

## THE EFFECT OF WETLAND HYDROPERIOD AND FEEDING ECOLOGY ON AMPHIBIAN MERCURY CONCENTRATIONS

Carlos Tapia<sup>1,2</sup>, David Scott<sup>1</sup>, Megan Winzeler<sup>1</sup>, Austin Coleman<sup>1</sup>, Paul Walkup<sup>1</sup>, and Stacey Lance<sup>1</sup>

<sup>1</sup>UGA Savannah River Ecology Laboratory, Aiken, SC

<sup>2</sup>University of Central Florida, Orlando, FL

Mentor: Stacey L. Lance

Mercury (Hg) is an element naturally found in many environments and is known for its neurotoxic effects on organisms that bioaccumulate elevated levels. Previous studies on fish have shown that 1) top predators accumulated more Hg than did fish at lower trophic levels, and 2) fish in shorter hydroperiod wetlands accumulated more Hg than did fish in longer hydroperiod wetlands. Few studies have examined Hg biomagnification patterns across trophic levels, or the effects of hydroperiod on Hg bioaccumulation, in amphibians. Our objective is to determine the effect of wetland hydroperiod and trophic position on Hg levels in larvae of three amphibian species: mole salamanders (*Ambystoma talpoideum*), marbled salamanders (*A. opacum*), and leopard frogs (*Lithobates sphenoccephalus*). We collected amphibian larvae from 25 wetlands on the Savannah River Site across a range of hydroperiods. We freeze dried and homogenized samples, then used a Hg analyzer to measure whole-body Hg concentrations. Mole salamander larvae were only found in long hydroperiod wetlands, but we captured both small young-of-the-year larvae and larger, older paedomorphic larvae. The paedomorphic larvae, which feed at a higher trophic

level, had more Hg than the younger larvae. Although carnivorous salamander larvae are at a higher trophic level than herbivorous frog tadpoles, we found that leopard frogs had significantly higher levels of Hg than salamanders. Both frogs and salamanders in shorter hydroperiod wetlands accumulated more Hg than their counterparts in longer hydroperiod wetlands. From this study it appears that amphibians inhabiting shorter hydroperiod wetlands may be at a higher risk of experiencing the toxic effects of Hg. In addition, herbivorous tadpoles that graze near the wetland sediments may accumulate more Hg than salamander larvae feeding at higher trophic levels, indicating that feeding ecology as well as trophic position may influence Hg uptake.