

**Department of Geology
COLLEGE OF ARTS & SCIENCES**

**SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN**

APPLICATION DEADLINE: March 1, 2014

The Department of Geology is pleased to offer the following research project for the summer of 2014. Interested students are urged to contact the faculty member(s) directing the project that most interests them. By contacting the faculty member, you can discover more about the project, learn what your responsibilities will be and, if possible, develop a timetable for the twelve-week research period.

Forest gullies and waterfalls: responses to heavy rainfall and land-use history

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Project Description

This project seeks to address the mechanics of erosion, sediment transport, and sediment storage in first-order forest streams. Recent work has shown that the legacy of mill ponds, logging, and farming in the eastern United States has greatly affected the amount of sediment stored in the landscape and the conditions under which it is released into downstream portions of the watershed, where it can have a significant impact on water quality. Related to this issue, the mechanics of erosion in forested gullies are less well-known relative to their counterparts in plains, deserts, and alpine settings.

The project will primarily focus on tributaries to the Little Miami River located in the Rowe Woods nature preserve. Here, the history of land use is relatively well-known, and the landscape includes several different types of streams: woodland gullies with only occasional streamflow, perennial bedrock streams with small waterfalls and gravel-covered alluvial reaches, and a stream that was recently restored as part of conservation effort. These attributes make this area a natural laboratory for exploring the topics outlined above.

A specific research plan for the study period will be tailored to student interests and project needs. Project tasks may include repeated surveying and detailed field observations; measurement of stream discharge and suspended sediment concentration; watershed delineation and mapping using high-resolution topographic data; and research and interpretation of historical airphotos and land use records. The successful applicant will be involved in research design, data analysis, and interpretation.