

MAMMOTH TRUMPET



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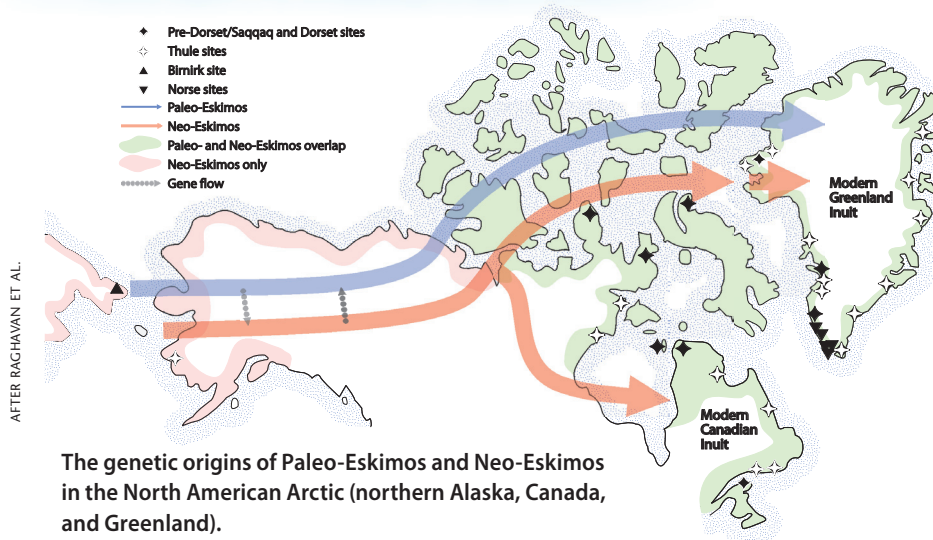
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A Complex Archaeological Record

DNA Clarifies Prehistory of New World Arctic



THE PREHISTORY of the American Arctic is complicated. Humans first moved into this forbidding region only 6,000 years ago, and over the next few thousand years a variety of cultures with distinctive ways of life alternately appeared and vanished. Archaeologists have identified the *what* and *when* of this succession of cultures, but have been slow to figure out the *why* of these historical entrances and exits. Do these episodes of cultural change

represent migrations of people into and out of the region? Or are these changes a result of local populations responding to changes in their natural or social environments? New research undertaken by Eske Willerslev and an international team of scientists provides answers to these questions using DNA recovered both from ancient human remains and from contemporary North American Native Americans, Greenlandic Inuit, and Siberian Nivkhs.

INSIDE

4 A Who's Who of discovered Paleoamericans

Here's a summing-up of what we know about the Paleoamericans whose remains have contributed to our knowledge of the First Americans. Included are tabulated ages and a handy map.

10 Meet the First Lady of American archaeology

No scientist has done more to rescue Peopling of the Americas studies from the tyranny of the Clovis-First model than Ruth Gruhn. That Latin America is today an integral part of the American anthropology theater is a tribute to Ruth Gruhn and her husband, Alan Bryan, who 45 years ago traveled through South America in their Land Rover.

17 A land where rich finds await bold investigators

Older-than-Clovis sites await discovery in the Northern Cap of South America. El Jobo and Taima-taima hint of early occupations yet to be found in Colombia and Venezuela—by scientists who aren't intimidated by drug wars and social unrest.

A cultural history of the New World Arctic

The earliest peoples to inhabit the

American Arctic are known as the Paleo-Eskimos. This cultural tradition includes the Denbigh, Pre-Dorset, Independence I, and Saqqaq cultures, which range in age from between 3000 to 800 B.C. These early cultures share in common a stone toolkit based on bifaces, blades, and burins similar to that of the Siberian Neolithic cultures, and a reliance on hunting caribou, musk oxen, and seals.

Beginning around 900 B.C. cultures began to diversify throughout the Arctic. In northern Alaska the Choris and Norton cultures developed from the Denbigh culture, and by A.D. 200 Norton developed into the Ipiutak culture. In the Arctic regions of eastern Canada and Greenland, new types of housing and a focus on hunting marine mammals define the Dorset culture. Dorset was replaced by the Thule culture, which is characterized by technological innovations such as dog sleds, skin boats, sinew-backed bows, and harpoon float gear useful for hunting whales. Whale hunting in the Arctic declined during the Little Ice Age, which spans much of the period from the 16th to the 19th centuries. During this period, the modern Inuit techniques of hunting seals at breathing holes and whales along the ice edge were adopted.

A genetic key to the puzzles of Arctic prehistory

In an effort to resolve questions about the biological relationships between and among these various archaeological cultures, Eske Willerslev of the Centre for GeoGenetics at the University of Copenhagen Natural History Museum of Denmark led a team of 55 scientists from nine countries that collected samples of bone, teeth, and hair from the field and from collections held in museums. The samples represent 169 ancient human remains drawn from the various American Arctic cultures as well as cultures in Siberia and Greenland. The team presented their results in the 29 August 2014 issue of the journal *Nature*.

The researchers expected to find well-preserved ancient DNA, given the generally colder temperatures of the Arctic, but actually found the opposite. They attribute the poor preservation to the fact that the remains weren't deeply buried and so were subjected to fluctuations in

temperature and humidity, which greatly accelerate the decomposition of bone. Nevertheless, the team recovered mitochondrial DNA (mtDNA) from 154 ancient samples. Mitochondrial DNA is contained in the mitochondria, the energy factories located in the cytoplasm of the cell. It's much more abundant in tissues and so is more likely to be recovered in ancient samples. In addition, Willerslev and his coauthors sampled the nuclear genomes

of 26 ancient samples. Finally, the team sequenced "high coverage genomes" from two Siberian Nivkhs, one Aleutian Islander, two Athapascan Indians, and two Greenland Inuit for comparison against the ancient DNA data.

In conjunction with the DNA work, other members of the team obtained new radiocarbon dates for 27 ancient human remains and, crucially, corrected 25 of the dates for the marine-reservoir effect.

MAMMOTH TRUMPET



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Mammoth Trumpet, Statement of Our Policy

Many years may pass between the time an important discovery is made and the acceptance of research results by the scientific community. To facilitate communication among all parties interested in staying abreast of breaking news in First Americans studies, the **Mammoth Trumpet**, a science news magazine, provides a forum for reporting and discussing new and potentially controversial information important to understanding the peopling of the Americas. We encourage submission of articles to the Managing Editor and letters to the Editor. Views published in the **Mammoth Trumpet** are the views of contributors, and do not reflect the views of the editor or **Center** personnel.

—Michael R. Waters, Director



MIKAL SCHLOSSER

The origins of Paleo-Eskimos

The most common mitochondrial haplogroups in the American Arctic are A and D. Haplogroups are groups of people who are one branch of the mitochondrial family tree. Willerslev's team determined that the subgroup D2a was present in both Early and Late Paleo-Eskimos. The majority of the Pre-Dorset, Saqqaq, and Middle Dorset remains could be further classified as D2a1. These same haplogroups are found in present-day Aleutian Islanders and Siberian Eskimos, indicating a particularly close genetic relationship. The team concluded that

Lab technicians in the Centre for GeoGenetics Clean Lab take extreme precautions to ensure that ancient samples aren't contaminated by modern DNA.

(Humans that consume a lot of marine resources will incorporate older carbon in their tissues than people who live in the continental interior; dates on bone from coastal peoples must therefore be corrected to take this into account.) This was particularly important for human remains that lacked associated artifacts to indicate their cultural affiliations or that were found in layers of sediment that couldn't be dated independently.

Early and Late Paleo-Eskimos were "closer to one another than to any of the sampled present-day populations, including those from the Americas and Siberia." Therefore, "all Paleo-Eskimos, from both Canada and Greenland, represent a continuum of the same single ancestral population." The present-day populations most closely related to the Paleo-Eskimos are, not surprisingly

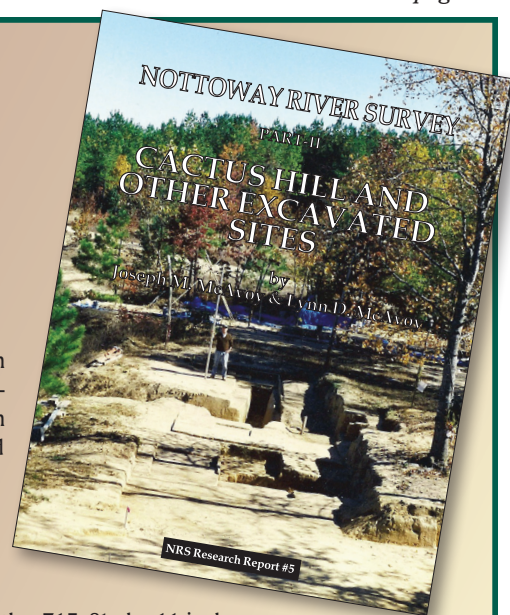
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NOTTOWAY RIVER SURVEY PART-II

CACTUS HILL AND OTHER EXCAVATED SITES

The Nottoway River Survey announces a new book by Joseph and Lynn McAvoy on research into the pre-Clovis, Paleoindian, and Archaic periods of southeastern Virginia in the mid-Atlantic region of eastern North America. Emphasized are new data including radiocarbon dates and other multidisciplinary findings from the NRS excavations in the pre-Clovis and Clovis cultural levels of the well-known Cactus Hill archaeological site.

The 12 chapters of *Nottoway River Survey, Part-II* are introduction and summary, an update on 22 years of NRS pre-Clovis and Paleoindian research, and nine chapters on site excavations centering on the 210-page (Chapter 5) Cactus Hill site final report.



Among the 715 8½-by-11-inch pages are 105 tables, 310 B&W figures, and over 590 photographs, drawings, and graphs. This book is recommended for researchers, teachers, and archaeologists engaged in CRM work in the East. It is an invaluable reference tool for anyone interested in North American pre-Clovis and Paleoindian cultures.

For price and ordering details for *Nottoway River Survey, Part-II*, log on to website

www.nottowayriversurvey.com

TOM DILLEHAY, the archaeologist famous for his investigations at the pre-Clovis Monte Verde site in southern Chile, says that North and South America are “the only continents on the planet where our knowledge of an early human presence comes almost exclusively from traces of artifacts and not from human skeletal remains.” While that may or may not have been strictly true when he wrote it back in 2000, in the last decade we certainly have witnessed a flood of new insights into the First Americans based on studies of human remains. From Kennewick Man (**MT 30-1**, “Ambassador from our ancient past”) to Arch Lake Woman (**MT 26-2**, “Arch Lake Woman: A fleeting life on the southern High Plains”), from the Anzick child (**MT 28-3**, “Clovis child answers fundamental questions about the First Americans”) to the Horn Shelter No. 2 Double Burial in central Texas (**MT 30-4**, “Horn Shelter No. 2 Double Burial: America’s earliest shaman?”), human remains are giving us an ever richer understanding of the lives and times of America’s earliest inhabitants.

What do we know about the people that peopled America? I recently had the opportunity to review all the human remains found in North America that date from 15,000–8000 RCYBP to establish a broader context for understanding Kennewick Man. My analysis was published as Chapter 1 in *Kennewick Man: The Scientific Investigation of an Ancient American Skeleton*, edited by Douglas Owsley and Richard Jantz and published last year by Texas A&M University Press. I was surprised by two things: first, the relatively large number of Paleoamerican human remains that had been discovered and reported; and second, the varied stories told by these ancient remains. Clearly, the bones of the people themselves now play an integral part in the study of the First Americans.

The Paleoamericans

For the purposes of my review, I consider as Paleoamericans people who lived during the period from the original discovery of America around 15,000 years ago up to the somewhat arbitrary date of 8,000 years ago. My sample also includes the Pelican Rapids Woman, who is dated to 7,850 years ago, because of her historical importance to Paleoamerican studies.

In all, 324 individuals from 54 different sites are recorded in the scientific literature, but only 152 of these are sufficiently well preserved and complete enough to be reliably identified as male or female. There are another 18 possible burials from 5 additional sites, but any human remains that may once have existed at these sites have completely decomposed. Nevertheless, these sites add insights into the kinds of artifacts sometimes buried with Paleoamericans.

A total of 324 individuals may seem like a lot, but when you consider that the sample encompasses the lives of about 350

generations of Paleoamericans and an area of more than 8 million square miles, then 324 is a paltry sample of the original diversity—especially considering how biased the record of human remains is over both time and space. Consider that 56% (183) of the human remains were recovered from sites in Florida—and that 52% (168) were from the Windover site alone. That’s clearly telling us something about the extraordinary nature of the Windover site, but it also relates to the special environmental circumstances of the site that have preserved human remains over this vast expanse of years.

WHO were the people that peopled America?

The sample also is biased by time period. Only 5% of the sample of Paleoamericans come from 12,000–10,000 years ago, whereas 95% of the sample lived during the period of 10,000–8,000 years ago. Since Paleoamerican ways of life likely changed over the centuries as small groups of explorers became larger groups of settlers, we need to be aware that our understanding of this history is biased toward the end of that spectrum.

It’s also worth noting that fewer than half the skeletons are reasonably complete and many consist only of a handful of bone fragments, so what we can learn from any given set of human remains may be quite different.



Spirit Cave mummy,
ca. 9415 RCYBP

Age, sex, and health

The sample of Paleoamericans includes both men and women, young and old. Men and women are nearly equally represented—80 females and 72 males are identified in the sample. In terms of age, there are 159 adults and 85 sub-adults (a sub-adult is anyone younger than 17 years old). The youngest person in the sample is the Anzick Child, who was less than a year old at the time of his death. The oldest Paleoamerican may be a woman whose remains were recovered from Warm Mineral Springs in Florida; she was more than 50 years old when she died. The problem with identifying older persons in the sample is that once all



MARCELLO PEREGO—MILKIT.ORG

the adult teeth are present there are very few characteristics that reliably indicate age. So if the wisdom teeth, or third molars, are present, about all you can do is look at the grinding surfaces of the teeth to attempt to gauge how long they had been exposed. The sample includes 19 people whose age at death is estimated to have possibly extended into their 40s. This suggests only about 8% of the population lived to be 40 or older, but that number could have varied widely depending on a variety of factors.

Several Paleoamericans show evidence of having experienced occasional periods of extreme hunger. Defects in the teeth and bones, for example, can record periods when individuals weren't getting enough food. Such problems are typical of hunter-gatherers that live at high latitudes, where winters can be hard and food scarce.

Social status

One way archaeologists measure the social status of ancient people is to calculate how much effort a social group expended in burying a deceased person. The conventional wisdom says that the more elaborate the grave and the greater the number of funerary offerings, the higher the social status of the deceased.

Based on this criterion, Paleoamericans appear to have lived in largely egalitarian societies without much status differentiation. Indeed, most people appear to have been buried with no funerary offerings at all.

Men and women don't appear to have been treated much differently in death, which suggests a state of sexual equality. Although more men (67%) were buried without artifacts than women (52%), when artifacts accompanied burials men usually were buried with more. Of 15 Paleoamericans buried with more than 5 artifacts, 3 were identified as men and 6 as women. However, the 30 burials of undetermined sex at the Sloan site in Arkansas, as well as 18 additional burials with no preserved skeletal remains, included relatively extravagant funerary offerings dominated by projectile points and other artifacts usually associated with hunting. Most of these may therefore have been burials of men, which would suggest that men enjoyed higher status.

It's somewhat surprising that in burials for which the sex of the individual can be identified, the two richest sets of funerary offerings accompanied an infant boy and an 11-year-old girl. The burial of the Anzick infant boy included more than 100 stone tools, several of extraordinary size and quality. The young girl was buried at the Windover site with 22 funerary offerings, including a stemmed spear point, an antler point, a bone shaft wrench, and a shark's tooth hafted in a wooden handle. Many of these artifacts represent hunting gear; if we hadn't

been able to determine that the bones were those of a girl, we might have supposed they were a man's.

The burial of sub-adults with such rich funerary offerings suggests they enjoyed an important social rank inherited from one or another parent. That's the kind of status anthropologists refer to as "as-

The Spirit Cave mummy (*opposite*), found in the Carson Sink area of Nevada in 1940, is typical of the customary Paleoamerican burial in the flexed position, with the knees bent and pulled up into the body. Less common is the extended position of the body, seen in the Arch Lake Woman burial, discovered in New Mexico in 1967. Kennewick Man was also buried in the extended, fully recumbent position.



Arch Lake Woman,
10,020 ± 50 RCYBP

DOUGLAS OWSELEY & CHIP CLARK
NMNH SENIOR SCIENCE PHOTOGRAPHER

cribed,” usually found in societies with more socio-cultural complexity than is common with hunter-gatherers. Alternatively, perhaps special circumstances surrounding the deaths of these children evoked extraordinary outpourings of grief by the families or social groups to which they belonged, which would account for such extravagant funerary offerings.

Evidence for interpersonal violence

Another surprising aspect of many Paleoamerican skeletons is abundant evidence for traumatic injury, which suggests Paleoamericans frequently resorted to violence. Kennewick Man famously had a stone spear point lodged in his pelvis, and there are numerous other examples of violent encounters. A man of similar age found at the Windover site had an antler projectile point embedded in his pelvis. The forearm of another man buried at Windover had been broken in a “parry fracture,” sustained when he held up his arm to ward off a blow. The same man suffered injury to his left eye orbit likely caused by the impact of a bone- or antler-tipped spear.

This high incidence of interpersonal violence is surprising, since the best evidence suggests that Paleoamericans were highly mobile hunter-gatherers who traveled in small groups. Their survival would therefore be best served by friendly interactions with neighboring groups in cooperative hunting ventures and, more importantly, for exchanging marriage partners. If a situation arose where civility was desperately needed but sorely lacking—the forcible abducting of a mate, for example—violence was certain to erupt.

How did Paleoamericans bury their dead?

The most common method of mortuary treatment Paleoamericans used was to bury the body in a flexed or semi-flexed position, the body bent at the waist with the knees pulled up into the chest in the fetal position. It may have been intended as a symbolic return to the womb of the earth, or it may simply have been an efficient way of disposing of a body using the smallest hole possible.

The sample cites 183 burials of the

Discovered Paleoamerican Human Remains

The map on the facing page shows the location of human remains listed below, dated 8,000 radiocarbon years before present or older, which have been discovered on the North American continent. Of the 327 total individuals, scientists have identified 52 adults and 17 subadults, 72 males and 81 females.

For further information on discovered Paleoamerican human remains, see *Kennewick Man: The Scientific Investigation of an Ancient American Skeleton*, available from TAMU Press. See the rear cover of this issue for ordering information.

Before 11,000 RCYBP

- | | |
|--------------------------|--|
| 1 Meadowcroft, PA | 2 Eva de Naharon, Tulum Caves, Mexico 3 Fishbone Cave, NV |
|--------------------------|--|

10,000–11,000 RCYBP

- | | |
|--|--|
| 4 Hoyo Negro, Mexico 5 Arlington Springs, CA 6 Peñon III, Mexico 7 Anzick 1, MT 8 Buhl, ID 9 Chimalhuacán, Mexico 10 Mostin, CA | 11 Warm Mineral Springs, FL 12 Tlapacoya I, Mexico 13 Little Salt Spring, FL 14 Arch Lake Woman, NM 15 Crowfield, ON, Canada 16 Midland, TX 17 Seminole Sink, TX 18 Sloan, AR |
|--|--|

9000–10,000 RCYBP

- | | |
|--|---|
| 19 Whitewater Draw, AZ 20 Horn Shelter 2, TX 21 Olive Branch, IL 22 Tlapacoya XVIIIa, Mexico 23 On Your Knees Cave, AK 24 Marmes, WA 25 Tlapacoya, Mexico 26 Gordon Creek, CO 27 Graham Cave, MO 28 Cutler Ridge, FL 29 Wilson–Leonard, TX 30 Wizards Beach, NV | 31 Squaw Rockshelter, OH 32 Grimes Shelter, NV 33 Ashworth, KY 34 Ice House Bottom 1, TN 35 Spirit Cave, NV 36 Browns Valley, MN 37 Mostin, CA 38 Cueva del Tecolote, Mexico 39 Jerger, IN 40 Metro Balderas, Mexico 41 Namu, BC, Canada 42 Rancho La Brea, CA |
|--|---|

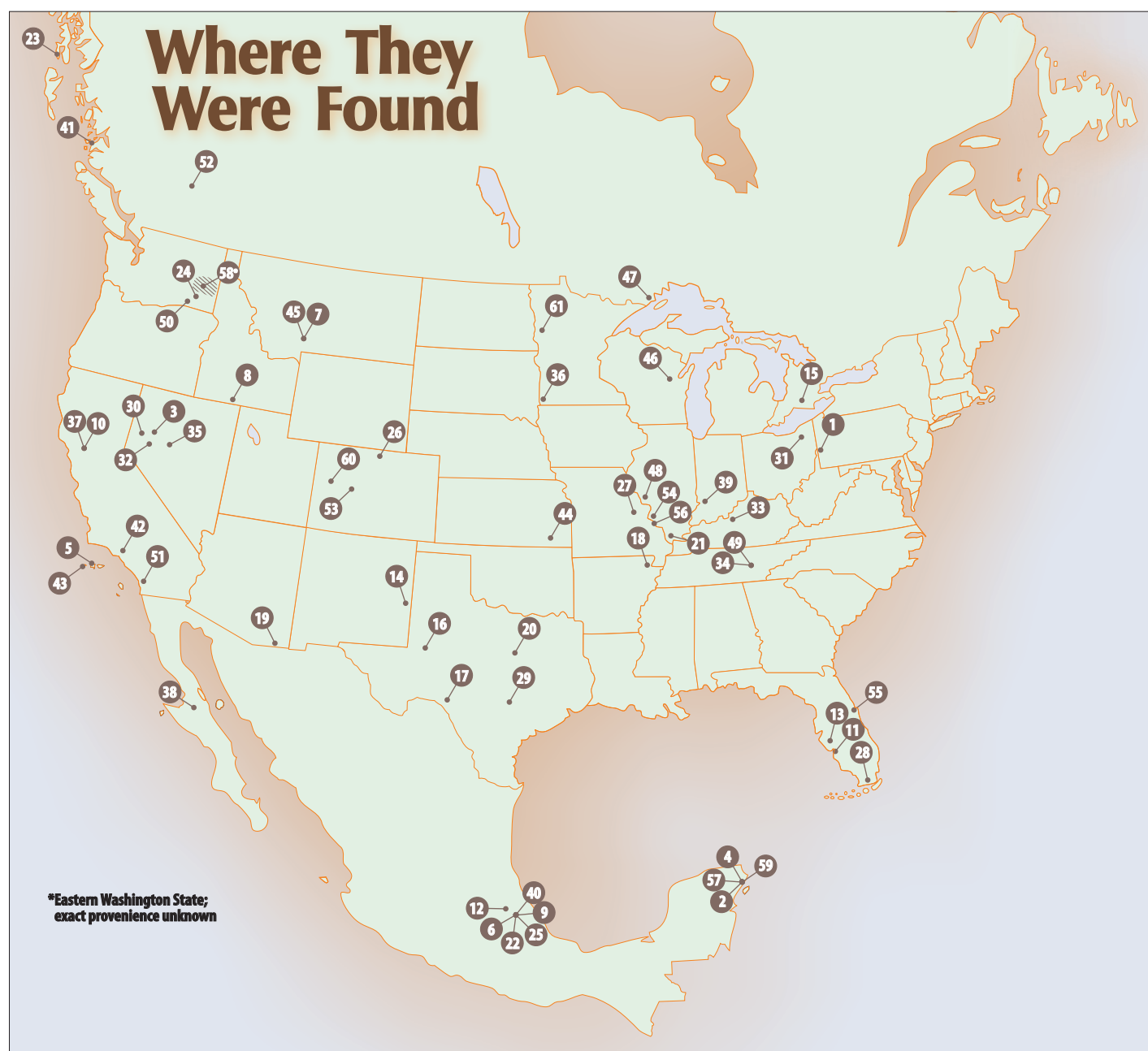
8000–9000 RCYBP

- | | |
|--|--|
| 43 San Miguel Man, CA 44 Stigenwalt, KS 45 Anzick 2, MT 46 Reiner, WI 47 Cummins, ON, Canada 48 Koster, IL 49 Ice House Bottom 2, TN 50 Kennewick Man, WA 51 Chancellor, CA | 52 Gore Creek, BC, Canada 53 Hourglass Cave, CO 54 Modoc, IL 55 Windover, FL 56 Kaskaskia Mine, IL 57 Las Palmas, Tulum Caves, Mexico 58 Stick Man, WA 59 El Templo, Mexico 60 White River Forest, CO |
|--|--|

flexed type, but since 160 of these cases are from the single site of Windover in Florida, our sample may not be representative of all Paleoamerican burials. Indeed, if we exclude the Windover burials, the majority of known Paleoamericans were laid to rest in an extended burial, with the body stretched out full length in a grave necessarily much larger than needed for a flexed burial. Both the Arch Lake Woman and Kennewick Man were buried in an extended position.

There are a few other types of burial documented among the Paleoameri-

cans, including several possible cremations. There also are a few possible secondary burials, in which the body was laid out in the open, perhaps on an elevated platform, so carrion eaters could deflesh the bones, which were then collected for burial elsewhere. There also appear to be cases where a body was simply left exposed on the surface without burial. If this was a common method of mortuary treatment, archaeologists will find little evidence for it because the bones would be scattered and subjected to a variety of destruc-



tive processes, leaving little to be found thousands of years later. It's possible, perhaps likely, that the few documented examples of unburied remains are those of individuals who died by accident or violence while away from their social group and whose bodies were never recovered by their loved ones and so never given a proper burial. The young woman whose remains were found at Hoyo Negro in Mexico may have fallen victim to such a tragic accident (**MT 30-3**, "DNA links Mexican Paleoamerican to Native Americans").

Places of burial

Where people choose to bury their dead is a decision fraught with layers of significance. The cultural beliefs of a group dictate the sort of final resting place considered appropriate for its members. Where Paleoamericans decided to bury their dead—whether the body was simply buried in a convenient location close to where death occurred, or whether the body was moved to a special location such as a cave, river bank, or designated cemetery—can reveal aspects of their social and religious beliefs.

Burial plots and cemeteries often have religious significance. Because ancestors are buried there, they also rank as territorial claims with socio-political implications. Many Paleoamerican burials occupy a prominent geographic location such as a cave or rockshelter, promontory, or even a pond as at Windover. Selecting a prominent location makes it easier to revisit the grave for commemorative ceremonies or additional burials.

A number of Paleoamerican burial sites were apparently formal cemeter-

The Windover Site: A Paleoamerican Tableau

THE WINDOVER SITE was discovered in 1982 when a backhoe operator excavating peat from a pond in Titusville, Florida, turned up a human skull. Glen Doran, then a professor at Florida State University, directed excavations at the site from 1984 to 1986, which eventually uncovered 168 human burials—more than half of all Paleoamerican skeletons found in North America. Having been submerged in non-acidic water, bones were



ALL PHOTOS: RICHARD BRUNCK

ies, that is, places set aside and used over and over again, perhaps for generations, for mortuary ceremonialism. Windover and Little Salt Spring in Florida and the Sloan site are prominent examples. At such an early period it wouldn't have been wise to advertise a cemetery as a political statement of a group's home territory; consequently these sites lacked conspicuous monuments that would attract the attention of strangers.

Future studies of the people that peopled America

Since the passage of the Native American Graves Protection and Repatriation Act (NAGPRA) in 1990, excavating and studying even very ancient American Indian human remains has

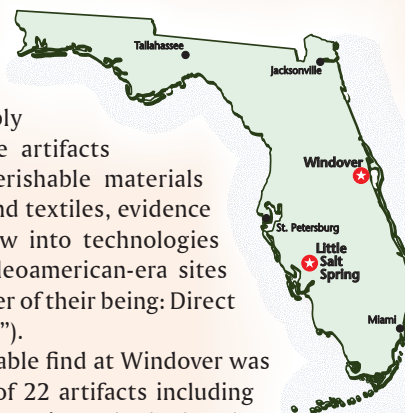
Funerary offerings are a tangible measure of the great respect paid by the family for the deceased and the deep grief they felt for their loss. This is dramatically emphasized by the extensive assemblage of artifacts that accompanied the burial of the Anzick Child in Montana (*opposite*), a boy no more than two years old, and a burial at the Windover site in Florida of an 11-year-old girl. Moreover, burial inventories from wet sites like Windover underscore the importance of organic tools compared with lithics.

perfectly preserved. Some skulls even contained preserved brain tissue. Also remarkably well preserved were artifacts made from such perishable materials as wood, cordage, and textiles, evidence that opens a window into technologies seldom found in Paleoamerican-era sites (MT 27-1, -2, "The fiber of their being: Direct dating fiber artifacts").

The most remarkable find at Windover was a funerary offering of 22 artifacts including a stemmed projectile point, a barbed antler point, a bone shaft wrench, and a shark's tooth hafted in a wooden handle. What makes this offering remarkable is that it accompanies the burial of an 11-year-old girl! We can only wonder at the depth of affection and respect that made her worthy of such a rich remembrance by her extended family.

Several Windover Paleoamericans showed evidence of violent death. Burial 102 was a male in his 30s who, reminiscent of Kennewick man, had an antler projectile point embedded in his pelvis. His skull wasn't present in the burial, suggesting the possibility that his killer kept it as a trophy.

Excavating roughly 4 m below the water table required an efficient wellpoint system to gain access to the burial strata some 2 m below the pond bottom. Wet sites provide a unique window on the past that is not fully appreciated in North America.



become increasingly contentious. The controversy surrounding scientists' efforts to study the remains of Kennewick Man over the objections of a coalition of American Indian tribes is



Windover site,
ca. 7000–8000 CALYBP

RICHARD BRUNCK

The Windover site was a formal cemetery used repeatedly by social groups over centuries. Instead of an isolated burial like Kennewick Man, here is an entire population of old and young, male and female, a cross section of the people who lived and died in this region of Florida 8,000–7,000 years ago. That's what makes this site so special.

Rachel Wentz, a bioarchaeologist who has studied the Windover Paleoamericans, writes in her book *Life and Death at Windover* that she felt she came to know these people person-

Even finding wet sites can be a challenge. This is the view of Windover when it was found by backhoe excavations as part of road construction.

ally: "I knew them by age: the fragile bones of the newborns that never made it to their first birthday; the elderly who somehow



managed to live into their fifties, their joints frozen by arthritis, their teeth worn and falling out. . . . This pond held the remains of their people—their parents, their siblings, their children. Its meaning remains a mystery steeped in the shallow waters. But meaning it must have had, for the people of Windover returned to this pond for many generations, laying the bodies of their dead beneath its murky surface."

In his preface to Wentz's book, Ben Brotemarkle, executive director of the Florida Historical Society, observes that owing to changes in federal laws, if Windover were discovered today it wouldn't be excavated: "It may be one of the last such archaeological excavations to take place in the United States."

—Brad Lepper

Hand-woven textiles were clearly part of the inventory of all early populations. They only survive in extremely rare wet or dry locations.

only the most highly publicized example (MT 30-1, "Setting precedents: A legal odyssey").

Unfortunately federal agencies, tribes, and cultural resource management firms often do minimal investigations of human remains encountered in the course of their work. University of Arizona archaeologist Keith Kintigh observes that when human remains are discovered there is often a "speedy

reburial in the absence of any demonstration of cultural affiliation." Kintigh argues that this is happening because "tribes with more stridently antiscientific positions tend to be more vocal" and "agencies tend to be more responsive to more vocal tribes."

There are hopeful signs that some American Indian tribes are beginning to recognize what the study of ancient human remains can contribute to the understanding of their own history. In a recent survey of 508 federally recognized tribes conducted by the Society for American Archaeology, many respondents indicated that "the study of human remains may be useful and necessary."

As one example of these changing attitudes, members of the Tlingit tribe participated in the excavation and analysis of Paleoamerican human remains discovered in On Your Knees Cave on Prince of Wales Island in Alaska. Tlingit elder Rosita Worl told the *Alaska Daily News* that "when this 10,300-year-old person was found on Prince of Wales, the way it was interpreted was that we had one of our ancestors offering himself to give us knowledge."

Archaeologists and biological anthropologists also are increasingly reaching out to American Indians and involving

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FEW SCIENTISTS can look back on a career that spans half a century with the same satisfaction as anthropologist Ruth Gruhn. With her husband, Alan Bryan, Gruhn rescued South American Paleoamericans from decades of neglect by North American scientists. Gruhn and Bryan were pivotal in founding the Department of Anthropology at the University of Alberta, which launched the careers of first-rank scientists including Loren Davis of Oregon State University and Rob Bonnicksen, founder of CSFA. Herself a giant in archaeology (don't be fooled by her diminutive physical stature), Gruhn in her rewarding career has counted among her friends such luminaries as Junius Bird, Scotty MacNeish, and John Fell. To our profound gratitude, Gruhn has for many years blessed CSFA with her friendship and counsel.

Romance and the start of dual careers

Gruhn's military family moved to a new post every two to four years during her childhood. She haunted school libraries to learn more about archaeology, a subject that had long captivated her. When she graduated from high school in Missoula, Montana, she chose Radcliffe (now part of Harvard) for its anthropology/archaeology program, the best available.

While on her first dig at a field camp near The Dalles in Oregon, Gruhn met fellow student Alan Bryan. In May 1961 they married and embarked on a lifetime of shared archaeological investigations that spanned five decades and three continents.

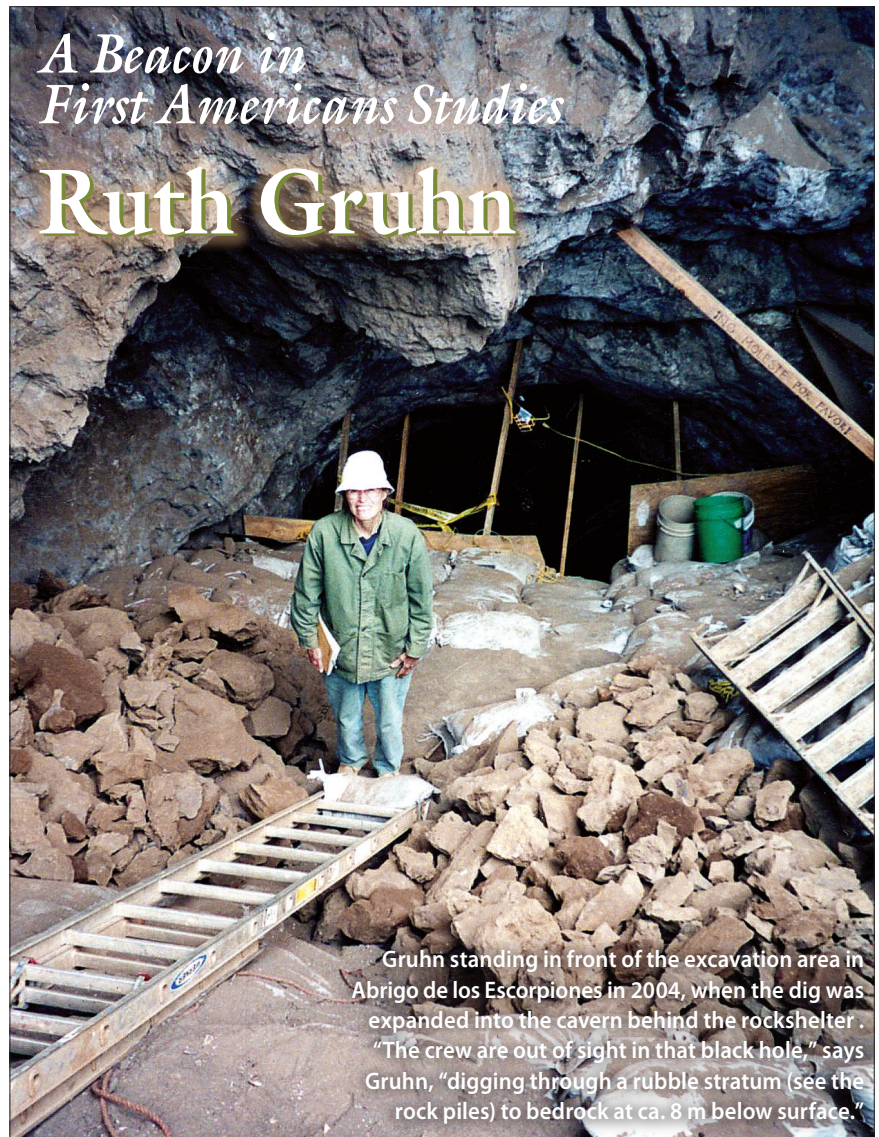
Both began postgraduate studies in environmental archaeology at the Institute of Archaeology, University of London, where they did fieldwork in the area of Southend-on-Sea, Essex. In the fall of 1963 they accepted teaching positions at the University of Alberta in Edmonton. They were later instrumental in founding its Department of Anthropology. Gruhn and her husband grew to love the area around Edmonton. They became naturalized Canadian citizens in 1973, bought a bigger house, and moved in their large collection of books and ethnographic materials. Ruth still lives there today.

Gruhn and Bryan excavating
in Wilson Butte Cave, Idaho,
in 1989.



ROY CARLSON

A Beacon in First Americans Studies **Ruth Gruhn**



Gruhn standing in front of the excavation area in Abrigo de los Escorpiones in 2004, when the dig was expanded into the cavern behind the rockshelter. "The crew are out of sight in that black hole," says Gruhn, "digging through a rubble stratum (see the rock piles) to bedrock at ca. 8 m below surface."

RICHARD CERUTTI

Problems with Clovis-First

As early as the 1960s the Clovis-First model for the peopling of the Americas, nearly universally accepted at that time,

found skeptics among scientists because of inconsistencies in the theory. Gruhn and Bryan were among those convinced that humans had inhabited the Americas well in advance of the Clovis horizon in North America. During their early excavations in areas in Alberta—tellingly, says Gruhn, "right in the heart of the Ice-Free Corridor, the supposed entry route of the First Americans"—their research suggested that erosion caused by the late-Pleistocene continental ice sheet had obliterated evi-



dence of the arrival of the earliest humans in much of North America.

When they went on sabbatical in 1969, the couple put into action an idea that had intrigued both of them for years: To examine firsthand early archaeological sites in Latin America, well south of disturbances caused by the continental ice sheet. Some sites appeared to be older than Clovis sites of North America and different in character.

Latin American odyssey

Loading supplies and their five-year-old child into a brand-new Land Rover, in August 1969 they set off on a Latin American odyssey. "Our objective was to examine and evaluate reported early archaeological sites along our route in Central and South America," says Gruhn. The couple drove from New York to Mexico, where at the Instituto de Prehistoria in Mexico City they visited geoarchaeologist José Luis Lorenzo, who had studied the complex late-Pleistocene volcanic deposits in the Basin of Mexico and the Valley of Puebla.

In Guatemala, Gruhn and Bryan spent two months in the traditional Mayan village of Chichicastenango, where Gruhn

conducted ethnographic observations among the indigenous people while Bryan explored the nearby mountains and eventually discovered Los Tapiales, a Paleoamerican site on the continental divide at an elevation of 10,000 ft. They would return in 1972 to conduct further investigations of this site.

Piloting their trusty Land Rover through the rough terrain of Honduras, Nicaragua, and Costa Rica, they finally arrived in Panama, the southernmost limit of navigable roads. While awaiting the arrival of a ship to take them and the Land Rover to Venezuela, they visited sites in western Panama with Smithsonian archaeologist Richard Cooke.

El Jobo points and ancient cooked sloth

In Caracas, meeting with archaeologist José Cruxent, Gruhn and Bryan got their first look

The lifetime accomplishments of archaeology team Ruth Gruhn and Alan Bryan: early sites they excavated (dating before 7000 CALYBP), and the route they followed in their Land Rover on their famous trip through Latin America in 1969–70, which led to their excavations in Guatemala (1973), Venezuela (1976), and Brazil (1977 and 1984).

at El Jobo points. Long, narrow, thick projectile points of late-Pleistocene age, these unusual artifacts had been discovered in association with bones of extinct animals at the waterhole site of Taima-taima. While they were working with Cruxent at this site in 1976, Ruth found a medial fragment of an El Jobo point imbedded in the pelvic area of a juvenile mastodon. Nearby vegetal digesta dated to 15,000 CALYBP.

Not all archaeological sites they examined along the route were equally rewarding. The El Inga site in Ecuador, for example, proved disappointing owing to its shallow eroded sediments and unclear stratigraphy. Having served as a toolstone

Gruhn examining the stratigraphy exposed in Cruxent's first dig at Taima-taima in Venezuela, 1970.



quarry and workshop used by hunters over thousands of years, it contained an enormous diversity of projectile-point types and lithic tools.

The couple spent a month in Peru, visiting the desert coast and Andean highlands. Archaeologist Scotty MacNeish, a fellow scientist whose doubts about Clovis-First were largely

ignored, invited them to visit Pikimachay, an Andean cave that yielded ancient megafauna remains associated with lithic tools. (To another visitor, TAMU palynologist Vaughn Bryant, MacNeish showed a burnt sloth rib that dated to over 15,000 years old [MT 18-3, "The elusive pollen grain"]. "Either people built a fire and ate barbecued sloth ribs," MacNeish told Bryant with undisguised sarcasm aimed at his scoffers in the Clovis-First camp, "or a sloth was hit by lightning, ran into the cave, and then sat down in a pile of wood that somehow caught fire and burned him to a crisp.")

The no-frills tour sometimes involved unexpected adventures. They became desperate when they descended into the Atacama Desert of Chile and found it bereft of gas stations. Bryan coasted downhill at every opportunity until they finally reached a railroad yard that sold them fuel for the Land Rover.

Time flies fast in South America

The Land Rover awaited their return in a museum parking lot in Santiago as Gruhn and Bryan traveled by train and plane to the Straits of Magellan, where they met John Fell and visited the famous cave excavated by Junius Bird. There Bird had found Fishtail points associated with the bones of extinct horse (MT 23-4 ff., "In the footsteps of Junius Bird").

Reclaiming the Land Rover for the return trip, the couple drove through Argentina, where they examined some early cave sites in the dry northwest and open sites on the Pampas. They traveled on to Brazil, where the mother tongue is Portuguese, a language Gruhn struggled with. Bryan, who had spent time excavating in Brazil in 1959, fared better. After visits to several archaeological sites, they arrived in

Gruhn in white hardhat, profiling the shell midden deposits in the Abrigo de los Escorpiones, Baja California, in 2000. Says Gruhn, "It was a very deep midden: my feet are at ca. 5 m below surface."



ALAN BRYAN

the city of Curitiba just in time to watch swarms of Brazilians dancing the samba in the streets to celebrate Brazil's victory in the 1970 World Cup.

Gruhn and Bryan finally arrived in Rio de Janeiro, rented an apartment in Copacabana, and made short trips to nearby sites, including the famous caves of the Lagoa Santa area in

the state of Minas Gerais. At the end of their ten-month journey Gruhn and Bryan flew back to Canada and sent the faithful Land Rover home by ship. They later returned to Brazil in 1977 and again in 1983–84 to excavate rockshelters in Minas Gerais and Bahia.

A sea change in Peopling of the Americas theory

Investigating a multitude of Paleoamerican environments and cultural complexes on their swing through South America had the effect of gelling their thoughts and confirming their ideas about the entry of the first humans into the Americas.

"We concluded that early South American archaeological sites indicate that the first Americans must have arrived before 20,000 years ago," Gruhn says today. "My surmise, first made some decades ago, has been confirmed by recent archaeological research in Chile and Brazil. In November 2015, Tom Dillehay and his associates reported the results of their return to the Monte Verde site, in south-central Chile, to investigate the Monte Verde I horizon, which had been radiocarbon-dated as older than 30,000 years RCYBP. They discovered clear stratigraphic and radiocarbon-dated evidence of small intermittent

occupations dispersed over the site area in the interval between ~18,500 and 14,500 CALYBP, when the Monte Verde II settlement was established. In equally remote northeastern Brazil, two rockshelter sites—Toca do Boqueirão da Pedra Furada and Toca da Tira Peia—and in central Brazil, the Abrigo de Santa Elina—have also produced dates older than 20,000 years ago. This early dating for the arrival of humans in South America should not be surprising, given the fact that by the end of the Pleistocene, by at least 13,000 CALYBP, all the major environmental zones of the southern continent were occupied by peoples who were well adapted to local resources by diverse technologies. Human populations must have crossed the Bering land bridge and expanded well southward before the Last Glacial Maximum (LGM)."

Where did the First Americans come from?

Gruhn speaks with the confidence and authority of a scientist who has thought long and hard about when and by what route the First Americans arrived. She explains that "several lines of genetic evidence now show clearly that the First Americans originally came from northeast Asia; and suggest that there was a single founding population, isolated for a time in the area of the Bering land bridge. In the early 1980s, picking up on the arguments of the coastal archaeologist Knut Fladmark and the ideas of Richard

A. Rogers regarding Native American language distributions, I came to support the model of an early coastal entry route for littoral-adapted populations from the southern coast of the Bering land bridge down the Pacific coast to South America, with groups crossing the narrow Isthmus of Tehuantepec and the Isthmus of Panama to spread along the eastern coasts of the continents. People adapted to aquatic resources could have then moved up the major waterways, ultimately to populate interior areas of both continents.”

How might we identify the earliest archaeological sites?

“Given the early South American dates,” Gruhn says, “we should be looking closely for pre-LGM archaeological sites in North America. This search will involve identification of preserved Late Pleistocene landforms, where early human occupation sites might be located. We may assume that the initial populations were sparse and mobile, so the remaining archaeological evidence may be very thin—a small but anomalous soil horizon with perhaps a hearth or other charcoal-laden feature with a few associated lithics and/or modified bones.

“Equally important in future First American studies will be the effort to reach a better understanding of cultural developments once the two American continents were populated. In particular, pressing problems remain with our understanding of the Clovis horizon in North America; and intensive research at Clovis sites must continue.”

Accomplishments, publications, and accolades

In addition to their work in South America, Bryan and Gruhn also carried out important research at Great Basin sites over their careers, including Gruhn’s thesis work at Wilson Butte Cave, Idaho, in 1959/60 and the return to that site in 1988/89 (**MT 22-4**, “Wilson Butte Cave”); Smith Creek Cave and Amy’s Shelter in Nevada near the Utah border in the late 1960s and early 1970s; and Handprint Cave in the Black Rock Desert area in the late 1980s.

“To me, Ruth is an archaeologist of the grand tradition who thinks about a problem and then goes out into the world to find the answers she’s seeking,” says geoarchaeologist Loren Davis of Oregon State University. “Her research interests are large and her knowledge of New World archaeology is deep. As a graduate student at the University of Alberta, I was interested to work with

Ruth because she was conducting research on the earliest peoples of the New World. I worked with Ruth at several sites in Baja California, Mexico, and during those years I learned many important lessons about conducting fieldwork in very remote places.”

“I always appreciated Ruth’s ‘can do’ attitude in the field,” Davis continues. “In 1997, we worked in the Laguna Chapala basin of Baja California during the time that Hurricane Nora had crossed over the peninsula. The hurricane had dumped an incredible amount of water into what was normally a dry lake, and a series of strong tropical storms followed in its wake. During our months in the field on that project, we suffered through high winds, more rain, and epic mud that swallowed up our field vehicles on occasion. Throughout the entire ordeal of bad weather and challenging field conditions, Ruth was a calming presence and a voice of reason. Ruth has taught me many important lessons about how to conduct archaeological field work and passed along her excitement for the process of making discoveries about the deep past. During our many occasions together in the field, Ruth taught me many things about how to conduct archaeology in pursuit of the First Americans. I’m still practicing these lessons today and will be eternally grateful for her guidance.”

Gruhn is a versatile scholar. During her long tenure at the University of Alberta before retiring in 1996, she taught a variety of courses in anthropology and archaeology and

Gruhn and Bryan in the Baja California field lab, 2004.




RICHARD CERUTTI

guided the studies of uncounted undergraduate and graduate students. Alan Bryan and Ruth Gruhn bequeathed the Bryan/Gruhn Archaeology Collection and the Bryan/Gruhn Ethnographic Collection to the Department of Anthropology and served as curators from 1966 to 2009. Although the majority of Gruhn’s work has taken place in the classroom and the field, her list of publications begins in 1960, continues for page after page, and is still a work in progress. At the 2013 Paleoamerican Odyssey Conference in Santa Fe, CSFA director Mike Waters presented her with a Career Recognition Award.

[Editor’s note: Over the years *Mammoth Trumpet* readers have enjoyed superb narratives written by Dr. Ruth Gruhn on Early Americans in South America (**MT 21-2 ff.**, “Paleoamerican foragers in the forests of Brazil”). On other occasions she has been an extraordinarily cooperative and helpful principal for writers tasked with describing her fieldwork for our readers. Many times she has benefited me with her knowledge to fill lamentable gaps in my own. Thank you, Ruth, for being always the glass I can break in an emergency. —JMC]

The future

"We finished our last dig, a deep stratified rockshelter in northern Baja California, in 2004," Gruhn says (MT 17-2, 'The Baja connection'). "Alan passed away in 2010; happily, years before, we had seen that most archaeologists had come to recognize the inadequacy of the Clovis-First model. I'm now engaged in preparation of the final report on our Baja site, keeping up with the literature, and attending conferences. It is now an exciting time to be involved in First American studies, with significant new discoveries every

year adding to our knowledge and understanding; and perspectives on the initial peopling of the Americas undergoing major changes." 

—Martha Deeringer

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Who were the people that peopled America?

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them directly in their research. In addition to James Dixon working closely with the Tlingit at On Your Knees Cave, Eske Willerslev consulted with Crow, Northern Cheyenne, Blackfeet, and Flathead Indians in his work with the Anzick skeleton (MT 29-2, "Clovis child answers fundamental questions about the First Americans") and was present with Center for the Study of the First Americans Director Michael Waters at the reburial ceremony for those remains (MT 30-2, "We are all one: Anzick children reburied"). Willerslev also involved the Confederated Tribes of the Umatilla Reservation in his analysis of Kennewick Man's genome. Twenty-two tribal members contributed samples of their DNA allowing Willerslev to determine that they shared a close genetic relationship with the "Ancient One."

The physical remains of the people that peopled America have much to teach us. Analyzing bones can tell us the age, sex, ancestry, diet, health, social status, activities frequently

engaged in, evidence for trauma, cause of death, and often the extent traveled over the course of the life of the individual. The graves of the First Americans and the artifacts buried with them can yield insight into their status in their social groups and the religious beliefs of their societies.

The story of the First Americans consists of more than stone tools and animal bones. We must study the people themselves to gain a complete picture of their lives and times. 

—Brad Lepper

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Suggested Readings

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Prehistory of the New World Arctic

continued from page 3

then, the Greenlandic Inuit, Aleutian Islanders, and Far Eastern Siberians. The lack of a close relationship with present-day Athapascans indicates that the Paleo-Eskimo migration into the Americas was separate from and later than the migration of the Athapascans.

Genetic relationships of Neo-Eskimos

The Neo-Eskimo Thule, from both Greenland and Canada, and present-day Greenlandic Inuit share a close genetic relationship. They all share the mitochondrial haplogroups A2a, A2b, and D3a2a. These lines of evidence support the idea that they have been a closely interbreeding population for the last 1,000 years. Moreover, these groups share a closer genetic relationship with the present-day Inuit than with any other sampled population. Willerslev and his team conclude that these data

support the suggestion of archaeologists that the present-day Greenland Inuit are the direct descendents of the Thule.

The research team also compared the American Neo-Eskimos to individuals from the Siberian Birnirk culture, which is thought to be "one of the cultural ancestors of the Thule." Both mitochondrial and nuclear DNA reveal that these Siberian Neo-Eskimos are indeed closely related to the present-day Greenlandic Inuit. The team concludes that these data provide "the first genetic evidence of an Old World population that was not only a cultural precursor of the Thule, but also either closely related to or a component of the ancestral Inuit gene pool."

The team also considered claims that the Sadlermiut, an extinct people that had been living on the isolated Southhampton Island in Hudson Bay, was a relict population of Dorset Paleo-Eskimo people. Robert Park, in a review article published in the same issue of *Nature*, noted that the Aivilingmiut, an Inuit group living on the mainland coast closest to Southhampton Island, said these people were reclusive and culturally quite distinctive. They spoke a strange dialect and "were bad at vital

Inuit skills such as making skin clothing, constructing igloos, and tending oil lamps.” Park also observed that the Sadlermuit “made sharp stone tools by flaking chert, whereas all other Inuit groups in the Canadian Arctic and Greenland made sharp stone tools mainly by grinding slate.”

Willerslev and his team studied remains from ten Sadlermuit individuals ranging in age from the 14th to the 19th centuries and found they belonged to mitochondrial DNA haplogroups A2b and D3a2a, which are typical of the Thule and Inuit. In addition, nuclear DNA from two of these Sadlermuit indicates they were most closely related to present-day Greenlandic Inuit. Therefore, in spite of the great differences in culture, the Sadlermuit were not a relict population of the Dorset, but instead were close cousins of their Inuit neighbors.

Evidence for interbreeding

Willerslev and his team also sought to evaluate the extent to which Neo-Eskimos are related to Paleo-Eskimos. They determined, based on similarities and differences in the DNA, that Paleo-Eskimos are more closely related to Greenlandic Inuit than to any other present-day New World population except the Aleutian Islanders. The data suggest that the gene flow occurred both from Paleo-Eskimo into Neo-Eskimo groups and from Neo-Eskimo groups back into Paleo-Eskimo groups. The Greenlandic Inuit likely acquired the influx of Paleo-Eskimo DNA through contact with the Canadian Thule, Greenlandic Thule, and even the Siberian Birnirk. Evidence of this admixture was found in a 4,000-year-old Saqqaq individual. Therefore, “the meeting and intermixing of Paleo-Eskimo and Neo-Eskimo ancestors predates the first archaeological observations of their coexistence in the eastern Arctic by ~3,000 years or earlier,” which would mean that this intermixing likely occurred either in northeastern Asia, “before the entry of the Neo-Eskimos into the Americas, or in Beringia.”

The team investigated the extent to which the 24,000-year-old boy from Mal’ta, Siberia (**MT 29-2**, “Ancient Siberian boy reveals complex origins of First Americans”), had contributed to the DNA of the Paleo-Eskimos and the Greenlandic Eskimos. They found that “western Eurasians and the boy from Mal’ta were slightly more closely related to the Saqqaq individual than

to the Han Chinese. Moreover, they found that the Mal’ta boy’s genes had made their way into American Indian populations as represented by the Anzick boy (**MT 29-2**, “Clovis child answers fundamental questions about the First Americans”), the Karitiana of Brazil, and the Greenlandic Eskimo.

In addition, the Mal’ta boy was found to be significantly more closely related to the Chipewyan Athapascans than to the Saqqaq individual. The authors of the new study suggest that these data allow them to reject a “single-wave” migration model for the Saqqaq and the Na Dene (Athapascans).

Finally, the research team decided to see if they could find evidence of interbreeding between the Norse and either Dorset or Thule peoples during their periods of contact in Greenland and in eastern Canada. They studied the mitochondrial DNA from the remains from 34 Norse individuals from southern Greenland “across the time span of their occupation in the region.” They found no evidence whatsoever of any interbreeding between the Norse and the indigenous populations. However, since the researchers only studied the mitochondrial DNA, which reflects only the genetic contribution of the mother, they would only have been able to detect evidence for Dorset or Thule mothers bearing children to Norse men, not Norse women bearing children of Dorset or Thule men.

Ancient DNA answers many questions about the colonization of the American Arctic

Willerslev and his team reached a number of important conclusions about the

Recovering ancient human remains from an excavation in northern Greenland.



CLAUS ANDREASEN

peopling of the American Arctic and the web of interrelationships among the cultures identified by decades of archaeological research in the region. This was made possible by their ability to sample “an extensive collection of Paleo-Eskimo remains for both ancient DNA and radiocarbon analyses.”

Paleo-Eskimos “likely represent a single migration pulse into North America from Siberia,” which was separate from and later than “the migration events giving rise to Native Americans and the Inuit.” Nevertheless, Paleo-Eskimos are unquestionably more closely related to Native Americans and the Inuit than to any Old World population. This supports the Beringia standstill hypothesis (**MT 27-1**, “Blood type O: New biological clues about the peopling of the Americas”), which states that all New World populations derive from a single ancestral population in Beringia that diversified over time into various more or less genetically distinctive populations and entered America at different times and following different routes. Willerslev

and his team found, however, that the subpopulations from which the Saqqaq and other Paleo-Eskimo groups are derived played no part in the two waves of migration that populated southern North America and South America. And therefore the Paleo-Eskimo migration into the Americas was a third wave, which must be taken into account in future analyses of the peopling of the Americas.

This third wave, which appears to have taken place more than 4,000 years ago, represents a “single tradition of

Processing and analyzing ancient human remains takes place in the Clean Lab of the Centre for GeoGenetics at the University of Copenhagen Natural History Museum of Denmark.



MIKAL SCHLOSSER

continuous technological and social developments,” which persisted until the Thule entered the region and replaced the Paleo-Eskimos around 700 years ago. This remarkable long-term continuity is all the more striking when viewed alongside the environmental record for this period, which ranged from the extremes of “warm hypsithermal to cold boreal through the early medieval warm event.”

The authors conclude that “Paleo-Eskimo survival must be due to remarkable resilience among dispersed local groups with the ability to shift their small population units to new areas when their homes became untenable.” Examples of this include the depopulation of Greenland and the Canadian High Arctic from A.D. 1 to 700.

The research by Willerslev and his colleagues also sheds light on the Dorset-Thule transition. The new radiocarbon dates obtained by the team, corrected for the marine-reservoir effect, show that Dorset and Thule overlapped for a period of 50 to 200 years, leaving plenty of time for interaction, including intermarriage. Yet this new research establishes that such intermarriage doesn’t seem to have happened. At least there is no evidence of it in the genes of contemporary Inuit.

The isolated Sadlermiut, with their distinctive non-Eskimo culture, were considered a relict population of Dorset people who had taken on some Thule cultural traits through intermarriage. Analysis of their DNA, however, suggests they were “Thule people who had somehow acquired Dorset stone technology.” Just how they came to adopt this foreign technology without direct interaction with the Dorset people, such as through intermarriage, is a mystery.

One of the most important outcomes of Willerslev’s team’s work is their conclusion that “Paleo-Eskimo technological innovations seem to have occurred solely by the movement of ideas within a single resident population.” This has far-reaching implications for our understanding of episodes of cultural change throughout prehistory. Simply put, movement of people is one possible way for change to occur in a culture’s way of life, but

in the absence of DNA evidence you can’t reliably conclude that any particular episode of change is due to the movement of people.

Artifacts can only tell part of the story. The evidence contained in human remains is necessary for a fuller understanding of human history. 🐾

—Brad Lepper

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A Light Footprint

PRE-CLOVIS IN THE NORTHERN CAP, SOUTH AMERICA

DURING THE PRE-CONTACT PERIOD, thousands of native cultures called South America home. They lived in climates as varied as deep rain forest, alpine valley, desert, grassland, and marine coast. Even now, South America remains one of the most linguistically diverse regions in the world, with nearly 450 native languages still spoken; before the European incursion there may have been as many as 1,750. No wonder some linguists argue that humans have occupied South America for 25,000 years. This lends credence to the occasional researcher who claims human colonization of the New World may have begun in South America.

Today it's hard to argue with the contention that humans occupied the Northern Cap of South America much earlier than Clovis times. It seems logical that people moving from the north would have passed through at least a few of the northernmost nations (Ecuador, Colombia, Venezuela, the Guianas, and Surinam) on the way south, where sites predating Clovis are more common. Yet evidence for early occupation of these countries is unusually sparse—with some extraordinary exceptions.

Some of the reasons for this lack of evidence may be geopolitical. Some nations in the region can be dangerous places for archaeologists to work, given unstable governments, powerful criminal organizations, and general lack of protection. These nations also contain large areas of dense tropical vegetation and savannah grasslands, so archaeological sites can be difficult to find. As is true everywhere, difficult access also

hinders those who search for the oldest human occupation sites. "Most archaeological investigations in northern South America are projects that require research to be done in specific places; pipeline right-of-ways, power-line towers, dam-reservoir basins," says Anthony Ranere of Temple University.

"The very few projects that have included looking for pre-Clovis sites have not found them."

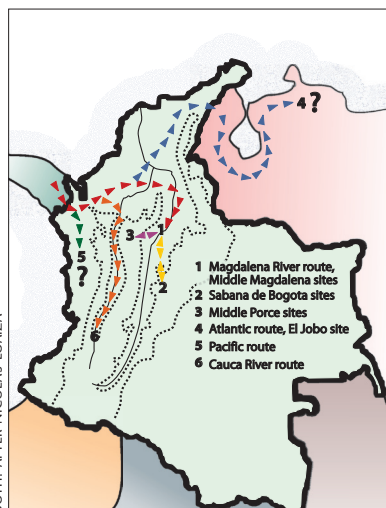
Indeed, according to Francisco Javier Aceituno of La Universidad de Antioquia in Medellín, Colombia, the main reason for the scarcity of very early sites (at least in Colombia) is "the few archaeologists working in the Paleoindian Period."

Still, "Considering that no viable group of hunter-gatherers can be distantly isolated spatially and out of contact with any others, the existence of even a few known archaeological sites indicates there must have been a population of foraging groups in the region in late-Pleistocene times," points out Ruth Gruhn, professor emerita at the University of Alberta, Edmonton. She and her

late husband, Alan Bryan, did ground-breaking research in northern South America, especially in the 1970s, and Dr. Gruhn is an expert on Pleistocene cultures of that region. She points out that "modern heavy vegetation cover and rugged ter-

◀ Colombian geographical regions with sites older than 12,000 RCYBP.

▼ Suggested entry points to South America via the Central American Landbridge.



BOTH: AFTER NICOLAS LOAIZA

rain over most of northernmost South America certainly have hindered the discovery of early archaeological sites in the region; but intensified research by able Colombian and Venezuelan archaeologists in recent years should identify more early sites."

A wise precaution

Gruhn advises against using the term "pre-Clovis" for South American cultures. Clovis cultural

material is very rare in the southern continent, limited only to a few sites reported on the Paraguaná peninsula in Venezuela. Gruhn suggests that "it's best to use Mike Collins's term, Older than Clovis." *Pre-Clovis* in this story doesn't refer to cultures that

later evolved into the Clovis culture, only to cultures that pre-date Clovis. At best, Clovis and contemporaneous cultures in South America are sibling or cousin cultures, descended from very early, low-population groups that worked their way down from Beringia to North, Central, and South America in succession. The resulting toolkits were diverse, adapted to the specific environment each group encountered.

During the Older-than-Clovis (OTC) era, there may not have been many

Aceituno in his laboratory, 2015.

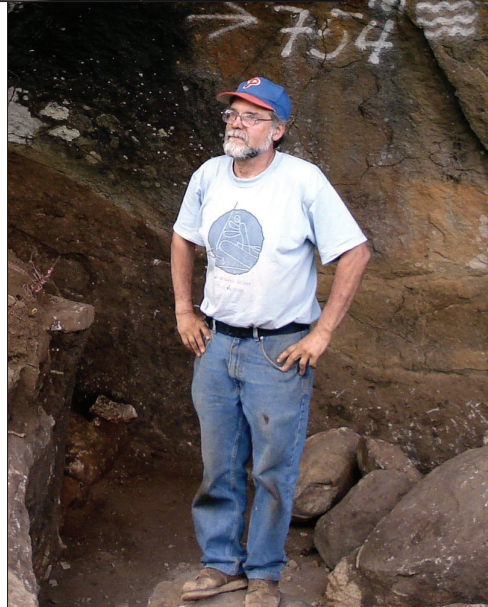


FRANCISCO ACEITUNO

people in the Northern Cap at all. Therefore, lack of coverage may not be the determining issue. In addition, other factors may contribute to the scarcity of known sites. As Dr. Aceituno explains, the lack of sites on the Caribbean coast may be due to rising sea levels during the early Holocene. "It would be normal to find any Pleistocene coastal archaeological sites in Colombia in the Caribbean Sea," he argues. "So far, the more extended interpretation is: Few people entered the continent, but they were able to get to South America. The number of sites throughout South America is large—not just Monte Verde. Colombia, Venezuela, Brazil, and Peru have pre-Clovis sites."

As Dr. Ranere explains, "There are, in fact, more pre-Clovis sites in northern South America than many other regions of the Amer-

Ranere at Casita de Piedra, Panama, 2007.



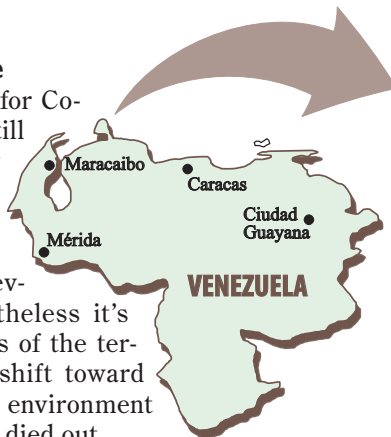
ANTHONY RANERE

icas. . . . That said, there are few investigators looking intensively for [them]." Nonetheless, both Colombia and Venezuela have yielded eye-opening sites that are certainly older than Clovis, providing a limited glimpse of the earliest occupation of South America.

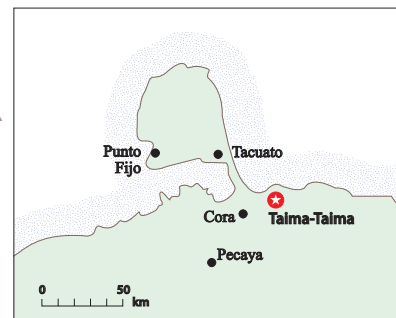
The Colombian evidence

The Paleoamerican record for Colombia is scant, and we still don't know much about early human adaptive strategies in the region (though Taima-Taima in Venezuela offers some fascinating evidence; see below). Nonetheless it's clear that big-game hunters of the terminal Pleistocene had to shift toward plant-based foraging as the environment warmed and the megafauna died out.

The oldest occupation of Colombia apparently was centered



occupied as early as 17,000 RCYBP—roughly 19,000 years ago. "My guess would be at least 16,000 CALYBP and possibly as early as 20,000 CALYBP," says Ranere.



The Venezuelan evidence

Venezuela wins the prize for the most convincing OTC occupation in northern South America. Some researchers have long suspected that the El Jobo culture, epitomized by long, narrow, thick leaf-shaped points of the same name, predates Clovis. It's been difficult, however, to convince other researchers—even in light of the compelling Taima-Taima site, where Gruhn and Bryan recovered the remains of a butchered mastodon in association with an El Jobo point and a flake tool. Chewed twigs from apparent stomach contents date

occupied as early as 17,000 RCYBP—roughly 19,000 years ago. "My guess would be at least 16,000 CALYBP and possibly as early as 20,000 CALYBP," says Ranere.

to older than 13,000 RCYBP (about 15,000 CALYBP). The site, which yielded more stone tools associated with the remains of extinct species including *Equus*, *Glossotherium*, *Glyptodon*, *Pararctotherium*, and *Stegomastodon*, produced 13 radiocarbon ages from 13,400 to 12,600 RCYBP. Ranere confirms that “there are a number of other sites in Venezuela with the same distinctive El Jobo points, some in association with extinct fauna, which date in all likelihood to pre-Clovis times.”

Gruhn and Bryan did their work at Taima-Taima in the 1970s. Not surprisingly, in an era when Clovis-First reigned supreme, “Taima-Taima received a skeptical reception from North American archaeologists when Alan Bryan wrote on our 1970 site visit in 1973,” Gruhn tells us. “While the site did support the widespread assumption of a big-game hunting focus by early Paleoamericans, the projectile points were not at all Clovis-like, and the site dates were far too early.” Because the mastodon remains at Taima-Taima were located at an artesian spring, critics questioned stratigraphic integrity, date associations, the age of El Jobo points, and the reputed point-mastodon association.



Nor was there evidence of an overlying occupation level from which the lithic artifacts might have worked their way down, even if there had been any disturbance. “As well,” Gruhn notes, “the paleontologist Rudolfo Casamiquela found butchering cut marks on a humerus and ribs of the mastodon.”

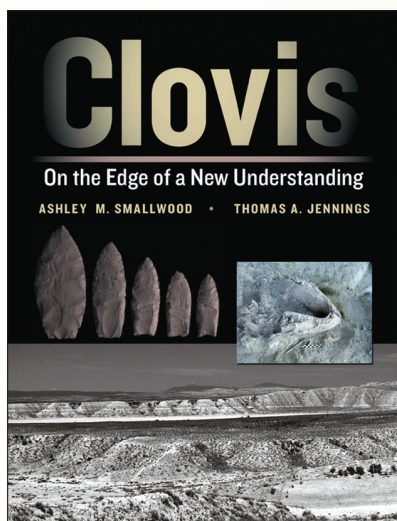
Gruhn excavating mastodon remains at Taima-Taima, 1970.

Gruhn and Bryan clarified matters with further excavations in 1976, which proved that the site strata were undisturbed. Indeed, the lowest unit (which included the mastodon remains) was sealed by a hard iron- and aluminum-rich

paleosol. Even after our 1976 work answered the earlier critiques,” Gruhn remembers, “the same negative comments continued, as if the 1976 excavations had never taken place.” It wasn’t until the Monte Verde find and Waters and Stafford’s reassessment of Clovis (MT 22-3, -4, “Clovis dethroned,”) that many First Americans researchers accepted as valid Taima-Taima and similar sites.

ALTHOUGH we now know that people of the Clovis culture weren’t the First Americans, their influence on shaping the peopling of America is undiminished. A new layer of complexity, however, has been added to the model of how Paleoamerican and Archaic cultures dispersed across the breadth of North America and beyond. How Clovis fits into this expanded matrix is the subject of reports by 17 scholars collected in *Clovis: On the Edge of a New Understanding*.

Contributing authors delivered earlier versions of these reports at the Clovis: Current Perspectives on Chronology, Technology, and Adaptations symposium held at the 2011 SAA meetings in Sacramento, California. The updated articles in this volume examine many aspects of the chronology, technology, and subsistence and settlement of the Clovis culture, from the Sonora Desert of Mexico to the Ontario wilds of Canada. The duration of Clovis, regional variations in toolmaking, prey preferences, caching—all are given a fresh overhaul in this richly illustrated work. See the outside rear cover of this issue for information on how to order your copy.



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So how did they get there?

The earliest South Americans may have followed the Caribbean coast south after filtering through the interior of North America. They may have followed both the Pacific and Caribbean coasts southward, or just come straight south down the inviting highway of the Central American Landbridge (CALB), whose lower part comprises today’s Isthmus of Panama. However it happened, South America’s colonization doubtless had its fits and starts, where humans filled a particular area before malcontents and explorers proceeded farther south. In a virgin territory where animals had little experience with human hunters, megafauna would have drawn people in all directions.

Gruhn, Ranere, and Aceituno agree that the most likely route of the first South Americans was via the Pacific Coast, down along the western margin of the isthmus, and thence to the southern continent. Even if some took a Caribbean route, their sites would have become inundated by rising seas of the early Holocene. Perhaps someday we’ll be able

to find and reconstruct submerged sites. Today, though, it's impossible.

It's worth noting that in studies of the colonizing of North America, the Pacific Coast migration theory has gained traction in recent years with the discovery that some Northwest coastal areas may have been ice free early on, creating refugia that offered islands of survivability. Such areas may retain evidence of early human occupation, especially at those points that coincide with the late-Pleistocene Pacific coast.

Did colonizers of South America engage in similar hopping from one refugium to the next like stepping stones? We

Pelvis of juvenile mastodon on exhibit at Taima-Taima in 2005, in proper anatomical position. (It wasn't found that way in the 1976 excavation.)



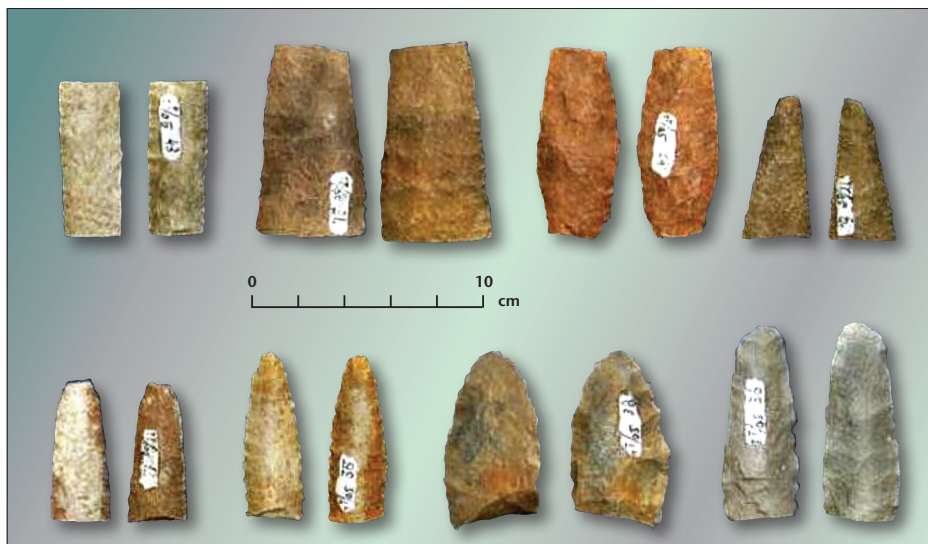
CARLOS LOPEZ

find the coastline in a few small areas on the CALB has barely changed since the Pleistocene. These and similar locations that may exist along the coastline of the northern cap are prime locations to explore. "Refugia hopping" may also explain the great antiquity of sites like Monte Verde, Taima-Taima, and localities in Brazil that may be even older (a possibility to be explored more fully in a future article). It's easy to imagine groups of colonizers across the generations making their way down the coast, taking advantage of these oases while groups stranded in Beringia had to wait until ice-free corridors opened into the heartland. Millennia may have passed before these groups, bearing their unique lithic technologies, encountered each other again.

The southern threshold

The CALB exits directly into Colombia,


El Jobo projectile points from Venezuela, including Taima-Taima.



AFTER RICHARD COOKE

so it's reasonable to expect that evidence for the first South Americans, sparse as it is, would be found there. Venezuela is the next country east, a natural direction for early occupants to explore. Now that we know people were in the Americas well before Clovis, the startling early ages reported for such sites as Taima-Taima and Pubenza are much easier for the

majority to accept. It's a shame North American archaeologists didn't take them seriously from the beginning. A faithful few like Gruhn and Bryan, Ranere, and Aceituno deserve our thanks for keeping the flame alive and enriching our knowledge of ancient sites in the Northern Cap.

The vast country of Brazil, another region studied by Gruhn and Bryan, includes a suite of sites with claims of great time depth—some old enough to substantiate linguistic claims for occupation by 25,000 CALYBP. The next article in this series will focus on those sites, and others that fit the OTC paradigm. Stay tuned. 

—Floyd Largent

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