

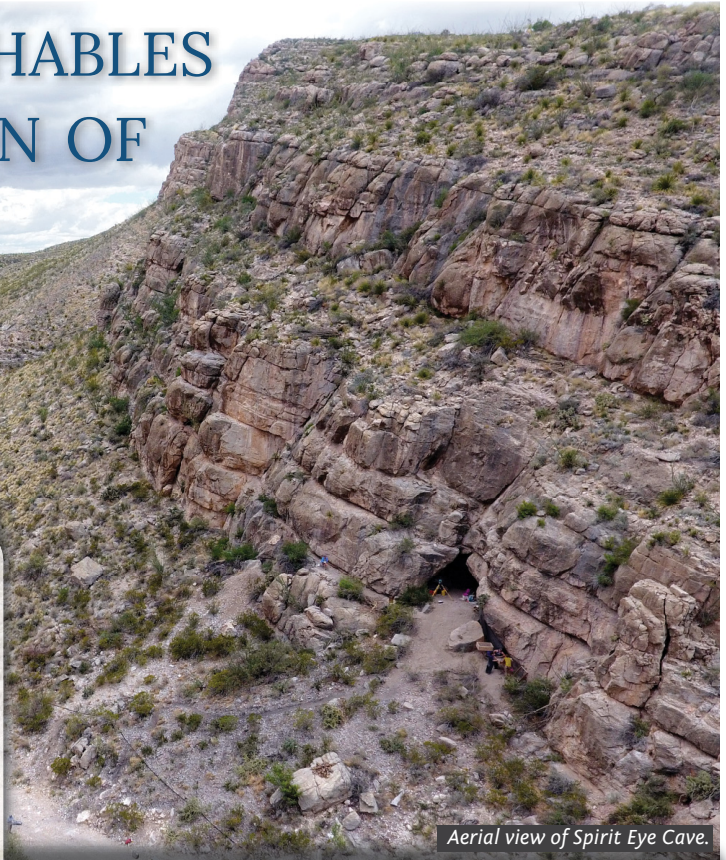


TRANS-PECOS PERISHABLES AND THE EVOLUTION OF MAIZE



A mentor in college once told me “archaeology isn’t rocket science; in fact, it’s harder. At least rocket scientists know whether their ideas are wrong: the rocket goes up or it doesn’t, but without a time machine, we can’t be certain whether or not we’re right.” Archaeology is difficult because humans have always been complex. Add natural events like erosion and cultural reuse of the areas we study, played out over multiple millennia, and it is a wonder we know what we know about the past. On top of this, we do not do ourselves any favors. We build complex categories of artifacts and features to order their distribution across time and space and often restrict these classifications to modern geopolitical boundaries that meant nothing to prehistoric peoples. We call them culture areas and, in archaeology, they are our bread and butter.

Learning a new culture area is like learning a new language in that it is difficult to understand a new concept without relating it to the one you already know. So as a newcomer to Texas archaeology, I have had to look over the fence to find relatable concepts and “cultures” to help make sense of my emerging research interests at Spirit Eye Cave on the Pinto Canyon Ranch. What began as an effort to better understand prehistoric classifications (i.e., culture areas) in the Trans-Pecos region has blossomed into a research design that incorporates eastern Trans-Pecos research objectives into an “over-the-fence” approach. This research anchored at Spirit Eye Cave focuses on: (1) the timing and duration of maize use on the Rio Grande, (2) the timing and spread of perishable industries across the Southwest, and (3) ancient DNA of prehistoric human populations.



Aerial view of Spirit Eye Cave.

I borrow heavily from Stephen H. Lekson (2009) who outlines a perspective for prehistoric Southwest groups centered on three key assumptions: (1) everyone knew everything, (i.e., hunter-gatherer knowledge far exceeded their local territories), (2) there were no coincidences, and (3) geographical distances can be dealt with. Like Lekson, I “err in those three directions” pertaining to most issues in prehistory, but especially, the three key research areas outlined above.

Maize in the Big Bend

The eastern Trans-Pecos is surrounded by regions that have produced some of the oldest maize radiocarbon dates in North America. To the north, shelters like Tornillo and Fresnel in New Mexico and, to the west, open sites like Cerro Juanaqueña in Chihuahua, and Las Capas in Tucson all have maize dates over 3,000 years old. The oldest dates are a little over 500 miles west of us in the Tucson Basin at 4,000 years old. Borrowing from Lekson’s idea of “everyone knew everything,” is it a stretch to assume that maize was in our neighborhood as early as 3,000 years ago?

Luckily, not only are we able to directly date corncoobs but we can also detect dietary history through analysis of human bone. Using stable isotope analysis of skeletal remains, former CBBS archaeologist Jennifer Piehl found interesting dietary patterns throughout the Late Archaic. The Black Willow Burial in Big Bend National Park, in particular, appears “similar to incipient agriculturalists in the Jornada-Mogollon region” (2009:79). But without solid radiocarbon dates on maize, she interpreted the data as a broadening of the Late Archaic diet to include grass seeds and cactus pads. We now have radiocarbon dates from five corncoobs at Spirit Eye Cave that indicate maize was present during much of the Late Archaic period, and in light of this we need to reconsider her results. Researchers in the eastern Trans-Pecos have long thought the use of maize by Late Archaic hunter-gatherers was negligible, and that still may very well be true (Cloud 2004; Mallouf 1985, 2005). Maize is not ubiquitous at Late Archaic sites in the region, but appears frequently at rockshelters closer to the Rio Grande. The dates on cobs from Spirit Eye Cave and the much later occurrence of farmers in the La Junta district suggest groups had at least a 2,000-year relationship with maize in our area. The dates and the distribution considered together define a fascinating research question: did groups in the eastern Trans-Pecos practice low-level food production to augment foraging activities or was the region a corridor that maize traveled along (Hanselka 2018)?

The initial entry of maize into the Southwest was either a process of diffusion between groups or a direct migration of Mesoamerican farmers, one or both initially occurring via a highland route, followed by a complex history of intermixing with lowland Pacific coast-adapted maize beginning around 2000 B.P. (da Fonseca et al. 2015). Once in the Southwest, groups worked hard to select the traits favorable to the area’s arid growing conditions. How the maize at Spirit Eye Cave and across the eastern Trans-Pecos fits into this fascinating period of migration, invention, and diffusion across Mexico and the Southwest is one of many questions this new research hopes to answer.

Perishable Artifacts

The eastern Trans-Pecos contains an unrivaled perishable artifact assemblage, all of which are directly datable. Conventionally we date carbon from hearths that often does not represent a direct cultural event but rather the scavenging of deadwood that offsets the occupation we’re interested in. Perishable artifacts provide a better date for several reasons; the most important is they represent a direct cultural event in the procurement and preparation of raw material for fiber and shafts. Researchers in other regions

have recognized the research potential of perishable artifacts and are developing programs to date these materials.

The Great Basin Textile Dating Project (GBTDP) is one such research program focused on dating perishable artifacts from across the Great Basin. Preliminary results have found sophisticated textile traditions were present by at least the end of the Late Pleistocene and some of the northern Great Basin textile industries persisted for as long as nine millennia. This latter result is fascinating because fiber industries involve prolonged direct apprenticeship (i.e., copiers rather than tinkerers) and are

more conservative to sudden change than stone counterparts (cf. Connolly et al. 2016). Because textiles are such “a highly plastic medium strongly controlled by learned community traditions . . . change suggests population replacement as part of or instead of adaptive shifts” (Connolly et al. 2016:510). What this means is the longevity of particular types of baskets, sandals, etc. across geographic areas can be interpreted as stable populations or learning environments that are more fine-grained than those associated with particular types of stone artifacts (see Bettinger and Eerkens 1999 for an example).

At Spirit Eye Cave, dates from parching trays and two types of coiled baskets provide the baseline for such an analysis. The appearance of coiled basketry in the archaeological record is thought to be part of a shift towards procurement

of small seeds that began in northeastern Mexico and spread northward. A single-rod coiled basket from southeastern Utah produced the oldest radiocarbon date on a perishable artifact. This suggests the technology spread southward towards Mexico instead (a 2,000-year-old radiocarbon date from a similarly manufactured basket from Spirit Eye helps reinforce the continuity of coiled baskets). Additional samples from a close-coiled bundle-rod foundation basket from Spirit Eye date to the Middle Archaic (4200 B.P.) and parching trays (similar to specimens recovered from Coahuila) date to the Late Archaic (see page 14). As a result, it appears that the perishable artifacts from Spirit Eye are part of larger stable perishable industries.

Ancient DNA

The interconnectedness and complexity of the prehistoric world is becoming evident with the greater availability of ancient DNA labs and studies. Unfortunately, DNA studies in the eastern Trans-Pecos are still in their infancy, which limits our interpretations. But we are not alone. As Meradeth Snow, a geneticist at the University of Montana, points out, “Ancient DNA has been analyzed for relatively few populations in the Southwest, and the sizes of

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Radiocarbon-dated maize from the Briscoe Collection donated to CBBS-SRSU. Photo by Taylor Greer.

(Top) Coiled basket from Briscoe Collection. Photo by Bryon Schroeder.



(Bottom) Fragment of 4200 B.P. close-coiled basket from Spirit Eye Cave. Photo by Bryon Schroeder.



An Update on the CBBS-INAH Agreement

Last year, on July 18, 2017, the CBBS and Sul Ross State University entered into an historic agreement with the *Instituto Nacional de Antropología e Historia* (INAH) through the signing of a Memorandum of Understanding (MOU). After the document was signed—by SRSU President Dr. Bill Kibler and INAH Director General Diego Prieto Hernández—a research meeting identified ways in which the two organizations could work together. The group agreed to cooperate in a range of ways, including sharing data; repatriation of Mexican artifact collections from the U.S.; joint fieldwork on both sides of the Rio Grande/Río Bravo del Norte, including documenting sites along the river and excavations at La Junta; participation in meetings and conferences; and, ultimately, joint publications. Although several collaborative field projects have occurred since the MOU signing, the most notable progress has been through the sharing of data and joint participation in meetings and conferences.

The first cooperative fieldwork took place in August 2017 when CBBS and INAH affiliates conducted an exploratory visit to a cave site on the Rio Grande in Coahuila. Located within the Lower Canyons portion of the protected “Rio Grande Wild and Scenic River,” the cave had been recently reported to Big Bend National Park personnel by rafters, who believed it to hold scientific research value. Access proved to be time-consuming and extremely difficult, requiring navigation in 4-wheel-drive vehicles over very rough roads, followed by a long, arduous hike. Although the site was documented for INAH records, the group agreed the logistics precluded further work there.

More substantive fieldwork occurred in late May 2018, again on the Mexican side of the Rio Grande, when CBBS and INAH staff began initial documentation of an historic community (Pulicos) and a protohistoric village (San Antonio de los Puliques) a short distance downriver from Ojinaga, Chihuahua. Several cemeteries were inspected at the former site and the crew rediscovered the possible location of a Spanish mission at the latter. J. Charles Kelley, the preeminent researcher of native villages in this area (known as *La Junta de los Ríos*, or simply,

La Junta), left an annotated photo in his research files showing the suspected location of the mission. With the aid of this photo,



(Left) CBBS director Cloud with INAH's National Coordinator of Archaeology Muñoz at the reopening of the Museo Casa de la Cultura Manuel Ojinaga, and (Top) Cloud with INAH Chihuahua director Dr. Jorge Carrera at the reopening. Photos by Erica Blecha (top) and Jessica Lutz (left).



But perhaps the greatest progress has been made through participation in meetings and the sharing of data, including the exchange of a wide range of publications as well as select un-

published project data. Of particular note, Coahuila and Chihuahua archaeologists have shared projectile point data with the Center, and CBBS archaeologists have shared information on regional ceramics, each supplying much-needed data to researchers on the other side of the border. Event participation has also contributed significantly to the collaboration. Personnel from INAH have presented on their projects



The suspected location of an eighteenth century Spanish mission at the Puliques archaeological site in Chihuahua. A Spanish majolica sherd found at the location dates approximately to the eighteenth century. CBBS director William A. Cloud records information while INAH archaeologists (on the right) discuss the site. Photos by Samuel Cason (top) and David Keller (bottom).



at the last two CBBS annual conferences and CBBS staff recently attended the re-opening of the Museo Casa de la Cultura Manuel Ojinaga (the Ojinaga Museum). At the latter event, INAH's Director General Diego Prieto and National Coordinator of Archaeology José María Muñoz each underscored the importance of this historic MOU. We at the CBBS feel the same and stand ready for even greater collaborations with our new partners in the coming years!

—William A. Cloud

PROJECT UPDATES

Historic Preservation in Big Bend National Park

Between November 10 and December 5, 2018, the CBBS partnered with the National Park Service to conduct preservation work on historic structures in Big Bend National Park (BBNP)—the second of a five-year cooperative agreement. CBBS Senior Project Archaeologist David Keller served as the project's Principal Investigator; adobe preservation specialist, Pat Taylor, served as the project consultant; and Joey Benton of Marfa served as the preservation contractor. Work was performed by Benton's crew consisting of Louis Madrid, Rosalio Sanchez, and Jesus Vasquez, in addition to Keller, Benton, and his partner Faith Gay. This year's work focused on the Café/Residence and Shed at La Harmonia near Castolon in the far western part of the park. Because the roofs on these two structures had failed from settling cracks, both were suffering damage from water infiltration and associated wood rot, termite damage, and mold on the vigas and basal coving and erosional channels in the wall, not to mention a substantial bat and rat infestation. The preservation crew was tasked with preparing the structures for a new roofing system. After removing the existing concrete

roofs and associated tar paper, expanded polystyrene foam, and plastic sheeting (all part of a misguided effort to roof these structures in 1972), the damaged vigas were replaced by new white fir vigas, and the damaged cane latillas were replaced with newly cut cane (*Arundo donax*). Following the viga replacement and painstaking latilla replacement, the parapet walls were repaired to full height in preparation for the new thermoplastic olefin roofing membrane installed by All Rite Construction out of Albuquerque, New Mexico. In addition to the primary work performed, a number of fir poles and cane were stockpiled for future use. Products include a completion report and a presentation for BBNP staff in the Spring of 2019. In collaboration with Dave Larson, chief of science and resource management at BBNP, we hope to extend our scope to a number of other ailing historic structures while expanding our volunteer base for future workshops, all in an effort to help the park meet its preservation mandate to protect these endangered relics of our historic past.

—David W. Keller



The Café/Residence (left) and Shed at La Harmonia in BBNP. Photo by David Keller.



Louis Madrid (left) and Rosalio Sanchez mortaring in new parapet adobes. Photo by David Keller.

Fort Davis Historic Artifact Analysis

This year the CBBS entered into a cooperative agreement with Fort Davis National Historic Site (FODA) and the National Park Service regional archaeology program to assist the fort with their significant backlog of historic artifacts consisting of some 7,000 specimens that have been collected at the site over the last 25 years, most during maintenance projects or by visitors. This work is being conducted prior to the artifacts' transfer to the Western Archeological and Conservation Center (WACC) in Tucson, Arizona—the primary repository for the Intermountain Region of the National Park Service—for cataloging and permanent curation. CBBS Senior Project Archaeologist David

Keller will be identifying and evaluating a wide array of artifacts from cartridge casings to military buttons, from baking powder tins to wagon axles. He will also flag museum-quality specimens the park could use for exhibits. In addition to the identifications, Keller will produce a report detailing the work conducted as well as an explanation of how the artifacts fit into the broader context of the fort's past. Acknowledging the contribution of black soldiers to the history of FODA, the work is being funded by the U.S. Historic Preservation Fund through the African American Civil Rights Grant Program that documents, interprets, and preserves sites and stories

related to the African American struggle to gain equal rights as citizens in the 20th century. Following the American Civil War, African American soldiers played a significant role in the settling of the West, notably in Far West Texas, where “Buffalo Soldiers” of the Tenth U.S. Cavalry under command of Colonel

Benjamin Grierson were highly effective at forcing the Apaches out of the region. Having been only recently emancipated, the military offered African American men a rare chance to gain status and recognition, steps along the pathway to gaining civil rights in America.

—David W. Keller



Decorated clay pipe bowl fragment. Photo by David Keller.



Hand-forged hoof pick. Photo by David Keller.

In Memoriam: Jon Kalb

Over the last 15 years, the CBBS was proud to partner with the late scientist and author Jon Ervin Kalb on a number of field expeditions to the remote Sierra Vieja lowlands in search of fossils and artifacts. A research geologist with the Vertebrate Paleontology Laboratory at The University of Texas at Austin, Jon was a founder of the expedition that recovered the 3.2-million-year-old Lucy skeleton and directed the Ethiopia-based team that discovered some of the most prolific hominid fossil-bearing deposits in the world. Jon authored numerous scientific publications and three books, including the award-winning, *Adventures in the Bone*

Trade: The Race to Discover Human Ancestors in Ethiopia's Afar Depression. While a graduate Fellow of John Hopkins University, Jon became interested in plate tectonics of the Afar Depression, a triple (rift) junction in northeastern Ethiopia, and spent the next seven years exploring the Awash Valley in the central and western Afar. Along with Assefa Mebrate, he documented the most complete known record of ancestral elephants (18 species) from a single area. Although Jon was expelled from Ethiopia in 1978 as a result of fabricated allegations that he was a spy for the CIA, the story became rich fodder for his books.



(Top) Jon Kalb searching for fossils in the Sierra Vieja lowlands. Photo by David Keller.

(Left) Jon Kalb exploring an arroyo below a prehistoric hearth remnant in the Sierra Vieja lowlands. Photo by David Keller

In 1996, Jon was diagnosed with Parkinson's disease. But instead of despondency, the diagnosis motivated him to write a memoir (published in 2012) and to double down on his fieldwork—long the centerpiece of his scientific contributions. By 2003, Jon's research interests brought him to the remote reaches of the Big Bend—a place having geological and paleontological parallels to the African Afar. Here, exploring the Sierra Vieja for Eocene fossils, notably that of the 38-million-year-old *Rooneyia viejensis*, the last known primate in Texas.

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Closing in on Late Archaic Research in the Eastern Trans-Pecos

The Late Archaic (LA) in the greater Big Bend—1000 B.C.–A.D. 700—was a seminal period preceding a Late Prehistoric cultural florescence across the region. It also represents the culmination of regionally adapted and climatically adjusted hunting-gathering lifeways over millennia. For many years there has been a frustrating paucity of data regarding this span of time, though it has figured prominently in archaeological research questions due to an explosion of projectile point types—such as Shumla, Paisano, Frio, Charcos, Conejo, Ensor, Ellis, Figueroa, Lange, Marcos, Montell, and Palmillas—originally defined in adjacent regions. Atop this list are three recently defined in the eastern Trans-Pecos: Carlsbad, Van Horn, and Hueco.

Time-honored models of LA lifeways in the region suggest increasing population, diversified settlement strategies, and adaptive responses to environmental shifts—notably a short mesic (cool and moist) interval evident in the northern Chihuahuan Desert ca. 3,000–2,200 years ago (Mallouf 2005:237, 240). Until recently, however, our understanding of the period lacked several key elements: temporal and spatial data from large, systematic surveys; radiocarbon dates from a range of LA sites; and geoarchaeological characterizations of LA deposits. Moreover, there had been minimal excavation of sites with discrete, buried, LA components or recovery of perishable materials with strong contextual associations from dry, sheltered locations. Now, with recent findings of the Trans-Pecos Archaeological Program (TAP), Late Holocene studies are at the cusp of addressing questions about the LA and how they articulate with larger patterns of cultural development in the region.

One of the most significant recent accomplishments is the completion of a large, systematic survey conducted by the CBBS over the course of nearly 18 years in Big Bend National Park. Of 284 project sites with diagnostic projectiles, 145 (35 percent) contained LA dart points, and 61 of those had only LA specimens. These data, derived from over 60,000 acres of pedestrian survey and the accumulation of fundamental spatial, environmental, feature, and artifact documentation, led to some unexpected conclusions regarding settlement and subsistence. Analysis of the data suggests that group size declined significantly, sites became more uniform in size and composition, and subsistence strategies appear to have shifted towards increased opportunism (Keller et al. in prep). These

observations add a remarkable degree of resolution to the changing picture of LA behaviors, indicating that reaction to environmental change in the lower Big Bend appears to have involved a variety of mechanisms—specifically, adaptive shifts in technology and social organization.

In another essential TAP study area, the O2 Ranch in west-central Brewster County, more than 500 sites have been documented to date, 179 of which contain LA diagnostics. Out of a total of 96 radiocarbon assays from the ranch, 8 are from the LA period. A single date from the Terlingua locality at the Genevieve Lykes Duncan site

slightly predates the LA at 3285 ± 20 radiocarbon years before present (RCYBP) (Cloud et al. 2016:Fig. 6). Significantly, the thin-bedded deposits at the locality appear to be related to a series of small-magnitude floods suggesting hydrological events that preceded the proposed LA mesic interval,

raising questions about its precise timing. Two other notable dates from the O2 Ranch at Collapsed Rockshelter (1690 ± 40 and 1730 ± 30 RCYBP) date to the latter portion of the period and may, with further exploration, yield intact LA materials.

Among the more than 1,000 sites on Pinto Canyon Ranch (PCR), at least 162 have LA occupations. Twenty-five radiocarbon assays from eight PCR sites date to the LA period, and excavations are underway at five of them. At the Second Gate site, nine LA dates from buried thermal features and deposits, with five centered around 350 B.C., indicate at least

one isolable component. By contrast, two radiocarbon samples from the Deep End site suggest a greater span of LA occupation—one centering around ca. A.D. 300 and another older date centering around ca. 500 B.C., both from features in pond-like or spring-side sediments. Two more LA dates from test excavations at the Oak Park site, within a unique oak copse in a mountain/canyon setting, are from midden deposits that range from 900–430 B.C. (Seebach 2010).

On another vital re-



Sediment from the Deep End site was documented in variety of ways—including a laser particle size analyzer—to define the characteristics of soil formation and paleoenvironment. The distinctly gray sediment samples, in which Late Archaic deposits are preserved, are “marl-like” and probably represent a spring-side environment.



CBBS archaeologists exposing deposits at the Second Gate site, one of several buried Late Archaic sites along major stream courses on the Pinto Canyon Ranch. Photo by Samuel Cason.

search front, CBBS collaborators Drs. Rolfe Mandel and Charles Frederick are in the process of revisiting the pioneering models



A view of Collapsed Rockshelter (41BS2693). Thus far, the site has yielded two radiocarbon dates from the early portion of the Late Archaic period. Photo by Erika Blecha.



At the Deep End site, heavy machinery was employed to excavate several deep trenches and expose buried Late Archaic deposits. Photo by Samuel Cason.

posited by the forerunners of geoarchaeology (in both the state and region)—Claude Albritton and Kirk Bryan (1939)—who investigated relationships between geological deposits and archaeological materials across the Big Bend region as early as the late 1930s. The current leading-edge work will include a suite of analytical tools not available to their predecessors (e.g., radiocarbon dating, palynology, diatom studies, etc.). While much of this effort spans earlier time periods, adding high-resolution data to the local paleoecological record will, in turn, bolster our understanding of LA climate and other environmental conditions that affected cultural adaptations. In the process, Mandel and Frederick are reanalyzing Albritton and Bryan's type-sites and comparing them to analogous exposures in other TAP study areas. A prominent question is whether Late Holocene mesic episodes—represented by substantial pluvial events—are representative of a region-wide pattern, or if they are instead expressions of small-scale, localized phenomena. Since eastern Trans-Pecos cultural-environmental models are derived mostly from adjacent regions, fine-tuning this geoarchaeological chronology with Big Bend data is essential.

Lastly, two rockshelters excavated by the CBBS in the Davis Mountains—Wolf Den (Mallouf 2007) and Tall Rockshelter (Mallouf 2001)—contain LA components with perishable artifacts. In addition to current investigations at Spirit Eye Cave (see



A portion of a large earth is exposed in the excavation block at the Second Gate site. Subsequent work across roughly 50 square meters of the site defined auxiliary features and debris scattered around the perimeter of the activity area. Photo by Samuel Cason.

Schroeder, this issue), radiocarbon dating of perishable materials from recent TAP rockshelter excavations—i.e., Tranquil (CBBS 2010), Rough Cut (CBBS 2010; Gray 2007), Surprise (Cason 2014), and Tres Metates (Seebach 2007)—promise to offer even greater insights into this little-known period. As a result of these various initiatives and discoveries, Late Archaic research is finally coming of age in the Big Bend.

—Samuel S. Cason

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The Petroform Phenomenon of the Big Bend

Cultures all over the world possess symbolic systems that express aspects of their mythology, spirituality, ritualism, and art. Among the most commonly documented of these symbolic systems is that of rock imagery. Although rock imagery can take many forms, one of the least understood is what archaeologists call petroforms, defined as stones deliberately arranged on the ground surface, often depicting animal or abstract geometric shapes. Some of these various shapes of rock alignments may have had spiritual significance while others may have served as navigational tools or even solar markers.

In North America, petroforms have been documented most often in the northern Plains of the United States and Canada (Lewis 1889; Hall 1960; Steinbring et al. 2003; Bryan 2011). Surprisingly, however, similar petroforms have been discovered here in the Big Bend in the form of linear, abstract, and zoomorphic representations. Most petroforms found in the Big Bend were unrecognized until recent discoveries during the extensive 62,000-acre pedestrian survey conducted by CBBS archaeologists in Big Bend National Park (BBNP) (Keller et al. in prep). Additional petroforms have recently been found in west-central Brewster County and far west Presidio County, Texas (Gray 2011; Mallouf 2010, 2011; Walter 2016; Cason 2014).

Three geometric petroforms, found only in southern Brewster County, have been interpreted as medicine wheels and are among the first such petroforms documented in Texas; in fact, the only other medicine wheel documented in the state, the Leon River Medicine Wheel, remains in question regarding its origins and function (Keller et al. in prep; Quigg et al. 1996). Typically constructed by native people of the northern Plains (Brumley 1988), medicine wheels are often understood to be tributes to chiefs and others of high standing. Others may be associated with religious or healing ceremonies (Quigg et al. 1996). The first medicine wheel confirmed in the region (colloquially known as “the spider”) was investigated by Tom Alex in the 1980s when he was BBNP archaeologist. Nearly 30 years later, two subsequent medicine wheels were discovered

by CBBS crews during the large BBNP survey (Figure 1). Significantly, these Big Bend medicine wheels occur over a thousand miles south of their previously known range and it is unknown if these have connections to Plains tribes that later migrated southward in the eighteenth and nineteenth centuries (e.g., Comanches, Kiowa-Apaches, and Southern Cheyenne).

Other petroforms are abstract in shape. At the Lizard Hill

site in southern Brewster County, two linear rock alignments form a broad V-shaped design with a U-shaped apex. The alignment points towards a cache that contained 13 Middle Archaic dart points along with two perforated freshwater mussel valves (Ohl 2011). Considering its proximity and context, this petroform is very likely Middle Archaic in age (ca. 2500–1000 B.C.). Another abstract petroform found in southern Brewster County consists of a series of straight to serpentine rock alignments at the Red Tuff Petroform site near a prominent tinaja (water hole). In addition to these two sites, about a half dozen other abstract petroform sites have been discovered in the region (David W. Keller, personal communication 2018).

Yet a third type of petroform recently documented in the region appears to be zoomorphic, most often resembling turtles—an unexpected aquatic-themed representation within a desert landscape.

These features are often located near water sources and are suspected of being locational markers or tributes. At the Turtle Ridge site, the turtle petroform, or “effigy,” was so well defined it left little to doubt, including a “head-shaped” rock that likely took considerable time to acquire (Figure 2). Two additional features are located ca. 100 m to the north-northwest of this feature. One is an oval-shaped, stacked rock structure with entryway, with the interior measuring ca. 1 m in diameter, large enough for a single individual. Adjacent to the entrance of this feature is a small 80 x 85 cm cairn. While the function of the cairn remains unknown, the attributes of the structure are similar to other stacked rock enclosures of the Cielo complex (ca. A.D. 1250–1680) (Mallouf 1999).



Figure 1. Overview of a probable medicine wheel in Big Bend National Park at the Spoked Pit Site, looking southwest. Photo by David Keller.



Figure 2. Turtle effigy petroform at the Turtle Ridge site (41BS1518) whose head points in the direction of nearby tinajas (natural water catchments). Photo by Richard Walter.

Further scientific studies of petroforms in the Big Bend promise to yield additional insights into the lives of indigenous groups that occupied the region—insights not available by other means. Although we may never know the true meaning and function of most of these petroforms, future research may add greater depth to our understanding of them and the often-elusive lifeways of past cultures in the Texas Big Bend.

— Richard W. Walter

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For several years he was joined on a number of field expeditions by then CBBS director Bob Mallouf, and in 2014 formed a multidisciplinary team in collaboration with CBBS archaeologists Samuel Cason, Bobby Gray, and David Keller to explore for mid-Tertiary mammals and prehistoric archaeology in the Sierra Vieja badlands. By then, Jon's Parkinson's had become advanced. Although walking now required the aid of two battered ski poles, to our collective amazement his condition did little to slow him down. From Sam Cason's field notes:

Bobby and I stopped along one terrace with exposed hearths and looked up to hail Jon, but Jon was riding ahead on horseback without us. He pulled up short to a high eroded slope, then dismounted. No easy proposition for Jon but he didn't seem to know or acknowledge the certain disaster that we expected, his poles windmilling wildly . . . In the last of the evening light, Jon hollered for us to stop, jumped out of the jeep and ran up the side of an eroded tuff slope—awkward, quadruped-like, Salvador Dali horse man, his aluminum appendages swinging dangerously and impossibly up the deteriorating slope, only to find . . . several large mammal bones, fully fossilized, like treasures in the red tuff.

Indeed, Jon seemed oblivious to physical discomfort, weather, wild animals, dangerous terrain, or hazards of any kind. Which, unknown to us, had long been one of his most famous traits. In fact, Jon's love of adventure, as well as his stamina, were legendary. He was famous for quips like "Food is for the weak." In one photograph from 1972, he is shown marching across the sweltering desert flats of the Kariyu Plain in Ethiopia, in nothing but shorts and hiking boots. The temperature was 130 degrees Fahrenheit!

Although Jon never located the elusive fossil remains of *viejensis*, he did recover over 2,000 fossils from the rugged badlands of the Sierra Viejas and was extremely effective at infecting others with his incredible passion for discovery, which, like the man himself, was larger than life. His drive and enthusiasm—in spite of his two-decade-long battle with Parkinson's disease—were sources of inspiration to us all. Jon died in his home in Austin, Texas, on October 27, 2017, at the age of 76.

Suggested Readings by Jon Kalb

Adventures in the Bone Trade: The Race to Discover Human Ancestors in Ethiopia's Afar Depression (2001)

Hunting Tapir During the Great Flood and Other Tales of Exploration and High Adventure (2012)



In Memoriam: Dave Hedges

Harold David "Dave" Hedges of Fort Davis, Texas, was instrumental in directing logistics at the 2005 Wolf Den Cave excavation project at the Davis Mountains Preserve, where he established the project campsite, maintained the road to the site, assisted with shuttling supplies to the

cave, and cooked many of the meals for the excavation crew. In remembering his contribution, principal investigator and then CBBS director, Bob Mallouf, fondly recalled Dave "as dependable as they come, easy to work with, and a joy to be around." Over the years, Dave worked tirelessly as a volunteer for the Texas Nature Conservancy, where he helped with fundraising and became especially noted for his work on new and existing trails on the Davis Mountains Preserve. He also played a major role in establishing a waterfowl sanctuary southeast of Balmorhea and a wetland project at the Independence Creek Preserve near Sheffield.

Continued on page 10

Revisiting the John A. Hedrick Collection

“The collection contains over 25,000 artifacts. Meticulously compiled survey and analyses data records, illustrations of hundreds of projectile points, maps, photos, slides, computer disks, and manuscripts at different stages of completion compliment the collection” (Mbutu 2007:8).

John A. Hedrick. He went by “Jack.” He was a dedicated avocational archaeologist and a lifetime member of the Texas Archeological and El Paso Archeological societies. If there was something to be learned, or something to be explored, you could count on Jack showing up. In the mid-1960s Jack decided to search for and record archaeological sites in what was then a virtually unknown area of the Trans-Pecos—the desert basins and foothills of the Plateau region near Van Horn, Texas.

The only notable archaeological work conducted in the Van Horn area prior to Jack’s arrival was intermittent research by Joe Ben Wheat in the 1940s through the 1960s. Wheat, who went on to become a preeminent North American scholar, was a native of Van Horn and is best known regionally for his discovery of (in 1946) and excavations (in 1962 and 1965) at the Chispa Site, an important Paleo-Indian campsite south of Van Horn. Wheat worked at a few other area sites and then moved on, eventually becoming a professor emeritus at the University of Colorado in Boulder. When Hedrick initiated his fieldwork at Van Horn in the 1960s, he was literally picking up where Wheat had only recently left off.

Long fascinated by the area and its prehistoric inhabitants, and undeterred by a lack of funding and scarcity of volunteer crews, Jack set out on what would prove to be a 40-year bold scientific endeavor. He personally funded his Plateau area surveys and solicited his crews from the membership of the El Paso Archeological Society and area schools. His untiring enthusiasm for his project was infectious, and he particularly attempted to arouse interest in archaeology among young people by involving them in hands-on recording and mapping. As of 1988, Jack had carried out detailed documentation of 127 sites and thousands of artifacts resulting from both his surveys and from analysis

of private collections. Ten years later, in April 1998, he passed away in Van Horn after guiding this writer and accompanying SRSU students through sites in the Carrizo Mountains and Lobo Valley. During that fateful tour, Jack repeatedly expressed to the students his hope that a young archaeologist would soon step up to carry on research of the Plateau area—almost as if he knew that his time was at hand.

With Jack’s passing, it fell to his wife, Carrol, to carry out his prearranged wishes in regard to placement of his extensive Plateau documentation, collection, and library. Carrol contacted the Center for Big Bend Studies to facilitate a permanent donation of the Plateau materials to the Museum of the Big Bend of Sul Ross State University. Since its arrival at the museum in the late 1990s, the Hedrick Collection has been accessed innumerable times by researchers seeking data for theses and dissertations, and by archaeological staff from numerous universities and public agencies. Importantly, archaeological staff of the Center for Big Bend Studies have made almost constant

use of this invaluable database for comparative studies with other areas of the eastern Trans-Pecos region. Currently, the collection is playing a major role in analysis of the Black Rock Burial Cairn, a Late Prehistoric hilltop feature that was discovered in 1992 at the eastern edge of Jack’s Plateau study area. Thus, Jack and Carrol’s bequest to the people of the State of Texas lives on and will continue to do so in perpetuity.

—Robert J. Mallouf



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In Memoriam: Dave Hedges continued from page 9

Originally from Kansas, Dave attended Ottawa University where he majored in biology with a minor in art. Following a long and successful career with AT&T Technologies in Lee’s Summit, Missouri, Dave retired in 1989. That same year he married Linda Kay (Heman) George and, following their wedding, they hit the road for a three-year adventure across the United States and Canada. Along the way, their journey

brought them to the Davis Mountains of Far West Texas, where, in 1994, they decided to make Fort Davis their home. Remembered for his famous smile and irreverent wit, Dave was also an accomplished birder, canoeist, camper, hiker, fly fisherman, and conservationist who made yearly pilgrimages to the canyon country of southeastern Utah. Dave died on April 5, 2018, at age 78, after a yearlong battle with cancer and neuromuscular disease.

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Ellen Sue Turner Memorial Fund

Ellen Sue Turner made many contributions to Texas archaeology, including tireless research of the many projectile point types (dart and arrow points) in the state. She continues to contribute to Texas archaeology through the Ellen Sue Turner Memorial Fund, which supported the salaries of our summer interns—Juan “Kiko” Morlock and John Jorgensen (2014), Juan “Kiko” Morlock (2015), and Lindsey Griffin (2016 and 2017). This fund is yet another way that Ellen Sue’s name and legacy can contribute to the study of Texas archaeology.

Please visit our website (<http://cbbs.sulross.edu>) to learn more about the fund or to donate. Or use the CBBS store on page 15 of this newsletter to make your donation. Call 432-837-8179 for more information.



Center for Big Bend Studies Provides Drone Mapping Support at the Connellee Peak Site, 41MY5, in Motley County

Connellee Peak (41MY5) is a prominent, 32-m-tall erosional remnant mesa—the top measuring 50 x 110 m—within the Middle Pease River drainage near Matador, Texas (Figure 1). Because the peak contains an abundance of artifacts and faunal remains, it has attracted many collectors to the site over the years. In particular, Jack and Rosa Spray, often with family and friends, conducted intensive, uncontrolled excavations there between 1947 and 1993. Portions of their collection, comprised of approximately 500 projectile points and other tools, are displayed at the First National Bank in Matador. Despite the lack of catalog numbers to validate proveniences, a range of corner-notched dart and arrow points, as well as side and unnotched arrow point styles attributed to Connellee Peak, suggests that the main prehistoric occupations spanned from Late Archaic through Middle or Late Ceramic periods.

Since the Spray family was primarily interested in chipped stone and bone artifacts, they allowed their son's friend, Alvin Lynn, to keep the prehistoric pottery. The 672 potsherds, recently donated to the Motley County Museum by Mr. Lynn, are an interesting aspect of the site. The pottery consists solely of cord-marked sherds (n=623; 92.7%) or plainwares (n=49; 7.3%). Although the mesa is some 45 miles (70 km) south of the southernmost recorded Antelope Creek village (a unique Late Prehistoric Southern Plains culture that combined elements of Puebloan and Great Plains groups) near Mackenzie Reservoir, the unexpected cord-marked pottery suggests that Connellee Peak may be an outlier in the known distribution of Middle Ceramic period sites for the Southern Plains. If so, the site could potentially revise our understanding of the spatial extent of this cultural complex.

On January 23 and 24, 2018, Samuel Cason from the Center for Big Bend Studies created a map of Connellee Peak with drone aerial photographs that produced high-resolution imagery of the site (Figures 2 and 3). Permanent datum points were marked in bedrock atop the mesa and elevation control points were set around the landform as visual references. In addition, coordinates for topographic and cultural features were integrated into the maps to denote the location and distribution of activity areas on and around the peak. This post-processed information yielded spectacular maps that allowed an accurate visual representation of the site upon which historic and prehistoric data could be plotted.

Historic graffiti on the top, sides, and lower talus slopes of the mesa records visits by Euro-Americans to the site starting in 1886. Seven dates denote visits before World War I, and one of



Figure 1. A view of the north side of Connellee Peak. Photo by Chris Lintz.



Figure 2. Samuel Cason flies the Center's drone over the peak. Photo by Chris Lintz.

these, by A. Brown in 1909, includes an incised bedrock depiction of a picket-post cabin. Fifteen prehistoric bedrock mortar holes were also measured and recorded. Although two are on top of the peak, most occur on talus boulders around the southwestern base of the mesa. These mortar holes range from 16 to 28 cm in diameter and 6 to 40 cm deep.

Ongoing analysis of ceramics collected from the site indicates that the paste is composed of silt (e.g., no visible large inclusions), with white angular quartz temper inclusions. A total of 188 sherds (28% of the total) measure less than 2 x 2 cm and are regarded as "sherdlets," which warrant no further analysis. Although most of the remaining large specimens are body sherds—421 cord-marked and 30 plainware—there are also 28 cord-marked and 5 plainware rim sherds in the assemblage. The thickness of a sample of 401

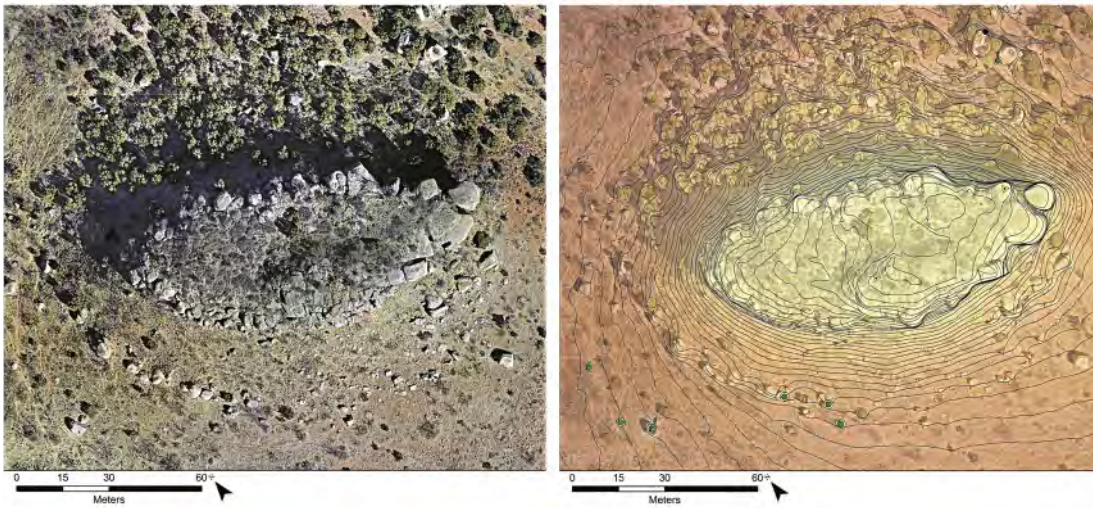


Figure 3. Views of Connellee Peak: (left) aerial view and (right) an orthophoto generated through the drone work. Photo and illustration by Samuel Cason.

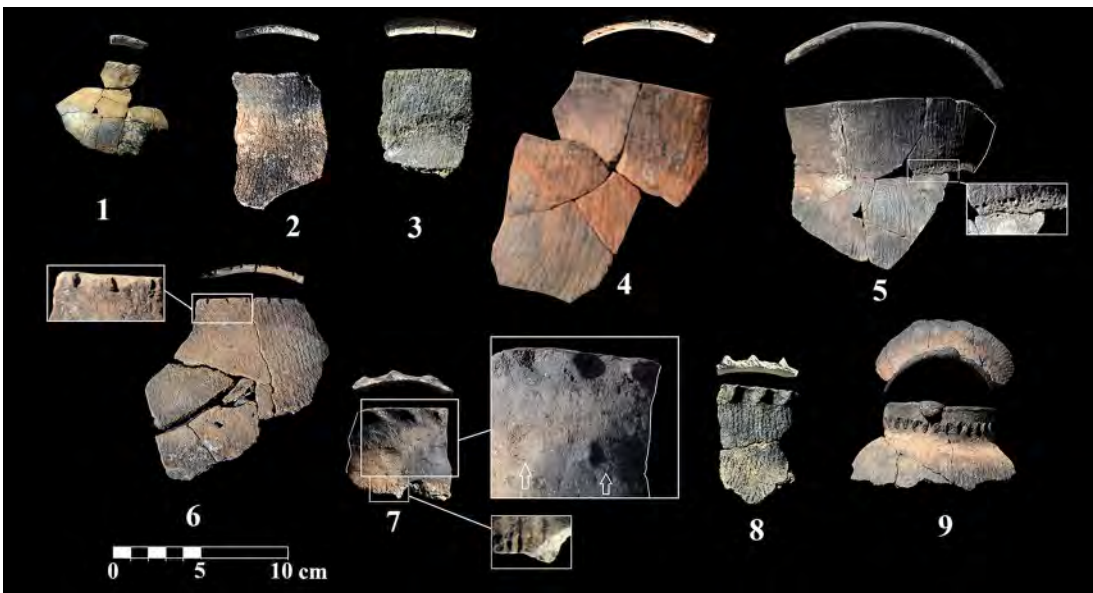


Figure 4. Decorated rim sherds recovered from Connellee Peak. Photo by Chris Lintz.

sherds ranges from 3.1 to 10.5 mm, which is within the conventional range of Middle Ceramic period pottery.

Eleven of the 33 Connellee rim sherds (33%) are decorated. This unusually high incidence of decorations contrasts with those from the Buried City complex in Ochiltree County, Texas, where decorations account for only 5% (Hughes 1990), and no decorations were found on ceramics recovered from Alibates Ruin 28 near the Alibates flint quarries (Hughes 2002). The Connellee Peak ceramics have crenulations (projecting triangles on the upper rim), spaced diagonal incisions, spaced triangular punctations, or spaced pinched depressions on their lip-rim junctures (Figure 4). The middle rim region displays finger-gouged nodes, widely spaced diagonal grooves, or spaced shallow circular depressions. The neck-body juncture on one sherd has coarse cord impressions that may be incidental to a tie-down lid. Other projections include horizontal lip tabs and evidence of loop handles on the mid rim areas.

Brief studies of decorative motifs across the Southern Plains have found limited decorations on ceramics among most other Canadian River Antelope Creek sites. However, five of the seven

Connellee Peak embellishments also occur in the ceramic assemblage at the Stamper site in the Oklahoma panhandle and among the decorated sherds of the Buried City complex. In addition, our Connellee Peak decorations occur on ceramics from the Armstrong site in the Bluff Creek complex of south-central Kansas and two motifs are also seen on ceramics from the Wilmore and Pratt complexes, also from the south-central Kansas region. Presently, it is impossible to determine if the Connellee Peak ceramics reflect occupations by a specific group or whether the decorations signify a more widespread phenomenon. For example, it could be that pan-regional motifs associated with cord-marked pottery signified regional religious or social meaning. For now, questions such as these must await a more detailed study of Middle Ceramic period decorations from the Southern Plains and supporting petrographic and neutron activation data.

Acknowledgements

We wish to thank Andy Cloud, director of the Center for Big Bend Studies, for his support of the field and mapping study components. Thanks also to Alvin Lynn for contributing his ceramic collection for study; to Marisue Potts for providing access to her family's land containing the mesa; and to those who helped with fieldwork, including Rick and Susan Day, Dr. Veronica Arias, Rolla Shaller, and Andy Burcham of the Panhandle-Plains Historical Museum.

—Christopher Lintz* and Samuel S. Cason

* Christopher Lintz, Ph.D., is an archaeologist for the Center for Archaeological Research at Texas State University.

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The Center for Big Bend Studies fosters interdisciplinary scholarship of the diverse prehistoric, historic, and modern cultures of the borderlands region of the United States and Mexico, with emphasis on the area encompassed by Trans-Pecos Texas and north-central Mexico. The Center is committed to the recovery, protection, and sharing of this region's rich cultural legacy through dynamic programs involving research, education, public outreach, and publication.

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Trans-Pecos Perishables continued from page 2

samples studied have been small and/or the samples were not sequenced" (2010:3131). The available analyses are limited to late Mimbres and Casas Grandes populations and results suggest both populations were closely related to one another and were not the products of single Mesoamerican migration (especially important in the emergence of Casas Grandes). I assume genetic samples from Spirit Eye Cave are older than populations previously studied in the Southwest. In light of this, it will be interesting to see how DNA samples from Spirit Eye Cave now being processed at the University of Montana update this earlier work.



Fragment of parching tray recovered from Shaft B of Spirit Eye Cave. Photo by Taylor Greer.

Conclusion

Archaeology is difficult because we do not know what the answers are supposed to be (it is not rocket science—it is harder) and that makes it difficult to know where to cut off our analyses or which direction they should go. But with advancements in and increased precision of radiocarbon dating, genetics, and theoretical approaches, the complexity of the prehistoric world is starting to come into sharper focus. Researchers like Stephen Lekson have long championed the view that prehistoric groups were not country bumpkins, but part of complex social spheres. I think they are right and we are just beginning to see how this was the case for prehistoric groups that occupied the greater Big Bend region, but it is only possible if we are able to look beyond the confines of what have long been seen as distinct, and isolated, culture areas.

—Bryon Schroeder

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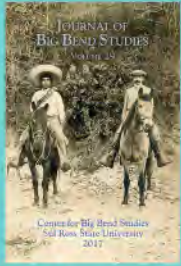
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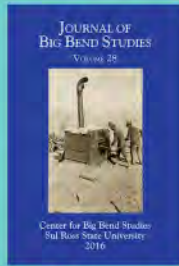
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