

THE UNIVERSITY OF MISSISSIPPI

FIELD STATION

"Nature's Laboratory at Ole Miss"

SPRING / SUMMER 2012

Visits to the UM Field Station by school groups, especially in the younger age groups, have increased rapidly in recent years. This spring, a group of about 360 third graders from Oxford Elementary visited.

This is the largest group we've ever had, so we asked several campus faculty members to help provide learning stations for the youngsters. The faculty really enjoyed this experience and all would like to participate again, so we have the unanticipated outcome of more UM faculty wanting to become engaged in FS activities – I couldn't be happier. Many of us also learned some interesting things from the students. I manned the undersea vehicle station, as the engineers were at sea. Early in the day, as I was struggling to explain the complexities of an autonomous undersea vehicle in terms that a third-grader would understand, I was asked by one of the kids if I meant it was a robot. I was suddenly off the hook and for the rest of the day, it was a robot. In fact, I think from now on, it will be a robot for me, too.

— *Ray Highsmith*



Ray Highsmith (right), director of the University of Mississippi Field Station and executive director of the National Institute for Undersea Science and Technology, shows third-graders from Oxford Elementary School how NIUST scientists use the submersible Eagle Ray to conduct research in the Gulf of Mexico.

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STAFF ANNOUNCEMENTS

Congratulations to Dr. David Pasco, Nirmal Pugh, Colin Jackson and Rita Moraes for the NCCAM / NIH award for research on "Echinacea Immune Enhancing Bacterial Endophytes."

Dr. Rita M. Moraes and colleagues of NPURU/USDA and EMBRAPA are publishing a chapter on natural pesticides/discovery and uses. The chapter will be published by EMBRAPA in Portuguese in an effort to continue the UM collaboration with scientists of Brazil.

Dr. Abbas Ali, senior research scientist, NCNPR, gave a seminar to the faculty of the University of Agriculture, Faisalabad, Pakistan, on special invitation of the vice chancellor, Dr. Iqrar Ahmad Khan. The title was "Role of natural products as biting deterrents/repellents against *Aedes aegypti* vector of Dengue virus)." The seminar was well attended and appreciated by the faculty. This topic is important for Pakistan because of widespread incidence of Dengue fever in Punjab during 2011.



Dr. Iqrar Ahmad Khan (right) , vice chancellor, University of Agriculture, Faisalabad, Pakistan is discussing the occurrence of Dengue fever in Pakistan during 2011 after the seminar, accompanied by Dr. Abbas Ali, center, and Dr. Tahir Zahoor. The seminar was in January 2012.

Welcome Dr. Junaid-Ur-Rehman who joined the National Center for Natural Products Research as postdoctoral research associate on May 7, 2012. He will be working with Dr. Abbas Ali at the Field Station. Dr. Junaid has a Ph. D in entomology from Quaid-i-Azam University Islamabad. He completed his research at the University of California, Davis and the National Agricultural Research Centre, Islamabad, Pakistan. Dr. Junaid brings with him many years of international research experience in the field of entomology. He has been working for various research organizations and left FMC to join the current position.

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



Green Tree Frog,
Hyla cinerea

RESEARCH SPOTLIGHT : AMPHIBIAN ACOUSTIC COMMUNICATION

After the summer sun goes down in Mississippi, the creatures of the night come alive and the thick, soft summer air is filled with a wonderful orchestra. The sounds come in waves that rise and fall and rise again like the waves of the ocean crashing on a beach. The mating calls of insects and frogs own the night.

The lyrical courtship is music to the ears of Dr. Chris Leary, an associate professor at the UM Department of Biology who studies acoustic communication in anuran amphibians (frogs and toads) in his lab and at the UM Field Station.

Assisted by graduate student Gabrielle Davis, Dr. Leary conducts his research experiments within a phonotaxis chamber (sound attenuation booth) he built on site at the Field Station. Female frogs are placed within the chamber and male mating calls are played inside. Two calls that differ in some way are broadcast from opposite sides of the chamber via a dual speaker playback system. The female frog will hop toward the speaker playing the mating call she prefers. Dr. Leary investigates what the females' preference means in relation to hormone levels present in the male frogs.

"We are particularly interested in how hormone levels influence the vocalizations produced by male frogs to attract mates," Leary said. "For example, how does circulating androgen level (e.g., testosterone) alter the attractiveness of male calls? We are finding that males with high testosterone levels are not necessarily more attractive to

females. This is because males with high androgen levels invest more energy in their calls and, hence, these males tend to have high levels of stress hormones that decrease the attractiveness of their calls. In other words, there appear to be hormonal consequences associated with producing attractive calls that are important in the context of the evolution of the endocrine system and sexually selected male traits".

"Who knew that a 'ribbit' could be so complex? And important?" said Ray Highsmith, UMFS Director. "There are so many frogs here that collectively they create a real racket in spring and early summer evenings. It puzzles me how a female can tell one call from another and locate Mr. Frog. We all tune in to the things that are important to us."

"All of our field work is carried out at the UM Field Station – the many ponds at the station are home to a diverse array of frogs and toads, which makes it a great place to do my research. I encourage anyone interested in learning more about acoustic communication in these animals to contact me and to join us on a nighttime field trip," said Dr. Leary.

"Especially if they're not afraid of snakes," added Dr. Highsmith.



Dr. Chris Leary (below) and his assistant Gabrielle Davis (left) conduct night research





Dr. Rita Moreas giving tour of the green house

UM FIELD STATION:



Third-graders learning about soil

OXFORD, Miss. – More than 360 third-graders spent a day last week playing with dirt at the University of Mississippi Field Station, all in the name of learning about science.

The Oxford Elementary School students participated in a fast-paced science clinic March 30 at the field station, staffed by volunteers from the USDA National Sedimentation Laboratory and several UM units, including the Department of Biology, Medicinal Plant Garden, National Center for Natural Products Research and the National Center for Physical Acoustics. The students visited 17 activity stations, where they learned about all sorts of environmental sciences, ranging from the activities of red fire ants to the characteristic sonic signature of tornadoes.

It was the largest group to ever visit the Field Station at once, said Ray Highsmith, director of the Field Station and executive director of the National Institute for Undersea Science and Technology.

“Having this large group of scientists assist in talking about their research at the Field Station for all these children was an enormous help to our staff,” Highsmith said.

“Everyone made outstanding contributions, and the day was a great success,” said Mark Baker, Field Station resident director and organizer of the event. “We couldn’t have handled this large of a school group without our partners that volunteered to help.”

Most of the 17 activity stations began with questions from the scientists.

“What is this?” asked Seth Dabney, a National Sedimentation Lab researcher, holding up a soil sample.

He quickly answered his own question with, “Soil. Now, if I rub it on your jeans, what is it?”

The kids answered excitedly, “Soil!”

Dabney deadpanned, “No, now it’s dirt,” and quickly explained the scientific reasoning.

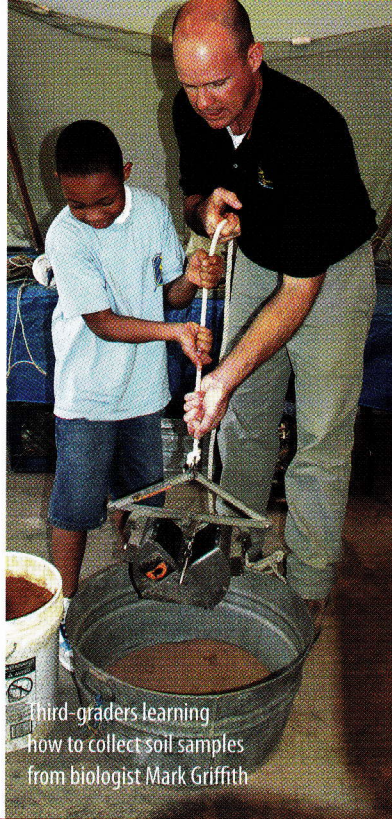
Daniel Wren, research hydraulic engineer at the Sedimentation Lab, asked, “Where does water come from?”

Some students answer, “Rivers. Rain. The ocean. The water hose!”

Water is a main research theme at the Field Station, which has more than 200 experimental ponds.



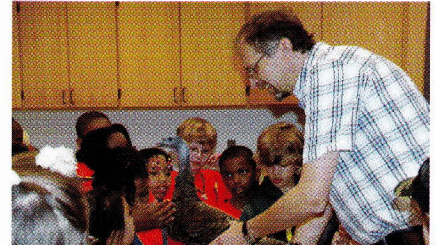
Dr. Aruna Weerasooriya shows Third-graders medicinal plants



Third-graders learning how to collect soil samples from biologist Mark Griffith



Third-graders learning about bird calls



Third-graders learn about turkeys from Dr. Rich Buchholz

COMMITMENT TO EXCELLENCE

The students were able to connect a lot of the Field Station experience with the science they're learning in the classroom, said OES third-grade teacher Chasity Arbuckle.

"They're asking so many questions; they're very engaged!" she said.

Wren taught the students about waves and said, "They love to get their hands on the wave machine. They definitely want to touch it and see how it works, even if they get wet."

Aruna Weerasooriya, senior research scientist at the UM natural products center, had arguably the most engaging of the stations, where he showed students many plants, among them tea and stevia plants. Stevia is used to make sugar substitutes such as Truvia and SweetLeaf.

One of the most important takeaways for the kids was to learn about the principles of science, said Matt Moore, a research ecologist at the Sedimentation Lab who helped design the science stations.

"It's not all rocket science," Moore said. "Science can be down and dirty, too."

Moore also wanted children to see that science isn't as foreign as they might think and that scientists are normal people.

"They need to understand that science happens here in Oxford and that one of their best friends' mom or dad might just be a scientist," he said.

That understanding would be a good thing for Michelle Edwards, assistant to the director for marketing and business development with the Field Station and NIUST. One of her main goals is community outreach, which is tantamount to the Field Station's mission: to preserve natural ecosystems and make the station's entire 746 acres available for teaching and research.

"We're trying to keep one small spot completely natural for researchers and teachers to use," she said.

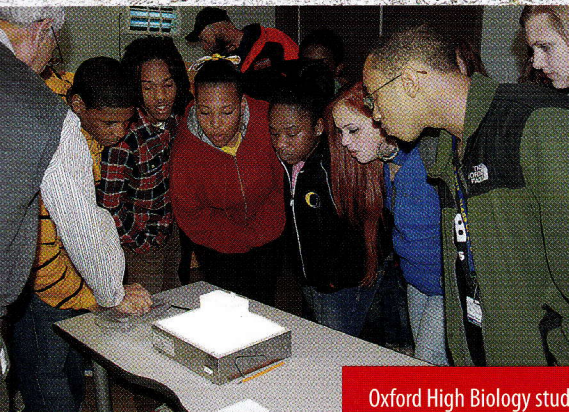
The clinic with OES students was deemed a success by the entire scientific group, Edwards said.

"With this event, we're able to reach the general public because the kids go home and say, 'Hey Mom, guess what we did today?'" she said.

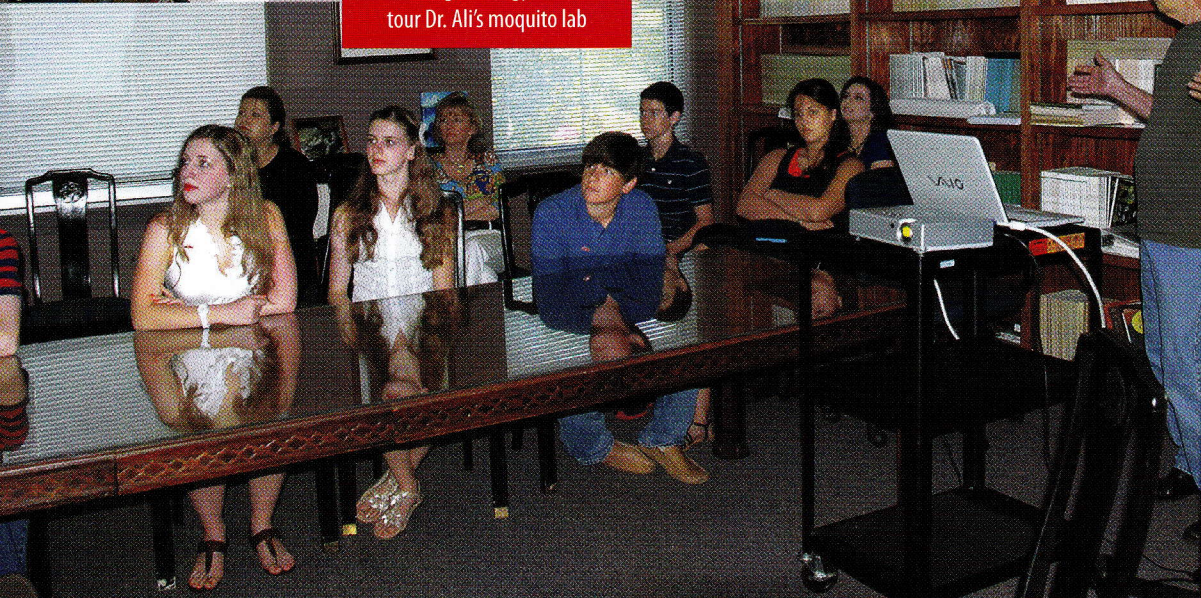
VISITORS PAGE



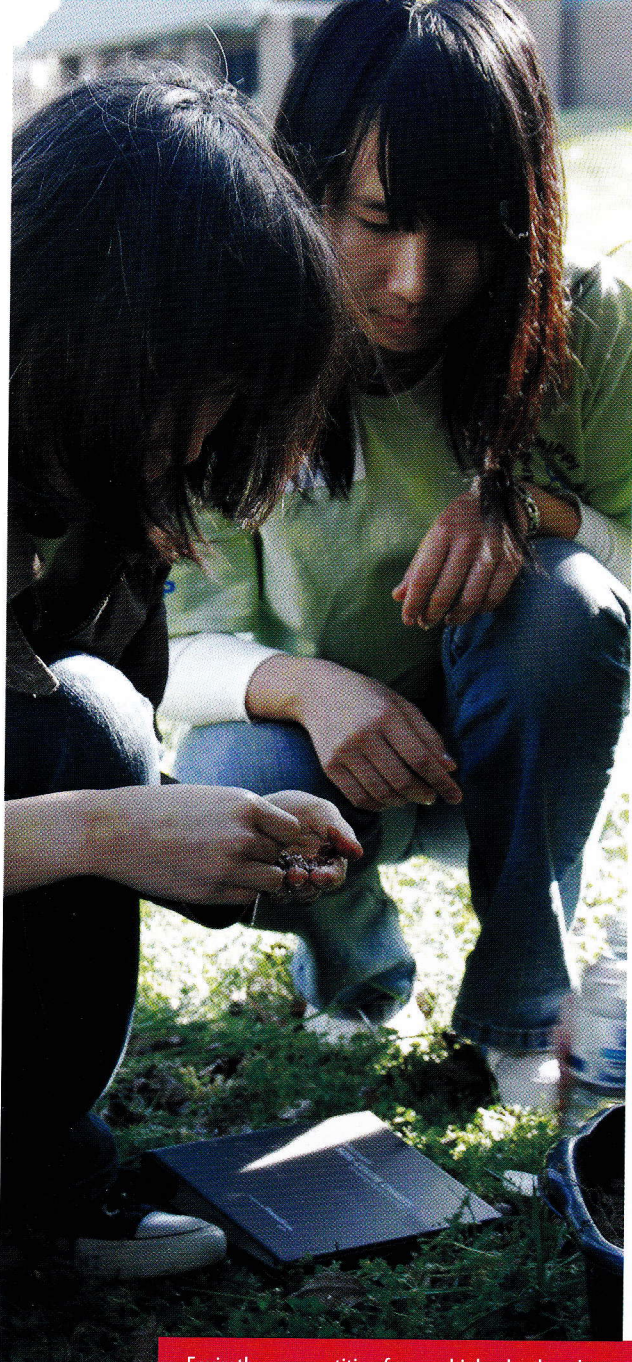
Students from Chalysbeate High School



Oxford High Biology students tour Dr. Ali's moquito lab



Dr. Ed Keiser talks to group of high school students

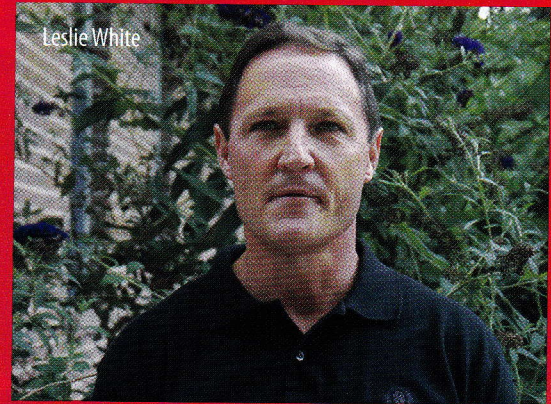


Envirothon competition for area high school students



Envirothon competition for area high school students

NEIGHBORS



Leslie White

Retired Mississippi state trooper Leslie White has lived most of his life in the Bay Springs community. His parents, Christine and Eddi Gene White, moved in across the street from the Field Station property (then Minnows Inc.) when he was in elementary school. Leslie's grandfather, George White, worked for Minnows Inc. after he retired from the dairy business, and the White grandkids enjoyed the run of the property.

His two brothers and one sister spent their childhood days roaming the land, streams and ponds that were once Minnows Inc. , Leslie said "We used to ride our horses and bikes, hunt and fish all over the property. It was home away from home as I recall. I miss those days! It was a lot of fun and I have a lot of great memories!"

Leslie graduated from Lafayette High School, attended Northwest Mississippi Community College and Ole Miss. After working at the hospital as an EMT for four years, he was admitted to the Mississippi State Troopers in 1987. During his last three years on the force, he was the news media liaison for District 3.

Retirement hasn't slowed him down very much. Leslie is working security at Northwest campus in Oxford. He said that he enjoys the slower pace and being able to participate in family holidays without being on call, but misses being a trooper. He hopes to fill his retirement days with lots of hunting trips with his brothers. "I hope to make more pheasant hunting trips to Iowa with Wesley (his twin) and John and maybe even go to Colorado elk hunting one day soon."



FIELD STATION

University of Mississippi

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Abbeville, MS 38601



Wildflowers at the
UM Field Station