MAMMOTH TRUMPET

Center for the Study of the First Americans

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An unglamorous start to a field trip: Rafael Suárez of the University of the Republic of Uruguay and his team ride in a cart to the Uruguay River, where fishermen's boats will ferry them to El Tigre site. It's arduous fieldwork and sometimes dangerous, but more than 10 years' research at the site has rewarded Professor Suárez with a fuller understanding of the Fishtail-point culture—and the discovery of a coeval artifact, the Tigre point. See our story on **page 5.**

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Dating the Peopling of Mesoamerica

Excavating the Mayahak Cab Pek Rockshelter.

FOR DECADES SCIENTISTS have attempted to pinpoint when First Americans moving south colonized Central America. Pursuing the answer is Keith Prufer, Professor of Anthropology and Director of the Environmental Archaeology Lab at the University of New Mexico. For his archaeological research on the peopling of Central America, he focuses his attention on the tiny nation of Belize.

The peopling of Mesoamerica

Prior to 13,000 yr B.P. bands of Ice Age humans moving southward from the forests and plains of western North America, either boat people hopscotching down the Pacific coast or migrants on foot, crossed the bottleneck of the Isthmus at Tehuantepec to arrive in southern Mesoamerica. Their arrival in the lower Americas accompanied a changing environment brought about by the end of the Ice Age, when warmer and wetter conditions introduced tropical rainforests teeming with biological life. These migrants encountered new plant and animal species of the neo-tropic biota in landscapes of semi-tropical gallery forests and mixed patchy grass and scrublands.

In the Neotropics warmer and wetter Holocene climatic changes supplanted cooler, drier Pleistocene conditions. One consequence of this shift, Prufer tells us, was an evolving toolkit that included flaked stone tools, artifacts that endure. Made of sedimentary rock composed of microcrystalline or cryptocrystalline quartz called chert, or sometimes volcanic obsidian, these tools are distinctive evidence for the undeniable dispersal of humans across the Americas, and along with them the transmission of cultural knowledge.

Elusive chronologies

Following the trail of these first mi-

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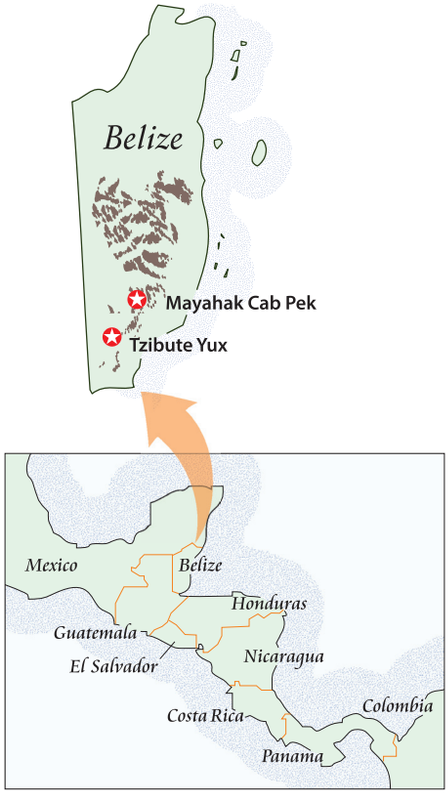
grants to Central America has been challenging because of a paucity of late-Pleistocene and early-Holocene sites. The resulting dearth of knowledge about the Paleoindian period in southern Mesoamerica, an early migration bottleneck, has frustrated researchers' attempts to determine how the First Americans adapted to new tropical environments.

With few exceptions, finds of early bifacial tools in southern Mesoamerica have come from undated contexts, mainly surface finds or poorly documented discoveries. In the absence of solid contexts, scientists have attempted to reconstruct



the earliest periods of human activity in Mesoamerica by comparing stone tools with those from other regions. But this procedure fails to disclose the timing of important phase changes that mark shifts in cultural practices; for example, the transition from the early-Paleoindian period to the late-Paleoindian, which witnessed increasing regionalization as populations adapted to Holocene climate conditions and localized foraging strategies, or the transition from the late-Paleoindian period to the Archaic, reflecting an increased use of plant resources.

Unlike unsatisfactory attempts in the past to gauge the age of sites in Mesoamerica by their lithic artifacts, Prufer's multiple excavations at two sites with buried Paleoindian contexts in southern Belize in recent years have yielded valuable information about the First Americans from both cultural and biological perspectives. Artifacts of the Lowe technocomplex were previously known from many surface finds and a few excavated contexts, Prufer explains, "but they lacked robust chronological information and had been tentatively assigned as a late-Archaic point type just before the development of farming communities in the Maya lowlands."

Refining the chronology

Located at the throat of the Yucatan Peninsula, once the heart of the Mayan culture, Belize is a tiny country with a total popula-

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–Michael R. Waters, Director

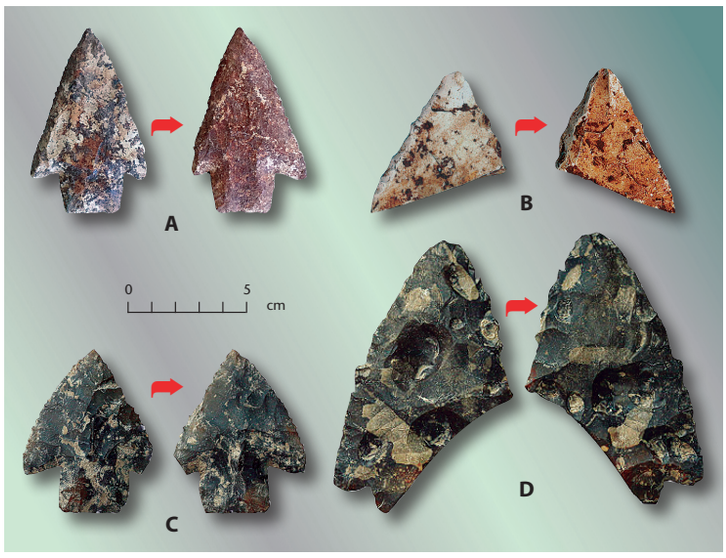
tion the size of Miami. It's here that Prufer has concentrated his efforts in excavating sites with Lowe-complex bifaces.

In 2014 Prufer and his colleagues returned to the Bladen Nature Reserve and two large rockshelter sites in Belize—a full 2-day walk from the nearest road—and excavated for two weeks, recovering artifacts from contexts dating back to 12,000 yr B.P. "We have returned each year since and have several Ph.D. students working on various aspects of the assemblage including the lithics and human remains," Prufer says. His team also recovered a complete and a partial Lowe-complex biface from a smaller site 20 km away in contexts dating 12,000–12,500 yr B.P.

Prufer excavating at Uxbenka, Belize, 2012.

During the 2017 excavations at Mayahak Cab Pek the expedition made a remarkable discovery. Prufer remembers that "we recovered a complete Lowe point in deep stratified excavations that were pretty easy to date based on abundant organic materials. All points found to date are from well-dated sequences spanning the Paleoindian period." He wasn't entirely surprised when the team found compelling evidence that Lowe is much earlier than previously thought. As every archaeologist knows, Paleoindian and Archaic sites in the neo-tropics of Central America and Mexico are very rare.

Prufer's research into early archaeological sites has focused on rockshelters located in a 35-km radius along perennial rivers in areas rich with soil and gallery forests, Tzibte Yux (TY) and Mayahak Cab Pek (MHCP). From these two sites Prufer recovered two complete Lowe-complex bifaces and a partial, and a distal biface fragment with features characteristic of Lowe complex. "I first identified rockshelter sites where we are now working in the 1990s while conducting dissertation research," he recalls. "At that time I suspected that these sites might have earlier components and that they might be stratigraphically intact based on the initial excavations."



Lowe Complex artifacts recovered in controlled excavations in southern Belize. **A,** Lowe point from Tzibte Yux Rockshelter; **B,** biface distal tip with unifacial beveling on alternate edges from TY; **C,** Lowe point from Mayahak Cab Pek Rockshelter; **D,** badly damaged large Lowe point from MHCP.

Prufer is aware of some early surface finds—a handful of excavated points—that are Clovis-like, but lack concrete dates. Likewise a rockshelter in Honduras boasting a good chronology has yielded several early bifaces, but they haven't been fully published. "The Lowe complex seems to come well after the end of Clovis and represents a tool type only found in the eastern tropics of Mesoamerica," says Prufer. "Placing it into the Late Paleoindian makes it the oldest endogenous type known from the region."

Although Prufer acknowledges technological similarities between the Lowe complex and contemporary bifaces in North America, he won't be drawn into the trap of attempting to infer relationships between distant archaeological finds. "One confounding issue," he notes, "is a general lack of well-dated bifaces in the huge geographic area of Mexico that separates most North American late-Paleoindian tool traditions from those in the neo-tropics. We do raise the possibility, however, that some stone tools from other neo-tropical regions (lower Central America or the northern Amazon) resemble some examples of our dated Lowe and other similar but undated points from Central America."

Prufer explores this possible relatedness, although he admits that this work is presently quite tentative. Work in the Amazon is still involved in developing reliable chronologies for late-Paleoindian (post-Fishtail) periods. Meanwhile, he assures us that "we still have much to learn about Lowe points and their related, and likely chronologically contemporaneous, brethren. What our work does support is that the Middle and Late Archaic likely don't have distinctive bifacial knives or points, which supports other observations by archaeologists working in lower Central America."

It's hard to tell how much the Lowe complex has shifted our thinking about early sites in the Americas. The problem, says Prufer, is our present shallow knowledge of the chronology of Paleoindian or early-Archaic tools in Central America. One thing the Lowe complex clearly indicates is that after Clovis, bifacial tool traditions continue until around 8000–6000 yr B.P. What we've learned from the

Lowe complex also raises interesting research questions about later-Archaic tool traditions and begs inquiry into whether those include bifacial knives or projectile points. "We don't see any evidence of production of distinctive bifacial points or knives after the end of the Lowe complex, sometime in the early Archaic," says Prufer. "This is similar to observations made for lower Central America and parts of South America by others, but very different from tool traditions in North America," Prufer explains.

Looking more closely at the evidence

Seventeen radiocarbon dates verify that TY was occupied during the late-Preclassic through Classic periods (2350–1000 yr B.P.) and from the Paleoindian to the Early Archaic (13,000– 8500 yr B.P.). To test the integrity of their chronology, Prufer's team developed depositional models for both units at TY.

Rockshelter MHCP reveals fascinating evidence for human presence: Remains from at least 14 individuals recovered from Unit 1 range in date from 1000 to 10,500 yr B.P. Especially noteworthy is the burial of an older adult female whose disarticulated remains were interred in a pit approximately 205 cm below the modern ground surface. The remains were dated on XAD-purified amino acids from bulk-tissue collagen to 9430 to 9140 yr B.P. Genetically, she is a member of haplogroup D4h3a, which links her directly to the Anzick child in Montana, an ancestor of founding North, Central, and South American populations (**MT 35-2,** "Genetics studies reveal rich history of ancient America").

One complete and one partial Lowe point were also recovered from MHCP Unit 1. The complete point has one well-defined barb, unifacial beveling on alternate edges, and two longitudinal thinning-flake scars on one side of the stem, the longest measuring 23 mm. The badly damaged partial point, which has alternate edge beveling distinctive of Lowe-complex bifaces, is missing the entire stem, both barbs, and the distal tip, and has battered edges as well as fire damage. Both points were recovered from the same stratigraphic level containing lithic, faunal, and isolated human remains, and both were found below the burial, which is directly dated on purified bone collagen at 9430–9140 yr B.P. This suggests that the minimum age for the Lowe-complex bifaces is older than the burial.

Tzibte Yux Rockshelter.

The distinctive morphology of these large straight-stemmed, barbed bifaces, with flat to slightly concave bases and frequently featuring unifacial beveling on alternate edges, classifies them as Lowe-complex points. The TY and MHCP rockshelters thus yielded the first stratified contexts for Lowe-complex bifacial tools and the first designation of a well-dated lithic type to a Paleoindian technocomplex native to southern Mesoamerica.

The Lowe complex vs. other lithic technologies

The oldest bifacial tools found in Central America are lanceolate and fluted Clovis projectile points. The fluted points, usually having concave bases and constricted midsections, are called *waisted Clovis.* In South America, one of the most widespread and best-dated tool types is the stemmed Fishtail projectile point (FPP). Clovis, waisted Clovis, and FPP specimens have been recovered at Los Grifos in Chiapas, southern Mexico, and at Los Tapiales in highland Guatemala.

One of the earliest attempts to develop a Paleoindian and Archaic lithic chronology for southern Mesoamerica was the Belize Archaic Archaeological Reconnaissance (BAAR), directed by R. S. "Scotty" MacNeish. BAAR assigned undated examples of what Prufer and his colleagues call the Lowe complex to their Lowe-Ha (11,000–9500 yr B.P.) and Sand Hill (9500–8000 yr B.P.) phases. Specimens were labeled *Pedernales-like, Madden Lake-like,* and *Bulverde-like,* referring to names of lithic types in North America and a well-known but undated Paleoindian locale in Panama. The BAAR bifaces were later reassigned as types rather than as phases.

Prufer's data yield a revised chronology for the Lowe complex that conforms to a general trend in North and South America toward diversified stemmed and barbed bifaces by 12,000 yr B.P., coinciding with the dramatic climatic and environmental changes at the beginning of the Holocene. Lowe complex and several related types are similar to tools found in lower Central America, Amazonian South America, and some North American traditions. Prufer notes, however, that Lowe-complex bifaces from the southern Central America study area bear no relationship to Lowe flared-base points that date to the late Holocene in midwest North America.

Multiple payoffs

The work Prufer and his team have invested in excavating Belize rockshelters is paying dividends in enhancing our knowledge of First Americans migration, their culture, and their subsistence strategy. "We continue to conduct excavation

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The sleeper site of Uruguay

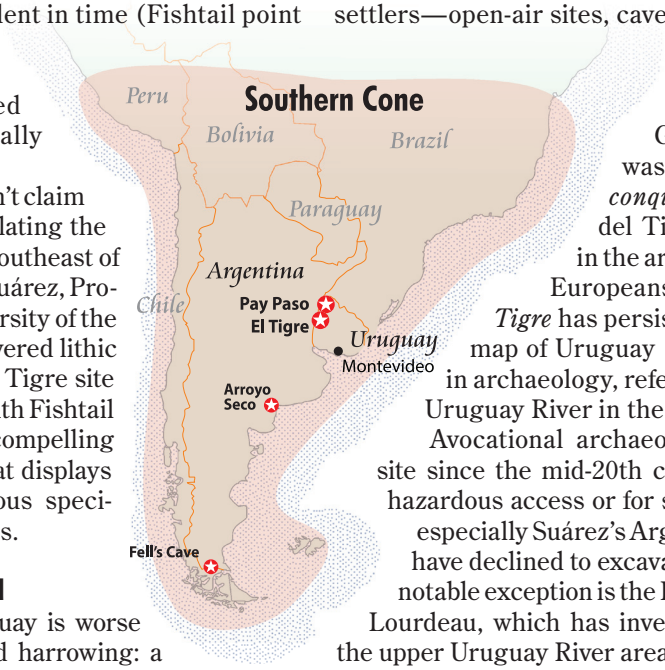
El Tigre

Initial excavation of the Tigre site area, 2012. "Observe the vegetation of the place," says Suárez. "We had to clear the entire area where we were going to excavate of shrubbery, creepers—all vegetation."

THE PROBLEM with creating a model to describe or explain a particular episode in the peopling of the Americas is that, once firmly entrenched, it tends to quash alternative lines of thought. For example, for generations the gospel of Clovis-First decreed that, at the end of the Ice Age, intrepid colonizers from northeast Asia crossed the Bering land bridge and proceeded to populate the entire breadth of the uninhabited North American continent. It took an uphill struggle to gain recognition of the Western Stemmed Tradition—and probably other cultures not yet discovered—which we now know not only coexisted in North America with Clovis, but predated it.

In similar fashion the Fishtail-point culture has dominated the model of human dispersal across South America . The two cultures, Fishtail point and Clovis, are eerily similar. They're nearly exactly coincident in time (Fishtail point 12,900–12,200 yr B.P., Clovis 13,000–12,700 yr B.P.), and the Fishtail-point culture is credited with projecting humans into virtually every region in South America.

But the Fishtail-point culture can't claim exclusive bragging rights for populating the Uruguayan Plains in the extreme southeast of the continent, according to Rafael Suárez, Professor of Anthropology at the University of the Republic of Uruguay. He has discovered lithic artifacts of a different culture at El Tigre site in Uruguay that are nearly coeval with Fishtail points. What's more, he has found compelling evidence for a lithic technology that displays superb craftsmanship in glamorous specimens built not to kill, but to impress.



Not a site for the faint-hearted

Traveling to El Tigre site in Uruguay is worse than inconvenient, it's arduous and harrowing: a journey from a remote ranch to the edge of the Arroyo del Tigre; from there, when the stream is low enough, a tractor–pulled trailer takes you to the Uruguay River, where artisanal fishermen convey you to the site by boat.

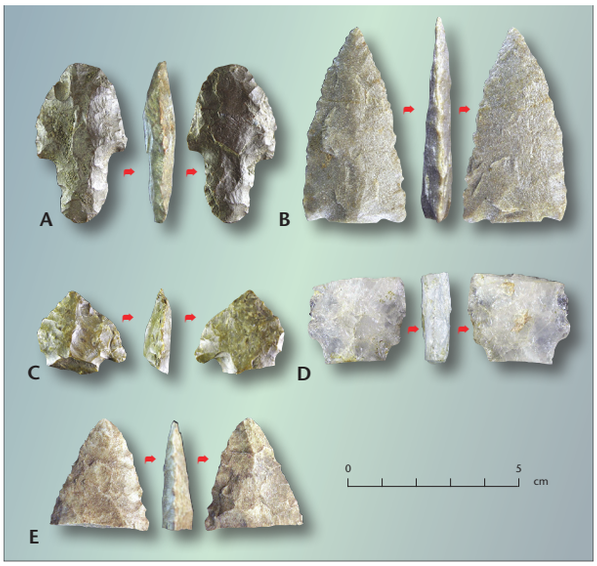
"We have to camp in the vicinity of El Tigre site to get the job done," Suárez says. He recalls one field trip when the fishermen went home for the weekend while they were digging at the site. A rain began that continued for several days, raising the level of the Uruguay River several meters. His crew had to call the Uruguayan army to rescue them. "Our lives were in danger! Digging the Tigre site is a real adventure."

Since the arrival of the first colonizers of Uruguay, the Uruguay River has served as an entry point to the interior of the continent, a medium for transportation, and an avenue for explorers. The Uruguay and Negro rivers branch into arroyos, streams, and creeks, all emptying into the Atlantic. No wonder, then, that living spaces of the earliest known settlers—open-air sites, caves, and rockshelters—were near water. The first Uruguayans made their homes here in the gently rolling hills of the Low Grassland Plains, or *Campos*. It was in this lush setting that Spanish *conquistadores* encountered Arroyo del Tigre. (The jaguar was plentiful in the area during the Spanish conquest; Europeans called it "the jaguar tiger," and *Tigre* has persisted.) In the first archaeological map of Uruguay (1892), José Figueira, a pioneer in archaeology, refers to archaeological sites on the Uruguay River in the Department of Artigas.

Avocational archaeologists have visited the Tigre site since the mid-20th century. Whether because of its hazardous access or for some other reason, researchers, especially Suárez's Argentine and Brazilian colleagues, have declined to excavate the region around El Tigre. A notable exception is the French expedition led by Antoine Lourdeau, which has investigated Paleoamerican sites in the upper Uruguay River area.

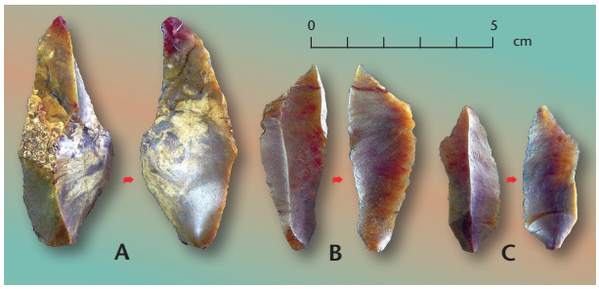
When Suárez was a graduate student he revered El Tigre as an almost "mythical" reference site in Uruguay archaeology. For

starters, it was the oldest site in the country at 12,420 yr B.P. Between 1976 and 1978, prior to construction of the Salto Grande Dam on the Uruguay River downstream from the Tigre site, the site was excavated under the egis of the Salto Grande Archaeological Rescue Mission (UNESCO) by the German father-and-son team Klaus and Peter Hilbert. Their goal was to retrieve archaeological resources from sites that were expected to be submerged by the reservoir. The date of 10,420 RCYBP (about 12,300 yr B.P.) that they established for the beginning of human settlement of the site was one of the most reliable dates for early sites in Uruguay. (This was in fact the first pre-Ceramic occupation; the Hilberts also determined the date of the initial Ceramic-age occupation.)



Representative projectile points from late-Pleistocene sediments: A–C, Tigre points; D, Fishtail-point fragment. Toolstones are dark garnet jasper (A), fine silicified sandstone (B, E), silicified wood (C), quartz (D).

The earliest occupation is characterized by small bifacial projectile points in widely ranging shapes, which link it to the "Uruguay phase" of southern Brazil. Fractured and unfinished bifaces and flakes are evidence that points were manufactured at the site.

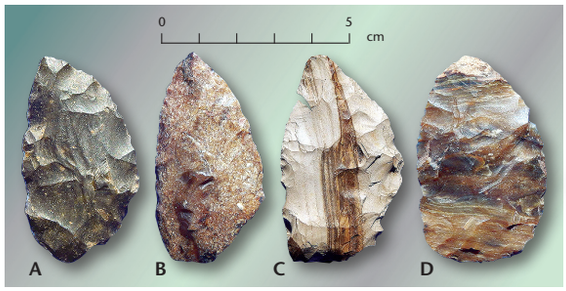


Blades: A, single-crested of silicified wood; B, double-crested of chalcedony; C, single-crested of chalcedony.

Suárez arrives at the scene

El Tigre site lies beyond the reach of the reservoir created by the Salto Grande Dam. In fact, the site is submerged only during severe floods.

Suárez planned to excavate El Tigre in 2000, but an unforeseen flood of the Uruguay River interrupted his schedule. He therefore turned his attention to the Pay Paso 1 site, which lies about 40 km from El Tigre on the Cuareim (Quaraí) River, a tributary of the Uruguay River (**MT 25-1,** "Early human occupation in the NW plains of Uruguay"). Suárez excavated Pay Paso 1 in 2000–2006, then in 2006–2010 analyzed data for his Ph.D. dissertation.



Quasi crescents (asymmetric bifaces). A and C were surficial finds; B and D were found in late-Pleistocene sediments. A is of unknown material; B–D are made of silicified wood.

In 2010 he executed his first survey of El Tigre site. In intensive fieldwork in 2012–2013 his team excavated an area of 22 m^2. "Now we're done processing those data," he remarks confidently, "and we're going to dig this huge site again."

The excavations reveal the presence of a meager blade industry, two blades of chalcedony and one of silicified wood, all exhibiting signs of use wear. For Suárez, their value lies in their possible continuity with the blade industries of Pay Paso 1 and perhaps upper Uruguay and southern Brazil.

Of far greater interest are projectile points at different stages of their life cycle, curious bifaces of undetermined function, and lithic artifacts whose apparent purpose was to confer social prestige on the toolmaker. Because no faunal remains were discovered at the site, Suárez and his team can focus their attention on the lithic technology.

A new point type on the Uruguay plains

Suárez's team found an intact recycled Tigre point and four fragments of various points. The Tigre point was named for El Tigre site (Tigre-K87), where it was first recovered in stratigraphy. The Tigre point, which is distinguished from Fishtail points by its angled shoulders and convex stem, serves as a time marker for a new Paleoamerican cultural group that arose post-Fishtail in the southeast of South America 12,000–11,100 yr B.P. It is remarkably widespread, appearing at sites in northern Uruguay, southern Brazil, and eastern Argentina as far as 1300 km from El Tigre site; furthermore, points similar in morphology to the Tigre point have been recovered at the Salar Punta Negra and the Quebrada Mani 12 sites in the Puna region of northern Chile. The breadth of its range, in fact, begs inquiry into a possible east–west axis of communication that may have linked Pacific regions with those adjacent to the Atlantic.

"Technological succession indicates at least four human groups in the Uruguay River basin in the late Pleistocene and early Holocene," Suárez says. Ubiquitous Fishtail points are the product of the successful lithic technology practiced by human groups adapted to different ecosystems in South America, from the heights of the Andes, pass-

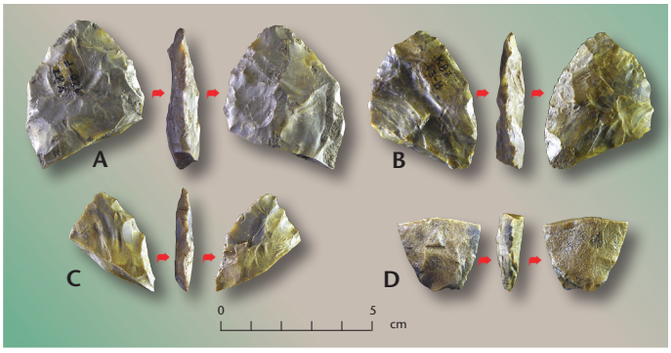
ing through the Puna de Atacama, to the low plains of Uruguay, the Pampa, and Patagonia. Both Fishtail and Tigre toolmakers manufactured points used as weapons for hunting and war. When their points reached the end of their use life, they were recycled as useful artifacts.

Similarities between Fishtail and Tigre points and their chronological continuity suggest that Tigre groups shared social, technological, and behavioral characteristics with Fishtail groups. It appears likely to Suárez that Tigre groups constitute an early regionalization of Fishtail groups in the Uruguay River basin, and he believes it important to investigate the geographical extension of this initial regionalization beyond the Uruguay River basin.

Excavation area of the Tigre site, 2012 season. Artifacts are beginning to appear in situ. Suárez explains that "this is the more recent cultural component (early Holocene), the most recent of the four ancient components identified in the site. Under this component we recovered Tigre, Fishtail, and pre-Fishtail occupations."

A curious biface in the Tigre toolkit

It's difficult to determine the function for which asymmetric bifaces of half-moon shape were intended. Suárez's team found four, all nearly identical in size (54.2 –55.2 mm long, 29.1–32.1 mm wide, and 6.2–7.8 mm thick) and shape. One edge is straight, the opposite convex, and both edges show traces of use wear. Suárez remarks that "these pieces remind us of some 'crescent bifaces' from North American Paleoindian adaptations" (**MT 25-3**, "Studying crescentics: Form or function?"). And, like the rest of us, he wonders.



Preforms; A–C are silicified wood, D is silicified sandstone.

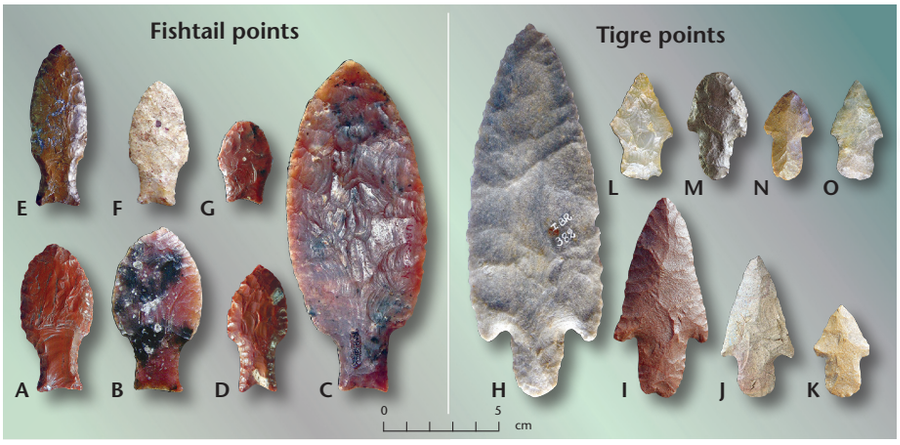
Why points of outlandish size?

Fishtail and Tigre points were used for hunting and warfare. They were subjected to a process of resharpening, reshaping, and recycling after repeated use in hunting events. In experiments, Fishtail points have withstood being thrown 103 times without suffering severe fractures.

Some Fishtail and Tigre projectile points recovered in Uruguay, however, are huge, more than 15 cm long. It seems unlikely they were necessary for hunting large animals. Suárez reminds us that Fishtail points recovered from the mastodon kill site at Tagua Tagua in Chilean Patagonia were only 37 and 40 mm long. Oversized Fishtail points have also been found in Pampa, Patagonia, and south-central Brazil.

For Suárez, the most plausible explanation for making oversized points was to impress, to identify the bearer as a master toolmaker worthy of respect, for to fashion such a masterpiece required consummate skill and considerable energy and time, starting with the search for a suitable outcropping of toolstone to produce a blank 20–25 cm long, the first step in the biface-manufacturing process.

"I believe that toolmakers had aesthetic preferences for toolstone for their weapons or artifact sets," Suárez explains. "A hunter who appears with a 20-cm-long spearpoint of translucent agate conveys a lot of information before saying a word. He can then say, 'Look, I know where there are extensive outcrops to make these weapons using material of symbolic value. I am



Fishtail and Tigre points from Uruguay. Among the Fishtail points: A–B are classic Fishtail points in size and proportion; E is fluted. Typical toolstones are red jasper (A), silicified limestone (B–C), yellow opal (E). Among the Tigre points: typical toolstones are extra fine grained silicified sandstone (H–I, O), translucent agate (L), yellow opal (N). Suárez calls oversized Fishtail point C and Tigre point H "prestige points," intended to confer respect on the toolmaker.

a master knapper.' That would have a strong impact on young knappers and make them want to learn from this teacher." Master toolmakers possessed a highly sophisticated knapping technique and understood the intricate procedure for thinning in all stages of the reduction process.

What makes El Tigre unique is its high density of projectile points. Not only is it a multi-component open-air site, it's located on a major transit, migration, and dispersal route of human populations during prehistory. The site is located in the vicinity of one of the most important fishing spots of the middle Uruguay River and affords access to extensive boulders of the finest toolstone in the middle Uruguay River basin (jasper, silicified sandstone and wood, opal, agate, and chalcedony). Exotic toolstones possessed social value as well. Paleoamericans expended considerable time and effort to exchange precious minerals from Uruguay to the Pampa region in Argentina.

Putting all this together, Suárez is confident that these oversized points were badges of prestige for the bearer—material goods meant to display success, wealth, or power. The motive for creating badges of prestige (to obtain mates, labor, and allies) is fundamentally different from the need to create practical artifacts. These special artifacts were worthy of admiration because of their aesthetic value, the technical skill expressed in their manufacture, and the use of highly valued toolstones.

Silicified limestone (silcrete) outcrop of the "Cueva de los Cuervos" (Ravens' Cave) discovered in 2017. Suárez beams at finding an outcropping of red silicified limestone, a favorite toolstone of Fishtail toolmakers, and a new cave for future research.

Perhaps most important, the recognized morphology of artifacts (Fishtail and Tigre) circulated extra-regionally would have expedited social cooperation among human groups dispersed across large territories. Meetings would have enabled exchange of information, knowledge, objects, people, and raw materials.

What sets El Tigre apart?

Suárez finds many aspects of El Tigre site impressive. Its high density of 1.3 bifaces or projectile points per square meter is extremely rare in South American archeology. The site boasts an area of about 10,000 m^2, and the cultural sequence spans at least 4 Paleoamerican occupations (pre-Fishtail, Fishtail, Tigre, and Pay Paso) and a 1200-year-old Ceramic occupation as well. Evidence gathered at El Tigre suggests human presence as early as 13,260 yr B.P., which is consistent with regional data for the Arroyo Seco 2 site in Argentina. Few archaeological sites boast evidence for such early populations, but they are beginning to emerge in the middle Uruguay River.

He speaks frankly about the status of El Tigre compared with other sites in the Americas: "El Tigre can be compared to Hell Gap in the USA, although there is no pre-Clovis at Hell Gap. There is Clovis, Folsom, Agate Basin, Hell Gap, etc. Previously an age of 12,420 yr B.P. was attributed to El Tigre. Our research established 20 new ages, which extended the occupation of the site by 1000 years to 13,355 yr B.P. and the early occupations to 9500 yr B.P. The ultimate lesson is: Two or three radiocarbon dates don't serve to establish the chronology of early sites in southeast South America."

Suárez believes that future work at the site will further substantiate its chronology and better fit El Tigre into the archaeological context of southeast South America. He intends to explore other sectors of the site. He has mapped 5 sectors that cover an area of 10,000 m^2, and to date his team has barely excavated 22 m^2. "We still have a lot of work to do," Suárez admits. "We have to excavate to the base of the site, then do a paleoenvironmental reconstruction with the sediments we have from the LGM to the recent Holocene. The research is very promising." As for other work remaining in the future, he sees the need to further define the technology of pre-Fishtail, Fishtail, Tigre, and Pay Paso and thus achieve a better understanding of the technology and lifestyle of El Tigre.

Suárez freely admits that the investigation at El Tigre is still in its infancy. Data obtained in the '70s augmented by recent data underscore the significance of the early occupation of this site, but he suspects the presence of other early occupations and other point types that haven't yet been identified.

And the same, Suárez insists, could be said of North America. He sees a striking parallel between the evolutionary convergence of some regions of North America with those of the plains of Uruguay. He pleads earnestly for a North American partner to engage with him in a cross-cultural project, whose agenda is to compare the adaptations, chronologies, and projectile-point morphologies from regions of North America and Uruguay.

He has hopes: "That the students who work with me are interested in the site and can continue to research this site. My life isn't long enough to investigate the vastness of this amazing site, not even 10 percent of it."

–Katy Dycus

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Suggested Readings

Suárez, R., et al. 2018 Living on the river edge: The Tigre site (K-87) new data and implications for the initial colonization of the Uruguay River basin. *Quaternary International* 473:242–60.

Genetics Study Links Upper Paleolithic Siberians to First Americans

ANCIENT DNA has revealed much about the complicated history of the First Americans, and each new study seems to uncover surprising details that further enrich our understanding of this epochal event in the history of humanity (**MT 34-3,** "The Native American family tree branched early: New insights from genomes of 91 ancient Native Americans"; **MT 35-2,** "Genetic studies reveal rich history of ancient America, Part 1"). In one of the latest such studies, a research team led by Johannes Krause, Cosimo Posth, and Choongwon Jeong, all with the Max Planck Institute for the Science of Human History, have changed our ideas about the source of the populations that became the First Americans.

GALINA PAVLENOK

A. P. OKLADNIKOV

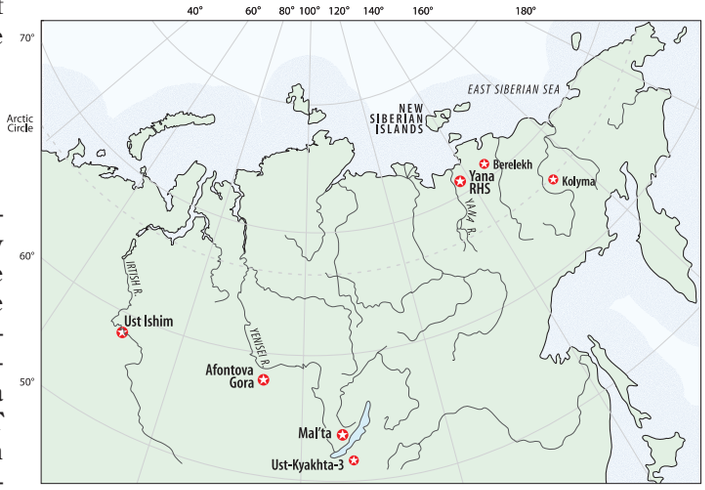
▲ View of the Ust'-Kyakhta-3 site.

◀ Excavating the Ust'-Kyakhta-3 site, 1976.

To gain a clearer picture of the genetic history of the people who would become the First Americans, Krause, Posth, Jeong, and their international team of scientists sequenced the DNA of 19 ancient hunter-gatherers who lived and died in the area around Lake Baikal and the surrounding region in southern Siberia. They combined these data with genomes from previously studied individuals and revealed a strong connection between ancient Siberians and the First Americans. That conclusion may not seem all that surprising, unless you're committed to the idea that ancient Solutrean sea-farers were the First Americans (**MT 28-2,** "Do Clovis origins lie in Paleolithic Spain? Part 1"). What is surprising, however, is that the Siberian ancestors of Native Americans weren't members of a discrete population living in far northeastern Siberia, but instead include contributions from a number of populations spread widely across this vast area of eastern Russia during the Upper Paleolithic.

Who were the Siberian ancestors of the First Americans?

Before the First Americans were Americans they were Siberians, but where did these Siberians come from? A study of the genome of the 24,000-year-old child from the Mal'ta site near Lake Baikal (**MT 29-2,** "Ancient Siberian boy reveals complex origins of First Americans") identified this population as Ancient North Eurasians, which were widespread across Siberia during this period. It was at about this same time that a population that would become the ancestors of the First Americans diverged from the North Eurasians and began moving to the northeast in a series of waves that would take them first into Beringia and then on into North America.



Krause, Posth, Jeong, and their team recognize that "although these waves of migration are generally linked to ancient Siberian populations, their origins in the context of the Siberian genetic history remain poorly understood." In an effort to provide this much needed context, they generated complete genomes from those 19 ancient Siberian hunter-gatherers, including one individual from the Upper Paleolithic Ust-Kyakhta-3 site located south of Lake Baikal and dated to 14,050–13,770 yr B.P. In addition, they recovered complete genomes from four Early Neolithic individuals ranging in age from 7320 to 6500 yr B.P. and 14 Late Neolithic to Early Bronze Age individuals ranging in age from 4830 to 3570 yr B.P. They then combined these new genetic data with previously published data on "3,014 present-day worldwide individuals and 453 ancient individuals," which enabled them to place those Siberian genomes into their global historical context. They presented the results of

their subsequent analyses in the June 11 issue of the journal *Cell* with He Yu as the lead author.

Reading the history written in DNA

The genome of the Upper Paleolithic individual from the Ust-Kyakhta-3 site revealed that this early Siberian resident was closely related to a 9800-year-old individual from the Kolyma site in northeastern Siberia, who had already been shown to be related to Native American populations. In addition, the genomes obtained from the Early Neolithic and Late Neolithic-Bronze Age individuals showed that they "shared genetic affinity with each other as well as with the older" Ust-Kyakhta-3 individual. These data indicated that, in spite of multiple population turnovers in the region over the millennia, the Ancient North Eurasian ancestry had not been completely replaced by the movement of East Asian groups into the region.

He Yu

Maria Spyrou

Cosimo Posth

Choongwon Jeong

Johannes Krause

The Ust-Kyakhta-3 and Kolyma genomes shared certain genetic changes with Native American populations that Yu and her coauthors determined had "occurred after the ancestors of Native Americans diverged" from their Ancient North Eurasian and northeast Asian forbears. This indication of a close relationship to Native American populations is also shown in the shared genetic connections linking the Ust-Kyakhta-3 and Kolyma individuals to the 11,500-year-old child from the Upward Sun River site in southeastern Alaska (**MT 34-2,** "Beringian child's genome reveals the founding population of the First Americans") as well as to "non-Arctic" Native Americans. The Upward Sun River child, however, shared "significantly more genetic affinity with Native Americans" than either the Ust-Kyakhta-3 or Kolyma individuals, which is only to be expected given the location of the Upward Sun River site in eastern Beringia.

Ancestors of First Americans spanned much of Siberia

Until now, most researchers assumed that the ancestors of Native Americas originated in far northeastern Asia. Certainly they passed through northeastern Asia on their way into Beringia, but the work of Yu and her colleagues now demonstrates that there was a "strong genetic connection" between Upper Paleolithic Siberians living in the vicinity of Lake Baikal in southern Siberia and all Native Americans except for those populations living in the Arctic, whose ancestors arrived in North America at a somewhat later time period (**MT 31-2,** "DNA clarified prehistory of New World Arctic").

The Ust-Kyakhta-3 and Kolyma individuals and the non-arctic Native Americans all are descendants of a Siberian population with ancestry from both Ancient North Eurasians, as represented by the Mal'ta genome, and other northeastern Asian groups. Yu and her coauthors conclude that the interactions of this Siberian population with various groups from northeast Asia entering the region over time resulted in the formation of subpopulations with varying proportions of Ancient North Eurasian and northeast Asian ancestry. The source of Native American ancestry, therefore, "aside from the first wave migrating into the Americas through Beringia," wasn't localized in a particular Siberian population, but instead was "more broadly spread across Siberia during the Upper Paleolithic."

Asked about the reason for the qualifying statement "aside from the first wave," Posth explains that the Ust-Kyakhta-3 individual "carries the admixed ancestry which forms the first wave into the Americas, plus additional East Asian–related ancestry. This suggests that the [ancestry of the] first wave into the Americas . . . might have been more widespread than what was hypothesized before. To directly show that indeed this ancestry formed in Siberia we would need to find earlier individuals with such a composition."

Given the importance of Siberia as the gateway to the Ameri-

continued on page 20

Suggested Readings

Cosmos 2020 A new old link between Siberia and America. https://cosmosmagazine.com/history/civilisations/a-new-old-link-between-siberia-and-america/

Price, M. 2020 Oldest cousin of Native Americans found in Russia. *Science,* online: https://www.sciencemag.org/news/2020/05/oldest-cousin-native-americans-found-russia

Raff, J. 2019 Genomic perspectives on the peopling of the Americas. *SAA Archaeological Record* 19(3):13–16.

Yu, H., M. A. Spyrou, M. Karapetian, S. Shnaider, R. Radzeviciute, K. Nagele, G. U. Neumann, S. Penske, J. Zech, M. Lucas, P. LeRoux, P. Roberts, G. Pavlenok, A. Buzhilova, C. Posth, C. Jeong, and J. Krause 2020 Paleolithic to Bronze Age Siberians reveal connections with First Americans and across Eurasia. *Cell* 181:1232–45; https://www.cell.com/cell/pdf/S0092-8674(20)30502-X.pdf

Cueva del Medio

A window on the colonizing of southern Patagonia

The frontal area of Cueva del Medio.

As populations swept across North America and into the far reaches of South America, their tools accompanied them and evolved with them. With waves of human migration, the fishtail, or Fell projectile point (FP), dispersed throughout Central and South America, assuming the iconic role in South America that the Clovis fluted point enjoys in North America.

The million square meters of Patagonia occupies almost half of both Argentina and Chile and is home today to two million people. This enormous expanse of Earth has never been home to more than a mere sprinkling of humanity, starting with the First Americans. Cueva del Medio, an archaeological site in southern Patagonia, is a dazzling record of human-faunal interaction and a textbook illustration of the interplay between culture and lithic technology.

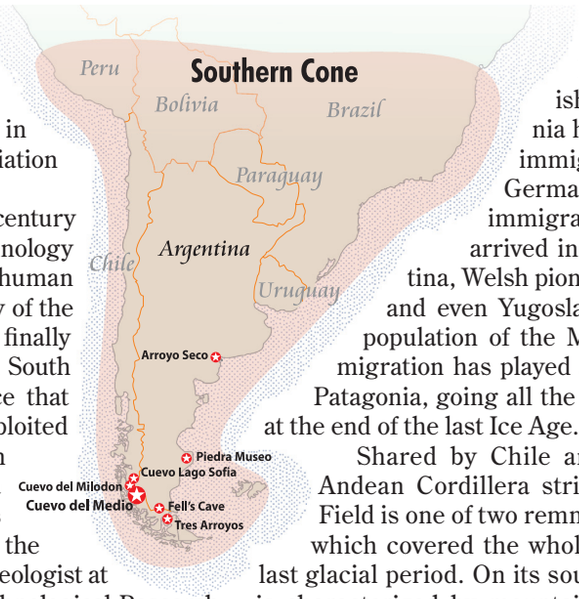
Early digging

In the 1930s Junius Bird, with wife and dog, pursued an archaeologic survey of this region (**MT 23-4, 24-1, -2,** "In the footsteps of Junius Bird"), which found that Pleistocene fauna coexisted with humans. The evidence he recovered is now housed in the American Museum of Natural History. Just as Blackwater Draw, Folsom, and the Lindenmeier sites in the North American Southwest proved the association of Clovis and Folsom points with Ice Age fauna, Bird's excavations of the Pali Aike and Fell's Caves near the Magellan Straits in Chile demonstrated an indisputable association of distinctive FPs with extinct fauna.

Indisputable perhaps to Bird, but half a century later questions surrounding the lithic technology and subsistence strategy of the oldest human populations at the southernmost extremity of the Americas were still hotly debated, until finally excavation of sites at the southern tip of South America yielded incontrovertible evidence that Patagonian hunter-gatherers indeed exploited extinct fauna. "In recent years the Magellan Strait and its surroundings have provided a series of previously unthinkable findings related to the oldest human occupations in the Americas," says Hugo Nami, Senior Archaeologist at the National Council of Scientific and Technological Research of Argentina (CONICET) and adjunct scientist in the Department of Geological Sciences at the University of Buenos Aires, Argentina. CONICET scientists have excavated extensively in the region.

The yield of excavations at Cueva del Medio in the '80s and '90s fell into line with the established record from Pali Aike and Fell's Caves. When Cueva del Medio was excavated, other sites in the region also corroborated the archaeological and chronological record: the Lago Sofía Cave excavated by A. Prieto and P. Cárdenas, and the Tres Arroyos rockshelter excavated by M. Massone on the Tierra del Fuego Island across the Magellan Strait on the Chilean side of the border.

What's more, Piedra Museo Rockshelter in southern Argentinean Patagonia yielded fishtail points and other stone tools with associated fauna. "Beyond, to the north, in the rest of the Southern Cone, many significant sites with fishtail points, diverse kinds of stone tools, and extinct fauna have been found and documented," Nami tells us. The patchwork quilt of sites is vitally important to our understanding the colonizers of the southernmost part of the Americas.



A checkered history

Patagonian locals all speak Spanish, but over the centuries Patagonia has been on the receiving end of immigration from around the globe: Germans and Swiss settled Bariloche, immigrants from England and Scotland arrived in Santa Cruz Province of Argentina, Welsh pioneers landed in Chubut Province, and even Yugoslav immigrants melded with the population of the Magallanes region of Chile. Immigration has played a major role in creating today's Patagonia, going all the way back to the first colonizers at the end of the last Ice Age.

Shared by Chile and Argentina in the southern Andean Cordillera strip, the Southern Patagonia Ice Field is one of two remnants of the Patagonia Ice Sheet, which covered the whole of southern Chile during the last glacial period. On its southwestern slope the orography is characterized by mountain ranges (Monumento Moore,

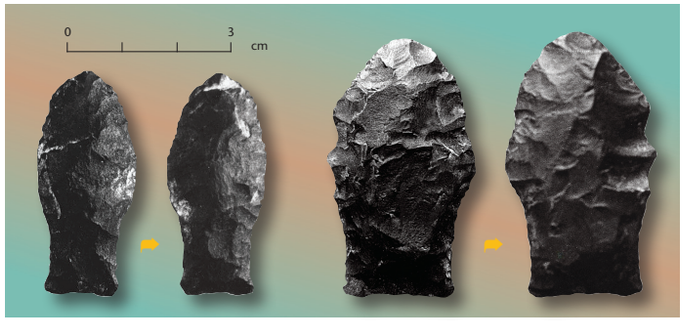
Señoret, Chacabuco, and Prat) with an average height of about 1500 masl.

Amid this geographic diversity and within the Cerro Toro geological complex sits Cerro Benítez, a small hill in Ultima Esperanza province, Magallanes region, southern Chile. Situated on its southern flank, the Cueva del Mylodon Natural Monument dominates the world-famous Mylodon Cave and other rockshelters that contribute to an important paleontological and archaeological record.

ALL PHOTOS AND DRAWINGS: HUGO NAMI

The interior of Cueva del Medio before Nami began excavating.

According to regional historian Mateo Martinic, at the beginning of 1895 this locale aroused international interest when German explorer Hermann Eberhard discovered a thick piece of hide with embedded dermal ossicles and long reddish hairs inside Mylodon Cave. The specimen was found in an excellent state of conservation, but wasn't associated with any known living animal. Later it was found that the skin belonged to Mylodon, a formidable herbivore resembling an enormous bear, which became extinct at the end of the Pleistocene epoch.



Fishtail projectile points found in the Paleoamerican level of Cueva del Medio.

German researcher Rodolfo Hauthal, who was working at the Museo de la Plata, Argentina, first excavated Cueva del Medio, after which the *Daily Express* in London organized an expedition with the aim of finding living Mylodons. Unfortunately, in the years 1899–1902 Cueva del Medio was ravaged by relic hunters, who stripped and destroyed a significant portion of the cave deposits. A large number of looted paleontological specimens were sold to European museums.

Projectile points from Georgia (A) and Panama (B) that Nami showed to Dennis Stanford to demonstrate the similarities between fishtail points from eastern North America and those from central and northern South America. The point and fragment (C) from Venezuela are further evidence. To illustrate the similarities between the North and South American fishtailed points he offered more than 150 points of this kind.

Cueva del Medio became forgotten, its location and accessibility unknown, until the beginning of the 1980s, when A. Prieto, with his sister Mónica and friend R. Romero, rediscovered the cave. "Owing to a lack of a staff archaeologist at the Instituto de la Patagonia, I was invited to perform excavations in Ultima Esperanza by the Instituto de la Patagonia founder and director, M. Martinic," Nami remembers. The excavations were carried out between 1986 and 1993 under the institutional support of the Instituto de la Patagonia, in conjunction with the Universidad de Magallanes.

Excavations led by Nami

Cueva del Medio lies about 1 km from Mylodon Cave in the Mylodon Cave National Park. Cueva del Medio ("Middle Cave") is aptly named: it lies between Mylodon Cave and Chica Cave, the smallest significant shelter on Cerro Benítez. Its entrance, 90 m long by 50 m wide, is also medium in size of the three caves.

On first arriving at Cueva del Medio, Nami was surprised by the size of the cave and stunned by the destruction wrought by looters: "There were pits everywhere made by looters and by initial excavations performed at the turn of the 20th century. The panorama was very sad and discouraging." The first order of business was to find intact portions where they could carry out careful archaeological excavations. "On our first expedition and excavation at the site, with the help of A. Prieto I began to clean one of the profiles of the predation wells, and there, fortunately, I was able to determine the first intact deposits that surrounded it. Consequently I began to carry out a systematic excavation starting from it. Luckily, in that small excavated area we found a fishtail point and extinct fauna in stratigraphy."

The next challenge, given the potential of the site, was to find more intact deposits. "We decided to clean the cave," says Nami, "by carefully removing the important accumulations of sediments left by the old diggings." Sediments from early diggings were carefully screened and many vestiges were recovered. Then they discovered several intact sections of the deposit in the front and center of the cave.

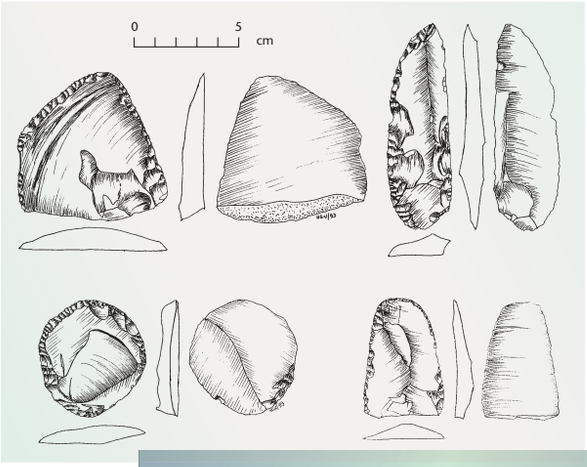
Fortune finally smiled on the researchers. A layer of pebbles detached from the central large blocks had sealed the sediments, making it impossible for looters to excavate. A small section at the end of the cave was also undamaged.

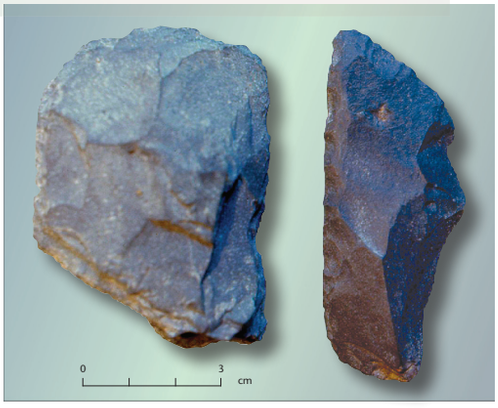
Prior to excavating, Nami defined grids numbered from the mouth of the cave toward the back and from east to west. All the findings were then accordingly mapped and recorded.

Nami's team found that Cueva del Medio comprised four distinct stratigraphic layers. In the most important layer, the archaeological layer dating to the Paleoamerican period, hearths, broken bones, red ocher, and various stone and bone implements were evidence that Cueva del Medio served as a multiple-activity site during repeated short-term occupations.

Materials that constitute the Paleoamerican record in Cueva del Medio were found in a relatively thin level that follows the natural sediment dip. In several sections, especially areas covered by rocks, it was undisturbed, which suggests a good integrity of the record.

Lithic artifacts found associated with extinct and extant fauna testify to faunal diversity in southern Patagonia in the late Pleistocene and verify that the earliest hunter-gatherers exploited various species, mostly Camelids and *Hippidion saldiasi* (horse). Radiocarbon dates on charcoal and burnt bones place Paleoamerican occupations in Cueva del Medio in the terminal Pleistocene, 12,000–13,000 yr B.P. Two outlying samples from hearths date to 10,900–11,050 yr B.P.





Unifacial tools found in the Paleoamerican level of Cueva del Medio.

Stone tools at Cueva del Medio

Toolmakers who occupied Cueva del Medio found toolstone in the glacial deposits surrounding Cerro Benítez. Chalcedony likely came from the Sierra de Los Baguales, 108 km north of the site. Lithic debitage attests to tool shaping and resharpening.

In his fieldwork at Cueva del Medio, Nami recovered two FPs, which appear to have been resharpened by pressure flaking with short irregular retouches; an additional broken specimen was found in a later excavation not led by Nami. All are morphologically similar to points found in the Fell's and Pali Aike caves.

The making of a lithics analyst

Starting in 1979, Nami set about learning the art of flintknapping, first by studying early-Holocene triangular stemless points from southern Patagonia (about 10,500–9000 yr B.P.). Then he struck up a correspondence with Dennis Stanford at the Smithsonian Institute. In 1983, he remembers, "Dennis suggested I work on a comparative study of North American and South American Paleoindian fluted points. The Cueva del Medio discoveries were very helpful and complementary to my initial interest in Paleoindian lithic technology." In his comparative study, Nami visited with many North American flintknappers who were working on Paleoindian reproductions. He credits Errett Callahan with refining his knowledge of advanced techniques such as fluting and creating blades and microblades.

When he studied the reduction sequence on specimens of Fell points from Patagonia, he found that most were made on thin flake blanks, just as Bird had noted. "Practically nothing was known about the use of bifacial reduction in its manufacture," he recalls. "At first I discussed the use of bifacial thinning based on the flaking debitage from the Alero Tres Arroyos excavated by M. Massone in Tierra del Fuego and the Cueva del Medio findings." Later, in the '80s and early '90s when studying the collections of the Junius Bird excavations in Fell's and Pali Aike caves, Nami identified bifaces fractured during bifacial thinning. "From an experimental perspective, I proposed an experimental method of manufacturing fishtail points as an alternative to using thin flake blanks. In some cases the use of bifacial thinning was a necessary condition for making points with broad blades, and for that reason I suggested that this strategy was indeed used by fishtail-point knappers."

In the late 1990s he studied points in Ecuador and Uruguay, where he confirmed that toolmakers had employed bifacial thinning in manufacturing FPs. He also observed their use of other interesting techniques, such as isolating a nipple when fluting, the same method used by toolmakers of North American fluted points. Today Nami continues to study collections from other South American sites in hope of finding preforms and specimens of early and intermediate manufacturing stages.

Nami finds Cueva del Medio remarkable for being "one of the few sites yielding FPs in association with the assemblages accompanying them. With the exception of the projectile points and a few fractured bifacial specimens, most tools were unifacial, mainly sidescrapers and knives of various shapes and dimensions. The remarkable ones, however, are those larger in size made using tertiary flake blanks." The largest unifacial instruments are morphologically comparable to those found at Pali Aike and Fell's caves and at the Piedra Museo rockshelter. These instruments belong to the so-called "level 11 industry," which, excluding FPs, were also found in the lower levels of the El Ceibo and Los Toldos caves. Nami believes that advances in research will show that "several sites without FPs but with unifacial tools, such as the Cueva del Lago Sofía, may have been part of the variability of these sites."

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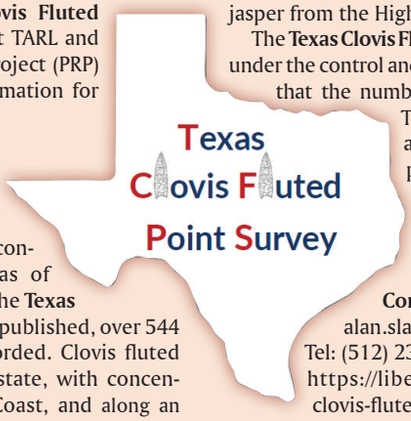
Call for Data

Alan M. Slade
Texas Archaeological Research Laboratory (TARL)
University of Texas at Austin

The author of the **Texas Clovis Fluted Point Survey** and colleagues at TARL and the Prehistory and Research Project (PRP) ask for help in updating information for the 4th edition of the **Survey**.

Brief Outline

In 1985 David Meltzer initiated a survey of Clovis fluted points in Texas. That survey continues to the present, and as of 2007, when the 3rd edition of the **Texas Clovis Fluted Point Survey** was published, over 544 Clovis fluted points were recorded. Clovis fluted points occur throughout the state, with concentrations on the High Plains, Coast, and along an arc through central Texas following the Balcones Escarpment along which high-quality chert and freshwater sources were readily available. The majority of Texas Clovis fluted points were made of Edwards chert from central Texas, with a minority fashioned of Alibates agatized dolomite and Tecovas jasper from the High Plains.



The **Texas Clovis Fluted Point Survey** has now come under the control and curation at TARL. We anticipate that the number of Clovis fluted points from Texas will be increased as well as the roll of counties where points were reported. This call for data will provide details of how and where to report any Clovis fluted-point discoveries.

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https://liberalarts.utexas.edu/tarl/texas-clovis-fluted-point-survey.php

Tools indicate productivity and migration

Lithic artifacts made by a socio-cultural group can be identified by certain shared technological and morphological features. We must, however, take into account significant differences between the implements made by FP toolmakers and the lithic assemblages that came later. Tools, after all, evolve, and sometimes disruption leads to diversity.

As a consequence of climatic or environmental change, FP lithic assemblages were supplanted by triangular projectile points made using a different method of bifacial reduction and by other forms of unifacial tools. Looking at evidence that Paleoindian lithic technology was replaced by different tools characteristic of other socio-cultural groups, we can hypothesize about the extinction of Paleoindian technological knowledge and the disappearance of the human groups that used it in that region.

Artifacts are cultural ambassadors that nurture human relations through their broad use, relevance, and appeal. They are emblematic not of a population group, but of an age.

What do we know of the age when fishtail points appeared? Our knowledge is being enhanced by genetics studies that link early South American remains with those found at the Clovis-age Anzick burial (**MT 35-2,** "Genetics studies reveal rich history of ancient America"). The earliest stemless triangular points in Patagonia date to about 9500 RCYBP (about 10,700 yr B.P.). Owing to their distribution in the Southern Cone, they probably represent human groups that came from the Andean region.

The first excavation of Cueva del Medio, begun at a looter's pit.

Archaeological sites investigated in recent years reveal the existence about 15,000 yr B.P. of pre-Clovis presence in North America and pre-Fell (pre–fishtail point) presence in South America. Archaeological evidence shows that by 13,000–11,500 yr B.P. , broadly diverse projectile points were employed in the Americas. Around 13,000–12,700 yr B.P. the Clovis fluted point had spread across North America; its counterpart, the fishtail point, was widespread throughout South America by 13,000–12,000 yr B.P. The nearly perfect simultaneity of the two toolmaking regimes may tempt us to infer a parent-scion relationship between them. Nami points out that, in fact, the discovery of flutes on a few fishtail points from Central and South America spurred scholars to suggest their origin was the North American Clovis point.

Most South American archaeologists, including Nami, maintain that fishtail points are technologically distinct in both morphology and reduction sequence. Moreover, early South American sites reveal marked diversity in lithic technology and subsistence strategy. The growing body of literature on the human colonization of the New World reveals an increasingly complex scenario. Nami is convinced that the Americas were peopled more than once and that successive colonizing events produced a diverse array of technologies and adaptive strategies.

Toolmakers passing through on their way south?

Nami suggests that the Last Glacial Maximum, which depressed sea level and thereby exposed continental shelves, may also have played a part in dispersing fishtail-point toolmakers. Similarities between fishtail points from Central and South America and fishtail specimens from eastern North America like the Waisted Clovis/Suwanee and Simpson points beg the hypothesis of a techno-morphological continuity from north to south. He believes, however, that the relationship of fishtail points from Central and South America with Great Plains classic Clovis points isn't so straightforward. Considering that "Clovis and FPs share several Upper Paleolithic traditional technological features of bone and stone tool manufacturing techniques," new evidence from sites exhibiting bifacial technology suggests to him the possibility of an ancestor–descendant relationship with pre-Clovis toolmakers.

He further suggests that the colonizing of northern South America may have followed two main paths, one down the Pacific slope and the Andean Cordillera in the west, the other down the Atlantic slope in the east. In the former case, the fishtail-point toolmakers that occupied Cueva del Medio may have followed the major Pacific–Andes route. In the latter case, hunter-gatherers using fishtail points in North America may have colonized South America during the terminal Pleistocene by passing along the Central American isthmus and across exposed continental shelves in the Gulf of Mexico and the Caribbean Sea.

Support, legacy, and gratitude

Nami believes the rediscovery and excavations at Cueva del Medio became a turning point in the study of the oldest hunter-gatherer societies occupying southern Patagonia. Despite looting and excavations at the end of the 19th century that greatly reduced the potential yield from archaeological discovery, evidence from intact deposits rewarded investigators with valuable clues on how the Americas were peopled.

The reward didn't come easily. The investigation of Cueva del Medio was initially funded out of Nami's own pocket, augmented by donations from a local bus company and Punta Arenas grocery stores, until support came from the Instituto de la Patagonia and Magallanes University. "Many people participated in the field work," he explains, "but the help of A. Prieto and P. Cárdenas, both members of the Instituto de la Patagonia staff, was most important." Eventually he received funding from the Bird Foundation in New York, Sigma Xi (Scientific Research Society), the Wenner-Gren Foundation for Anthropological Research, the Paleoindian Program (Smithsonian Institute), the Mongoloid Dispersal Project (Japan), and the National Geographic Society, which financed Nami's sixth expedition.

Nami (*standing*) discussing with Dennis Stanford his theory on Solutrean migration, 2006.

"Cueva del Medio is probably one of the sites with the most radiocarbon dates obtained for dating hunter-gatherers that used fishtail points in South America," Nami says. Among other ways it illuminated the colonizing of South America, "It also demonstrated the exploitation of extinct fauna, mainly horse, in their subsistence."

The discoveries at Cueva del Medio also broadened Nami's opportunities abroad. When he was excavating Cueva del Medio in the '80s, Nami secured his first Fulbright fellowship to work with Robson Bonnichsen, at the time Director of the Center for the Study of Early Man (the precursor to CSFA) at the University of Maine, Orono. "At that time, based on the Cueva del Medio finds, I was working on my experimental comparative study between North American fluted points and fishtail points from South America," he says. "In this endeavor I have spent almost 40 years traveling around North and South America studying Paleoindian artifacts, from Alaska to Tierra del Fuego." It's a job he's still working on.

Perhaps most important to Nami's comparative investigation between North and South American technological systems was his mentor and close friend, Dennis Stanford of the Smithsonian Institute, who passed away last year (**MT 32-1,** "Lighting the path: Dennis Stanford; **MT 34-4,** "Remembering Dennis J. Stanford"). Nami reminisces: "I spent several years working with Dennis, where, up to his death, I became an associate researcher in the Paleoindian program directed by him. During one of my stays in Washington, D.C., when my scholarship year at the Smithsonian Institute was coming to an end, Dennis proposed that I stay one more year. For this, he got money from the Paleoindian program for living expenses and I stayed as his guest in a beautiful apartment that he had built in the basement of his house."

Nami recalls when he rushed to Stanford's desk to show him a projectile point from an old collection from the State of Georgia and a point found in Alajuela Lake in Panama. When Nami showed him the two pieces side by side, Stanford looked wide-eyed at Nami and exclaimed in an unforgettable way, "They're the same!"

Beyond archaeology, Nami says of Stanford, "It was great to witness and share how he enjoyed life, his happiness and his really good voice when he sang, especially Willie Nelson, when we were traveling from D.C. to Carson Conn site excavations in Tennessee, making stops in several places visiting knappers practicing Paleoindian technology. Because of him, my oldest son is called Dennis. Now that my mentors are gone, this is a good opportunity to remember and thank them once again for their teachings and friendship through the years.

–Katy Dycus

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Suggested Readings

Nami, H. G. 2019 Paleoamerican occupation, stone tools from the Cueva del Medio, and considerations for the Late Pleistocene archaeology in southern South America. *Quaternary* 2(28):1–31.

La Prele

Aerial view of La Prele Mammoth site during the 2017 excavations.

The perplexing history of a mammoth kill site

ARCHAEOLOGISTS dream of finding mammoth remains associated with butchering tools. After years of suffering delays and overcoming obstacles, University of Wyoming scientists earned their reward at La Prele Clovis site. They even got a bonus, thanks in large measure to serendipity.

A beginning fraught with confusion and conflict

The saga of discovery and frustration began in 1987, when two residents of Douglas, Wyoming, found mammoth remains eroding from the bank of La Prele Creek, a tributary of the North Platte River. Legendary University of Wyoming archaeologist George Frison (**MT 30-2,** "George C. Frison: Archaeologist on horseback") was the first to excavate what is now called La Prele mammoth site. His crew sank a 3-by-4-m test block and unearthed the partial remains of a mammoth (*Mammuthus*) and a small artifact assemblage: a stone tool, hammerstone, and two in situ flakes. The initial excavators took note that the flakes lay at the same stratigraphic level as the ribs, thereby implying possible association of the stone artifacts and the mammoth remains.

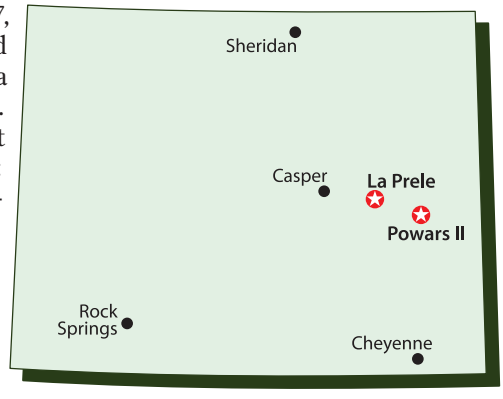
Later, however, doubt crept in. The absence of butchering marks on the bones and their articulated position seemed more consistent with natural death and deposition. Moreover, slight elevation differences between the bone bed and in situ artifacts suggested that the artifacts and mammoth remains may have been deposited in separate events. Although Frison was convinced of the association between the skeletal remains and the artifacts, the team supposed that artifacts from a later or nearby occupation could have washed into the bone bed.

Expectation became frustration when Frison fell into a dispute with one of the landowners. Frison butted heads with the landowner until he realized the situation was hopeless. All investigation ceased, and the site was shut down until, 27 years later, ownership of the land changed hands. University of Wyoming archaeologists were eager to roll up their sleeves and tackle the site anew.

To prove human handiwork is a steep hill to climb

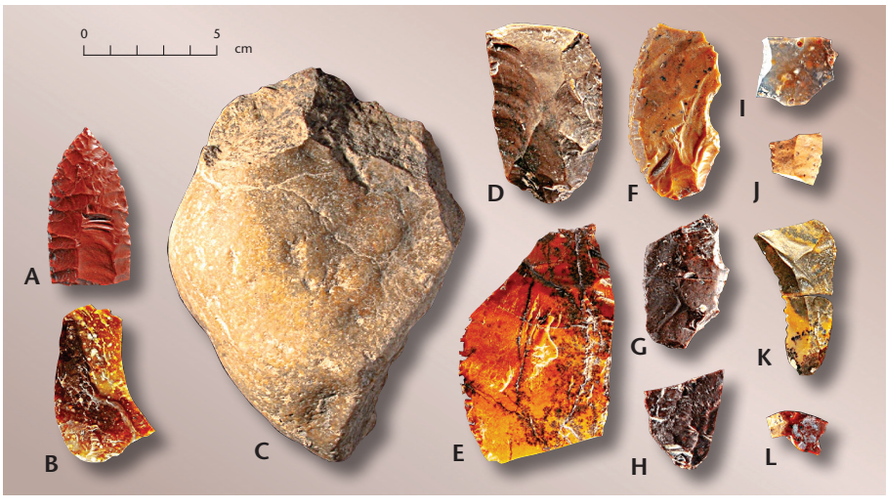
"We knew, from the work George had done, that there was possible association between Pleistocene fauna and artifacts in buried stratigraphic context," Surovell recalls. He emphasizes that to find artifacts associated with mammoth remains is an incredibly rare thing in North America. "Only 14 to 16 other sites like this have been found in the U.S."—and that's after archaeologists have plied their craft in this country for 120 years. For Surovell, La Prele was a golden opportunity for an archaeologist: "I've always been fascinated by Clovis and have always wanted to dig a Clovis site, but they aren't common. This is the first opportunity I've ever had to be the P.I. on the excavation of a Clovis site. They're really rare things."

In 2014 Surovell, with University of Wyoming postdoctoral researcher Madeline Mackie and three colleagues, set out to prove the bona fides of La Prele once and for all. Their mission was to determine whether La Prele met the stringent criteria established in 1983 by anthropologists Gary Haynes and Dennis Stanford, which confirm association between human activity and animal remains. Their checklist demands that archaeologists:



- prove contemporaneity of human and animal remains (that humans were present in the immediate region at the same time as the subject animal);
- verify direct association between human presence and animal remains (evidence for artifacts);
- confirm exploitation of animal remains (typically green-bone fractures or butchering marks on bones).

For five field seasons Surovell and Mackie have expanded the original excavations and tested additional portions of the site to determine if La Prele meets the criteria.



Stone tools from Le Prele site: A, Clovis point; B, flake tool found in the bone bed in 1987; C, the chopping tool; D–L, various stone tools recovered from the camp portion of the site.

So far they have identified activity areas surrounding the mammoth and recovered more than 1,700 pieces of chipped stone, 500 bone fragments, and 1,600 ocher pieces. New radiocarbon dates and consistent stratigraphic association amply demonstrate contemporaneity. The proximity of mammoth remains and artifacts makes a case for strong association; a thorough understanding of the geologic history of the site and evidence for bioturbation accounts for discrepancies in elevation. Although traditional butchering indications like cutmarks weren't found, stone tools found at the site tested positive for proboscidean blood antigens and displayed use wear consistent with animal butchering.

◀ Occupation floor of camp site. Nails mark intervals of 1 m.

▼ Excavated ocher stain enhanced using Dstretch software.

Surovell remarks that "for much of my career I've been involved in debates about Clovis subsistence and Pleistocene extinction and summarizing the data from North America, so here's an opportunity for me to make direct contributions." For Mackie, it "feels like one of those once-in-a-career sites. My Ph.D. dissertation was inspired by La Prele and looked at the record as a whole. I'm hopeful it will lead us to other sites to ask similar questions at this scale."

Suddenly a mammoth kill site includes a campsite

Nowadays most Paleoindian investigations are undertaken by archaeologists revisiting sites. Occasionally we learn something that alters initial interpretations. Sometimes a bit of luck leads to an exciting discovery.

Surovell recalls that "in 2014 we were digging and hardly finding anything. We felt kind of bummed out. Students were carrying heavy buckets of sediments down to the water screen along a narrow path." Dr. Rich Adams, who was shoveling to make the path safer, hit a big rock with his shovel. When Surovell examined the rock, he found underneath it an unmistakable artifact, a chopper. "It was in the same stratigraphic position as the mammoth, which was 12 meters away," he explains. "At that point the site got a lot bigger. We probably wouldn't have found the camp component of the site without this complete stroke of luck."

Immediately the team started excavating the area where the chopper was found. By the end of the 2015 field season the team had screened tons of sediment. One of Surovell's Ph.D. students at the time, Spencer Pelton (currently the State Archaeologist of Wyoming), found a tiny piece of bone. After checking that it wasn't hollow, he brought it to Surovell's attention and asked, "Is this what I think it is?"

Surovell scratched his head and exclaimed, "Is this a [blipping] bone needle? It can't be! It can't be! This is a mammoth kill site. We know kill sites have butchery tools, spears, and flakes from resharpening things. So what the hell is a bone needle doing here?"

The team had already discovered a large red ocher stain and more diverse stone tools far removed from the mammoth. Then they found even more fragments, and it became clear what they were looking at. Surovell confesses, "We weren't expecting to see what is clearly domestic stuff—pigments and hide working and beads and sewing." The team had found the occupation floor of a Clovis camp site adjacent to the kill site.

According to Mackie, La Prele bone needles are the oldest

found in the lower 48 states. "They were typical Paleoindian bone needles in terms of size and morphology," says Surovell. Although not many have been found that date to Clovis times, bone needles from the Younger Dryas period are relatively plentiful (**MT 36-2,** "Stitching together prehistory: Bone needles of the Younger Dryas").

Surovell.

Since 2014, Surovell's team has found over 1,500 artifacts at La Prele—average size less than a centimeter—using fine screen mesh; so many items are small and easy to miss. What these tiny artifacts reveal is a picture of domestic life in the late Pleistocene.

Mackie gives thanks for their luck in finding the needles, and at the same time wonders how many small but important artifacts have been overlooked at other sites. She points out that "many Clovis sites were discovered early, when screening wasn't part of the process. A lot of them could have been missed."

It was a quick-stop site

But what explains the spatial organization of La Prele? Why would people have situated their domestic space so close to the kill?

Chopper found approximately 12 m from the mammoth remains.

Mackie explains that "the assumption is, you don't want a camp site right next to the butchering. It might attract predators; therefore you'd want to be farther away." At La Prele, however, "the kill site and camp site are oddly close. If you look just at the mammoth main block, it looks like a kill site. If you look just at everything else, it looks like a camp site. And they're basically adjacent. Vertically, things are quite distributed, but horizontally, things are pretty intact." She compares La Prele with the famous Murray Springs Clovis site in Arizona, with its multiple mammoth and bison kills. "At Murray Springs, the camp site is over 100 meters away from kill sites," she points out. Finding the camp site only about 12 m away from the mammoth remains at La Prele was a shock to Mackie.

Mackie.

Unlike Murray Springs, which was used multiple times, La Prele is a single-occupation site. Mackie finds this "so uncommon in archaeology, especially during Clovis times. It looks like a short-term occupation on the scale of days or weeks. All the artifacts are really small. It feels really ephemeral."

When a stone tool is resharpened, debitage is created. Under the right circumstances, a short occupation can leave a good record if it gets preserved. That's what interests Mackie. "With the camp site, La Prele can be opened up to many more questions. You see the whole group being present. It isn't just about the kill."

If you can't bring the kill to camp, then move the camp

Surovell looks to ethnographic models in Central Africa to understand how early Americans may have organized their group around a kill. "When you kill an animal, you normally cut it up and bring the choice parts back to camp. But an elephant is so large you can't do that. So instead, you move the camp to the elephant. For the Mbuti, in the Republic of Congo, they're there at the kill site for about a week while butchering the animal. It's cheaper to move your camp to the kill than to move the kill to your camp."

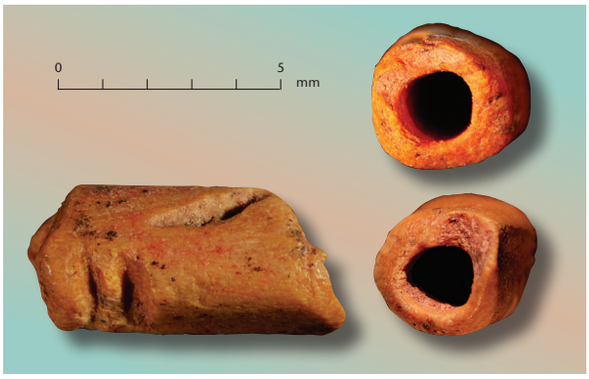
The Efe, of the Ituri forest, offer other ethnographic precedent: "A map of one temporary carcass-processing camp, occupied by both the Efe and Lese, is interesting compared with La Prele because it shows they camped in close spatial proximity to an elephant carcass during butchery," Mackie explains. Surovell notes that another instance where you'd see this kind of scenario play out would be large bison kills: "Imagine a big bison jump where you run 30 or 40 animals over a cliff. You move your whole camp there; this only happens when you have huge amounts of resource."

A Columbian mammoth, the prey animal at La Prele, probably weighed around 8 tons and would yield enough meat to feed a large group of people for at least a couple months. Therefore it wouldn't have been possible to consume all the animal. As Surovell explains, "We don't see cutmarks at La Prele—that's rare on mammoth bones as it is. One part of this skeleton (thorax) was still there, the spine and one side of the rib cage (in anatomical position). It gives me the impression that this thing wasn't completely butchered." Gourmet butchering strategy is very common at Paleoindian sites, where a hunting party take only the choicest parts of a carcass. He's confident they simply filleted meat off the animal and didn't bother to disturb the bones.

The living space at La Prele seems to encircle the mammoth, and definite evidence for domestic activities was found to the south and west of the animal. How space was organized and compartmentalized for crafts is what interests Mackie most: "I want to know more about cooperation and butchering,

how resources were distributed, the movement of people at the site—for example, are we looking at the entire group coming in from one location or from multiple locations?"

When Mackie considers division of labor, she is reminded of an example of cause-and-effect theorized by Nicole Waguespack: As meat assumed a higher proportion of the Paleoindian diet, women became burdened with more tasks because men were occupied hunting. "We have a diversity of tasks going on at La Prele," says Mackie, "which suggests that everyone is present. We can tackle the whole Clovis population, not just the males hunting." At La Prele, everyone contributed to the survival and day-to-day living of the group.



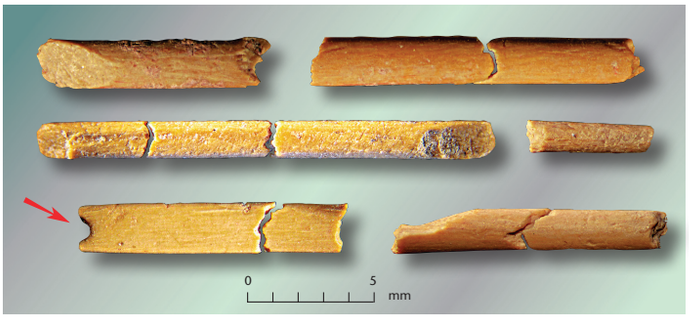
Bone bead discovered next to the ocher stain.

Sourcing La Prele lithic resources

The National Science Foundation has awarded Surovell and Mackie's team funding for two additional field seasons. They intended to excavate this year and next, but the COVID-19 pandemic has mandated a postponement. When the team resumes work, they plan to excavate more of the camp site to catalog lithic materials and determine their origin—and where the group came from.

"Clovis people were highly mobile," Mackie reminds us. "They picked up resources and moved them great distances." Preliminary research shows, for instance, that the source of red ocher found at La Prele lies at the same distant location as the source of several of the lithic resources, but other lithics found at La Prele come from different sources.

The red ocher stain, 2 m long and 1½ m wide, is large enough to capture anyone's attention. Surovell supposes that "maybe it was used ritually, as we see in burials like the Anzick child, which was Clovis age and completely covered in ocher, as were as the artifacts" (**MT 29-2,** "Clovis child answers fundamental questions about the First Americans"). La Prele, he emphasizes, is definitely not a burial context. Some scholars stress the utilitarian quality of ocher for its use as a preservative for worked hides, but Surovell believes it was used like paint for ornamentation. "What's weird about it," he admits, "is, if they're painting something, how does so much of it end up on the ground? Maybe the adults were distracted with the butchering process and then suddenly saw a bunch of naked children painted red, running around. *'They got into the ocher!'*"



Fragments of bone needles, including one with a partial eye (*arrow*).

Surovell wants to do a cross-cultural study of the use of pigment in forager societies in the ethnographic present. "It's my impression that the most commonly painted thing is people; it's the most common use of pigment," he says. "We were able to chemically trace this material as well. It came from the vicinity of Powars II [an enormous ocher deposit mined by Clovis and later early Americans; it lies 80 km southeast of La Prele], so people were carrying this a long way. It's clear the red ocher was an important material."

Confirming evidence: hard sciences to the rescue

It's one thing to trace a mineral chemically, quite another to test for blood antigens. To satisfy Haynes and Stanford's third qualifying criterion—to confirm exploitation of animal remains—and thereby establish La Prele as a mammoth kill site despite the absence of cutmarks on the skeleton, archaeologists had to recruit microbiologists to test for blood antigens.

"What informed us as to the presence of the camp area was discovering this chopper in the bank of the creek," Surovell explains. "The chopper is a large quartzite cobble with three flakes removed from one end; it was, simply put, a heavy-duty butchery tool. It's also pretty coarse grained." Quartzite is composed of many sand grains fused together, which creates many microscopic fissures. Organic molecules get trapped in those microfissures. Organic material extracted from the microfissures can then be compared with species-specific antibodies in the lab to test for a positive reaction.

He reports that although the chopper reacted strongly to elephant antigen and to nothing else, he's skeptical of the result because in his experience blood-protein analysis is famous for yielding strange results. "It's great when it gives you what you want, but when it doesn't, you tend to ignore those results. From other tools at the site, for example, we have other weird animals represented, like swine. If it's a true positive for swine, maybe it's because we ate bacon for breakfast that morning!"

Geneticists have also analyzed ancient DNA from some of the bones from the site, and proteomics research is underway to

Suggested Readings

Mackie, M. E., et al. 2020 Confirming a cultural association at the La Prele Mammoth Site (48CO1401), Converse County, Wyoming. *American Antiquity* 1–19.

Zarzycka, S. E., T. A. Surovell, M. E. Mackie, S. R. Pelton, R. L. Kelly, P. Goldberg, J. Dewey, and M. Kent 2019 Long-distance transport of red ocher by Clovis foragers. *Journal of Archaeological Science: Reports* 25:519–29.

identify species from small bone fragments that can't be assigned to taxon anatomically. Surovell hopes that eventually we'll know what species the bone needles and beads found at La Prele were made from. We have tiny samples of bone collagen to do this."

A surprise around every corner at La Prele

To future researchers at La Prele, Mackie offers this advice: Prepare to be surprised. She likens La Prele site to a rollercoaster. "At times, when I thought we were on the downhill swing and had things figured out, the next day something bizarre would pop up, like the bone needle discovery, or a whole different activity area. It's both a challenge and joy working there."

Surovell recalls a moment in 2017 when he received a surprising phone call from his La Prele colleagues. The team had decided to dig new test units farther to the south, as suggested by the spatial distribution of artifacts. Meanwhile, Surovell was traveling to another part of Wyoming for a conference. "I spent the night in a place with no cell service, and the next morning, as soon as I hit a spot with service, my phone started blowing up. It was Matt O'Brien, who called to say, 'Houston, we have Clovis.' He had sent me a photo of a Clovis point. We'd been working at La Prele for 88 days up to that point, and the one day I wasn't there they found a Clovis point in a random test unit. I was so excited I couldn't drive back fast enough."

–Katy Dycus

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The Lowe Complex

continued from page 4

at these sites," Prufer reveals. "In 2019 we recovered another Lowe-type point from early-Holocene contexts. Much of our work is focused on human biology—diet and DNA—of early humans in the neo-tropics."

MHCP and Saki Tzul (ST) are located in a remote valley of the Bladen Nature Reserve in the Maya Mountains of southern Belize. Both sites contain 3-m-deep stratigraphically intact anthropogenic deposits dating from 12,500 to 1000 yr B.P., and both sites yielded human remains. The burials of two middle-adult males found at ST were interred in flexed positions within the same burial feature, whose base was located 191 cm below the modern ground surface. Assays conducted on tooth enamel yielded dates of about 7400 yr B.P. The well-preserved skeletal remains recovered from Belize sites are currently being analyzed for the information they can yield on genetics, diet, and mobility. Initial findings were published in an article in the journal *Cell* (see "Suggested Readings") written by a collaborative group of geneticists and archaeologists, including Prufer. So far, the genetic results indicate that individuals from MHCP (9300 yr B.P.) and ST (7400 yr B.P.) don't share significantly more alleles with present-day people from the vicinity of Belize than with the present-day populations in Central and South America.

Looking at the Americas-wide picture, scientists find that the genome associated with the Clovis Anzick-1 child (12,800 yr B.P.) shares distinctive ancestry with the oldest Chilean, Brazilian, and Belizean individuals. What we're learning from the Lowe complex not only illuminates changes in technological patterns across the Americas over time, it also reveals genetic relationships among the First Americans.

– Katy Dycus

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Suggested Readings

Posth, C., et al. 2018 Reconstructing the deep population history of Central and South America. *Cell* 175:1185–97.

Prufer, K., et al. 2019 Linking late Paleoindian stone tool technologies and populations in North, Central and South America. *PlusOne*:1-20.

Genetics Study

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cas, Yu and her coauthors know full well that additional studies of genomes from Upper Paleolithic Siberians "will be necessary to describe where and when exactly the ancestral gene pool of Native Americans came together." Geneticist Priya Moorjani, of the University of California Berkeley, who wasn't involved in the research, told *Science* magazine that "every sample thus far from this region has helped to refine our understanding of human history and evolution." So, while we still have much to learn about exactly where the ancestors of the First Americans originated, the research of Yu and her colleagues has already pointed the way to where those answers will be found.

–Brad Lepper

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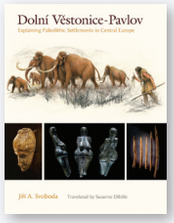

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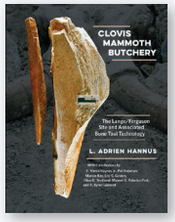

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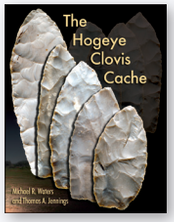

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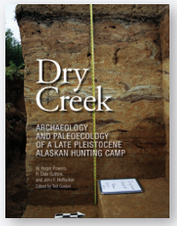

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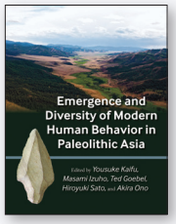

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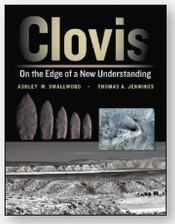

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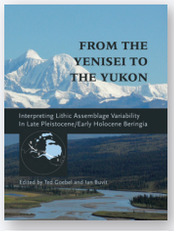

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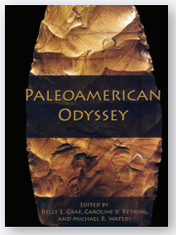

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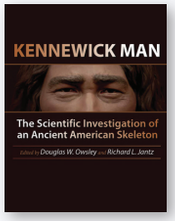

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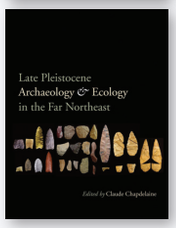

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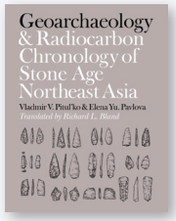

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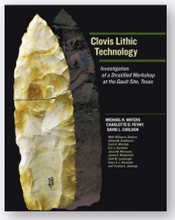

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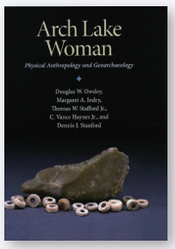

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