FIRST DRAFT

PREHISTORIC VEHICLES

Travois tracks at White Sands National Park indicate earliest human transport devices

Ten thousand years before humans developed agriculture or built the first cities in Mesopotamia, Ancient Native Americans trekked across southern New Mexico carrying cargo on wooden travois they dragged behind them.

These early humans crossed what is now White Sands National Park some 22,000 years ago, leaving footprints in the sand showing that they dragged something. They lived concurrently with ancient mammoths and/or mastodons, giant ground sloths and large wolves, during the peak of the last ice age.

Those are among the conclusions scientists revealed in a paper published last month. The research team examined human footprints and drag marks preserved in five locations in the dolomite sands at White Sands. They concluded that the drag marks were most likely the result of the humans pulling travois.

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"A travois is crafted from one or more wooden poles and is one of the simplest prehistoric vehicles. Although these devices likely played vital roles in the lives of ancient peoples, they have low preservation potential in the archaeological record," the report says. "Here we describe linear features associated with human footprints, some of which are dated to (approximately) 22,000 years old, preserved in fine-grained sediments at White Sands National Park (New Mexico, USA)."

The research that produced the paper is a joint effort of scientists working for the National Park Service, U.S. Geological Survey, Bournemouth University in the United Kingdom, and Cornell University, the University of Arizona and the University of Alaska in the United States. The researchers also consulted with Native Americans living in the region, including Pueblo Indians.

The paper reveals the latest conclusions from years of archaeological research into ancient human footprints discovered at White Sands.

Four years ago, the team revealed it had found human footprints along the shore of an ancient lake called Paleolake Otero at White Sands. Those footprints were made as much as 23,000 years ago — the earliest known evidence of humans in North America. Previously, the earliest signs of humans on this continent dated to about 16,000 years ago.

The dates for the White Sands footprints were confirmed through radio-carbon dating of seeds found embedded with the footprints, then later with two other methods for determining dates.

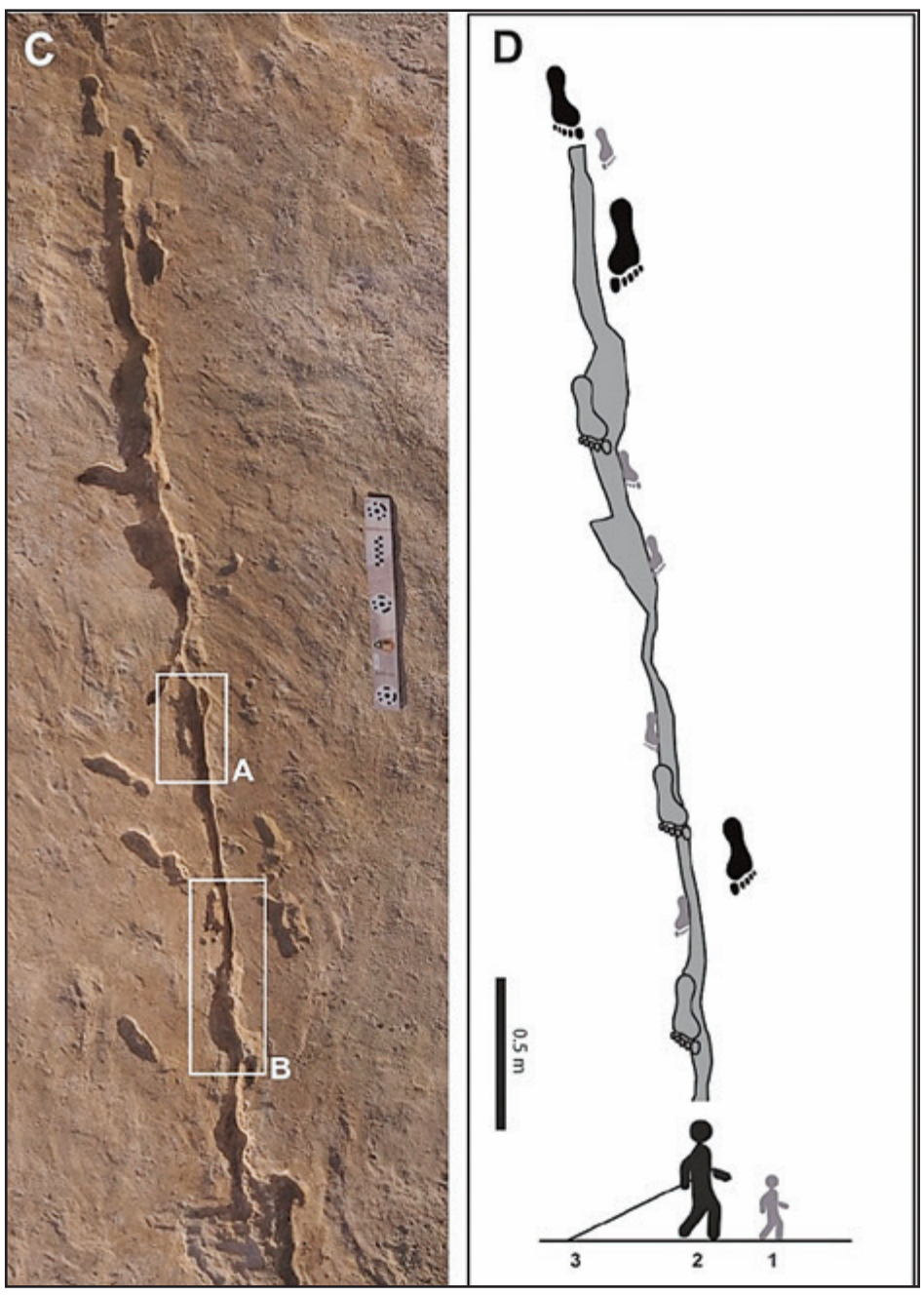
That puts the White Sands footprints near the peak of the last ice age. However, scientists have long believed it would have been impossible for humans to trek south from the iced-over Bering Strait at that time because ice sheets then covering much of Canada made it impossible for them to go south. It was only after those ice sheets melted, beginning about 16,000 years ago, that humans began to trek south across North America, according to the once-prevailing theory.

The White Sands footprints mean people arrived in the American Southwest much earlier. Perhaps they arrived before the last ice age. Or they hiked south along the Pacific Coast in an area not covered by ice. One theory suggests they may have sailed across the Pacific Ocean from Russia or Japan, finding open oceans south of the massive ice fields.

Footprints laid down more recently at White Sands — roughly 15,500 years ago — indicate a human was stalking a giant ground sloth. Mammoths and giant wolves also inhabited the same ground at the time humans were there. In fact, one area where the travois tracks were found is colloquially known as the "mammoth trample ground" because of the large number of mammoth tracks there.

If these ancient Americans killed or scavenged the carcasses of these huge animals, they would have needed a means to transport the meat, hides and other parts they collected. Carrying it all on their back would have been extremely difficult.

It is well-known that Native Americans on the Great Plains in more recent times used travois pulled by dogs, and later horses, to move tipis and to transport firewood or bullboats used on rivers and lakes.

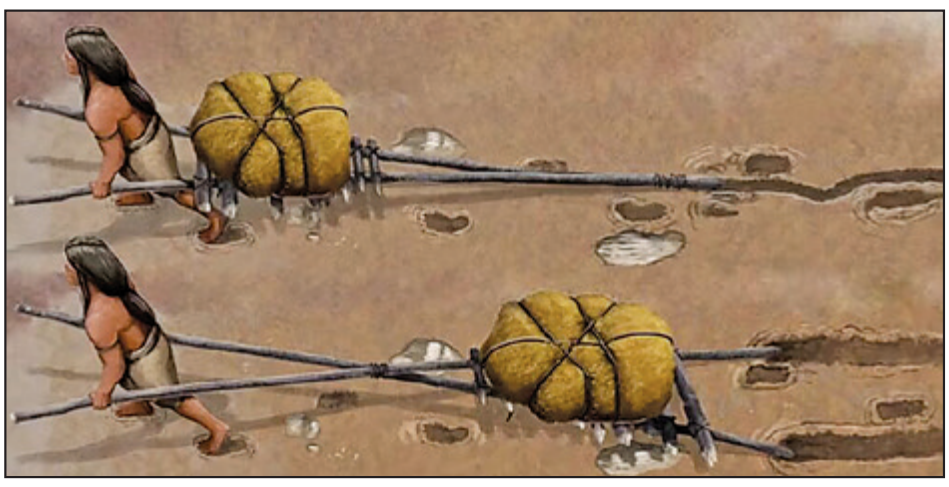


"THE ICHNOLOGY OF WHITE SANDS (NEW MEXICO)," BENNETT ET. AL., 2025.

On the left is a photo of footprints found at White Sands National Park, showing both an adult footprints and a child's footprints, paralleled by a linear groove believed to have been made by a v-shaped travois. On the right is an artist's interpretation of those footprints and drag marks.

"THE ICHNOLOGY OF WHITE SANDS (NEW MEXICO)," BENNETT ET. AL., 2025

A volunteer pulls a log across tidal mudflats in the United Kingdom, creating footprints and dragmarks similar to those uncovered at White Sands National Park.



DRAWING BY GABRIEL UGUETO, COURTESY BOURNEMOUTH UNIVERSITY

This drawing shows how ancient people may have used hand-pulled travois. The top shows someone pulling a v-shaped travois leaving a single track. The bottom illustration shows a person pulling an x-shaped travois and leaving two parallel tracks.

"More commonly, large cuts of meat were transported on these vehicles after leaving a killing site," the White Sands paper says. "The popularity of the travois on the Great Plains stems from its high functionality in landscapes with hard ground and short grass. A similar environment may have existed in our study area" based on climate analysis for the Southwest at the time the White Sands footprints were made.

Although there is abundant evidence human beings who lived earlier than 23,000 years ago in other parts of the world, no one until now has seen indications that they used travois.

"So far as we are aware, this would be the earliest evidence for terrestrial transport technology, excluding, of course, watercraft," said Edward Jolie, an anthropological archaeologist with the University of Arizona and a member of the White Sands research team.

That team didn't just see ancient footprints with drag marks parallel to them, and assume that they indicated humans dragging travois. They considered a multitude of other possibilities such as mammoths dragging their trunks across soft sand or dragging logs as modern elephants are known to do; people dragging firewood; people dragging bullboats or small reed vessels to or from the lake; or flotsam washed ashore from Paleolake Otero.

However, with the exception of people dragging firewood in a couple of instances, none of the possibilities listed above could have left the types of tracks so closely aligned with human footprints that the researchers discovered.

The scientists found three different types of drag marks. There were marks left by a v-shaped conveyance with single pole dragging; similar single-pole marks where the end of the pole appears to have been covered by a piece of hide to make it easier to drag; and parallel marks believed to have been made by two poles connected in an x-shaped formation.

To test their theories, some of the researchers also made their own travois and pulled them across a tidal mudflat in the United Kingdom. They left marks very similar to those found buried at White Sands.

They also learned that such a mechanism was a useful method of hauling heavy items. "A hand-pulled travois functions well and is equivalent to using a small wheelbarrow or cart, and there is a clear advantage in moving bulky, and presumably heavy, items," the paper said.

Additionally, the authors note that there has been some dispute over the exact dates of the footprints and tracks. But, they add, "(T)his should not distract from the fact that these features, whatever their age, demonstrate traditional ancient Indigenous practices, driven by the universal human need to transport possessions and resources."

Sources: "The ichnology of White Sands (New Mexico): Linear traces and human footprints, evidence of transport technology?" by Matthew R. Bennett, et. al. Quarternary Science Advances, February, 2025; "Incredible Fossil Footprints are the Earliest Known Trace of Humans in North America," by Alin Woodward, Science Alert, Sept. 24, 2021; "These Tracks Reveal Evidence of 22,000-Year-Old Wheelbarrows — But Without the Wheels," by Sara Kuta, Smithsonian, March 13, 2025; Author's email correspondence with Jeff Pigati and Edward Jolie.

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