

DEPARTMENT OF GEOLOGY
COLLEGE OF ARTS & SCIENCES

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE WOMEN

APPLICATION DEADLINE: 03/01/2018

PROJECT TITLE: Anthropogenic influence on land snail species composition in woodlands from SE Ohio

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Project Description

Anthropogenic (human-influenced) disturbance can be detected in the species composition of animal and plant communities. In particular, animals with low dispersal abilities, like land snails, which exhibit a lack of mobility, non-migratory behavior, and high-habitat specialization, are suspected to be highly vulnerable to anthropogenic modification. Thus, snails are ideal candidates to assess ecosystem health. Land snail diversity from woodland areas are linked to the density of coarse woody debris. It is hypothesized that old growth forests (or low human-impacted woodlands) will exhibit high abundance of woody debris and high soil organic content, which would result in high diversity of land snails. In contrast, second-growth forests (or high human-disturbed woodlands) are expected to display low concentration of wood debris and low soil organic content, which would cause a decrease in snail diversity. In this project, land snail diversity of microsnails (5 mm) from SE Ohio will be measured along an urban-to-rural gradient. The selected student will learn to (1) conduct field sample collection of land snail species; (2) identify snail species using standard taxonomic diagnostic features, (3) measure species composition and diversity of land snail communities, and (4) determine if and how species diversity varies along an urban-to-wildland gradient using multivariate analytical methods (e.g., non-metric multidimensional scaling ordination). Three main forests with gradual decreasing degree of human disturbance will be sampled including Mt. Airy Forest (near downtown Cincinnati), East Fork Wildlife Area (Clermont County) and Edge of Appalachia (Adams County). This research will test the hypothesis that second-growth forests near Cincinnati will exhibit low land snail diversity whereas old-growth forests near the Edge of Appalachia will contain high land snail diversity and significantly different species-composition than assemblages near the city.