

THE UNIVERSITY OF MISSISSIPPI

# FIELD STATION

*"Nature's Laboratory at Ole Miss"*

## SPRING 2009 NEWSLETTER

### The Journey - Building Big Mo...

**A**s we continue on our journey to develop the UM Field Station into the leading field station in the Mid-South, it is important to build momentum. I am happy to report that I sense we have "ole mo" moving in the right direction. Technically, momentum is defined as the product of a body's mass and velocity. For us, this means building a critical mass of researchers, teachers and students, and velocity is moving forward with more activities and programs. The product is all our combined efforts working together toward our common goal.

With regard to staffing, two of our newer partners have added staff, and one of our long-term partners is spinning up a new project that will increase activity at the Field Station. We'll tell you about it next time. While we did lose our postdoctoral research associate, it was a positive development because Dr. Robbie Kroger, accepted a faculty position at Mississippi State University – a natural academic progression and testimony to his good training here. In addition, Dr. Ikhlas Khan's research has received national

recognition. There has been an upswing in environmental activities at the Field Station that we are pleased to tell you about. Another key source of impetus at the Field Station has been Professor Richard Buchholz' major research program on wild turkeys funded by the National Science Foundation.

Finally, our Neighbor article highlights the environmental efforts of Bob Dunlap, a UM alum who has been planting trees for nearly 60 years, surely rivaling the legendary Johnny Appleseed.

As every sports fan knows, momentum is vital to success. Momentum at the Field Station is keeping this journey to excellence on track.

*Ray Highsmith*



*Momentum!*

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## STAFF ANNOUNCEMENTS

**W**e welcome the addition of two new faces at the Field Station: a visiting professor-scholar from Brazil, and a new member of NIUST's Undersea Vehicle Lab. The station staff also congratulates Dr. Robbie Kroger on his new position with the Department of Wildlife and Fisheries at Mississippi State University.

Visiting scholar Dr. Denizart Bolonhezi works for the Instituto Agronomico de Campinas in Ribeirao Preto, Brazil. His expertise is in soil management for sustainable crop systems. He is working with Dr. Rita Moraes on several projects, including yacon acclimatization to Mississippi, hydroponics cultivation system for *Galega officinalis* and organic peanut production. Dr. Bolonhezi has a B.S. in agronomy and master's and doctoral degrees in crop science.

Max Woolsey is the newest addition to the National Institute of Undersea Science and Technology's Undersea Vehicle Lab/Shop. Woolsey is the Electrical engineer for UVTC vehicles *Eagle Ray* and the new photographic AUV scheduled to be delivered this spring. A 2008 graduate of UM with a master's degree in electrical engineering, Woolsey is responsible for the programming and computer hardware in both vehicles. Does that Woolsey name sound familiar? He is the son of Maxine and the late Dr. Bob Woolsey, former director of the Seabed Technology Research Center of NIUST.

Dr. Robert "Robbie" Kroger accepted a position in January as an assistant professor in aquatic systems management in the Department of Wildlife and Fisheries at MSU. His research broadly encompasses water quality issues, environmental processes at the agricultural land-water interface, aquatic biogeochemistry and drainage, and nutrient management. Projects on the horizon include drainage vegetation management in Jonesboro, AR, urban fisheries management in Jackson, MS, and drainage management implementation at various sites in the Mississippi Delta. He will be teaching an undergraduate course, titled Applied Terrestrial and Aquatic Ecology, and plans to teach a graduate course that deals with water resources management and aquatic biogeochemistry. Kroger reports that he and his new bride are settled in to their new community and doing great.

*All photos by Michelle Edwards unless otherwise noted.*

*Special thanks to Dr. Lucille McCook for passion flower identification*

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

## STAFF ACCOLADES

### Dr. Ikhlas Khan awarded prestigious Farnsworth Excellence in Botanical Research Award

by John Kaiser, Daily Mississippian

Ikhlas A. Khan is the first faculty member at the University of Mississippi to be awarded the Norman R. Farnsworth Excellence in Botanical Research Award. Khan is a professor of pharmacology and assistant director of the National Center for Natural Products Research at the university, as well as the coordinator for natural products research at the Center for Water and Wetlands Resources.



He has been asked to address multiple forums around the globe and has co-authored or written more than 300 original publications. Khan also serves as a foreign editor for the Journal of Traditional Chinese Medicine, and as co-editor of *Planta Medica*.

The award is given to a deserving candidate by the American Botanical Council and is named after Professor Norman R. Farnsworth, Ph.D., who is the ABC co-founding board member.

Khan said he is more enthusiastic for the acknowledgement of his field than the recognition of his labors.

“I am really excited,” he said. “The award recognizes our efforts to establish safety of dietary supplements and acknowledges a need for that.”

Khan said the award is not based on just one or two accomplishments, but on his collective achievements starting in the early 1990s.

“I was really surprised,” Khan said. “I was not expecting it so soon in my career. I am honored and humbled to receive this prestigious award named for Norman Farnsworth, whom I admire and respect and who is

legendary in the field of pharmacology and natural products.”

Dr. Troy J. Smillie, a research scientist on Khan’s team said, “There is still a lot of work that needs to be done.” We do research on safety, quality and authenticity of botanical dietary supplements,” he said. “The dietary supplements people take are not to aid in treating specific disease but to help in overall health. Our research is to test if the supplements are safe for human consumption and to see if the botanicals are authentic.”

Khan is also the director of the Sino-US TCM Research Center, director of the Center for Research of Indian Systems of Medicine and adjunct professor for the Chinese University of Hong Kong.

## NEW UMFS PUBLICATION!

### THE UM FIELD STATION BROCHURE



Contact us at [umfs@olemiss.edu](mailto:umfs@olemiss.edu) or 662-915-5479 for your free copy of our new 12-page brochure.

# Nature's Cla

## Field Station Hosts High School Envirothon

by Erin Parsons.

Photo by Erin Parsons.

Months of preparation paid off for six teams of high school students who won the North Area Mississippi Envirothon February 19 at the Field Station.

Thirteen five-member teams participated, and the six highest-scoring teams advanced to the statewide competition. The advancing teams are from Oxford High School, Millsaps Career and Technology Center, Eupora High School, New Albany High School and two teams from Amory High School.

The Envirothon competition is a problem-solving natural resources competition for high school students.

“We quiz the kids on aquatic ecology, soils, wildlife, a current issue (biodiversity) and forestry,” said Brad Shedd, field representative at the Mississippi Soil and Water Conservation Commission and coordinator of the Envirothon. “The students are asked to identify items such as trees, soils, skulls and animal tracks. They are also given a 30-minute written test on each subject.”

While the students competed, Field Station staff talked to teachers about education and research programs at the station, and conducted tours of the station’s facilities.

The teams representing the North Area will compete with the winning teams from the Central Area, South Area and Delta Area for the state title and scholarships. The statewide event is set for May at Roosevelt State Park in Morton. The winning team from this competition will move on to the nationwide Canon Envirothon, in August at the University of North Carolina.



*A student team from Eupora High School identifies pelts and various skulls as part of the North Area Mississippi Envirothon competition.*

Joy Walker, an AP biology teacher at Eupora High School, has had numerous teams participate in the North Area Envirothon in previous years. Several of those teams have advanced to the statewide competition, Walker said.

“It just exposes them to all the different areas of science,” she said. “They gain knowledge of the different disciplines, and get a chance to study on these subjects. They may even want to major in one of these areas when they get to college.”

Zack Orsborn, a senior at Amory High School, said he believes it’s important for students his age to study about the environment, “because we are the future, we need to know how to conserve the environment, how to keep it intact and how to study about it as well.” According to the Mississippi Envirothon Web site,

# SSrooms

<http://www.mswcc.state.ms.us/Envirothon/Enviro.htm>, the competition serves to teach participants about the environment and issues facing this generation, as well as future generations.

## Wetlands ecology

Dr. Margorie Holland's "Wetlands Ecology" class received a tour of the Field Station and got to see where they will be participating in research projects on Field Station property. Dr. Holland has been teaching this class in alternate years since 1996. The class is a mixture of undergraduate and graduate biology students. Six students are enrolled through BISC 611, and two are enrolled through BISC 479.

The class members are divided among three projects: the two undergraduates work on a dendrochronological project in which they are looking at the ages of some trees in the Long-Term Monitoring Plots; three graduate students work at Bramlett Pond collecting various macroinvertebrates; and three graduate students map the vegetation established in the wastewater-treatment raceways.



*"Having a safe place in which students can undertake long term ecological research projects gives them a critical opportunity for hands-on field experiences. The fact that the UMFS is so close to campus makes it easy for students to work on their wetlands projects on their own timetable."*

— Dr. Holland

## Ecology Day Camp

Summer doesn't just mean warmer weather and mosquitoes. At the Field Station it's also Ecology Day Camp time! For five weeks in the summer the Field Station hosts Ecology Day Camp for kids. The camp is funded by Mississippi Department of Environmental Quality and is so popular that last summer an extra session was added, and there was still a waiting list.

The weeklong sessions are jam-packed with learning activities related to ecology and the environment. No video games here! The kids spend the days at camp enjoying the outdoors and learning to identify the insects, trees, birds and fish at the 740-acre Field Station. Because of the Field Station's wide variety of wildlife and supporting ecosystems, the campers get an opportunity to experience an "outdoor classroom," an experience that Mike Wallace, camp director, believes they will always remember.



"Enthusiasm and an appreciation for the environment that they will one day be in charge of caring for is our aim," says Ray Highsmith, executive director of the Field Station. "We enjoy having the kids here and having a chance to share all the natural riches the Field Station has to offer."



## Delta Council: Stoneville

Dr. Rita Moraes and Ray Highsmith traveled to Stoneville on February 9-10 to visit the Delta Council and attend the 55<sup>th</sup> Annual Southern Hardwood Forest Research Group Meeting at the Capps Center. This research field is of considerable interest to field station researchers because of the extensive and beautiful forested areas of the Field Station.

The meeting was sponsored by the Center for Bottomland Hardwoods Research (USDA, Forest Service, Southern Research Station) headquartered in Stoneville. The research mission of the center is “to provide the scientific basis to manage Southern bottomland hardwood and wetland forests and associated stream ecosystems for a sustained yield of forest products and other desired values.” The Field Station does not produce forest products but does have great interest in forest and stream ecosystems as well as the potential for forest plants to yield useful natural products.

The theme of the meeting was “An Update on University Cooperative Research Partnerships.” Presentations were made by researchers from Yale University, the University of Missouri, industry representatives and the center. The University of Mississippi was represented by Dr. Steve Brewer, Department of Biology whose talk was entitled “Factors Influencing Plant Species Diversity in Upland and Floodplain Forests in North Mississippi.” Dr. Mel Warren, leader of the Ecology of Aquatic and Terrestrial Fauna Team at the Forest Hydrology Lab in Oxford, spoke on “Forests and southern U.S. Stream Fishes: exploring the Links.” Dr. Warren and UM colleagues just initiated a stream project on fish egg-laying at the Field Station.

*For more information about the Center for Bottomland Hardwoods Research, visit the website at <http://www.srs.fs.usda.gov/cbhr/>*

## Neighbors: Dunlap



Friend of the UM Field Station and neighbor Bob Dunlap might be better known for his tire company, but he is also passionate about ecology and the conservation of his home state of Mississippi. His enthusiasm is infectious when he discusses his reforestation plans and Ole Miss football, two subjects that are also hot topics at the Field Station. (Hey, what can we say .... great minds think alike!)

Bob very actively pursues his interests and serves on the boards of conservation groups such as the Nature Conservancy and Wildlife Mississippi.

He grew up in Batesville and graduated from Ole Miss in 1951. After serving in the military, he returned to Batesville and joined his father in the tire business, Dunlap & Kyle Co. Today, Dunlap & Kyle is a leading wholesale tire distributor headquartered in Batesville that retails regionally through Gateway Tire centers. Bob still rises early and commutes to his office every morning.

It is a delight to have a neighbor who is so interested in conservation and environmental issues. Bob has planted millions of trees, starting when he was a 13-year-old Boy Scout. He wants to totally restore an 11,000-acre island he owns in the Mississippi River with native trees, plants and wildlife. “I just love trees, and I’ve been planting for a long time. Even before I had land of my own, I planted them on someone else’s,” he said with a laugh.



## Research Spotlight : Wild Turkey

Associate Professor Richard Buchholz, a faculty member in the UM Department of Biology for 10 years, operates an avian research facility in a remote area of the Field Station.

He conducts research on captive wild turkeys that were raised from eggs under a permit from the Mississippi Department of Wildlife, Fisheries and Parks and funded by the National Science Foundation. The NSF grant has had a significant impact, in addition to the merits of the study, by supporting training and employment of more than a dozen student lab assistants, animal care workers and graduate research assistants.

Dr. Buchholz is a behavioral ecologist who is interested in how individual animals alter their behavior to make “the best of a bad job,” with an emphasis on individual animals that lack disease resistance. Specifically, he is investigating how the parasite susceptibility of individual wild turkey hens varies and whether they alter their behavior to compensate for that susceptibility. The focus of his research is primarily on the mating behavior of turkey hens. “All animals, including humans, vary in their resistance to disease because of their individual genetic makeup and because of their condition (e.g. nutrition, stress, etc.) at the time they are exposed to an infective agent,” he said. His work addresses a theoretical body of work on how sexual selection shapes animal diversity.



So what do parasites have to do with mate selection? In his previously published work, Dr. Buchholz demonstrated that infected hens examine more males than uninfected females before deciding on which one they'd prefer as a mate. And preliminary results from last breeding season showed an intriguing result that was reported last summer at the International Society for Behavioral Ecology meeting at Cornell University. Infected females exhibited greater impatience during mate selection, and, as a result, solicited copulation from a greater number of males. They also appeared to “stall” in mid-posture while inviting a male to mate. He hypothesizes that the poorer condition of the females results in lower levels of estradiol-beta, a hormone that stimulates the copulation posturing in female birds.

This season, he hopes to increase the sample size of his work and collaborate with Dr. Anna Bess Sorin of the University of Memphis to extend genetic measures of parasite resistance in wild turkeys.



*Purple passion flower (Passiflora incarnata) at the Field Station*

**Our Mission:** *To foster ecosystem stewardship by providing a natural laboratory for research, education and service.*



Field  
Station

University of Mississippi

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