The Late-Glacial Wenas Creek Mammoth Site (45YA1083) in Central Washington

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During construction of a private road in 2005, a mammoth (*Mammuthus* sp.) left humerus was uncovered near Selah, central Washington State. Finds of isolated mammoth elements are common on the Columbia Plateau, many of them in late-Pleistocene Missoula Flood slackwater deposits (Barton 1998, 1999; Lillquist et al. 2005; Waitt 1980). The Wenas Creek find appeared somewhat unusual because it was well preserved and elevationally above these deposits, thus potentially representing an in situ mammoth. Owing to its unusual topographic setting and the potential for finding additional material at the site, Central Washington University initiated an ongoing investigation with annual summer field schools starting summer 2005 (Barton et al. 2005; Lubinski et al. 2006). The goals of the project from the outset were to recover additional mammoth remains, plus associated faunas and paleoenvironmental data, and place these in geological context. Excavation methods were designed to yield data that could reveal taphonomic relationships between finds and recover evidence of human involvement, if any, with the site.

Field investigations began with a ground-penetrating radar survey, followed by excavating 37 m of backhoe trench, both parallel and perpendicular to the find location, to document the depositional history of the site. More than 46 m^2 has been excavated by hand in units 2 by 2 m or smaller; 95 percent of the matrix was dry-screened through 1/8″ (3.175 mm) mesh, and a 5-percent sample was water-screened through 1-mm mesh to recover any associated microfauna or small artifacts. All finds and geological strata have been mapped with a total-station theodolite for evaluation of spatial relationships. Bones have been consolidated with Butvar B-76 (polyvinyl butyral resin), except for those intended for ^{14}C dating or chemical analyses.

In the first two seasons, we have exposed nearly complete and fragmentary remains of left and right mammoth humeri, and mammoth-size scapula, metapodial, phalanx, and vertebrae. All element epiphyses are fully fused and can be accounted for by a single individual. The humeri are consistent in size

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with Columbian (*M. columbi*) or woolly (*M. primigenius*) mammoths, based on data in Madden (1981), and data compiled independently by Barton. The animal is more likely a Columbian mammoth given the absence of reliably identified woolly mammoths west of the Rocky Mountains (Barton 1998; Lillquist et al. 2005; Madden 1981; Pasenko 2006). Within the same stratum and closely associated with the mammoth bones we recovered a left metatarsal cannon bone and left fused 2nd/3rd tarsal from a bovid, most likely *Bison antiquus*, although this identification has not yet been confirmed. A single human artifact, a cryptocrystalline flake, was recovered about 15 cm above one of the mammoth bones. We have also recovered pollen and opal phytoliths within the mammoth-bearing stratum, and rodent remains in less intimate proximity.

Four bone samples have been submitted to three laboratories for ^{14}C dating, three from the mammoth left humerus and one from the bovid metatarsal. These have so far returned two plausible age estimates, 13,398 ± 58 (Wk-18064) and 13,788 ± 70 RCYBP (Wk-20117). When taken in conjunction with bracketing infrared-stimulated luminescence dates on sediment adjacent to the right humerus (13,920 ± 1190 [UIC-1688] and 18,230 ± 1580 CALYBP [UIC-1203]), ages of about 13,000–14,000 RCYBP or 15,500–17,000 CALYBP are inferred for both the mammoth and bovid. We are awaiting corroborating radiocarbon assays before we can have full confidence in these estimates.

The site lies on a laterally discontinuous bench on an Ellensburg Formation-cored interfluve lying between Wenas Creek and the Naches River. The northeast-facing bench is approximately 170 m below the top of the interfluve and 21 m above the Wenas Creek floodplain. As such, it is ca. 95 m above and roughly 10 km northwest of the furthermost reaches of the Missoula outburst flood deposits as mapped by Waitt (1980) and extended by Lillquist et al. (2005). The site has three principal strata: a basal gravelly sand/sandy gravel; stratified alluvium; a middle matrix-supported diamict interpreted as a colluvium; and a fine-textured loess cap. The origin of the bench has not yet been determined.

Laboratory analyses are underway, including examination of spatial distributions, bone taphonomy, and taxonomy. Excavations at the site will continue with summer field schools for several more seasons.

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