges."

Maxwell's work over the past three years has involved all things oyster as she assists



Vanessa Maxwell counts juvenile barnacles as part of her doctoral research. Improving methods to reduce the occurrence of barnacles and other oyster fouling organisms is important to the oyster industry and to Maxwell's work.

Louisiana Sea Grant researcher John Supan with the establishment of an aquaculture park to demonstrate longline oyster farming in coastal Louisiana. Longlines are an offbottom culture technique used widely in Australia in which oysters are cultivated in flexible plastic mesh bags suspended from a cable. Maxwell says this method has many advantages over traditional reef production, such as protecting oyster crops from predators and allowing for treatment of the accumulation of fouling organisms like barnacles, bryozoans and oyster spat.

Maxwell's graduate assistantship in the School of Renewable Natural Resources at LSU is funded by Sea Grant's Gulf Oyster Industry Program through a project titled "Sustainable Community Development via an Inshore Molluscan Aquaculture Park." In part because different aspects of oyster production

in Louisiana are regulated by different agencies, her dissertation research covers a broad spectrum of topics, including legal, policy, regulation, biology and economic issues related to establishing the park.

"Vanessa's background in aquaculture, both at Florida Tech and Auburn, gave her the qualifications I was looking for to join my research team," said Supan. "With the Sea Grant oyster hatchery located in Grand Isle, it takes a special student to

work independently and cooperatively in such a remote location. Vanessa has an excellent work ethic both on-campus and in the field She is a quick learner and adapts well to new procedures and conditions."

In the last year, adaptability has been critical, as the focus of Maxwell's work has shifted to rebuilding the oyster hatchery in Grand Isle, which was completely demolished by Hurricane Katrina. While the hatchery building, tanks and other equipment were literally torn to bits, the experimental longline system she maintained in Grand Isle

Category 5 hurricane. It definitely was a is completely gone," Maxwell explained.

Maxwell continued. "I prefer the marine environment over freshwater, and I like my shellfish management."

After graduation in 2007, Maxwell plans to feed her keen interest in policy and management by seeking a job with the National Oceanic and Atmospheric Administration or a legislative body.

Information on Supan's research is available at www.rnr.lsu.edu/Faculty/Supan. htm .



Coastal Hazard Mitigation Guidebook Being Developed

The Louisiana Sea Grant Legal program is developing a coastal hazards mitigation guidebook, funded with a grant from the Federal Emergency Management Agency (FEMA).

The book will be used to help educate state and local policymakers, along with residents, about relevant laws and techniques for siting buildings as communities continue the redevelopment process following the 2005 hurricane season. "While buildings can't be made indestructible, they can be built as strong and safe as possible," said Jim Wilkins, LSG Legal director.

"The hazard mitigation concepts in the guidebook will be geared toward Louisiana's coastal parishes," Wilkins added. "We will be mindful of the difference between rural and urban areas, and different concepts will apply to different areas.

"Implementing the concepts will be voluntary," Wilkins stressed. "If we give people the information and a set of options, showing them both the cost-effectiveness of hazard mitigation in the earliest stage of development and how hazard mitigation will benefit them, then they're more likely to incorporate the ideas."

faculty members and coastal hazard mitigation experts will write the book, which will be published in late 2007. Sea Grant Legal also will develop a series of brochures builders and property owners.

timely, relevant legal information to the coastal businesses, commercial fishers, recreational fishers, non-governmental organizations and the general public. The program's Web site is www.lsu.edu/sglegal.