People may have lived in North America by 30,000 years ago

Stone tools from a cave in Mexico date from before the Last Glacial Maximum.

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Enlarge / Assistant professor Mikkel Winther Pedersen with team members wore PPE to avoid contaminating potential ancient DNA in the cave; no human DNA was found. Mads Thomsen

In Chiquihuite Cave, archaeologists found 240 stone tools buried in 30,000-year-old layers of muddy sediment. Archaeologist Ciprian Ardelean and his colleagues collected 46 radiocarbon dates from bone, charcoal, and sediment near the tools. According to a statistical model—which used those dates to predict the most likely starting date for the layer of sediment and artifacts—the oldest layers at the site date back 33,000 to 31,000 years ago.

If the archaeologists are right, that means people were making a living high in the mountains of north-central Mexico well before most people in the field thought North America was inhabited by humans.

At the moment, most archaeologists accept the idea that people started moving into North America sometime between 20,000 and 16,000 years ago. Those dates come from sites like Cooper's Ferry in Idaho and a handful of others. Around that time, the ice sheets covering the northern half of the continent had started to recede after reaching their peak during the Last Glacial Maximum, the height of the last ice age. People could have skirted around the western edge of the ice, along the Pacific coast, or ventured through a corridor that later opened up between the ice sheets (archaeologists are still debating which route they took).

But if Ardelean and his colleagues are right, people moved into the land south of the ice sheets about 10,000 to 15,000 years earlier than most archaeologists currently think—well before the Last Glacial Maximum.

Expect some arguments about this one

While the find comes as new evidence has been steadily pushing back the date for humans' first footsteps in North America, it's still a drastic claim. As archaeologist Ruth Gruhn, who commented on the study, wrote, the dates "will be very hard for most archaeologists specializing in early America to accept. There will undoubtedly be challenges to this interpretation and close examination of the site data."

There's enough evidence to take the Chiquihuite finds seriously, but there's also room for questions and skepticism. One important question is why archaeologists haven't found any sites this old anywhere in the vast swath of the continental United States between Beringia and Chiquihuite. Gruhn suggests that if people moved southward along the Pacific coast, many of those earlier sites may now be underwater.

And many archaeologists who study the peopling of the Americas are primed to be skeptical of early dates, especially after a 2017 study claimed to have found evidence that people were butchering mammoths in California 130,000 years ago. (Spoiler alert: they were not.) Good science requires questioning and reexamining the evidence. But for the moment, the dates from Chiquihuite appear to be the earliest chapter in the emerging story of how people first came to the Americas.

The first North Americans

By 30,000 years ago, humans had spread beyond our species' homeland in Africa, into Europe, Asia, and Australia. Genetic evidence shows that Native Americans originated in northeast Siberia, but their timing of arrival has been a matter of extensive dispute. Evidence comes in the form of widely scattered sites throughout North and South America, the dating of which are sometimes still in dispute.

Given the new find in Mexico, some of the same researchers used statistical modeling to reconstruct when and how the first people spread out across the continent. Archaeologists Lorena Becerra-Valdivia and Thomas Higham gathered dates from early sites around North America and Beringia (the area that made up the exposed "land bridge" between Asia and North America). They used the archaeological dates from all these sites to estimate when people most likely started living there, using the same sort of statistical analysis that provided an estimate of the age of the oldest layers at Chiquihuite Cave.

So far, Chiquihuite Cave is the only evidence of anyone living in North America before the Last Glacial Maximum. But Becerra-

Valdivia and Higham's model suggests that people made it to sites in Central Texas, Pennsylvania, Virginia, and Idaho during this period and just afterward, between roughly 26,000 and 16,000 years ago. Those first arrivals were probably sparse, widely scattered groups, based on how few sites archaeologists have found—but they were definitely *here*.

The Bering land bridge would have been high and dry during this time, but the corridor between the ice sheets didn't open up until around 13,000 years ago, based on paleo-environmental and geological evidence. That means anyone who ventured south of the ice sheets before 13,000 years ago probably had to skirt their edges along the Pacific coast. A growing body of evidence supports that scenario.

Prehistoric population boom

Sometime between 16,000 and 14,000 years ago, those sparse populations experienced a sudden boom. That increase in population density shows up in the greater number of archaeological sites dating to around 14,500 years ago, but it's also recorded in the DNA of the people who lived through it. DNA from several ancient and modern Indigenous North Americans shows signs of a larger population, with more genetic diversity, around 15,000 years ago.

Becerra-Valdivia and Higham suggest that ancient population boom isn't a coincidence. Climate data from Greenland ice cores reveals an abrupt warm spell around 15,000 years ago, which ancient-climate researchers call Greenland Interstadial 1. The warmer conditions may have made it easier for groups of people already living south of the ice sheets to thrive and expand. This is roughly when the Clovis culture, known for its fluted projectile points, emerged.

A few decades ago, most archaeologists thought the people who made those distinctive Clovis points were the first ones to reach North America, but by now it's clear that Clovis is somewhere later in that story, not the beginning.

Multiple cultures

At the same time the Clovis culture emerged, at least two other distinct cultures, with their own ways of making projectile points and blades, also appear in the archaeological record. Archaeologists call these cultures the Western Stemmed tradition and the Beringian, because we have no way to know what their people called themselves. Becerra-Valdivia and Higham's model supports the idea that all three cultures emerged at around the same time from a diverse group of people scattered south of the ice sheets.

Chiquihuite Cave lends some support to the idea that the first people to venture south of the ice sheets were a more diverse group than we once assumed. The stone tools Ardelean and his colleagues found there don't look like the stone tools made by any other known culture in North America. They used mostly green and black recrystallized limestone, which has a texture similar to chert. Their tools and projectile points were mostly made with flakes that had been chipped sideways off stone cores, so the flake's long axis is perpendicular to the direction in which it was removed from the core.

Unlike the precursors of the Clovis and Western Stemmed cultures, the Chiquihuite points have neither stems nor flutes; instead, their bases tend to be round or tapered. According to Ardelean and his colleagues, "its qualitative traits suggest a mature technology, possibly brought in from elsewhere before the Last Glacial Maximum."

More questions than answers

As is usually the case in archaeology, the finds at Chiquihuite Cave provide as many questions as answers, and archaeologists need more evidence to tackle them. Even if we accept the existence of pre-Clovis cultures, are the dates definitive enough to indicate people had been in the Americas that much earlier? Where did the people of Chiquihuite come from, what route did their ancestors follow to northern Mexico, and how are they related to other pre-Clovis people in North America?

Those questions join a long list of others. Archaeologists are still trying to piece together exactly how the cultures at pre-Clovis sites, like Cooper's Ferry in Idaho and the Gault Site in Texas, are related to the cultures like Clovis, Western Stemmed, and Beringian that emerged around 14,000 years ago. They're also trying to understand the genetic relationships between the people who made those tools. "In light of these new discoveries, archaeological research into this period should intensify," wrote Gruhn.

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