

THE UNIVERSITY OF MISSISSIPPI

FIELD STATION

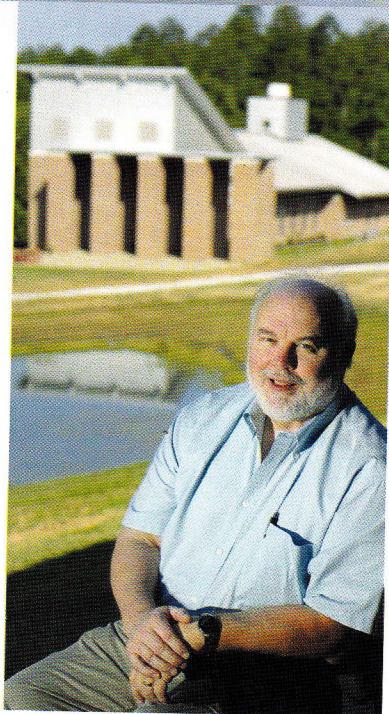
"Nature's Laboratory at Ole Miss"

FALL / WINTER 2012

Sure seems like we go from too hot to too cold too fast! In the Mid-South, fall is a very pleasant time of year – it just doesn't last long enough.

At field stations, spring and summer tend to be the busiest times as nature ramps up and students and scientists follow suit. Fall marks the transition to winter with nature shifting to low gear or neutral and researchers and students returning to the lab or classroom.

For oceanographers, winter months are typically spent on shore due to winter storms. Not only do storms reduce or even halt shipboard research activities but create discomforts that cannot be truly appreciated any other way.



Our NIUST team, headquartered at the UM Field Station, was the first academic science cruise to the site of the BP Deepwater Horizon accident and subsequent oil spill. Our team has continued to study the spill and, based on this experience, developed an extended team of outstanding Gulf researchers to compete for Gulf of Mexico Research Initiative funding. I'm pleased to report that our proposal was successful. We are anxious to get to work, but winter weather will dominate the Gulf for the next few months so we are busily planning our research, building instruments and chartering vessels, in many respects just like researchers at field stations. Be sure to look inside for more information on our new initiative.

— *Ray Highsmith*

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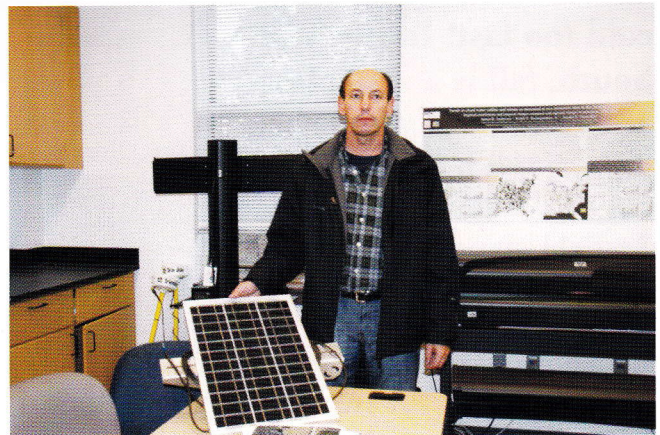
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STAFF ANNOUNCEMENTS

Congratulations to Director Ray Highsmith and staff (Sarah Holter) for working tirelessly to submit a successful grant proposal for NIUST and colleagues at 15 other universities to study the effects of the BP oil spill relative to the Gulf of Mexico Ecosystem. The research award is for a three year period with a budget of \$20,250,000.

Welcome back Jake! Postdoctoral Fellow Jake Marquess is back to collaborate with Dr. Anderson in the fire ant lab. He is currently splitting time between the Field Station and the National Center for Physical Acoustics on campus. Glad to have you back Jake!

Can you hear me now? We are in the process of installing wi-fi at the Field Station so researchers can use their laptops out in the field for real time downloads. Not only that - it's all solar! Graham Green, our network administrator is working in collaboration with Jose Queiroz, an engineer visiting from Brazil. The project is in the beginning phase and we are excited to see the progress! Way to go guys!



Jose holding up a solar panel that will power the wi-fi

Donor Information:
Friends of the Field Station Account
UM Foundation, P.O. Box 249
University, MS 38677

RESEARCH SPOTLIGHT : Dr. Richard Lankau

Dr. Richard Lankau, assistant professor of plant biology at the University of Georgia, has chosen the UM Field Station to be one of a set of nine research sites in the eastern part of the United States. At each site, he is collecting seeds and soil samples from nine different tree species in order to investigate the symbiotic relationships trees have with fungal communities, located in the soil in which the trees are rooted.

Extensive research has been done on where different plant and animal species live, but very little is known about many fungi because of their cryptic lifestyles in the soil. Concentrating on mycorrhizal fungi, decomposers and pathogens, he hopes to learn how they are distributed in the soil among tree species at his research sites. "In particular we want to see if the geographic patterns differ between different groups of fungi," Dr. Lankau says. "For instance, a tree like black oak can be found as far south as Mississippi and as far north as Michigan. Does this tree species interact with the same fungal species across this whole range, or with different species at its southern limit vs. its northern limit. No one knows that right now, but it could be important if we want to predict how tree ranges will shift as climates change."

"Ecological studies covering a large geographical area are especially challenging to biologists," says Ray Highsmith, UMFS director, "because study sites and support facilities are needed, including staffing, to assure that the sites will remain undisturbed and be accessible on a regular basis for years to come. We are pleased to have been selected as one of Dr. Lankau's permanent study sites. One of the major advantages to the UMFS is that we become part of a large geographic database and the information generated will improve understanding of the local tree species and their soil interactions." Collecting samples is just the first step in the study. The second part of the project will be conducted in the greenhouse using the seeds and soil samples. Here is where the climate change question is addressed. What are the potential consequences if

Dr. Richard Lankau,
asst. professor of
plant biology,
University of Georgia



climate change forces new combinations of trees and fungal communities? What will the forests of the future look like? These are questions Dr. Lankau hopes to answer, "... if the tree species shift north in response to warming climates, but the fungal species stay in place, then you would get new combinations of plant and fungal species. Will these new combinations work as well as the old ones? Will they work better? Similarly, it may be that the fungal species will also shift their ranges in response to climate change. If the fungi move faster than the trees, this would also lead to new combinations, of a different sort."

Lankau continues, "We need lots more research to be able to predict how changing biological, as well as climatic, conditions will determine what forests look like in the future."

OIL + W

BY GARY PETTUS
reprinted from The Clarion-Ledger

TWO MISSISSIPPI UNIVERSITIES ARE PART OF A \$112.5 MILLION EFFORT TO LEARN HOW THE GULF OF MEXICO HAS FARED SINCE THE 2010 BP OIL SPILL.

The University of Mississippi and the University of Southern Mississippi are among dozens of universities making up eight separate research teams that will divide the multimillion-dollar award from the Gulf of Mexico Research Initiative created with a 10-year, \$500 million pledge from BP.

The teams also will study ways to respond more effectively to future disasters similar to the April 20, 2010 Deepwater Horizon explosion and spill that cost 11 lives and spewed more than 200 million gallons of oil into the Gulf.

The largest marine oil spill in history, its economic impact has been measured in billions of dollars, but the extent of the environmental damage has not been nailed down.

“A program like this in the Gulf of Mexico is something that has not been done before,” said Denis Wiessenburg, vice president of research at USM. It’s great that BP saw the value of having the university research community engaged in this.”

Ole Miss is the lead university in a 14-member consortium awarded

\$20 million over three years to study “Ecosystem Impacts of Oil and Gas Inputs to the Gulf.”

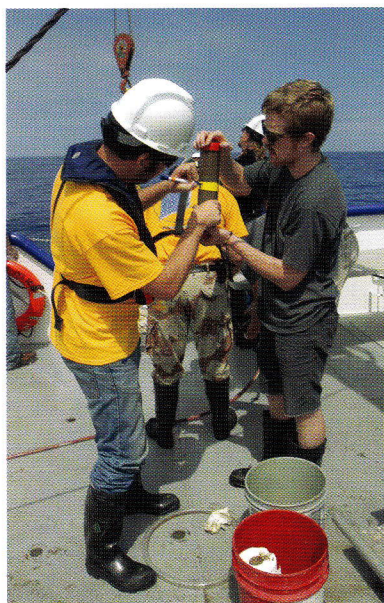
The lead investigator on that team is Raymond Highsmith, director of Ole Miss’ National Institute for Undersea Science and Technology, which is basically a partnership between Ole Miss and USM.

“Dr. Highsmith, who hand-picked the people involved in his consortium, worked in Alaska after the Exxon Valdez oil spill,” said Mitchell Diggs, Ole Miss spokesman. “So he is very familiar with this.”

Highsmith, who studied the 1989 oil spill while at the University of Alaska Fairbanks, said there are major differences between the two disasters.

In contrast to the BP accident, the Exxon Valdez was a confined, surface spill that did not contain natural gas.

“The BP spill was perhaps a mile deep, with a combo of crude oil and as much as 40 percent natural gas,” Highsmith said. “We never had a spill like that before.”



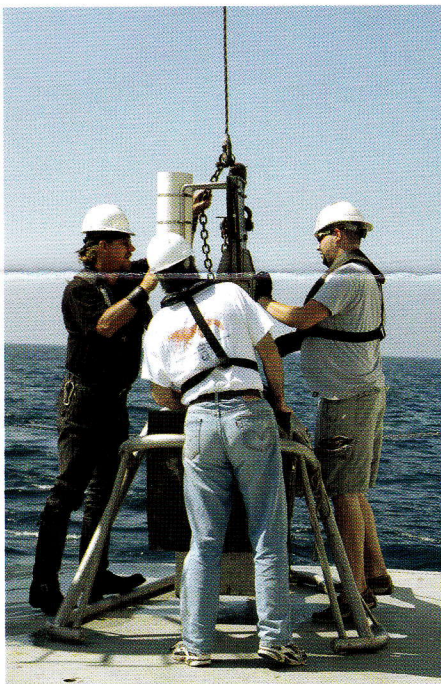
WATER

Two other Ole Miss researchers, both part of the National Institute for Undersea Science and Technology, will play major roles on Highsmith's team: Marc Slattery, professor of pharmacognosy and director of the institute's Ocean Biotechnology; and Leonardo Macelloni, a research associate in the institute's Seabed Technology Research Center.

Highsmith's consortium, among other things, will conduct experiments on oil dispersants.

"There is also some debate on how much of that oil sank to the bottom," Highsmith said. "That will be one of the things we investigate. We will try to get a better handle on what can happen if there is another spill. And there probably will be one; the industry worldwide is drilling deeper and deeper. It's just going to happen."

USM is one of the institutions on the Ole Miss-led team, but is also one of 23 universities participating in a separate, \$10.3 million study led by Tulane University: "The Science and Technology of Dispersants as Relevant to Deep Sea Oil Releases."



Among the USM researchers participating in the studies are Vernon Asper, professor of marine science, and Charles McCormick, professor of polymer science.

"In the group Ole Miss organized, a lot of the scientists at the different universities have worked together before," Wiesenburg said. "The objectives of the eight consortia are different. They will work independently but the hope is that they will get together and find ways to maximize resources that are available."

The various grant recipients competed for the awards, submitting funding proposals in July. Those accepted by the Gulf of Mexico Research Initiative will be funded for three years, but the teams may apply for up to two, three-year renewals.

"The long-term contribution of this research will be of major benefit to industry, governments and the people who live along the Gulf of Mexico coast," Rita R. Colwell, chairwoman of the GRI Research Board, said in a statement.

VISITORS PAGE



Oxford Insights 5th-graders visit the Field Station



Project Learning Tree



NEIGHBORS



National Sedimentation Lab



Small family farms are quickly becoming a thing of the past. Over recent decades, the trend in agriculture has been toward fewer but much larger commercialized operations. Luckily for us at the Field Station, we have neighbors who are dedicated to keeping the older way of life from disappearing. Dr. James McChesney, now retired from the University of MS, continues to work his small farm. “It’s a small operation, with some cows. We grow some wheat and corn and bale lots of hay,” he said. He bought the land in 1979 and his three kids grew up out there. They remember the Field Station as the minnow farm where they used to catch minnows, frogs and snakes.

Dr. McChesney, a Midwest native, moved to Oxford in 1978. From 1986 to 1995 he was the Director of the Research Institute of Pharmaceutical Sciences at Ole Miss, where he established the very successful National Center for Natural Products Research. He retired from the University in 1996. He retired again in 2008 from a small private company to return to farming – his first love. “I never quit farming. I grew up on a farm and I wanted my kids and grandkids to have that experience.”



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University of Mississippi

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