

Public Abstract

Stacy James

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Amphibian metamorphosis and juvenile terrestrial performance following chronic cadmium exposure in the aquatic environment

Advisors: Dr. Raymond Semlitsch, Dr. Edward Little

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Chemical contaminants are potential sources of acute and chronic stress that have been linked with habitat degradation and amphibian declines. Manipulative experiments were conducted in outdoor aquatic and terrestrial enclosures to investigate the performance (i.e., growth, survival) of amphibians that metamorphose from cadmium-contaminated aquatic breeding sites. It was expected that cadmium exposure would decrease the growth and survival of tadpoles and juveniles because cadmium affects the physiological processes and body condition of amphibians and other taxa. The research suggests that aquatic breeding sites polluted with cadmium produce fewer, older, and contaminated amphibian metamorphs relative to uncontaminated sites. Those that survive to metamorphosis do not appear to be hindered by reduced terrestrial survival or growth as juveniles. However, the effect of cadmium exposure history on juvenile performance was a function of terrestrial habitat quality. Assessments of the effects of contaminants on amphibians that incorporate multiple routes of exposure and other potential stressors may produce different outcomes than assessments that only manipulate the aquatic concentration.