

## Archaeological Jackpot: Paleoindian Research at the End of the World

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The search for the oldest inhabitants of North America, the first settlers of this continent, is like playing the lottery: you may think it is your lucky day but at the end of the day - Surprise! - You haven't won the grand prize. Nevertheless, after years of studying the numbers in detail with the hope of finding patterns that might help you win, and especially with a lot of luck, you might actually win something. And that something could be a once in a life-time prize. That is what it is like to work on Paleoindian sites. It is all or nothing, and even though 99% of the time you come up with nothing, literally not even the smallest chip of stone or bone, when you finally find that little speck of ancient human culture intact and buried, left behind 13,000 years ago during a time when mammoths and saber toothed cats still roamed these lands, you feel like you finally have won the jackpot. I mean, it does not get any better than that.

I have worked on Paleoindian archaeology in northwestern Mexico for the last 9 years, trying to understand how some of the first inhabitants of Sonora lived at the end of the Pleistocene era about 13,000 years ago, how they moved around the Sonoran landscape, and how they used the different resources that they encountered in a totally new and unknown territory. This is not an easy task. Paleoindian sites are, in general, rare owing to different factors: geomorphic processes that have either destroyed them or buried them deeply making it very unlikely to find them; very slim chances of preservation due to the thousands of years these archaeological sites have been sitting in the landscape; the sites are few and so scattered over vast territories that the odds of discovery are very low; and finally, since Paleoindian sites do not contain architecture or large-scale modifications of the landscape their archaeological visibility is lower than other sites dating to more recent periods, and sometimes are not recognized or are under-reported. Moreover, when sites are found, most of the time they are scatters of stone tools on the

surface or even isolated artifacts such as stone projectile points without the stratigraphic undisturbed contexts that provide all the essential information about their place in space and time. This is exactly why finding a buried, undisturbed archaeological site dating to the oldest period of human history in the Western hemisphere is equivalent to winning the lottery. You need to be lucky.

In 1997, in a remote ranch located in the middle of the almost uninhabited Sonoran Desert of the north-central part of the Mexican state of Sonora, an amazing Paleoindian site was discovered. This site remained buried and intact for thousands of years until modern erosion processes uncovered some hints of what was underground. It was by pure chance that Don Gustavo Placencia, the owner of the ranch where the site is located, and his cowboy, Alejandro, happened to be herding some cows in this exact place in the middle of this immense ranch, and discovered, by accident, the ancient site. They found big bones sticking out of the walls of an eroded landform, the same landform that contained the archaeological site. They noticed that the bones were so big that they could not belong to any modern animal in the area. They immediately realized that these bones were old, and most importantly, they recognized their potential scientific value. Don Gustavo reported his finding to the *Instituto Nacional de Antropología e Historia* (INAH) straight away, but for several reasons, including unavailability of people and, most importantly, the remoteness of the site's location, ten years went by before professional archaeologists inspected the locality.

In February of 2007, Guadalupe Sánchez, Ned Gaines, and Beto Peña, archaeologists interested in the earliest human occupation of Sonora, conducted an informal survey in and around the place where Don Gustavo and Alejandro discovered the bones. The archaeologists identified the bones as possibly mammoth or mastodon, and in a matter of minutes, they found a complete and beautiful stone spear point diagnostic of the Clovis culture on the surface about twelve meters away from the landform with the bones. The Clovis archaeological culture is generally accepted as the earliest unequivocal evidence of human presence in the New World. The team of Paleoindian archaeology experts was perfectly aware that four sites containing the skeletal remains of mammoths in associa-

tion with Clovis points were discovered and excavated in the San Pedro River Valley in southeastern Arizona, the densest concentration of buried Clovis sites, only 200 kilometers to the northeast. So the discovery of buried bones of Pleistocene age animals such as mammoths and the finding of a Clovis point on the nearby surface at this site represented the possibility of not only an association between Pleistocene megafauna and humans, but also the huge potential for a buried Paleoindian site. Lucky strike! I can only imagine the excitement, joy, and incredulity that my colleagues felt that day after years of searching for buried Paleoindian sites. One might not run into an opportunity like this twice in their lifetime.

The archaeologists named the site *El Fin del Mundo*, Spanish for “the End of the World”, and no other name could be more appropriate. The site is at least 100 kilometers away from any major town or village in every direction, in the middle of a basin in Don Gustavo’s remote and isolated ranch. And even though Hermosillo, the capital and largest city of Sonora, is only 100 kilometers to the southeast, you need to drive for about three and a half hours to get to the site since the only way to get there is through the labyrinthine of dirt roads that connect the huge private ranches in this part of the Sonoran Desert. And you can get badly lost if you are not familiar with the roads and do not have a GPS with a tracker, as I have learned from personal experience. It also gets way worse if your car breaks down in the middle of nowhere, as I learned first-hand.

In October of 2007, the first archaeological excavation at El Fin del Mundo began. I joined the team during that season in early November and participated until early January. It was my first archaeological experience working on any type of Paleoindian site, and I never left Paleoindian research after that. The excavation focused on Locality 1, the landform where the bones were contained. The bones exposed on the walls of Locality 1 were localized right below a well-defined layer of pure white diatomite, so different in color from the rest of the sediments that it functioned as a natural marker of the level where the possible archaeological deposit was contained. The surface of Locality 1 consists of calcium carbonates so hard that it is impossible to excavate using trowels. The excavation of the upper 40 centimeters had to be conducted using

picks, mallets and chisels. Once the upper layer was completely removed, the excavation continued in a slower and more controlled way using trowels, dental picks and brushes. The excavation of the next 45 centimeters proceeded slowly, with no findings at all. Finally, we reached the white layer, under which we suspected the archaeological deposit was present. By the end of the season we partially uncovered the incomplete skeletons of two large animals. Although we suspected that the remains belonged to an extinct species related to modern elephants, the definite identification of the animal bones remained unknown for one more year.

The uncovering of the bones was exciting. However, we did not find convincing evidence of its association with humans. Some tiny stone flakes less than 2 millimeters long were found among some of the bones. Their form and material suggested that they might have been part of stone tools. Nevertheless, these micro-flakes were so small that they could have been transported vertically in the sediments by water, gravity, insects or roots through small cracks, thus creating a false association between cultural remains and the bones of the extinct animals. This evidence was not enough to state that a new buried Clovis site had been discovered.

One year later, the second field season was conducted from October to December of 2008. Before the excavation of Locality 1 was resumed, during their first day back in the site, Ned Gaines and Mike Brack were checking the condition of the excavation area and, lucky strike number 2! They found the most amazing Clovis point ever, on the surface, at the same level where we stopped excavating the previous season, about 1 meter away from one of the excavation units. This amazing complete and totally transparent quartz crystal Clovis point must have been washed out from its buried context, probably a couple centimeters below the level we stopped excavating the previous season, by rain during the last few months. It is such a shame that we will never know for sure if this Clovis point was in fact associated with the skeletal remains, but its finding at the beginning of the 2008 season made clear that the possibility of a buried Clovis site was real and more likely than when we left the site in January.

The uncovering of the animal bones in Locality 1 continued during the 2008 season. More bones were exposed including an almost complete mandible with molars that finally revealed that the two animals that died at the site were gomphotheres, elephant-like creatures with long straight tusks. Later on, during the excavation of the eastern part of Locality 1, in a heavily disturbed context by rodent burrows that mixed the different sediment layers, another complete Clovis point was found. This time, due to the disturbed nature of the deposit in which the point was found, no association with the stratigraphic level of the gomphotheres could be established. By the end of the second season we had two gomphotheres and two Clovis points from Locality 1, but no definitive undisturbed buried Clovis site. Frustration could be felt by all of the team.

In December of 2010, the third season started. The excavation focused on a 4 meter x 4 meter area in the east-central part of the landform of Locality 1. This area was the last unexcavated remnant of sediment between the excavated area of 2007 and the disturbed deposit excavated in 2008. If there was any evidence of an association between the gomphotheres and Clovis hunters it would have to be found here. Once the upper layer of calcium carbonates was removed, the excavation was conducted with extreme care to maintain the maximum control possible. After several weeks without finding any evidence of human presence on the same stratigraphic layer of the gomphotheres, on January 3rd 2011, approximately at 10:00 am, a Clovis point was found in an undisturbed context at El Fin del Mundo Locality 1. Moreover, it was associated with small fragments of animal bone. I swear, that precise moment will remain intact in my memory for the rest of my life, and I still feel the chills every time I recall that day. A series of exciting findings had just started! Just a few minutes after we resumed the excavation, a second Clovis point came out of the sediment, only 10 centimeters away from the first point and at the same level. That was definitely one of the happiest and most exciting days of my life.

A few days later, we decided to continue the excavation of the nearby area where the quartz crystal Clovis point was found at the beginning of the previous field season. This area was

excavated in 2008 to the lowest level of the bones. Just a few minutes after we started working, the third Clovis point from an intact context in Locality 1 was found. It was also associated with animal bone fragments that were exposed later that same day. At the end of the 2010-2011 season, four years after the first Clovis point on the surface of Locality 1 was found, we finally proclaimed that a new buried and intact Clovis site was discovered in Sonora! The amazing findings continued one year later when, during the 2012 excavation, a large Clovis point was found centimeters below the area where the gomphothere mandible was uncovered in 2008.

El Fin del Mundo is the first site containing remains of extinct Pleistocene megafauna associated with stone tools discovered in Mexico since 1954. It is also the only known human-gomphothere association in North America. Furthermore, it is the most recent gomphothere site on the continent, as these animals were thought to have gone extinct in this part of the world thousands of years earlier. Now we know with a fair amount of certainty that in El Fin del Mundo, near the end of the last glacial period, about 13,400 years ago, a group of hunters killed two gomphotheres with Clovis spear points.

Luck played a great role in the discovery of this site. A lot of hard work, time, and hope were invested in this project, and it all started with a series of lucky findings. I can say that the discovery of El Fin del Mundo meant that all of the researchers and excavators involved in this project won the archaeological jackpot because the truth is that El Fin del Mundo was, in fact, a once in a life-time prize.