

**Department of Biological Sciences  
McMicken College of Arts and Sciences**

**SUMMER RESEARCH OPPORTUNITIES  
FOR UNDERGRADUATE WOMEN**

**APPLICATION DEADLINE: March 1, 2006**

*The Department of Biology in the College of Arts and Sciences is pleased to offer the following research project for the summer of 2006. 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.*

**Visually Guided Behaviors of Predatory Water Beetle Larvae**

**Professor Elke Buschbeck**

**Assistant Professor**

**Department of Biological Sciences**

**805G Rieveschl**

**University of Cincinnati, Cincinnati, Ohio 45221-0006**

**Tel. (513)556-9747**

**Fax. (513)556-5299**

**Email: [elke.buschbeck@uc.edu](mailto:elke.buschbeck@uc.edu)**

Have you ever wondered how other animals perceive the world? While our perception is limited to our own senses, modern science allows us to get a glimpse on how other organisms sense the world. In my lab we are focusing on insect visual systems. You can find information on several current projects (including this one) on my web-side (<http://www.biology.uc.edu/faculty/buschbeck/elke.htm>). One of the insects that we study are the larvae of aquatic, predatory beetles of the family Dyticidae. Thus far we have focused on the Sunburst Diving Beetle, the larvae of which has six little camera-type eyes on each side. Two of those six eyes stand out in that they are much larger than the other eyes, and their internal organization is highly asymmetric and unusual. We are currently investigating the possibility that these eyes function as highly specialized distance detectors, which can be tested behaviorally. The focus of this study will be to take and analyze 3D video footage of prey (mosquito larvae) capture behavior under the following conditions: A) Spontaneous prey capture to determine the prey distance and alignment immediately prior to capture; B) Prey-capture with occluded eyes to determine if larvae are able to gauge distances when all but one eye is occluded, and C) Capture of tethered prey items, or dummy prey to determine systematic differences between vertically and horizontally oriented high-contrast visual cues, which may allow us to test if the mechanism of distance estimation follows our theoretical expectations.