Departments of Environmental Engineering and Biological Science
COLLEGES OF ENGINEERING & ARTS AND SCIENCES

SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN

APPLICATION DEADLINE: March 9, 2015

The Departments of Environmental Engineering and Biological Sciences are pleased to offer the following research project for the summer of 2015. 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: Tracking Source of Phosphorus Nutrients to Reduce the Potential of Harmful Algae Blooms

Dr. Stephen Clarson
CEAS – Environmental Engineering
ERC 550
Cincinnati, OH 45221-0012
Tel: (513) 556- 5430
Email: stephen.clarson@uc.edu

Dr. Edwin Barth
A&S – Biological Science
RIEVESCHL
318 College Dr
Cincinnati OH 45221-0006
Tel: (513)556-9700
Email: barthef@ucmail.uc.edu

Project Description

An emerging public health threat is the proliferation of Harmful Algal Blooms (HAB) that threaten drinking water supplies and recreational activities. During the summer of 2014, the drinking water supply of city of Toledo, Ohio was shut down due to lake eutrophication. The blooms contain cyanobacteria algae that produce cyanotoxins such as specific microcystins, which has been linked to human liver system, nervous system, and skin effects as well as animal fatalities that were exposed to lakes containing HAB. Due to eutrophication, recreation activities at Grand Lake St. Mary's were suspended in 2010.

The eutrophication process is primarily due to the nutrients containing nitrogen and phosphorus entering lakes during hot weather conditions. Most of the nitrogen and phosphorus are due to fertilizers that are transported to receiving streams due to agricultural runoff.

The purpose of this proposal is to identify the phosphorus source areas and collection areas (soil and receiving streams) to track phosphorus transport on a 100+ acre recreational farm that contains a 30 acre lake. Soil and water samples will be taken on a grid pattern to determine if there are clearly identifiable nutrient sources, identify concentrated tributary areas, and also determine if these discharge source areas and concentration stream areas causes HAB in the associated receiving portion of the lake.