Apr 11th, 8:50 AM - 9:05 AM

Effects of Leaf Litter on Amphibian Oviposition Site Selection

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Leaf litter plays an important role in the forest ecosystem, such as impacting various processes and hindering erosion. While there is variability in the chemical and nutritional properties of leaf litter, the effects that these variables have on organisms within the environment is not well known. In this study, we examined the effects of leaf litter chemistry on amphibian oviposition site selection. Artificial ponds were created using small, plastic pools, and leaf litter of 15 different tree species (including two invasive species) was added. During the 60 day experiment, water quality measurements were taken weekly from each individual pool (including temperature, pH, dissolved oxygen, conductivity, and water depth), and the amount of eggs deposited by Cope's gray treefrog (Hyla chrysoscelis) was recorded. Using zero inflated models, results show that tree species was the most accurate predictor of the amount of eggs deposited into each pool. Frogs had a strong preference for post oak leaves, while they completely avoided southern red oak leaves. Tree species also had an effect on the amount of nitrogen, phosphorus, and tannins (a type of secondary compound in tree leaves). These results indicate that cues from tree species have a strong impact on habitat selection for amphibians, which may impact ecosystems in broader ways through changes in amphibian abundance and diversity.