

# FOR THE RECORD

Essays On Education, Research and Issues In Natural Resource Management

## Scientists from Warnell School and College of Veterinary Medicine collaborate to identify emerging frog disease

By Andy Davis

In the summer of 2006, frog tadpoles in ponds at the Warnell School's Whitehall Forest began dying from an unknown disease. While conducting research on other amphibians in the area, PhD student Andy Davis and his advisor Dr. John Maerz witnessed this outbreak and subsequently conducted an investigation, in collaboration with Drs. Kevin Keel and Michael Yabsley from the UGA College of Veterinary Medicine's Southeastern Cooperative Wildlife Disease Study, into the cause and magnitude of the disease. The results of this study were published in the journal, *Ecohealth* in September 2007, and were also highlighted in the magazine, *ScienceNews* in November.

The study provided important baseline information about this disease, which has been anecdotally reported by herpetologists in other states, and was first discovered by David Green at the National Wildlife Health Center in Wisconsin. The UGA study showed the disease is caused by infection with a protozoan distantly related to other pathogens in the genus *Perkinsus*, which are all parasites of marine mollusks. From examination of tissue sections of infected tadpoles, the microscopic organism appears as a round, spore-like parasite that invades all organs and can number in the hundreds of thousands within severely infected tadpoles. Infected tadpoles appeared bloated, lethargic, and actually weigh more than uninfected ones, presumably because of the edema and swelling of tissues associated with infection.

The UGA study also included a systematic survey of 5 ponds in the Whitehall Forest for the presence of the disease in tadpoles of the most common frog species, the southern leopard frog. Results showed the disease varied in prevalence, with only a few tadpoles being affected in certain ponds while in others nearly all tadpoles were sick, and later died, which left few, if any, tadpoles in these ponds. Interestingly, surveys of the same ponds the following summer revealed few tadpoles, when there normally should be many.

While the study was an important first step in describing this emerging disease, which appears capable of wiping out entire populations of frog larvae within ponds, the authors emphasized that future studies are needed to clarify the nature of transmission, the full geographic range of the pathogen in North America, as well as the potential for



Andy Davis leads a presentation regarding the emerging frog disease that was recently described by Warnell and SCWDS researchers.

J.P. Bond

infected larvae to metamorphose into adult frogs and carry the disease from pond to pond. They also point out that given the current research focus on pathogen-related amphibian declines, including pathogens such as chytrid, ranavirus and trematodes, this emerging protozoan disease should be added to the suite of pathogens of concern and needs to be monitored closely in the future.



Andy Davis is a PhD student in the lab of John Maerz and is in the Wildlife Ecology and Management Program at the Warnell School of Forestry and Natural Resources. Andy's doctoral research focuses on physiological responses of amphibians to environmental and anthropogenic stressors. **L**