

UNDER EMBARGO UNTIL WEDNESDAY, APRIL 26 AT 10 AM PDT

**SAN DIEGO
NATURAL
HISTORY
MUSEUM**

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**MASTODON DISCOVERY IN SAN DIEGO SHAKES UP OUR UNDERSTANDING OF
EARLY HUMANS IN THE NEW WORLD**

Broken bones and rocks yield evidence that pushes back the record of early humans in North America by more than 100,000 years

SAN DIEGO, Calif.—An Ice Age paleontological-turned-archaeological site in San Diego, Calif., preserves 130,000-year-old bones and teeth of a mastodon that show evidence of modification by early humans. Analysis of these finds dramatically revises the timeline for when humans first reached North America, according to a paper to be published in the April 27 issue of the prestigious science journal *Nature*.

The fossil remains were discovered by Museum paleontologists during routine paleontological mitigation work at a freeway expansion project site managed by the California Department of Transportation (Caltrans). The bones, tusks, and molars, many of which are sharply broken, were found deeply buried alongside large stones that appeared to have been used as hammers and anvils, making this the oldest *in situ*, well-documented archaeological site in the Americas.

“This discovery is rewriting our understanding of when humans reached the New World. The evidence we found at this site indicates that some hominin species was living in North America 115,000 years earlier than previously thought,” said Judy Gradwohl, president and CEO of the San Diego Natural History Museum, whose paleontology team discovered the fossils, managed the excavation, and incorporated the specimens into the Museum’s research collection. “This raises intriguing questions about how these early humans arrived here and who they were.”

Until recently, the oldest records of human sites in North America generally accepted by archaeologists were about 14,000 years old. But the fossils from the Cerutti Mastodon site (as the site was named in recognition of field paleontologist Richard Cerutti who discovered the site and led the excavation), were found embedded in fine-grained sediments that had been deposited much earlier, during a period long before humans were thought to have arrived on the continent.

“When we first discovered the site, there was strong physical evidence that placed humans alongside extinct Ice Age megafauna. This was significant in and of itself and a ‘first’ in San Diego County,” said Dr. Tom Deméré, curator of paleontology and director of PaleoServices at

the San Diego Natural History Museum and corresponding author on the paper. “Since the original discovery, dating technology has advanced to enable us to confirm with further certainty that early humans were here significantly earlier than commonly accepted.”

Since its initial discovery in late 1992, this site has been the subject of research by top scientists to date the fossils accurately and evaluate microscopic damage on bones and rocks that authors now consider indicative of human activity. In 2014, Dr. James Paces, a research geologist with the U.S. Geological Survey, used state-of-the-art radiometric dating methods to determine that the mastodon bones—which were still fresh when they were broken by strategically-placed blows from hammerstones—were 130,000 years old, with a conservative error of plus or minus 9,400 years. “The distributions of natural uranium and its decay products both within and among these bone specimens show remarkably reliable behavior, allowing us to derive an age that is well within the wheelhouse of the dating system,” explained Paces, a co-author of the paper.

The finding poses a lot more questions than answers: Who were these people? Are they part of an early—but failed—colonization attempt? Or is there a long, but as of yet, scarcely recognized presence of humans in this hemisphere?

“There’s no doubt in my mind this is an archaeological site,” said Dr. Steve Holen, director of research at the Center for American Paleolithic Research, former curator of archaeology at the Denver Museum of Nature & Science, and the lead author of the paper. “The bones and several teeth show clear signs of having been deliberately broken by humans with manual dexterity and experiential knowledge. This breakage pattern has also been observed at mammoth fossil sites in Kansas and Nebraska, where alternative explanations such as geological forces or gnawing by carnivores have been ruled out.”

The specimens recovered from the Cerutti mastodon site will be on display on Level 2 of the Museum beginning Wednesday, April 26, and a public lecture featuring several of the *Nature* article authors will take place on Saturday, April 29 at 7 PM.

Digital 3D models of a selection of specimens pointing toward human association at this site can be viewed interactively at the [University of Michigan Online Repository of Fossils](#). Animations featuring these models are also presented as supplementary information associated with the published version of this research.

Eleven authors contributed to the manuscript that is scheduled to be published in *Nature*: Dr. Steve Holen, director of research at the Center for American Paleolithic Research; Dr. Tom Deméré, curator of paleontology and director of PaleoServices at the San Diego Natural History Museum; Dr. Daniel Fisher, professor of paleontology and director and curator of the Museum of Paleontology at the University of Michigan; Dr. Richard Fullagar, professorial research fellow at the Centre for Archaeological Science at the University of Wollongong, Australia; Dr. James Paces, research geologist at the U.S. Geological Survey; Kathleen Maule Holen, administrative director at the Center for American Paleolithic Research; Dr. Jared Beeton, professor of physical geography at Adams State University; Dr. Adam Rountrey, collection manager in the Museum of Paleontology at the University of Michigan; George T. Jefferson, district staff paleontologist at

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Anza-Borrego Desert State Park; Dr. Lawrence Vescera, volunteer paleontologist at the California State Parks Colorado Desert District Stout Research Center in Borrego Springs; and Richard Cerutti, former paleontological monitor at the San Diego Natural History Museum.

Recovery of the fossils was supported by Caltrans District 11. Major funding for research and display of the artifacts was provided by the National Geographic Society, the Walton Family Fund, Pat Boyce and Debbie Fritsch, the James Hervey Johnson Charitable Educational Trust, and the Downing Family Foundation.

About the San Diego Natural History Museum

The San Diego Natural History Museum (theNAT) is the second oldest scientific institution in California and the third oldest west of the Mississippi. Founded in 1874 by a small group of citizen scientists, the Museum's mission is to interpret the natural world through research, education, and exhibits; to promote understanding of the evolution and diversity of southern California and the peninsula of Baja California, Mexico; and to inspire in all people respect for the environment. The Museum is located at 1788 El Prado, San Diego, CA 92101 in Balboa Park. For more information, call 877.946.7797 or visit sdnat.org. Follow theNAT on [Twitter](#) and [Instagram](#) and join the discussion on [Facebook](#).

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