Geneticists develop key conservation tool for imperiled amphibian species

August 1 2011

Shy salamanders, flitting frogs and other anonymous amphibians, whose secretive ways may lead them into harm's way, will be better protected thanks to a new conservation tool developed by University of Idaho genetic researchers.

Caren Goldberg, post-doctoral scientist, and Lisette Waits, professor of wildlife resources in the University of Idaho College of Natural Resources, recently conducted a study confirming environmental DNA – eDNA – as a sensitive and efficient tool for documenting stream-dwelling amphibians in the Pacific Northwest.

Their study has demonstrated the utility of eDNA techniques for detecting aquatic vertebrates across a majority of freshwater systems, which sets the stage for an innovative transformation in approaches for aquatic research.

Their collaborative paper, entitled "Molecular Detection of Vertebrates in Stream Water: A Demonstration Using Rocky Mountain Tailed Frogs and Idaho Giant Salamanders," was released online this week by *PLoS ONE*.

"Stream ecosystems harbor many secretive and imperiled species, and studies of vertebrates in these systems face the challenges of relatively low detection rates and high cost," said Waits.
"However, it was unclear whether this tool could be used for low-density vertebrates in fast-moving streams where shed cells may travel rapidly

away from their source.”

The team sampled waters from five streams in central Idaho to determine whether they could detect eDNA for Rocky Mountain tailed frogs and Idaho giant salamanders, two elusive amphibian species.

“We detected Idaho giant salamanders in all samples and Rocky Mountain tailed frogs in four of five streams and found some indication that these species are more difficult to detect using eDNA in early spring than in early fall,” said Waits.

While the sensitivity of this method across species remains to be determined, the use of eDNA could revolutionize surveys for rare and invasive stream species, according to Waits.

Provided by University of Idaho