

**Department of Geology  
MCMICKEN COLLEGE OF ARTS AND SCIENCES**

**SUMMER RESEARCH OPPORTUNITIES  
FOR UNDERGRADUATE WOMEN**

**APPLICATION DEADLINE: March 3, 2008**

*The Department of Geology is pleased to offer the following research project for the summer of 2008. 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.*

**POPULATION ECOLOGY AND TAPHONOMY OF A DINOSAUR BONE BED  
IN THE UPPER JURASSIC MORRISON FORMATION OF MONTANA**

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**Project Description:**

For several years the Cincinnati Museum Center has conducted a Dinosaur Field School in Montana. Volunteers participate in the scientific excavation of a "bone bed" in the Morrison Formation, one of the world's most prolific deposits of dinosaur fossils. In the field participants help to excavate the bones, locate them on a detailed map of the site, and remove the bones using appropriate excavation techniques demonstrated by the scientific coordinators of the dig. Under the permit for the excavation with the Bureau of Land Management, fossils collected are brought back to the CMC for further preparation, research, and permanent housing at CMC. The Field School runs over a 5 week period late in the summer. Collections are prepared during the rest of the year at the Fossil Preparation Lab at CMC and are studied at the Geier Collections and Research Center of CMC.

The WISE project would include participation in the field project as well as study of material in the collections at Geier. In the field, data on bone distribution and orientation are collected before jacketing and removal of the fossils. This information is plotted on a map of the bone-bearing layer that is analyzed for patterns of distribution and orientation of the bones. Several questions can be addressed from the mapped bone bed. Do bones represent articulated skeletons or parts of skeletons, or are they disarticulated

skeletal elements? Does the distribution and orientation of bones provide any information about the mode of burial of the bones? Are there distinct clusters of bones that reflect either disarticulation of a single animal or aggregation by a depositional process? Do bones show any parallel alignment that indicates deposition in a flowing water or sediment environment?

At the Geier Center, bones that are ready for examination (collected and prepared over previous field seasons) are first identified as to skeletal element and dinosaur taxon. They are also examined for taphonomic features such as breakage, abrasion, or biologic agents such as predation damage. The results will augment the inventory of fossil taxa from this locality and the nature of preservational features associated with this deposit. Although this is an ongoing project, the WISE participant will be able to summarize existing data on population composition and preservational features.