

**Department of Biological Sciences
COLLEGE OF ARTS AND SCIENCES**

**SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN**

APPLICATION DEADLINE: March 1, 2014

The Department of Biological Sciences 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.

**PROJECT TITLE: Evaluation of Mechanistic Unified Hypotheses Predicting
the Distribution and Abundance of Organisms**

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Project Description

This research project plans on testing competing theories that explain and predict patterns of biodiversity and biogeography. To do so, this research will focus on multiple taxa within the Pymatuning reservoir island-mainland system located on the border of Ohio and Pennsylvania. We wish to demonstrate which theory is most consistent with nature and if there are differences among taxa. The results will have theoretical and practical applications in the fields of management and conservation where evaluating biodiversity often depends on habitat area and isolation. The proposed taxa will include small and medium-sized mammals, song birds, moths, and vegetation. Mammals will be trapped directly and tagged to estimate abundances on both the mainland and on multiple islands. Song birds will be studied through aural count surveys which require identifying species through song. Moths will be captured using UV-light traps and will be identified and preserved in a laboratory setting. Vegetation will be surveyed using standard identification and measuring techniques in the field.

A WISE student would gain research experience working with the above taxa and the ability to focus their efforts on a taxon of their interest. This work would be done at Pymatuning Laboratory of Ecology at Pymatuning Reservoir in Pennsylvania where shared housing (including kitchenette) would be provided. The student would, under direct supervision, aid in locating, setting up, and maintaining sampling grids and equipment on mainland and island sites for all taxa (depending on starting dates). Other duties include taking down data and learning different collection techniques for multiple taxa. This would involve working long hours, outdoors, in rugged conditions both on

land and on boats. In addition, laboratory work will be included both on site and possibly at University of Cincinnati. Laboratory work involves processing, identifying, and organizing collected samples as well as data entry. Applicants should be in good physical shape, willing to work in Pennsylvania during the summer, may need to provide their own transportation, and have a flexible schedule. All necessary training will be provided.