

# PARTICIPATION OF HIGH SCHOOL STUDENTS AND TEACHERS IN QUATERNARY RESEARCH IN BENTON COUNTY, WASHINGTON STATE

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Students prepare for pedestrian survey, May 2008

## ABSTRACT

In the spring of 2008, a graduate student and a faculty member at Central Washington University (CWU) contacted the senior author about a reported mammoth find on property within the Kamiakin High School service area in Kennewick, Washington. The graduate student was interested in exploring the possibility of involving high school students in the paleontological excavation of mammoth bones. Arrangements were made for high school students to visit the site and begin exploratory excavation under the supervision of a professional paleontologist along with a team of CWU students. Initial observations yielded mammoth bones in Touchet Bed sediments from gigantic Ice Age floods (i.e., the Missoula Floods). At that time, the property was for sale and two local farmers purchased it with the intent that a program be developed for local students to experience science in the field. To further this goal, the Mid-Columbia Basin Old Natural Education Sciences (MCBONES) Research Center Foundation, a Washington State non-profit corporation, was established.

The program is designed to expose students to various science, technology, engineering and mathematics (STEM) concepts relative to the paleontological dig. Archaeology, geology, and paleontology are not extensively taught in public secondary schools in Washington. This program represents an opportunity for students to work with STEM concepts through an interdisciplinary approach. Students are members of the Kamiakin High School Mammoth Club and take field trips to the excavation under the supervision of the club supervisors. Classes in the Kennewick School District for which the dig offers project opportunities include forensics, biology, language arts, technology, art, and mathematics. The project also affords opportunities to develop topics for required culminating projects.

Soliciting local businesses for donations for equipment and materials for the excavation has developed community support. Local educators, organizations, and private individuals are being recruited and trained to mentor students who participate in the dig. The goal is for experienced students to help train those new to the program in an ongoing cycle. Workshops have been held for educators and other community volunteers.



Exploratory excavation, May 2008

## BACKGROUND

Large bones were discovered along the western edge of Coyote Canyon during quarrying operations in 2000. When it was recognized that the bones were from a mammoth, excavation was halted. In 2008, the site was purchased by a local farming family who wished to see the site preserved and developed into a research center for K-12 teachers, students, and community volunteers from the Tri-Cities (Kennewick, Pasco, Richland), Washington State.



Initial discovery, 2000

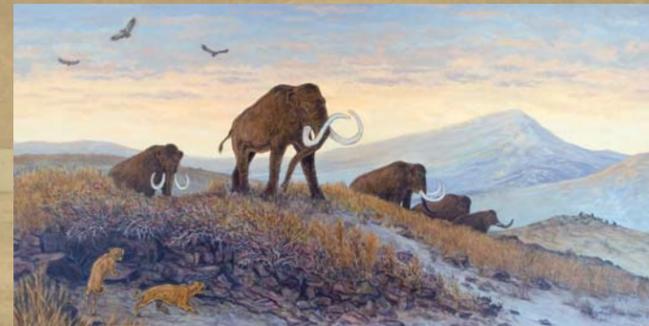


Tail vertebra

In September 2008, the Mid-Columbia Basin Old Natural Education Sciences (MCBONES) Research Center Foundation was established as a Washington State non-profit corporation. The foundation provides local K-12 teachers and their students an opportunity to actively participate in laboratory and field-based research in paleontology, geology, paleoecology, and other natural sciences. The Coyote Canyon Mammoth Site is the keystone site of the MCBONES Research Center Foundation.

## ICE AGE

Finds of fossil bones are common in the Ice Age flood deposits of eastern Washington. The bones of the Coyote Canyon Mammoth are embedded in fine-grained layers of these flood deposits, termed Touchet Beds.



Art by Rick Feser

The last major Ice Age was a time of massive continental glaciers, giant mammals, early humans, and the world's largest fresh water floods (the cataclysmic Missoula Floods, that extended from eastern Montana through Idaho, Washington, and Oregon). It ended with the extinction of nearly all giant mammals in North America.



Rib found during exploratory excavation, May 2008



Dry screening, May 2008

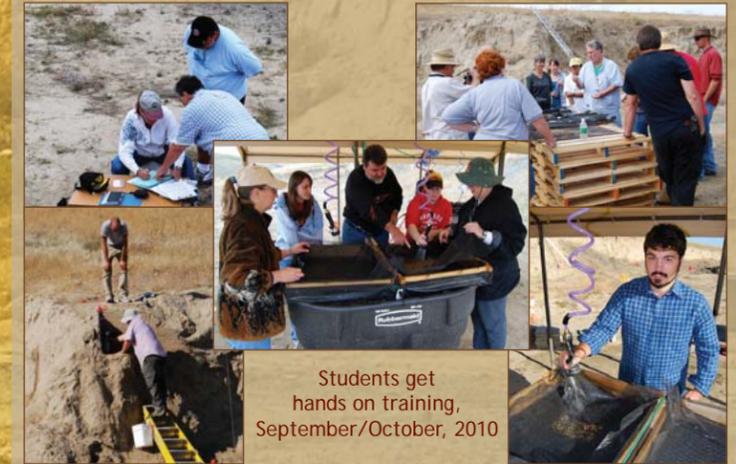
Among the most prolific fossils in the state, are those of the Columbian Mammoth, the official fossil of Washington State. However, few of these finds have been excavated and studied to the exacting scientific standards that modern paleontology and archaeology disciplines require.

## OUTDOOR CLASSROOM



Training and scientific excavation begins, September 2010

The Coyote Canyon Mammoth Site provides a unique outdoor classroom and laboratory and an important window into the region's Ice Age past. The site contains an extended paleoenvironmental record of the geology, botany, and zoology in the eastern Washington region. Carefully controlled excavation by students and teachers is helping to document the area's Ice Age history for the first time.



Students get hands on training, September/October, 2010

The goal of the MCBONES Research Center Foundation is to see the Coyote Canyon Mammoth Site developed into a local/regional paleoenvironmental research center serving as an outdoor classroom and laboratory for K-12 teachers, students, and community volunteers. The site and its fossils are being excavated and studied under the guidance of regional Ice Age research specialists. The Coyote Canyon Mammoth Site is being used to teach and train current and future students to become paleontologists, geologists, and paleoecologists, as well as to spark interest in scientific methods and inquiry in the general school population.

## COLLABORATORS

- Anthropology Department, Columbia Basin College, Pasco, WA
- Burke Museum and Quaternary Research Center, University of Washington, Seattle, WA
- Department of Education, Central Washington University, Ellensburg, WA
- Ice Age Floods Institute, Lake Lewis Chapter, Richland, WA
- Kamiakin High School, Kennewick, WA
- Team Battelle, Richland, WA

