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Press Release

The last of the Gomphotheres

Earliest humans in North America hunted now-extinct elephant-like creatures, say University of Arizona and Tübingen researchers

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An international research team including Tübingen archaeologist Dr. Susan Mentzer has published the results of archaeological excavations in northwestern Mexico. The study, which was released this week in the Proceedings of the National Academy of Sciences, describes a site called El Fin del Mundo ("the end of the world" in Spanish), an ancient swamp containing the remains of two gomphotheres in association with stone tools attributed to the Clovis culture – that of the first humans in the Americas.

These results are significant because gomphotheres – extinct cousins of mammoths and mastodons – were previously believed to have disappeared from North America long before humans ever arrived.

In addition, the association between the gomphothere remains and archaeological materials suggests that these large, elephant-like mammals were on the list of prey for some of North America's earliest human inhabitants. Although humans were known to have hunted gomphotheres in Central and South America, this is the first time a human-gomphothere connection has been made in North America.

"This is the first archeological gomphothere found in North America, and it's the only one known," said Dr. Vance Holliday, a professor of anthropology and geology at the University of Arizona and co-director of the excavations.

Holliday and colleagues from the U.S., Mexico and Germany began excavating the skeletal remains of two juvenile gomphotheres after ranchers alerted them to the bones' presence in northwestern Sonora, Mexico. The site, which contains several "bone beds" or concentrations of bones of extinct Pleistocene megafauna, is located in a remote area of the Sonoran Desert. On their first visit to the site, the researchers observed several tusks actively eroding into the desert, as well as stone tools that appeared to be associated with concentrations of bones.

Excavations began in 2007 and continued for several years, uncovering two articulated juvenile gomphothere skeletons, identified as such on the basis of their jaw bones and teeth.

The international research team – which includes Dr. Mentzer, a post-doctoral researcher in the Geoarchaeology Working Group of the Institute for Archaeological Sciences at the University of Tübingen – studied many aspects of the site, including the gomphothere skeletons and other faunal remains, the archaeological materials, the geology, and the ages of the different deposits.

Mentzer's role on the project was a high-resolution study of the sediments that surrounded the skeletons and archaeological materials. "The sediments indicate that the environment at the site was very different from the dry desert that exists today," says Mentzer. The gomphothere remains are covered in a layer of diatoms – algae skeletons – which suggests that the site was once covered by water, perhaps a shallow pond or swamp. A seasonal source of water would explain why both large mammals and humans were present at the site.

Gomphotheres were about the same size as modern elephants and had straight tusks. They once were widespread in North and South America, but were thought to have gone extinct in North America long before humans arrived. However, the bones that Holliday and his colleagues uncovered date back 13,400 years, making them the last known gomphotheres in North America.

The excavations also uncovered numerous Clovis artifacts, including signature Clovis projectile points, or spear tips, as well as cutting tools and flint flakes from stone tool making. The Clovis culture is so-named for its distinctive stone tools, first discovered by archaeologists near Clovis, New Mexico, in the 1930s.

Radiocarbon dating reveals that the El Fin del Mundo site is about 13,400 years old, making it one of the two oldest known Clovis sites in North America; the other is the Aubrey Clovis site in northern Texas. This finding is especially significant, because it might suggest that the Clovis culture originated in the southwestern USA and northern Mexico. Up until now, very little was known about Clovis sites in northern Mexico. The researchers hope that their work at El Fin del Mundo will provide new information about how the humans lived in this area. In addition to the artifacts that found in association with the gomphothere remains, the team has discovered an extensive habitation site that they call a "Clovis camp."

The position and proximity of Clovis weapon fragments relative to the gomphothere bones at the site suggest that humans did in fact kill the two animals there. Four of the seven Clovis points were found in association with the bones. "This is the first Clovis gomphothere, it's the first archeological gomphothere found in North America, it's the first evidence that people were hunting gomphotheres in North America, and it adds another item to the Clovis menu," Holliday said.

The dig at El Fin del Mundo was funded by the University of Arizona's Argonaut Archaeological Research Fund, the National Geographic Society, the Instituto Nacional de Antropología e Historia (Mexico), and The Center for Desert Archaeology in Tucson, Arizona (USA).

Publication:

Guadalupe Sanchez, Vance T. Holliday, Edmund P. Gaines, Joaquín Arroyo-Cabrales, Natalia Martínez-Tagüeña, Andrew Kowler, Todd Lange, Gregory W. L. Hodgins, Susan M. Mentzer, and Ismael Sanchez-Morales: Human (Clovis)–gomphothere (*Cuvieronius* sp.) association ~13,390 calibrated yBP in Sonora, Mexico. *Proceedings of the National Academy of Sciences*, doi: 10.1073/pnas.1404546111

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Researchers at work in the Sonora Desert, Mexico. Photos: Susan Mentzer/University of Tübingen