

The Paleoindian to Archaic Transition: The Gypsum Overlook Paleo-Archaic Archaeological Site in New Mexico's White Sands

Matthew Cuba, MA and Joel Butler, MA

The initial human settlement of southern New Mexico's Tularosa Basin has become a heavily debated topic within the archaeological community in recent years with discussions of possible pre-Clovis occupations being found at White Sands National Park. Although there is much controversy surrounding these claims, the Tularosa Basin does retain a well-documented Paleoindian and Archaic period occupation. The Paleoindian occupation of the basin traditionally began with Clovis age occupations and substantial numbers of Folsom age sites.

What is less understood and even more poorly documented is the transitional period between the Clovis/Folsom occupations and the following Archaic period in the basin. The Paleo-Archaic transition period is a little-understood time period with very few sites remaining intact enough to collect radiocarbon dates for this time when the environment began to change drastically in the terminal Pleistocene epoch and the beginning of the Holocene. This Paleo-Archaic transition is important as it lays the groundwork for the following 6,000-year-long Archaic tradition that dominates the archaeological record of the American Southwest.

Traditionally the Paleoindian period in New Mexico ends at approximately 8000 cal BP (6050 BCE) in most pre-Columbian chronologies used in the state with the Archaic period beginning after that date. There are very few radiocarbon dates associated with assemblages from the 9000 cal BP (7050 BCE) to 8000 cal BP time frame and the period remains poorly documented and poorly understood.

New discoveries in the Tularosa Basin relating to this transitional period (see Figure 1 and others in this article) have begun to shed light on how people were adapting to the post-Pleistocene, increasingly xeric environment of the Holocene. The discovery of the Gypsum Overlook archaeological site along the eastern shoreline of Paleo Lake Otero (Figure 2) has provided a unique opportunity to view a single-component Early Holocene occupation dating to the terminal Paleoindian timeframe. The presence of an early occupation – 8800 cal BP (6850 BCE) – with distinctly Archaic attributes (ground stone artifacts, simplified lithic reduction continuums, and evidence of diversified subsistence practices) suggests the transition to Archaic-style lifeways began in the terminal Paleoindian period.

Continued on page 2

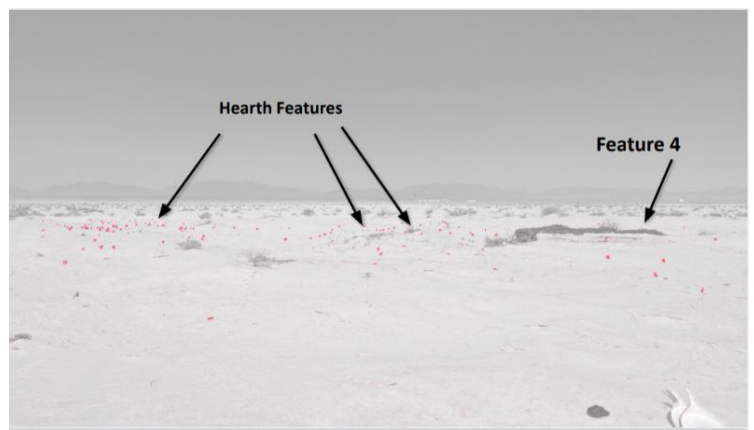


Figure 1. Overview of Gypsum Overlook, facing northwest
(All illustrations in this article except the one on page 12
are courtesy of Holloman Air Force Base, New Mexico)

Also in this issue:

"How Archaeologists Identify Stone Artifacts and Cultural Features" by Allen Dart	14
"Piipáash, Halyehdúum and 'O'odham: Centuries Together on the Gila River" by Harry J. Winters, Jr.	27
Upcoming Activities	48

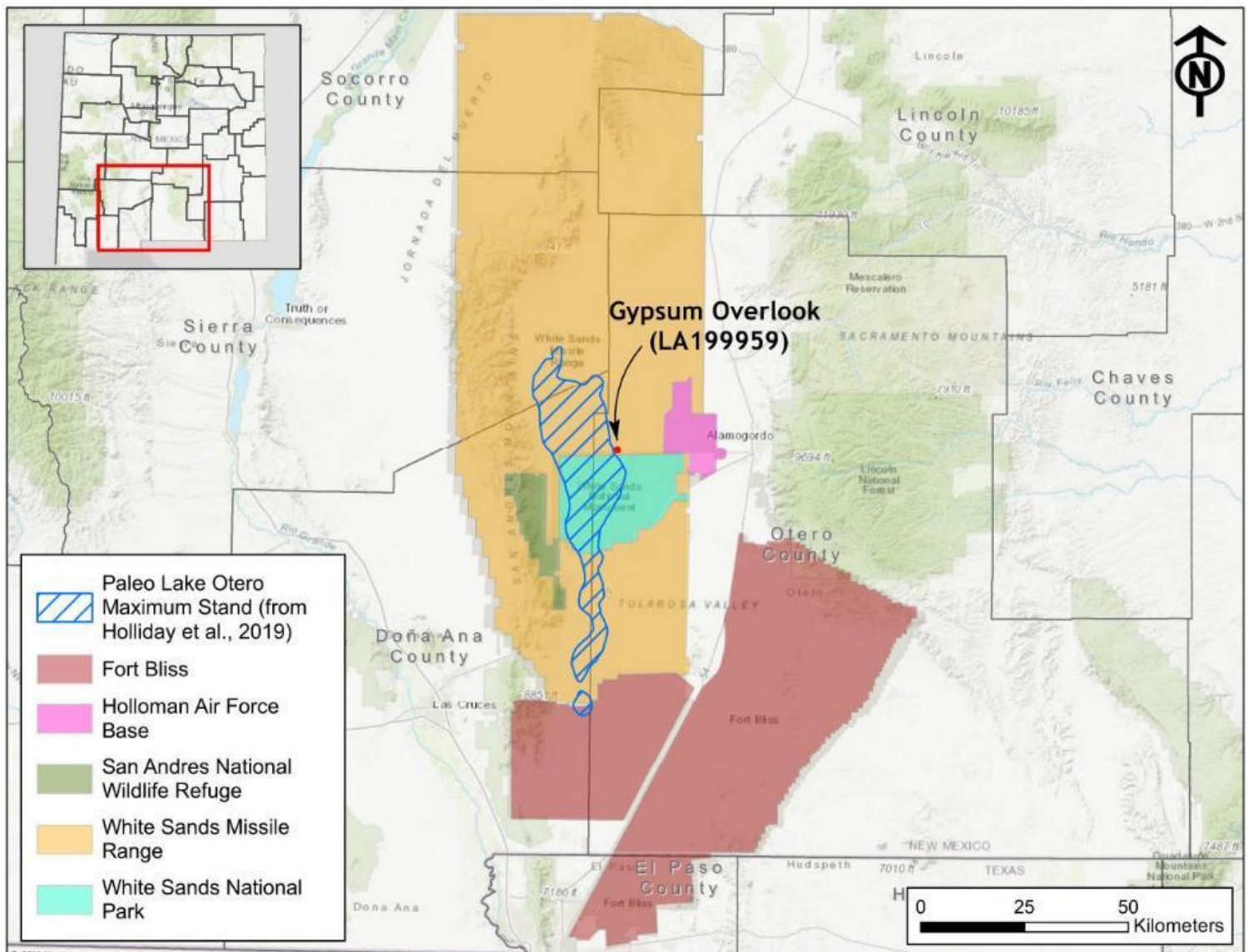


Figure 2. Location of Gypsum Overlook in the Tularosa Basin showing Paleo Lake Otero

Chronology and Cultural Transitions

The chronology of human occupation of precontact New Mexico is well established and begins in the Terminal Pleistocene epoch (approximately 13,000 years ago) and continues through to the Historic period. Through time, subsistence strategies and settlement patterns changed as the environment began a gradual warming and drying trend beginning about 11,700 years ago, or roughly 9700 BCE (American Museum of Natural History 2026), which ushered in the beginning of a new era, the Holocene. It was marked by increasing aridity and warming temperatures, and it was against this backdrop of a changing environment that the transition from the Paleoindian period to the Archaic period occurred. As the Holocene began, the people who inhabited the precontact Southwest were changing their subsistence and settlement strategies in response to the rapidly changing environment, including drying lakes throughout the American West and Southwest. During the last glacial period, basins had been filled with water, creating large freshwater lakes throughout the West. These lakes provided not only water but created exceptionally productive ecosystems along their margins.

These Early Holocene adaptations were differentiated from the North American Plains Paleoindian adaptations not only by the differences in the “reduction continuum,” that is, the process of reducing stone by flaking it, but by other tools the Early Holocene peoples utilized. Tool forms not seen in the North American Great Plains Paleoindian assemblages include ground stone, large minimally modified flakes



utilized as knives, and large unifacial ovoid scrapers. Early Holocene peoples appear to have utilized a much more varied suite of plants and animals in their diet than their Pleistocene predecessors, as evidenced by high ratios of ground stone in archaeological site assemblages. How Early Holocene peoples created their stone tools and the production continuum they employed are in stark contrast to the flaked stone reduction process utilized on the Great Plains and in the earlier Clovis and Folsom age assemblages. Early Holocene peoples were focused on the removal of large macro flakes from large cores, which were then reduced into several formal tools, including projectile points and bifaces as well as scrapers and tabular knives. The Early Holocene toolkit reflects a different approach to subsistence than what is seen in the Clovis/Folsom flaked stone reduction continuum.

New Mexico has not traditionally been associated with significant Early Holocene sites, and until recently no substantial sites attributable to Early Holocene occupations had been identified in the state. The generally accepted chronology of precontact New Mexico begins with the Clovis culture followed by Folsom and the host of Late/Transitional Paleoindian cultures. Following the end of the Pleistocene, we see the first Archaic culture groups appear in the archaeological record, utilizing projectile points such as the Jay and Bajada types in New Mexico. Gypsum Overlook (LA 199959), which is located on the eastern shoreline of Paleo Lake Otero (the modern-day Lake Lucero area in south-central New Mexico's Tularosa Basin) is forcing us to rethink the cultural organization of the Pleistocene/Holocene transition.

The shift from Paleoindian to more broad-spectrum Archaic subsistence strategies is well documented throughout the western United States, but sites straddling that transitional period have been elusive with very few discovered. The inclusion and use of ground stone shows that subsistence patterns were already changing by 8,800 calibrated years before present (cal BP) (6850 BCE) with increased utilization of seeds and other floral foodstuffs. In addition to the change in subsistence strategies, landscape use began to change as well. At Gypsum Overlook, we see the repeated use of specific locations across the landscape with what appear to be seasonal occupations. The presence of "stacked" structure floors shows that the site was reoccupied more than once, probably by the same group or lineage of people who chose to "invest" additional time and energy at the site.

Archaeological Feature Descriptions

Gypsum Overlook is located in a relict dune belt on the eastern margin of Paleo Lake Otero on White Sands Missile Range (Figures 1 and 2). The site consists of eight archaeological features and over 400 flaked and ground stone artifacts. The four projectile points discovered at the site have concave bases and parallel sides and are relatively thick, more closely resembling late Paleoindian points of the Great Basin's Western Stemmed tradition than points of the Great Plains' Plainview lineage. The site measures 70 by 40 m with artifacts and features evenly distributed throughout (Figure 3). The features consist of five small (less than 1 m in diameter) slightly pedestaled features and three large (over 2 m in diameter) features. Three of the eight features are preserved floors of habitation structures. These features have withstood the effects of wind erosion because of the heating of the gypsum substrate, thus turning the gypsum into a plaster of Paris-like material called gypsum anhydrite. This heating of the gypsum and subsequent creation of a well consolidated and hardened layer has preserved the features and prevented their erosion over the last nine millennia. Artifacts are associated with all eight features, occasionally within the feature matrix itself. Charcoal is preserved within the hardened matrix of all the features.

The site is located on the eastern margin of Paleo Lake Otero on a well-defined rise above the lake in an area of eroded dunes (Figures 3 and 4). Very little vegetation grows in or near the site today and the

Old Pueblo Archaeology Center's Board of Directors as of July 2026

Officers: Monica Z. Young, President; Samuel (Sam) Greenleaf, Vice President;
A. J. Vonarx, Secretary; Monica (Nica) Prillaman, Treasurer

Other Board Members: Robert (Rob) Arnberger, Charles R. (Butch) Farabee, Jay Franklin,
William (Bill) Gillespie, Mitchell (Mitch) Kagen, Patricia (Pat) Lindberg, Brian McKee, Celestine (Sally) Pablo,
Michelle O'Donnell, Asa Sherry, Idella Stanley, Patricia (Pat) Wiedhopf, and Reylynne Williams.

Executive Director (Volunteer): Allen Dart, RPA

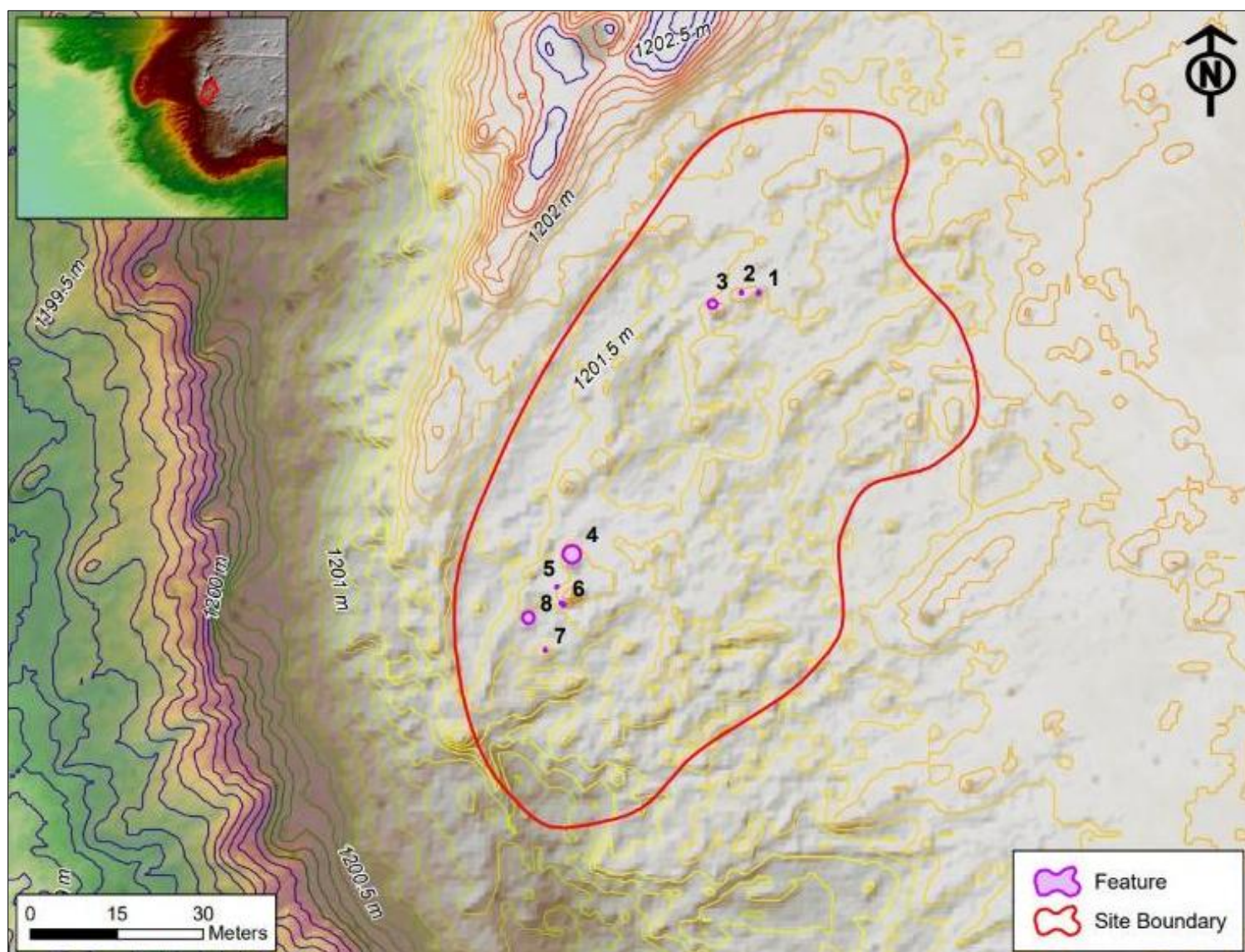


Figure 3. Gypsum Overlook site map

few plants present are primarily saltbush. The site is on a flat surface with a sharp dropoff to the Paleo Lake Otero shoreline, or erosional scarp to the west. Gypsum sands from the dry lakebed blanketed the site and the cycle of deposition and erosion of the gypsum continues to this day. Most of the Gypsum Overlook site has been heavily impacted by erosion and, as a result, the only attributes of it that remain intact are the hardened gypsum features. All of these features are pedestaled above the surrounding ground surface with the areas between these hardened feature remnants eroded away.

All eight features retain pieces of charcoal preserved within the hardened gypsum anhydrite plaster. Six radiocarbon samples were derived from the features. Statistical analysis of them performed by Dr. David Meltzer of Southern Methodist University and the Quest Archaeological Fund demonstrate that the dates are essentially contemporaneous, tightening the date range to 7940 ± 12 radiocarbon years BP (RCYBP) (6002-5978 BCE) or a median calibrated age of 8768 cal BP (6818 BCE) (Meltzer, personal communication to Cuba, February 2022).

The ability of gypsum sands to be heated and chemically altered into anhydrite, which becomes very resistant to erosion, has preserved features in a manner rarely seen in sites of this age. A host of younger features have been discovered at White Sands National Park and the process by which the gypsum is transformed into anhydrite has been well documented. Generally, the hotter the fire, the deeper and greater the area that is transformed into anhydrite. Features found on White Sands National Park have anhydrite deposits that represent long-lived heating events, like those seen in hearths (for example, Feature 5,

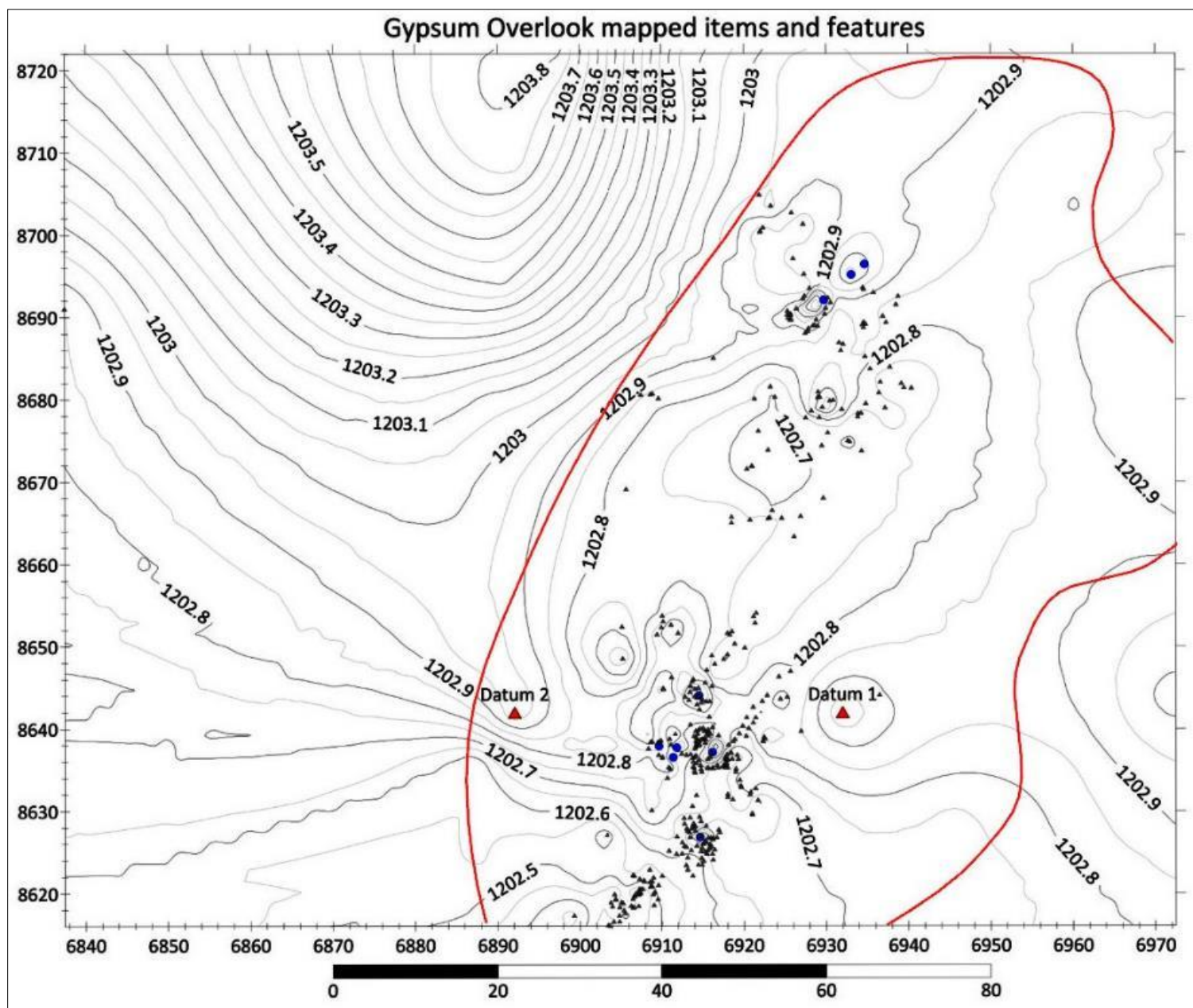


Figure 4 (above). Point-plotted artifact data for Gypsum Overlook – black marks are artifacts, blue marks are features.
(Map courtesy of Dr. David Meltzer)

The heat coming from a hearth or roasting pit is long lasting and attains very high temperatures, resulting in more gypsum being transformed into anhydrite. Thicker anhydrite feature deposits that are consistent with long-lasting heating events are present at Gypsum Overlook and appear to represent hearths or fire pits. However, the three structure features present at Gypsum Overlook consist of shallow (approximately 8 cm) rinds of anhydrite that have been created during single, fast, low in-

Figure 5) or roasting pits.



Figure 5 (right). Feature 5 (hearth) showing pedestaled anhydrite deposits above the surrounding ground surface



tensity heating events. A consistent rind of anhydrite less than 10 cm in depth would correspond well to the signature left from a brush structure burning. When a grass or brush structure burned, it would occur rapidly and would not have enough fuel for the heat from the fire to penetrate as deeply into the gypsum substrate as would a hearth or roasting pit.

Feature 4 is a pair of superimposed basin-shaped house pit features measuring over 3 m in diameter, located on the southern margin of the site. Feature 4 has been further divided into Feature 4a, Feature 4b, and Feature 4c (Figures 6-10). Feature 4a is the uppermost shallow basin and Feature 4b is the lower shallow basin (Figures 6, 8, and 9). Feature 4c, a patch of anhydrite located beneath Features 4a and 4b, could represent a third occupational floor. The portions of Feature 4c that remain have been the most heavily impacted of the three “stacked” features. The two features are separated by more than 10 cm of sterile white gypsum.



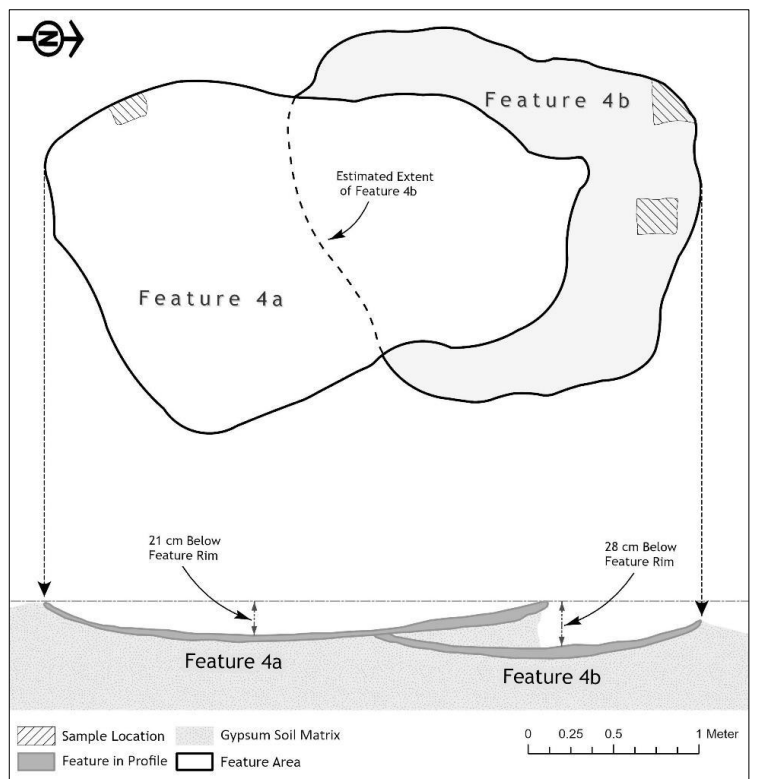
Figure 6 (upper left). Features 4a (top right) and 4b (bottom left) demonstrating the stacked nature of the structure floors

Figure 7 (upper right). Radiocarbon sample collection area showing consistent thickness of anhydrite deposits that comprise Feature 4a



Figure 8 (above). Close-up photo of the west side of Features 4a and 4b showing the basin shape of the features and the overlapping nature of the two structure floors

Figure 9 (right). Plan view and profile illustration of Features 4a and 4b





Feature 4a has several artifacts in direct association with the feature matrix, including a one-hand mano, a tabular knife, flakes, and one piece of quartz rock. Feature 4b has no artifacts observed in association with the feature matrix but is mostly covered by Feature 4a and therefore largely obscured. Artifacts found around the margins of the features include one slab metate, cores, fragmentary pieces of ground stone, two projectile points (on the eastern margin of the features), and one biface.

Feature 4a is an 8 cm thick deposit of burned and well-consolidated and hardened gypsum with charcoal and artifacts sealed within the hardened anhydrite. The 8 cm thick deposit is over 2 m in diameter and slightly basin shaped, the edges of the feature being higher than the center by approximately 10 to 15 cm. The actual height difference between the center of the feature and the margins is difficult to accurately ascertain as the margins of Feature 4a have been subjected to wind erosion, thus impacting the original lateral dimensions of the feature. It does not thicken in the middle as most hearth or roasting pit features do in profile but instead retains consistent thickness throughout.

The areas of hardened gypsum plaster found above the structure floors have substantial amounts of charcoal within their matrix, like that seen in the floor deposits. These slightly mounded or raised areas are likely portions of roof fall or wall fall that accumulated on the structure floor after being exposed to the heat of the fire and transforming into anhydrite. There is a thin layer of clean white unaltered gypsum sand found between the floor of the structure and these areas of roof/wall fall. The layer of clean gypsum sand could only have been deposited there sometime after the burning of the structure and before its walls/roof slumped into the remnant pit.

The artifacts in direct association with Feature 4a are found around the margins of the feature with few artifacts found in the center. This type of organization is often found in later periods within the confines of structures, such as pithouse features documented elsewhere in the Tularosa Basin, while features of this size (3 m in diameter) are in line with the sizes of proposed Paleoindian structures found in Colorado and Wyoming (Larson and Francis 1997).

Although no additional subfeatures have been positively identified within Features 4a or 4b there is strong evidence that these features represent abandoned and burned structures. One possible post mold is located on the southern margin of Feature 4a and western margin of Feature 4c (Figure 11). This subfeature (Feature 4c) was not investigated aside from being exposed in plan view. Additional



Figure 10. Overview showing Features 4a and 4b with 4b cleared of recent eolian-deposited sand



Feature 4C, Possible Post Mold

Figure 11. Possible post mold along the margins of Features 4a (upper portion of figure) and 4c (along the right side of the figure)



work would be required to positively identify the subfeature as a post mold. The slightly basin-shaped cross section exhibited in Features 4a and 4b is often seen in later pithouses and brush structures.

The locations of artifacts along the margins of the features and the lack of burned rock within them are also characteristics seen in later period habitation structures. Additional subfeatures or post molds could be present within the features but not yet identified in the small area that has been exposed. While not a subfloor or structure floor feature, the areas of wall/roof fall found above the floor surface of Feature 4a indicate that the structure was partially subterranean and/or portions of the walls of the structure above ground surface had soil packed against the lower margins. Controlled excavation of the features could yield post molds and other subfeatures that may aid in better defining what type of structures are present and how they were utilized and constructed. The consistency of the thickness of the two features corresponds well with being the signature of a single burning event. The heat from the fire could only penetrate the substrate beneath the burning surface approximately 8 to 10 cm and this type of uniform burning, with no substantially hotter spots, would correspond well to the signature of a burned structure.

In addition to the two stacked structure house pit floors preserved in Feature 4, there is an additional structure floor located to its southwest. Feature 8 is a large (2 m in diameter), roughly circular patch of burned and consolidated gypsum plaster located approximately 3 m to the southwest of Features 4a and 4b (Figure 12). Feature 8 is composed of a thin layer of charcoal and enriched and well consolidated gypsum plaster, with a small (20 cm diameter by 10 cm thick) round lump of burned gypsum plaster located along the southeastern margin of the feature. A portion of Feature 8's center has been recently eroded away but the margins of the feature are clearly visible in plan view. The feature is slightly basin shaped. A 20 cm diameter lump of burned gypsum plaster is located within the confines of Feature 8.

Flaked and ground stone artifacts are found in association and a scatter of artifacts surrounds the feature. Feature 8 is located at approximately the same elevation as Feature 4b and is close in size. Like Feature 4a, Feature 8 has a substantial assemblage of artifacts found in association. The lump of burned gypsum plaster located in the southeastern portion of Feature 8 is likely a section of roof/wall fall like that seen in Feature 4a. Beneath this burned area of gypsum plaster is a thin layer of sterile gypsum sand. As in Feature 4a, there is much charcoal found embedded and preserved within the gypsum plaster matrix.



Figure 12. Feature 8 showing the remnants of a structure floor with portions of wall fall in the upper right area of the photo



Feature 8 shares several similarities with Features 4a and 4b. All three of these features are over 2 m in diameter, are located lower in elevation than the surrounding hearth features, are slightly basin shaped, and have consistent thicknesses. Like Feature 4a, there are artifacts associated with the floor of Feature 8 and areas of roof/wall fall comprised of burned gypsum plaster. Substantial amounts of charcoal exist within the gypsum plaster deposit of Feature 8 just as they do in Features 4a and 4b. No radiocarbon dating has been performed on Feature 8 but it likely dates to the same time as the other features at the site considering the presence of a homogenous flaked stone assemblage, similarities among Feature 8 and Features 4a and 4b, and the elevation of the structure floors in relation to the hearth features.

Ground Stone Artifacts

The presence of a sophisticated ground stone assemblage at such an early date has not been encountered in New Mexico. The presence of ground stone in these early assemblages seems to suggest that people were adapting to a changing environment and utilizing the resources available along the margins of the rapidly drying lakes. The assemblage at Gypsum Overlook includes the largest securely dated Early Archaic ground stone assemblage thus encountered in southern New Mexico. The presence of substantial amounts of ground stone and tabular knives suggests that processing vegetable foodstuffs was a major focus of the site.

The ground stone assemblage and other lithic processing tools present at Gypsum Overlook represent one of the earliest dated ground stone assemblages found in the Southwest. The number of ground stone items is substantial but confined to strictly one-hand manos and slab metates of various materials. Because the site apparently is the result of a single group occupying an area and was not reused by later time periods (evidenced by the homogeneity of the assemblage, the dynamic geographic location on the margin of a disappearing lake, and a narrow range of radiocarbon dates) the assemblage can be definitively attributed to a single, yet repeated, Early Holocene occupation.

The number of ground stone items in the assemblage is substantial and consistent regarding type and general shape and size. Materials utilized for the ground stone include sandstone, a porous basalt, and a fine-grained basalt-like igneous material. The ground stone assemblage (Figure 13) present at the site includes 12 one-hand manos and 10 slab metates. Most of the metates have been eroded and split apart over the preceding millennia but enough material remains to make a positive identification. Ground stone is found in direct association with features on the site, indicating that the assemblage is not overprinted by later occupations. Some of the one-hand manos also exhibit the same cracking and breaking apart as the slab metates, but to a lesser degree.



Figure 13. Examples of ground stone from Gypsum Overlook, photos taken in field



Most of the fragmentary slab metates are made of sandstone while the more intact specimens are made from an unidentified more resistant igneous material. The sandstone metates retain only small portions of the original ground surface, the rest being heavily eroded. The metates made from the unidentified igneous material show that both sides of the metate were utilized for grinding. The one-hand manos at Gypsum Overlook are bifacial and exhibit heavy grinding and polish on all facets of the manos, including the edges.

Tabular Knife Artifacts

In addition to ground stone and flaked stone debitage, five examples of what would be best described as tabular knives were recovered from the site. Three are shown in Figure 14. These tools are large flakes or naturally occurring flat pieces of slate or basalt that have been flaked along the margins and most measure over 6 cm. No attempt was made to thin the artifacts like a large biface, but instead focused on creating a cutting edge along the margins. These tabular knives were found in association with the features and within the matrix of Feature 4a.

Formal Tool Artifacts

Formal flaked stone tools at Gypsum Overlook include four projectile points with slightly concave bases and parallel to expanding lateral margins (Figure 15). The projectile points exhibit traits of the Late Paleoindian period as well as the Early Archaic and have been heavily resharpened. The bases of the projectile points are slightly ground with basal thinning flake scars and no shoulders present on any of the examples. The flaking pattern is random and one of the points appears to have been made from a thin flake with one face of the point showing remnants of cortex.

The projectile points are all Plano Lanceolate in cross section, but much of the original flaking is obscured by repeated resharpening, which is not unexpected, as the site is located well away from the nearest flaked stone sources in either the San Andrés Mountains (15 miles west) or Sacramento Mountains (25 miles east). All of the projectile points are made from black chert, likely originating in the Sacramento Mountains, and were possibly acquired from one of the many drainages that empty into the Tularosa Basin.



Figure 14. Examples of tabular knives and a scraper (right) from Gypsum Overlook, photo taken in field with metric scale, background dropped out for publication



Figure 15. Four projectile points with intact bases (above) and other flaked stone tools recovered from Gypsum Overlook, photos taken in field, backgrounds dropped out for publication

Stylistically, the projectile points recovered from Gypsum Overlook predate Bajada points and appear to be contemporaneous with Jay points. Jay points are poorly dated but are placed chronologically before Bajada and after the suite of Late Paleoindian variants such as Plainview, Midland, and related types. Jay points most likely date to somewhere between 7550-10,770 BP (5600-8820 BCE) and two dates from questionable association elsewhere suggest that Jay points may be as young as 6800-7500 BP (4850-5550 BCE) (Chapin 2017). Regardless of the exact age of Jay points, Bajada points have been dated to a much younger time period and Bajada Type 1 points could be as old as 8000 BP (6050 BCE), though most of the Bajada points date to younger than 7000 BP (5050 BCE) (Chapin 2017; Pitblado 2003).



In the assemblage with the projectile point bases are three chert bifaces: one made from a black chert and the other two made from a white to slightly opaque chert. The two opaque white chert bifaces appear to be made from the same material. One of the opaque white bifaces is a large flake, unifacially worked into a generic projectile point form. The biface was abandoned, possibly due to a series of step fractures near the tip of the biface. The platform for the initial flake removal was reduced and only a small portion of the bulb of percussion remains on the ventral side. The other two bifaces have been bifacially modified. One drill fragment was also recovered from the site and is made from the same black chert as the projectile points.

The remaining stone artifact assemblage is comprised solely of flakes that exhibit multifaceted as well as single-facet platforms. The flake assemblage matches the formal tools in terms of type of flake as well as material type. The flake assemblage consists of over 100 flakes, found in association with the features and lightly scattered throughout the site. Flakes are in direct association with the feature matrix of Feature 4a and Feature 8 as well.

Synthesis, Similar Sites, and Conclusions

Gypsum Overlook represents the first well dated structural, single component Early Holocene site yet found in southern New Mexico. The site includes habitation structures, hearth features, and one of the earliest dates for ground stone in the state of New Mexico. The unique qualities of the gypsum soils have preserved the site's features and allowed the first glimpses of Early Holocene habitation structures as well what type of toolkit was utilized by the Early Holocene peoples of the region. Gypsum Overlook is from a time characterized by change, not only in the environment at the end of the Pleistocene, but also in toolkits in response to that changing environment, marking the transition from Paleoindian to Archaic subsistence strategies.

The toolkit utilized by the Early Holocene peoples of the Tularosa Basin was markedly different from the Paleoindian toolkit, which was virtually unchanged for thousands of years. By 8800 cal BP years ago (6850 BCE), a well-established ground stone tradition, which included one-hand manos and slab metates, was already in place. The large ground stone assemblage (over 20 items) present at Gypsum Overlook is unquestionably associated with structures present at the site and is the earliest large assemblage of ground stone that can be directly attributed to a specific period. Early Holocene peoples at Gypsum Overlook were processing perishable material and devoting effort into procuring, shaping, and using ground stone. This new stone tool-making tradition, established in the Early Holocene, continued relatively unchanged throughout the remainder of the Archaic period.

Sites attributable to the Early Holocene period are rare and seldom encountered in situations in which datable deposits exist in direct association with a single component occupation. On neighboring Holloman Air Force Base, another Early Holocene site (Gomolak Overlook, LA 202921) was recently discovered, buried beneath approximately 2 m of loess also originating from the Paleo Lake Otero basin. Gomolak Overlook was discovered eroding out of the side of a roadcut and thus the true extent of the site is not known but two hearth features have been dated to the 8200-8400 calibrated years before present period. Like Gypsum Overlook, LA 202921 retains intact hearth features with flaked stone artifacts in direct association. Investigations at Gomolak Overlook are ongoing and may provide additional important information about early Archaic peoples of the region.

The presence of two sites attributable to the Early Holocene in the northern Tularosa Basin that retain datable deposits and substantial integrity provides insight into a period in which substantial changes in the environment were occurring. The environmental change that occurred during the Pleistocene/Holocene transition spurred changes in technology, subsistence, and settlement patterns that are currently poorly understood. The two "Overlooks" will provide much needed data on this transitional period and help us better understand this dynamic period.



Scenery: Small animal tracks and plant in White Sands National Monument, photo by Allen Dart, July 1, 2006



About the Authors

Matthew Cuba (M.A. 2014, New Mexico State University) is the Cultural Resource Manager at Holloman Air Force Base located in the eastern Tularosa Basin. He has worked in the Tularosa Basin for almost 20 years. His research interests include Early Holocene cultural adaptations and lithic sources of the San Andrés Mountains in southern New Mexico

Joel Butler (M.A. 2006, Texas Tech University) has worked in Cultural Resource Management throughout Texas, New Mexico, and surrounding states for 20 years. He is presently a Principal Investigator archaeologist at Westwood Professional Services. His research interests include geoarchaeology and early Archaic cultural adaptations.

Acknowledgments. The work done at Gypsum Overlook was only possible due to the efforts of numerous people over multiple years. The authors would like to thank Jim Bowman, White Sands Missile Range Cultural Resource Manager, for his steadfast support throughout the project. Without his support and guidance there would be no "Gypsum Overlook." Additionally the authors wish to express their gratitude to Dr. David Meltzer, Dr. Vance Holliday, Dr. Jason Windingstad, Dr. Andrew Boehm, Dr. Brian Andrews, and Dr. Michael Diehl for all their hard work on and off the site.

References Cited

- American Museum of Natural History
2026 Perissodactyls: Plio-Pleistocene. American Museum of Natural History, New York.
<https://research.amnh.org/paleontology/perissodactyl/concepts/deep-time/plio-pleistocene>
- Chapin, Nicholas
2017 Oshara Revisited: The Archaic Period in Northern New Mexico. Anthropological Papers No. 10. Maxwell Museum of Anthropology, University of New Mexico, Albuquerque.
- Larson, Mary and Julie E. Francis
1997 Changing Perspectives of the Archaic on the Northwest Plains and Rocky Mountains. University of South Dakota Press, Vermillion, South Dakota.
- Pitblado, Bonnie L.
2003 Late Paleoindian Occupation of the Southern Rocky Mountains: Early Holocene Projectile Points and Land Use in the High Country. University Press Of Colorado, Boulder.

*Some White Sands National Monument scenery,
photos by Allen Dart, July 1, 2006*



How Archaeologists Identify Stone Artifacts and Cultural Features

Allen Dart, RPA

Old Pueblo Archaeology Center, Tucson, Arizona

People often bring objects, or send photographs of them, to archaeologists with questions whether the items are archaeological artifacts. Probably most often the question is about a pottery specimen, but a close second and third are whether certain portable stones are artifacts and whether certain colored lines, holes, depressions, grooves, and other attributes people have seen on bedrock exposures or large boulders are humanmade.

Before going further to address these questions, let's consider how archaeologists identify stone artifacts and human-made or human-altered features.

An **artifact** is any object made, modified, or used by people, such as a tool, weapon, or container. It usually also is portable and relatively easy to carry, a quality that some archaeologists use to distinguish an artifact from what we call a "cultural feature" (see next paragraph). An object does not have to be old to be an artifact. For example, an item of clothing, a drinking glass, an eating utensil, a laptop computer, a lamp, a chair, a picture hung on a wall, and myriad other kinds of objects that have been made, modified, or used by one or more persons and that are easily movable are artifacts, even if made or used only as recently as yesterday or today.

A **cultural¹ feature** is a relatively nonportable, permanently placed or embedded object or fixture that has been made or modified by human action.

Archaeology Opportunities Membership/Old Pueblo Archaeology Subscription Application Form Please return this form with check payable to "OPAC" or with credit card information completed, To Old Pueblo Archaeology Center, PO Box 40577, Tucson AZ 85717-0577			
Name (Mr., Ms. Mrs.) _____		Questions? 520-798-1201 or info@oldpueblo.org .	
Address _____		I am submitting the following payment for:	
City, State, Zip _____		Archaeology Opportunities membership: \$ _____	
Area Code & Phone (____) _____		Donation to Old Pueblo Archaeology Center: \$ _____	
Email address _____		TOTAL ENCLOSED: \$ _____	
Please select membership category from the list below:			
☐ Individual	\$40	* Categories and rates shown at left include Old Pueblo Archaeology electronic bulletin annual subscription (4 issues), provide discounts on publications and some activities, and provide opportunities to participate in Old Pueblo Archaeology Center's member-assisted field research programs such as archaeological excavations and surveys. Provides 1-year Old Pueblo Archaeology bulletin subscription (4 issues) & discounts on publications & some activities; does not provide participation in member-assisted field research programs. Provides 1-year subscription to the Old Pueblo Archaeology electronic bulletin (4 issues); does not provide discounts or participation in member-assisted field research programs.	
☐ Household	\$80		
☐ Sustaining	\$100		
☐ Contributing	\$200		
☐ Supporting	\$500		
☐ Sponsoring	\$1,000		
☐ Corporation	\$1,000	☐ Friend	\$25
		☐ Subscriber	\$10
Please complete section below only if paying with credit card - Old Pueblo accepts Visa, MasterCard, Discover, and Diners Club cards.			
Name on card _____		3-digit security code _____	
Account no. on card _____		Expiration date (Month/Year) _____ / _____	
Signature _____		Date signed _____	

¹ cultural: having to do with humans; humanmade.



Identifying Projectile Points and Other Chipped/Flaked Stone Artifacts

Figure 1 summarizes the attributes archaeologists look for that would indicate intentional modification of a stone by chipping or flaking it to create a projectile point or another specific shape of flaked stone artifact.

Because most stone projectile points, drills, scrapers, and other implements are made primarily by flaking or chipping rather than by grinding or polishing, a key attribute for identifying a flaked stone artifact is the presence of flake scars (places on the stone where one or more flakes have been removed) that exhibit conchoidal fracture.² Figure 2 shows a stone flake exhibiting conchoidal fracture next to a cobblestone with prominent conchoidal flake scars. In Figure 3, all four of the archaeological stone flakes exhibit conchoidal fractures, and striking platforms (shown and described in Figure 1) are visible at the upper ends of items 2067-2 and 2086-2. Figure 4 shows a selection of simple flaked stone artifacts, that is, ones that have not been made into formally shaped tools. Figure 5 shows part of the stone-flaking process.

A stone “projectile point” is a flaked stone tool, usually sharply pointed, used as the tip of an arrow, spear, or or dart. A projectile point usually is somewhat triangular or leaf-shaped; has conchoidally fractured flake scars on its edges and on one or both of its faces where flakes of the original stone have been removed to shape and thin the artifact; and opposite the pointed end, usually has a base that has been intentionally shaped to make it easy to attach the point to a wooden or cane arrow or spear shaft by tying the point onto the end of the shaft, or by inserting it into a split portion of the shaft end, or by socketing the point into a foreshaft that is attached to the shaft end., or dart. A projectile point usually is somewhat

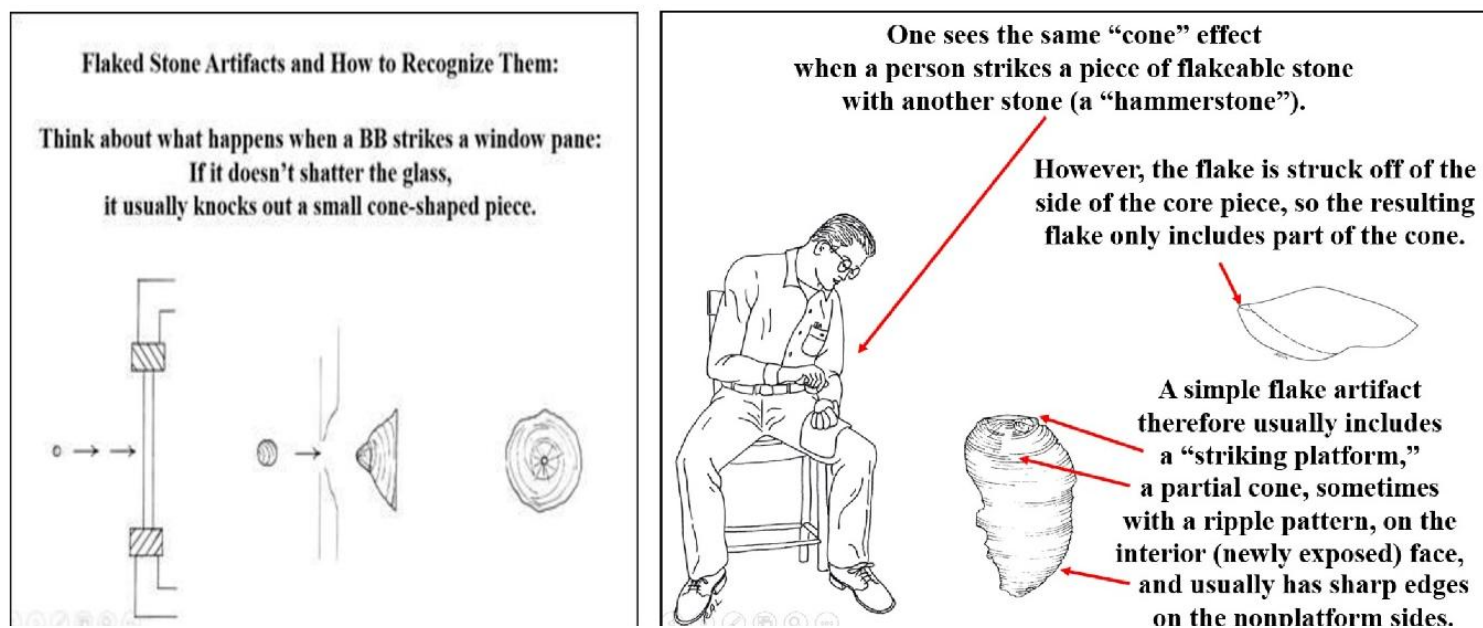


Figure 1. Some principles of flaked stone artifact-making and flaked stone attributes
(Drawings courtesy of Elisabeth Culley, Arizona State University)

² conchoidal fracture: a unique type of clamshell-like fracture that commonly results from striking or pressure-flaking fine-grained stones such as flint, chert, obsidian, jasper, chalcedony, agate, opal, anthracite, and some kinds of quartz, basalt, and rhyolite, and in amorphous solids like glass and porcelain. In this kind of fracture, the energy from hitting the object radiates away and outward from the impact point to form a partial or sometimes complete “hertzian” cone, like the cone of glass shown in Figure 1. The surface in a conchoidal fracture typically exhibits smooth, curved, slightly concave or convex concentric undulations similar to the ripples that radiate outward from where an object is dropped into water or like the successive lines of growth visible in a seashell. A conchoidal flake exhibits a bulb of percussion at the part of the partial hertzian cone immediately below the striking platform.



triangular or leaf-shaped; has conchoidally fractured flake scars on its edges and on one or both of its faces where flakes of the original stone have been removed to shape and thin the artifact; and opposite the pointed end, usually has a base that has been intentionally shaped to make it easy to attach the point to a wooden or cane arrow or spear shaft by tying the point onto the end of the shaft, or by inserting it into a split portion of the shaft end, or by socketing the point into a foreshaft that is attached to the shaft end.



Figure 2. A flake of quartzite showing conchoidal fracture and a striking platform on its right edge, and a core of chert exhibiting conchoidal flake scars (Photo by Allen Dart)

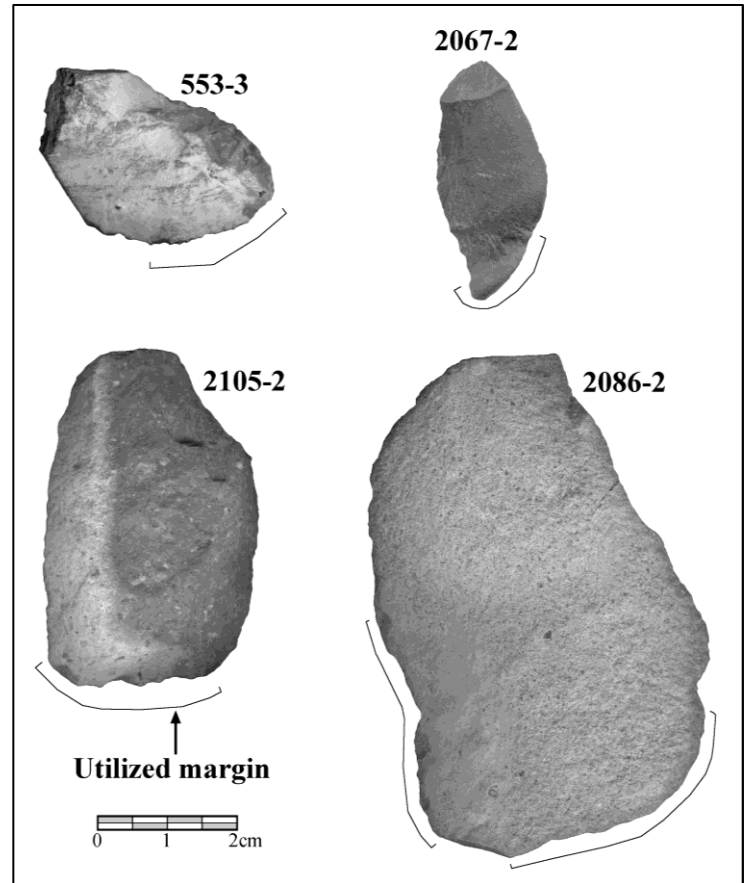


Figure 3. Simple flaked stone artifacts; meandering lines indicate places where several tiny flakes were removed along the edges when the stones were used for cutting or scraping (Photo by Allen Dart)



Figure 4. Examples of simple flaked stone artifacts, stone cores, and a core-hammerstone (Photo by Allen Dart)



Figure 5. Making a projectile point by removing small flakes from a larger flake using an antler-tip tool (Photo by Allen Dart)



An “arrowhead” is a form of projectile point used for the tip of an arrow; a “spearhead” is another form of projectile point used on the tip of a thrusting spear or a hurled dart. A very well made projectile point almost always will have at least some flake scars over both of its flatter surfaces (the faces) and all around its edges, not just at the pointed end. Figure 6 shows examples of projectile points that have been completely or mostly flaked on both of their faces and all of their edges. Some projectile points are less well made but still exhibit flake scars along their edges and over at least part of the faces, as shown in Figure 7.



Figure 6. Some archaeological projectile points that have been completely or mostly flaked on both faces and all edges (Old Pueblo Archaeology Center photos except a (Gwen Buttrill) and d(Desert Archaeology, Inc.)

Figure 8 shows some small stones that their collector suggested are projectile points because they each have a relatively pointed end and a wider base or midsection. However, using the definition of a projectile point given above, an archaeologist cannot identify the stones in Figure 8 as projectile points because they do not exhibit any conchoidal flake scars or other evidence that they were intentionally shaped, for example, by grinding, polishing, cutting, pecking, or carving.

If there is no visible evidence that a stone’s original shape or appearance has been intentionally changed by one of these evident human methods, and the stone was not part of a composite artifact (one that includes multiple items strung or bonded together, or in a container) or incorporated into a built cultural feature (such as a wall), one must assume that the

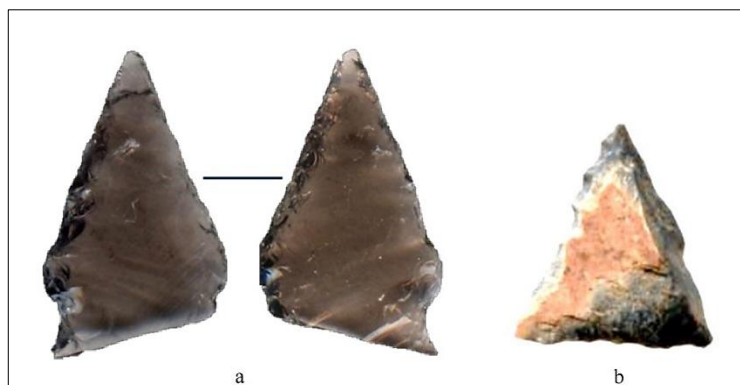


Figure 7. Archaeological stone artifacts identified as projectile points because the original stone has conchoidally fractured flake scars around the edges indicating the stone was intentionally flaked to shape it into an artifact longer than it is wide with a pointed tip opposite a wider base:
a, front and back views of an obsidian point, Old Pueblo Archaeology Center;
b, from Figure 6.6 in Riggs and others (2015)

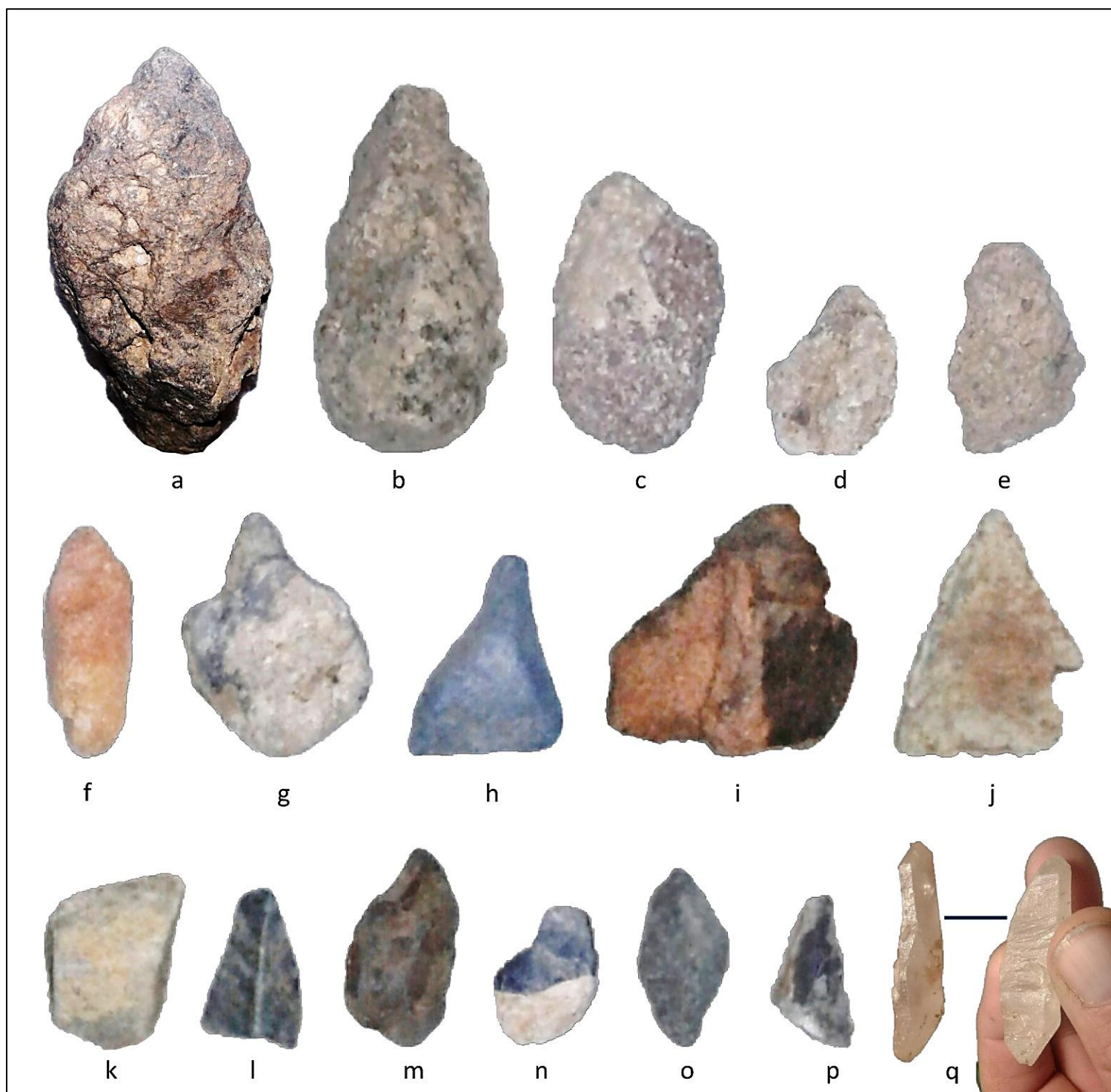


Figure 8. Small stones that an avocational archaeologist suggested are projectile points because they have relatively pointed ends and wider bases or midsections. However, only item q shows clear evidence that it is a human-shaped artifact.

stone's shape is a result of erosion or other natural occurrences, and there may be no way to say for sure whether a person once collected or used it for any purpose.

Humans and our biological ancestors have been creating and using flaked stone tools worldwide for millions of years, and even the very earliest projectile points that have been found in the Southwest (Clovis points up to 11,600 years old, such as the one in Figure 6a) were fully flaked by experienced flintknappers. Therefore, unless a group of ancient people was in an area where absolutely no flakable stone was available for making projectile points and other flaked stone artifacts, it does not make much sense to



me to suggest that Indigenous peoples of the Southwest were not skilled or smart enough to create well-made projectile points using stone-flaking techniques they had learned from their forbears or contemporaries.

Identifying Ground, Polished, or Carved Stone Artifacts

What is considered “ground stone”?

A broadly constructed definition includes any stone item that is primarily manufactured through mechanisms of abrasion, polish, or impaction, or is itself used to grind, abrade, polish, or impact However, the categories of flaked stone and ground stone are artificial constructs that have meaning only to archaeologists. Many artifacts are in a fuzzy set between flaked and ground stone, including cores that were ground to prepare an area for efficient flake removal, and axes that were either ground or flaked to shape or re-sharpen. [Adams 2002:1]

In other words, ground stone is a class of artifact made by grinding, polishing, pecking, carving, or otherwise intentionally shaping a rock. If a stone has no evidence of any of these intentional actions, we cannot say for sure that it is an artifact – It may be just a “natural stone” (See Table 1 “Paraphernalia” row and footnote), that is, shaped naturally without human intervention, and it may or may not have been collected or used by a human.

When archaeologists use the term “ground stone” we often mean for it to include polished and carved stone objects, and that is how I use it in this article. Therefore, ground stone is found in many forms (Table 1, next page). Examples of some of the artifact types listed in Table 1 are shown in Figures 9-19.



Figure 9 (left). This pebble (two views) is interpreted as a polishing stone because in the left image the uppermost, left, and right edges are much smoother than the stone's central and bottom portions, and in the right view almost the entire upper-right portion except for the flake scar at the top is much smoother than the lower left portion. (Old Pueblo Archaeology Center photo by A. C. MacWilliams)



Figure 10 (right). Examples of metates and manos modified only by wear rather than by intentional shaping. The two larger stones (metates) exhibit noticeable grinding polish on their upper surfaces only and both of the cobble manos are highly polished just on their flatter faces. (Old Pueblo Archaeology Center photo by Martina Dawley)

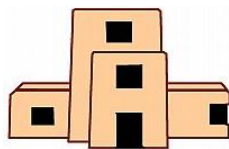


Figure 11. A mortar and two stone pestles found together on a Hohokam pithouse floor in Tucson: The mortar is in a coarse boulder of gneiss that shows smoothing in and around the rim of the mortar hole, the pestle on the left (which is 43 cm = 17 inches long) has been smoothed all over, and the naturally flat-sided pestle in the mortar has been shaped only on its ends and around its edges. (Old Pueblo Archaeology Center photo by Ken Matesich)

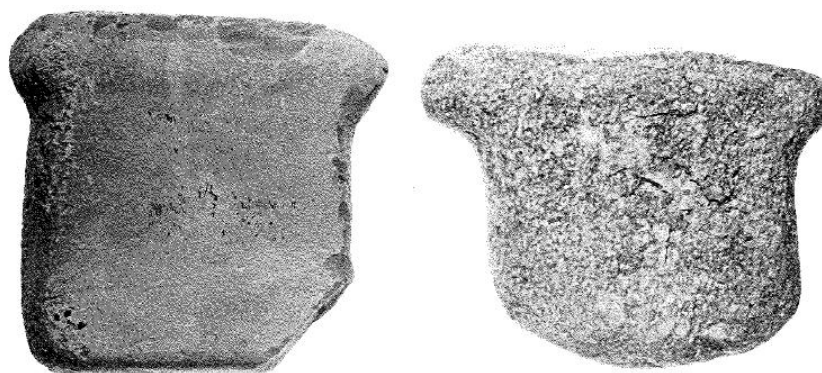


Figure 12. Hohokam T-shaped stones (“fergoliths”) of granite (left, greatest width 28.3 cm = 11.1 inches) and gneiss interpreted as hand-held crushing or pulping tools. There is no visible evidence of human alteration of the naturally weathered cortex on either one’s flatter faces but the left one shows chipping scars on its upper and right edges and polishing wear on the left and bottom edges, and the right one exhibits grinding wear on all of its margins (Photo by Helga Teiwes courtesy of Alan Ferg and Richard Goddard)

Table 1. Some ground stone artifact categories and types identified by Adams (2002)			
Category	Some types		
Abrading, smoothing, and polishing tools	Abraders and smoothers	Polishers	Hide-processing stones
Grinding and pulverizing tools	Manos and metates Mortars Pitted and cupped stones	Pestles Handstones Netherstones	Grinding slabs Lapstones Palettes
Percussion tools	Hammerstones Pecking stones Choppers	Chisels Crushers and fergoliths [T-shaped stones]	Pottery anvils Lithic anvils
Hafted percussion tools	Axes Mauls Picks	Adzes Mattocks	Hoes Tchamahias
Spinning tools	Fire-drill hearths	Spindle bases	Whorls
Perforating, cutting, and scraping tools	Awls Reamers	Saws and files Planes	Tabular Tools
Paraphernalia	Atlatl parts Balls Bell stones Cruciforms Cylinders and medicine stones	Disks Lightning stones Plummets and weights Pipes and tubes Shaped stones Pigments	Natural stones ³ Personal ornaments Figurines
Containers and container closures	Bowls Trays	Censers	Closures
Structural stones	Loomblocks Cooking stones	Firedogs and trivets	Fire-cracked rock

³ Natural stones: Many items were collected prehistorically, probably because of their unusual natural shape, the significance of which is knowable only to the original collector Some are reminiscent of human or animal figures, and it is easier to postulate why these might have been collected than others Natural stones include concretions, fossils, meteorites, petrified wood, mica, selenite, gypsum, asbestos, crystals, and other rocks and minerals. For the most part, they have not been altered, although handling or moving them causes wear that sometimes can be recognized. [Adams 2002:211]



Figure 13. Two Hohokam stone ax heads: Both probably were initially shaped by chipping and pecking but both were finished by grinding all over and show finer polish on their cutting bits. (Old Pueblo Archaeology Center photo by Jennifer DeJongh)



Figure 16. A tabular knife with a ground cutting edge; some tabular knives have flaked edges (Photo courtesy of Mary Lou Heuett, from a 1987 Cultural & Environmental Systems report by Laurie V. Slawson and others)



Figure 17. Ground stone paraphernalia: tubular bead, disk bead, and cruciform artifact (Photo by Allen Dart)



Figure 14. A 19.1 cm long x 1.6 cm thick (7.5 x 0.6 in) tchamahia from Chaco Canyon, NM showing high polish on all margins and about halfway in from the sharpened right end; possibly used as a chisel or planing tool (National Park Service photo)



Figure 15. Ground stone whorls and a polishing stone or whorl preform, all completely ground and polished (Photo by Allen Dart)



Figure 18 (left). Ground stone pendant, notched needle, and faceted red ocher nodule (Photo by Allen Dart)



Figure 19 (right). Fire-cracked rocks in Hohokam horno (roasting pit) exposed in archaeological test trench (Photo by Allen Dart)



Feature Names Keyword List

1	Ash Stain	58	Log Cabin
2	Artifact Scatter	59	Masonry Structure
3	Atalaya	60	Midden
4	Ball Court	61	Milled Lumber Structure
5	Barn	62	Mine
6	Battle Site	63	Mine Waste
7	Bedrock Grinding Stone	64	Monument
8	Bedrock Steps	65	Mound, Structural
9	Bin/Cist	66	Mound, Trash
10	Brick Kiln	67	One Room Structure
11	Bridge	68	Orchard
12	Burial/Grave	69	Ore Processing Facility
13	Burned Rock Midden	70	Ore Transport Feature
14	Cache	71	Outbuilding
15	Cairn	72	Outhouse
16	Canal	73	Oven
17	Car Body	74	Painted Petroglyph
18	Cavate Room	75	Pecked Bedrock
19	Cemetery		Depression
20	Charcoal Stain	76	Petroglyph
21	Church/Religious Structure	77	Pictograph
22	Clearing in Desert	78	Pithouse
	Pavement	79	Plaza
23	Clay Quarry	80	Posthole
24	Coke Oven	81	Pottery Kiln
25	Compound Walls	82	Public Building
26	Communication System, Linear	83	Quarry
27	Constructed Linear Feature, Undefined	84	Railroad Track/Bed
28	Corral	85	Ramada/Shelter
29	Cremation	86	Reservoir
30	Depression, Undefined	87	Resource Procurement Area
31	District	88	Road/Trail
32	Dugout	89	Roasting Pit
33	Dump	90	Rock Alignment, Undefined
34	Excavated Linear Feature, Undefined	91	Rock Feature, Undefined
35	Fence	92	Rock Pile
36	Field	93	Rock Ring
37	Field House	94	Roomblock
38	Fired Brick Structure	95	Sawmill
39	Garden	96	Scatter, Sherd
40	Graffiti	97	Scatter, Trash
41	Grain Mill	98	Shed
42	Great Kiva	99	Shrine
43	Hearth	100	Soil Control Structure
44	Historic Settlement	101	Spring Control Device
45	Hogan	102	Stage Stop
46	House Extant	103	Stockade
47	House Foundation	104	Sweat Lodge
48	Human Remains	105	Tank
49	Hunting Feature	106	Tent Base
50	Intaglio	107	Tower
51	Kiln	108	Trading Post/Mercantile
52	Kiva	109	Trailer
53	Lime Kiln	110	Trincheras
54	Linear Border	111	Wall
55	Lithic Quarry	112	Water Control Device
56	Lithic Scatter	113	Well
57	Livestock Enclosure	114	Wickiup
		115	Windmill
		116	Other (note in Feature Remarks)

Cultural Features

Per the definition of cultural features on page 14, these features include but are not limited to buildings, other structures (for example, earthworks, mounds, embankments, dikes, aqueducts, canals, corrals, field enclosures, and foundations of rock, cut stone, concrete, or other material), pits, ditches, hearths, postholes, shrines, trash disposal areas (such as middens, pits, abandoned houses, outhouses, and wells), human-made depressions in the ground, stone concentrations, alignments, cairns and piles, and geoglyphs – and on bedrock or large boulders, pictographs, petroglyphs, grinding slicks, mortars, cupules, and inscriptions that have been ground, pecked, or carved.

A cultural feature may be considered an *archaeological feature* if it is fairly ancient and no longer in use by people except maybe for different purposes than it was used for originally, or for display. Figure 20 provides a list of archaeological feature types recognized in the Southwest.

A useful criterion for identifying an archaeological feature is whether it appears to be something different from what one would expect to occur naturally where it is situated. The features interpreted as pithouse floor remnants in the accompanying “Paleoindian to Archaic Transition” article by Cuba and Butler are good examples: They are fairly large and thick, intensively burned layers of earth that probably would not occur naturally there because sand dunes support very few trees or bushes that could be burned intensively enough to form thick, burned layers in a dune. Just as importantly, though, these features were found in association with flaked and ground stone artifacts, which confirm that human activity occurred in the immediate area of the burned patches.

Rocky Cultural Features

Since most of this article focuses on stone artifacts, I conclude it with a discussion and some illustrations of cultural features incorporating rocks, boulders, and bedrock.

Many kinds of forces, cultural and natural, can shape and alter the appearances of bedrock, boulders, and smaller stones. To determine whether a stone or a group of stones is a cultural feature, an archaeologist must see evidence that the stone has been moved, shaped, or modified by people rather than just by natural forces such as erosion, redeposition, earthquakes, or other landscape movements. Figures 21-33 show some examples of archaeological features that are architectural or include groupings of rocks.

Figure 20. List of archaeological feature types recognized by the Arizona State Museum, University of Arizona (1993)

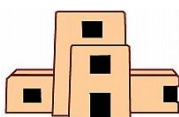




Figure 21. A most obvious kind of grouped stones comprising an archaeological feature: A freestanding rock-masonry room in the Gila Cliff Dwelling (Photo by Allen Dart)



Figure 22. A less obvious grouped-stones feature: Archaeologist Richard Lange points out rock rubble and alignments that mark the location of a pueblo room at the "Multi-Kiva" archaeological site south of Joseph City AZ (Photo by Allen Dart)



Figure 23. Scattered rock alignments marking where a stone-reinforced enclosing compound wall once stood at the Ring site in the Lower Gila Valley, Arizona (Photo by Allen Dart)



Figure 24. The Rock Ball Court in the Lower Gila Valley, Arizona: a rare example of a Hohokam rock-embanked ballcourt; most of them just have earthen embankments (Photo by Allen Dart)



Figure 25. In Arizona's San Pedro Valley, rock alignments arranged nearly in a square – possibly a jacal-walled hut foundation but note the linear extension in right foreground – (Photo by Allen Dart)



Figure 26. Hohokam trincheras – massive rock-embanked terraces on relatively steep hillsides – were once thought to be defensive but many evidently had dwellings and gardens (Photo by Allen Dart)



Figure 27. Not a trinchera – This rock-embanked terrace is interpreted as a farming feature in a Hohokam agricultural field area on Tumamoc Hill in Tucson (Photo by Allen Dart)



Figure 28. Piled rock-alignment check dams that slowed water runoff and caused soil to build up on upslope sides of the dams in the Tumamoc Hohokam agricultural field area (Photo by Allen Dart)



Figure 29. A minor agriculture terrace formed with just a row of rocks in the Tumamoc Hohokam agricultural field area; evidently agaves were grown in these fields (Photo by Allen Dart)



Figure 30. Low rock piles on gentle slopes in the Hohokam region, sometimes numbering in the thousands, also are interpreted as agricultural features for farming agave (Photo by Allen Dart)



Figure 31. Geoglyphs are features in which rocks were arranged on the surface to form designs or patterns. This southwestern Arizona one probably was not for farming (Photo by Allen Dart)



Figure 32. In this rock cluster excavated at a site in Green Valley, Arizona, the rocks in the foreground exhibit jagged fractures typically caused by high heat, suggesting these were heating stones in a roasting pit, but no traces of the pit itself were found. (Old Pueblo Archaeology Center photo by Jeffrey Jones)



Figure 33. For comparison with Figure 32, the left part of this photo shows a roasting pit that was filled with fire-cracked rocks in the Avra Valley west of Tucson before the pit was excavated. During the excavation the rocks were removed and piled at right. (Old Pueblo Archaeology Center photo by Deborah Swartz)

Bedrock and Boulder Cultural Features: Petroglyphs, Pictographs, Mortars, Basins, Slicks, and Cupules. To determine whether a segment of bedrock or a boulder that cannot be easily moved has been altered by a person rather than by natural forces, archaeologists look for evidence that the original shape or appearance of the stone has been intentionally changed by grinding, abrading, polishing, cutting, pecking, incising, carving, chipping, or flaking, or by adding colors or objects that are not natural parts of the stone.

Figure 34. Imprecise, "fuzzy" edges and discontinuities in the lines of this petroglyph at the Cerro Prieto site in Pima County, Arizona suggest the designs were created by repeatedly striking the rock face with a hammerstone rather than by grinding or incising.

Most precontact petroglyphs in the U.S. Southwest were made by pecking. (Photo by Allen Dart)



Some common archaeological features that are immovable or not easily moved are petroglyphs (symbols or designs created by pecking, grinding, incising, scratching, carving, etching, or rubbing the design into the surface of a rock, causing damage to the rock surface) and pictographs (symbols or designs painted, drawn, or otherwise applied to the surface of a rock, generally without chipping, gouging, or scratching its surface). A few examples of petroglyphs and pictographs and some of their attributes are shown in Figures 34-37.

Figure 35. The narrow, continuous, and nearly parallel lines in this petroglyph at La Cieneguilla, southwest of Santa Fe, suggest it was created by incising rather than by pecking or grinding. Southwest Indigenous people's incised petroglyphs became more common in late precontact and early historic times (Photo by Allen Dart)

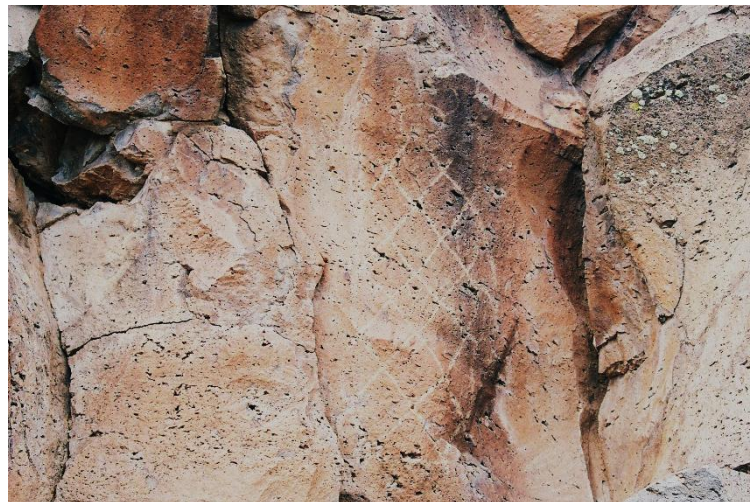




Figure 36. The anthropomorph, animal, and spiral petroglyphs on this panel at the Picture Rocks site in Pima County, Arizona, appear to have been pecked into the rock but the two lighter-colored circles above the spiral are completely smooth and continuous suggesting they were ground into the rock. (Photo by Allen Dart)

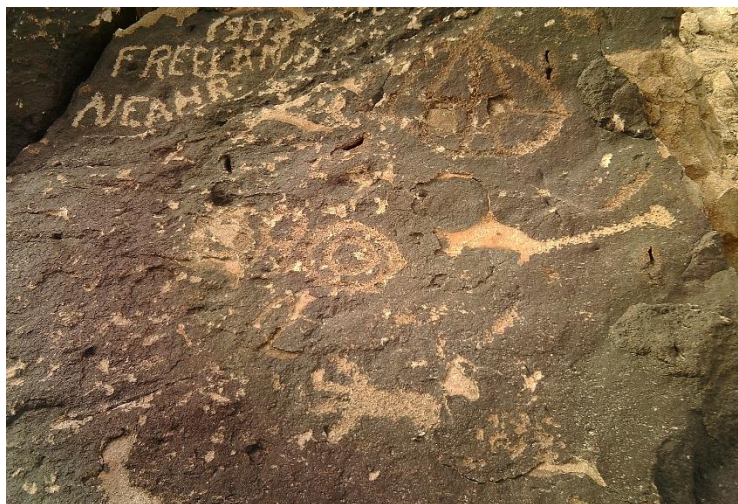


Figure 37. These petroglyphs at Antelope Hill near Wellton, AZ are of different ages, indicated not just by the historical graffiti glyph's 1908 date but also by the different glyph colors, which reflect how long the designs have been subject to weathering. The very faint, dark glyphs probably are the oldest ones and the bright graffiti and animal-like glyph likely are the latest (Photo by Allen Dart)

Other common stone archaeological features in the U.S. Southwest include mortars, basins, slicks, and cupules, which I define as follows:

Mortar: A human-made cavity, ranging from circular to ovoid, that was created by pecking, pounding, and grinding with a pestle, which typically caused rotary or vertical wear in the cavity; typically U-shaped in cross-section and usually more than 9 cm (3.5 inches) in diameter.

Basin or slick (Also called basin metate and grinding slick, respectively): A human-made depression, ovoid or irregularly shaped, that was created by grinding, usually quite shallow but often highly polished; grinding striations, if visible, may be either ovoid or parallel to an axis of the feature.

Cupule: A human-made depression, circular or ovoid, that was pecked or ground into a horizontal, diagonal, or vertical rock face or underside; relatively shallow, often less than 5 cm (2 inches) and usually no more than 8 cm (3.2 inches) in diameter.

Mortars, basins, slicks, and cupules may occur alone, in groups of the same type, or in combination with other depression types. These three depression types sometimes are associated with petroglyphs or pictographs. For illustrations of a variety of them see *Old Pueblo Archaeology* No. 81:

https://www.oldpueblo.org/wp-content/uploads/2021/06/202006opa81_BedrockBoulderMortarsBasinsSlicksCupules.pdf

Acknowledgment. I thank Kip Montgomery for inspiring me to write the artifacts section of this article.

About the Author

Allen Dart, a Registered Professional Archaeologist, has worked professionally in archaeology since 1975 and has been Old Pueblo Archaeology Center's executive director since 1993.

References Cited

- Adams, Jenny L.
2002 *Ground Stone Analysis: A Technological Approach*. University of Utah Press, Salt Lake City.
- Riggs, Brett H., R. P. Stephen Davis, Jr., and Mary Elizabeth Fitts
2015 *Archaeology at Ashe Ferry: Late Woodland and Middle Mississippian Period Occupations in the Lower Catawba River Valley, York County, South Carolina*. Research Report No. 36. Research Laboratories of Archaeology, University of North Carolina, Chapel Hill.



Piipáash, Halychdúum and 'O'odham: Centuries Together on the Gila River

Harry J. Winters, Jr., PhD

The Piipáash and Halychdúum are called Maricopas in English. They speak the same Yuman language, Piipáash Chuukwér. The Tohono 'O'odham used to be called Papagos in English. The 'Aki-meli 'O'odham historically have been called Pimas. The Hiach'ed 'O'odham, a much smaller group, historically were called Sand Papagos. All these 'O'odham speak the same language, 'O'odham Ñi'ok.

Since perhaps the early sixteenth century Piipáash and 'O'odham have lived together, first on the lower Gila River and later on the middle Gila and Salt rivers. On the lower Gila they lived as neighbors, but not in the same houses. There were quite a few bilingual people. They intermarried. They interpreted for European explorers, starting with Father Eusebio Francisco Kino in 1699.

The Piipáash and 'O'odham must have spent countless evenings listening to each other's traditions. As a result, some Piipáash and 'O'odham oral traditions became so interwoven that today it is not obvious which episodes of a tradition came from which people. Amazingly, at least to me, in spite of the centuries spent together, with one or two exceptions there seems to have been no borrowing of words from one language by speakers of the other language. At the same time these two peoples share a peculiar kinship term and verbal responses to sneezing that seem unlikely to have originated in both peoples independently. But which people did they come from?!

I have put accent marks on words in Piipáash Chuukwér to help the reader pronounce them correctly. Piipáash means persons, people. Chuukwér means a language. I never put accent marks on words in 'O'odham Ñi'ok. Ñi'ok means a language. Words are almost always accented on the first syllable in 'O'odham Ñi'ok. I usually shorten Piipáash Chuukwér to Piipáash and 'O'odham Ñi'ok to 'O'odham.

I frequently refer to the Kwcháan, formerly known as Yumas, and to the Mojaves and Cocopas. I use spellings of these tribes' names that correspond to the Piipáash pronunciation of them. The Piipáash names are Kwcháan, Makháv and Kwapá, respectively. See Appendix 1 on tribal names.

Appendix 2 briefly discusses the relationship between the Hiach'ed 'O'odham (formerly in northern Sonora) and the Kwcháan. Appendix 3 is on Spier's "Kaveltcadom."

The word District always refers to a local governing district of the Tohono 'O'odham Nation or of the Gila River Indian Community.

Figure 1 is a map showing places named in this article.

Orthography in this Article

Harry J. Winters, Jr.

In this paper all 'O'odham words are written in an alphabet that comes as close as possible to what someone who has learned to read English in American schools would expect. Differences are (1) all glottal stops are included and are written as apostrophes, (2) the English vowel "e" is used for the 'O'odham vowel that sounds like the "oo" in English book, (3) the 'O'odham consonant that sounds like the Spanish "d" in donde is written as "ḍ" and (4) the 'O'odham consonant that sounds like the "ny" in English canyon is written as "ñ." This is the alphabet used in Winters (2012: xxxix-xlii) and Winters (2020: xlv-xlviii). See either of those references for details.

As in my other works, I always write the glottal stop as an apostrophe when it is the first consonant in an 'O'odham word, including in the word 'O'odham. This is to help readers who are not speakers of the 'O'odham language pronounce the words accurately. Other authors do not write the glottal stop when it is the first consonant of a word, presumably because it is not written in English words.

**Would you like to subscribe to
Old Pueblo Archaeology?**

If you are not currently an Old Pueblo Archaeology Center member, please consider becoming one so that you can receive future issues of the *Old Pueblo Archaeology* bulletin. See membership information on page 14 in this issue.



Piipáash and Halychdúum

According to ethnologists and linguists, the Piipáash and Halychdúum are River Yuman peoples. Today the Piipáash are concentrated on the middle Gila in District 7 of the Gila River Indian Community (GRIC) (Figure 2). The Halychdúum are concentrated in the Lehi area of the Salt River Pima-Maricopa Indian



Figure 1. Map showing places named in this article (Old Pueblo Archaeology Center map by Allen Dart)



Community (SRPMIC). Other River Yuman peoples include the Kwcháan (Quechan, Kwatsáan, Yumas), Makháv (Hamakháv, 'Aha Makhav, Pipa 'Aha Macav, Mojaves/Mohaves), Kwapá (Cocopa, Cocopah), Halykwamáí and Kahwín (Table 1; Figure 3).

After creation and a time of searching for a home, a person with great supernatural powers gave all these River Yuman peoples farmland on the Colorado River, Há Khwét, Red Water (há is water; hwétm means to be red). Today the Kwcháan, Makháv and Kwapá each have reservations along the Colorado. The Halykwamáí and Kahwín joined the Piipáash on the middle Gila in the nineteenth century. Their descendants have intermarried with Piipáash and Halychdúum. Some of them still know their tribal ancestry, but they all have been called Maricopas historically.

The River Yuman Languages are highly mutually intelligible. My estimates are Piipáash to Halych-

Table 1. River Yuman peoples and languages		
English name	Piipáash name	Tribe's own spelling
Mohave	Makháv	Hamakhav
Yuma	Kwcháan	Kwatsáan and Quechan (official)
Maricopa	Piipáash	Piipaash and Pee-posh
Halchidoma	Halychdúum	
Cocopa	Kwapá	Kwapa and Cocopah (official)
Kohuana	Kahwín	
Halyikwamai	Halykwamáí	

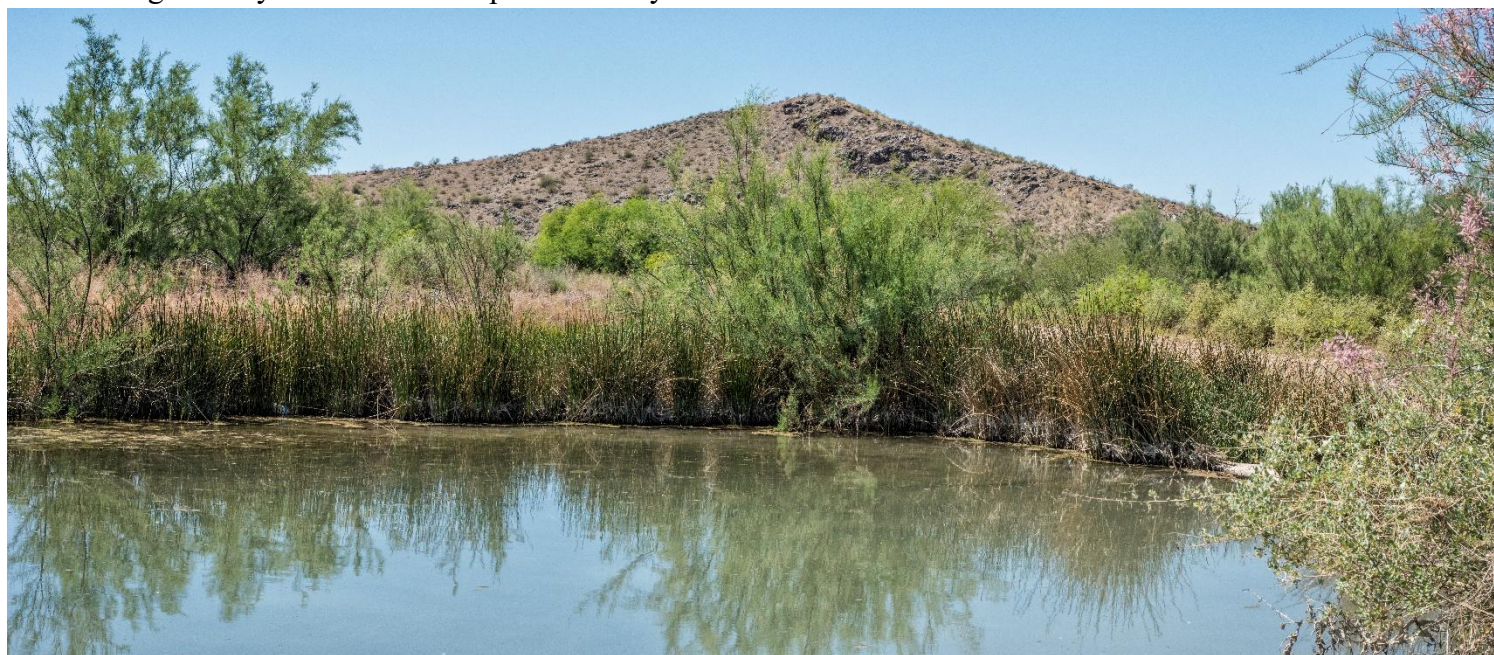


Figure 2. The Gila River in District 7 of the Gila River Indian Community near the junction of the Gila and Salt rivers (Photo by Peter Kresan)

dúum 100 percent, Piipáash and Halychdúum to Kwcháan 85 to 90 percent, and Piipáash and Halychdúum to Makháv about 75 to 80 percent. Spier (1978:ix) wrote that the Mojave language was “unintelligible” to Piipáash. That is flat wrong. I have listened to Makháv and Piipáash elders at Parker, Arizona carry on conversations ranging over varied topics for an hour without either man appearing to miss a beat. In 1972-1973 I managed a copper exploration project in the Buckskin Mountains near Parker. I searched out Thomas Stevens, a Makháv elder at Parker. He taught me some Makháv phrases and place names. He and I taped them. They are nearly identical with Piipáash. For example, in both languages we have, “‘Avé ki-yúuk! Watch out for the rattler!” – as useful in the desert near Laveen as in the Buckskins. The tribal library at Parker has a copy of the tape as well as of Makháv elder Sheldon Swick’s translations of it. Thomas is the only person I ever met who was fluent in Chemehuevi as well as Makháv and English.



Figure 3. Pass Mountain or Amél Kunyily seen looking east from Halychdúum lands at Lehi, Arizona (Photo by Peter L. Kresan)

From 2004 to 2023 I visited with Kwcháan elders at Yuman language conferences, at Kwcháan tribal offices, and during a couple of day-long road trips. These elders were very congenial ladies and gentlemen. When I walked into an office, I greeted them in Piipáash and they answered me in the Kwcháan language. We understood each other just fine; lots of smiles and laughter.

Piipáash, Halychdúum, and 'O'odham History in a Nutshell

Beginnings. River Yuman traditions tell us that after creation their ancient ancestors eventually settled at Há Wylpó, House Post Water, in Eldorado Canyon in Clark County, Nevada (Figures 1 and 4). There was probably a spring there. It is about two miles upstream from the Colorado River. Floodwater in the canyon runs into the Colorado at the site of Nelson's Landing. A wylpó is a vertical post that supported the roof of River Yuman houses. There are a number of pinnacles of rock that are erosional remnants on the slopes of Eldorado Canyon. They look like posts.

After an eventful time at Há Wylpó, a person with great supernatural powers showed the River Yumans where each tribe was to live on the Colorado and taught them which of them were to be allies and which were to be enemies (Table 2). The Makháv were given a stretch of river north of Parker, Arizona. The Kwcháan were given a segment from a place not far south of Blythe, California, to a place south of Yuma, Arizona. The Piipáash and Halychdúum were given stretches between the Kwcháan and the Makháv. The Kwapá were given land in the Colorado River delta downstream from the Kwcháan. The Kahwín and Halykwamáí were given their own portions of the river. I don't know where they originally were, but by the early nineteenth century both tribes lived between the Kwcháan and Makháv, perhaps near the Halychdúum.

Table 2. River Yuman allies and enemies, pre-1857

	Makháv	Piipáash	Halychdúum	Kwcháan	Kwapá	Kahwín	Halykwamáí
Makháv		Enemies	Enemies	Allies	?	Enemies	Enemies
Piipáash	Enemies		Allies	Enemies	Allies	Allies	Allies
Halychdúum	Enemies	Allies		Enemies	Allies	Allies	Allies
Kwcháan	Allies	Enemies	Enemies		Enemies	Enemies	Enemies
Kwapá	?	Allies	Allies	Enemies		?	?
Kahwín	Enemies	Allies	Allies	Enemies	?		Allies
Halykwamáí	Enemies	Allies	Allies	Enemies	?	Allies	

Notes: Tribal names are spelled as pronounced in the Maricopa language. In English the Makhav are called Mojave/Mohave, the Piipaash, Halychdum, Kahwin and Halykwamai are all called Maricopas, the Kwchaan are Yumas, and the Kwapá are called Cocopa.



As we go on, keep in mind that the states of hostility and intermittent warfare among these peoples were not over farmland or other natural resources or for wives! They were the means by which each people maintained its own supernatural powers. It was believed necessary for each tribe's survival as a people (Winters 2018:xxxi-xxxiii).

Off to the Gila. According to archaeologists, from 500 to 800 CE the western Hohokam frontier was in the Gila Bend area. Between 800 and 1200 there were 14 ballcourt villages in that area including the Gatlin site, which is in the Town of Gila Bend. Sometime between 1200 and 1300, the Hohokam abandoned the Gatlin site.

The Piipáash probably moved to the lower Gila sometime between 1200 and 1300. I think this was due to one or more of at least three causes: (1) their unfavorable tactical situation on the Colorado and the outcome of fighting with the Kwcháan and Makháv; (2) the Vá Vospósh, Empty/Abandoned House, incident of Piipáash tradition; and (3) the opportunity to take over rich farmland and fishing grounds on the lower Gila due to weakening of the position of the Hohokam at the Gatlin site. The Piipáash probably did not occupy the entire lower Gila all at once. They had a well-developed system using a team of experts to identify land with the best soil and water conditions. Eventually Piipáash territory stretched from Agua Caliente, Ha Kupíny meaning Warm Water in Piipáash, all the way upstream to Powers Butte, Vii Hály Kwa'ámp (Figure 5), on the south side of the Gila across from Hassayampa, Arizona. Vii Hály Kwa'ámp means Mountain Lying Flat On Its Stomach With Its Head In The Water (as if to drink). Also see Winters (2018:38-42) and Winters (2020:927-949) for names and locations of Piipáash and 'O'odham villages on the lower Gila.

In the Vá Vospósh incident an abandoned house stood by the Colorado River in Piipáash territory. Vá means house and vospósh means empty. Although the house was empty, crying could be heard coming from inside it. Piipáash kwsiiishdíish, witches, warned that this was a bad omen and the Piipáash should leave the area. They did so (Winters 2018:xxxii). I have been told more than once in the past 20 years that the Vá Vospósh incident was the main reason for the move off the Colorado.

Intermittent warfare between the Piipáash and Kwcháan continued after the Piipáash moved eastward into the lower Gila Valley. Fighting between the Makháv and Halychdúum and between the Kwcháan and Halychdúum also continued.

Raids by the Tolkapáya band of Yavapais were an added risk after the Piipáash move. Tolkapáya territory was north and west of the lower Gila over the whole stretch of river occupied by the Piipáash. Two main trails connecting the Piipáash on the lower Gila with the Halychdúum on the Colorado ran across Tolkapáya territory. One trail ran from Agua Caliente northwest to the Halychdúum. The other ran from the Arlington area west across the desert to the Halychdúum. The trail from Agua Caliente was considered riskier because it passed closer to Kwcháan territory too.

The Tolkapáya raided for horses far south of the Gila River. Gagga (Clearings For Fields) village is in Tohono 'O'odham territory, 39 miles southeast of Gila Bend as the crow flies. It was a major farming village



Figure 4. Há Wylpó in El Dorado Canyon, Clark County, Nevada
(Photo by Peter L. Kresan)



Figure 5. *Vii Hály Kwa'ámp* on south bank of Gila River near Hassayampa, Arizona (Photo by Peter L. Kresan)

in the Hickiwan District of the Tohono O'odham Nation. In the 1970s the 'O'odham of Gagga and Ventana still told the story of one of those raids. A hill near Gagga is named 'Oob Voi'kuḍ (Place Where the Enemy Laid Down (and hid)) as a result of the raid. See Winters (2020:531) for the story of the raid. In another case they raided about 75 miles south of Gila Bend in the valley south of Pisin Mo'o and east of the Mesquite Mountains. See Winters (2020:461-463) for the story of that unsuccessful raid.

Enter the Tohono 'O'odham. Around 1450 the 'O'odham drove the Sisivañ from their vapaki, large multistory structures now called great houses, on the middle Gila and Salt rivers (Winters 2021:1-9). The Tohono 'O'odham then spread out over the territory included in today's Tohono O'odham Nation. Possibly as early as the late 1400s or early 1500s, some Tohono 'O'odham from the area of today's Hickiwan District moved to the lower Gila and lived with the Piipáash. They did not live in the same houses. Their house styles on the lower Gila at that time were very different. The 'O'odham lived in dome-shaped houses covered with brush. The house was called *kii*, with plural *kiiki*. Such a house was for a single family. The Piipáash sometimes made houses large enough for two or three families. They had center posts called *wylpó* and rafters called *kvnáw*. They were neighbors. One village, 'O'ohia Da'iwush in 'O'odham *Ñi'ok*, was only 'O'odham. Its name means Sand Ran Out, as in sand running out of the mouth of a wash in a heavy flood (Figure 6).

Between 1500 and 1700 the Piipáash and 'O'odham thrived on the lower Gila. See Burrus (1971:398) for Manje's 1699 diary entry on the abundance of fish. The population may have increased. The Piipáash almost certainly outnumbered the 'O'odham. The Piipáash village, *Kwa'ák Mát*, Catclaw Field, near today's Gila Bend (Figure 1) is shown on Father Kino's 1695-1696 map but in the 'O'odham translation, 'Uupaḍ 'Oidag. Kino and his military companion, Captain Juan Mateo Manje, first visited the Piipáash villages on the lower Gila in early 1699. Between 1700 and 1800 Piipáash and 'O'odham villages on the lower Gila were visited by Fathers Kino, Sedelmayr, and Garcés, and the Anza and Fages expeditions. Father Keller may have visited some of them. Father Nentvig mentioned them in his 1764 description of Arizona and Sonora (Nentvig 1980:15-16).

Warfare between the Kwcháan and Piipáash continued between 1500 and 1800. By 1800 some Piipáash were moving to the middle Gila. The move was probably complete by 1830-1845. Tohono 'O'odham who had been living with the Piipáash on the lower Gila moved back to their ancestral homes in the Hickiwan Wash floodplain and the Gagga area.

The Halychdúum Exodus. The Halychdúum left the Colorado around 1827-1830 (Winters 2018:xxxii). They had held out against the Kwcháan and Makháv as long as they could. They probably left at night to escape detection for as long as possible. Their evacuation route probably was the trail east across the desert to the lower Gila near Arlington, then south to Gila Bend, and then southeast across Tohono 'O'odham



Figure 6. Piipáash Vii Nyily Tukyév, in 'O'odham Chuk Shapijk, the site of Gillespie Dam and also of a mixed Piipáash and 'O'odham village centuries ago (Photo by Peter L. Kresan)

country. After first going to Magdalena, Sonora, they finally went north and joined the Piipáash on the middle Gila in the 1830s. They had been getting sick in Magdalena and had sent runners to the Piipáash to ask for doctors, kwsiiishdíish. The doctors went to Magdalena. They advised the Halychdúum to come north to live near the Piipáash where they would have good farmland and doctors. Since the 1870s some Halychdúum, Piipáash, and 'Akimeli 'O'odham have lived on the Salt River north of Mesa, Arizona, on farmland set aside for them by settlers and in 1879 made into a reservation, today's SRPMIC.

Why did the Halychdúum go to Magdalena instead of directly to the middle Gila? Perhaps they had heard good things about it from Father Sedelmayr when he visited them on the Colorado in 1744 and from Father Garcés when he visited them there in 1774. It was a safe distance from the Kwcháan and Makháv, especially with the Tohono 'O'odham living astride 200 miles of trails between Gila Bend and Magdalena.

End of River Yuman Hostilities. Between 1845 and 1877 thousands of travelers passed along the lower Gila from Gila Bend to Yuma. I know of no mention of Piipáash or 'O'odham villages along the lower Gila in those travelers' records. Fighting between River Yuman tribes ended in 1857 with the defeat of a large force of Kwcháan and a few Makháv by the Piipáash, Halychdúum and 'Akimeli 'O'odham and probably a few Tohono 'O'odham. The final battlefield was on the Gila downstream from Pima Butte and north of Maricopa Wells (Figure 7). The 'O'odham call Pima Butte 'Al 'Aji because of its thinly laminated bedrock. The Piipáash call it Vii Vakíi V'áw, Mountain Standing Back Home, because their villages were in its area before they moved to Laveen. Vii means mountain, vá means house/home, vakíi means at home, and the verb v'áw means standing. The name is usually shortened to Vii Váav in conversation. 'O'odham were still calling the site of the battle Cheggiakud, Battlefield, in the 1980s.

During World War II as Piipáash recruits from the Laveen area were on buses headed for training in California, they looked back on the Sierra Estrella on the western side of their district. The Sierra Estrella became their Vii Vakíi V'áw.

In the 1860s and 1870s many Piipáash, Halychdúum and 'Akimeli 'O'odham warriors, in Piipáash kwn-tamé and in 'O'odham gidahiokam, served in combat patrols against the Yavapais and Apaches. Company B of the Arizona Volunteers was established by Arizona Governor Goodwin in 1865. It was a Piipáash and Halychdúum unit captained by Juan Chivaria, the leader of the Piipáash. After Company B was disbanded at the end of 1866, Piipáash, Halychdúum and 'O'odham continued to serve as scouts for the Army and participate in combat.

Two smaller River Yuman tribes, the Kawhín and Halykwamáí, also left the Colorado and moved in near the Piipáash on the middle Gila in the nineteenth century. A number of people still recognize their Halychdúum ancestry. A few people are still known to be descendants of Kawhín or Halykwamáí, but today all are included in the tribal name Piipáash.

'O'odham Return to the Lower Gila. When the Southern Pacific Railroad main line was built from Wellton to Gila Bend in the 1870s, some Tohono 'O'odham from today's Hickiwan District moved back



Figure 7. Vii Vakii V'áw or Vii Váav seen from the north, scene of the last major battle between the Piipáash and Kwcháan in 1857 (Photo by Peter L. Kresan)

to the Gila Bend area to work on railroad construction. They reestablished farming villages in the Gila Bend area and upstream from there to the area where Gillespie Dam would be built in 1921 (Figure 6). Today almost all Tohono 'O'odham on the lower Gila live at Gila Bend. Until recently some worked for farms and ranches, for example the Enterprise, Stout, and Poco Dinero, between Arlington and Dome. For reasons that no living Piipáash seems to know, the Piipáash never moved back to the lower Gila.

Well into the twentieth century there were two or three small Hiach'ed 'O'odham villages on the lower Gila between Wellton and Yuma. They were visited by Hiach'ed 'O'odham from Sonora and from the triangular area in Arizona with Ajo as the apex and today's international boundary between Sonoyta, Sonora, and Quitobaquito, Arizona, as the base. The Hiach'ed 'O'odham had been on friendly terms with the Kwcháan and Kwapá and had traded with them for centuries.

Results of Centuries Together

There are many areas in which these peoples could have influenced each other. They include languages, oral traditions, owl lore, crafts such as basketry and pottery making, hunting and fishing, farming methods, etc. The following are brief comments on a few of these.

Loan Words. During centuries together on the lower Gila there were bilingual Piipáash and 'O'odham. In November 1699 when Kino visited 'Aji in today's Gu Achi District, four Piipáash were there to see Kino and hear "the word of God." According to Kino, the Father Visitor accompanying him heard the Piipáash language there for the first time. Somebody there knew both the 'O'odham and Piipáash languages (Winters 2020:22).

On the lower Gila peoples of both tribes must have sat in on countless discussions of each day's events, plans for future activities, and old traditions. Both peoples had every opportunity to adopt words from each other's languages. But based on the vocabularies of speakers today, it didn't happen! Other than loan words from Spanish, there are only two words I have heard that might be loan words. The first is kvé in Piipáash and kuiva or kuivo in 'O'odham. It means downstream in both languages. Other Yuman languages also have this word (Table 3). Kvé is also translated as west by the Piipáash and Halychdúum. West is downstream on the Gila and Salt Rivers.



Kuiva/kuivo also means west to the 'Akimeli 'O'odham. It means west, north, or south to the Tohono 'O'odham depending on which direction the water runs in the main wash near their village. The words for east, north and south in Yuman languages are very different from those in 'O'odham. Both Yuman and 'O'odham languages often have two or more words for a cardinal direction, but many of those words are being forgotten.

The second possible loan word is nawoj, plural nai-pijjhu, in 'O'odham and náy, plural náysh, in Piipáash. The noun nawoj means friend in 'O'odham. The verb nawoj means to have a friend. Nawmki means drunkard. I have been told that the underlying meaning of nawoj is one who drinks saguaro fruit wine, nawait (navait), with me. In summer after the saguaro fruit harvest the 'O'odham held a ceremony in several villages in which copious quantities of nawait were prepared and drunk. Swelling of the body with wine symbolized the swelling of saguaros with rainwater. The purpose was to bring rain for newly planted crops.

In Piipáash the noun náy means friend. The verb náaw-k means to have someone as a friend. The Piipáash also made wine, hacháa, from saguaro fruit, 'a'a. They had a saguaro wine celebration, which Spier spelled hatcápoŭm (hacháa póm?) and translated as “water mixing” (Spier 1978:56-58), which is probably wrong. According to Spier, the celebration “commonly resulted in a decision to go on a raid.”

Is naw a loan word and, if so, which way did it go? To the best of my knowledge there is no Kwcháan word that sounds like naw and means friend. On the other hand, one of three Mojave words for friend is nawah. Nawah-k, with plural natwahch, which means to have (someone) as a friend or to call (someone) a friend (Munro et al. 1992:144, 238). The Yavapais, Báaja, an Arizona Upland Yuman people, call a friend nowáaha in their language. The Hualapai, another Arizona Upland Yuman people call a friend nuwa or nowa. (Watahomigie et al. 2001:582). Is the similarity between the words for friend in 'O'odham and Yuman languages a coincidence? I will leave that question up to linguists!

Great-Great-Grandchildren and Sneezing. Although the Piipáash and 'O'odham words are very different, there is one language custom that can't be coincidental and another one that may or may not be.

In Table 4 on kinship terms, focus on the expressions for “my great-great-grandson”! Both 'O'odham ñ kahio vopo and Piipáash nyíp imé imís mean “the hair on my leg.” For the 'O'odham kahio vopo is where relationship ends. It's where one stops keeping track of who is related to whom. I find it hard to believe that such a unique term for great-great-grandson did not pass from one people to the other, but in which direction? A possible clue is that in the Kwcháan language eemé imís, leg hair, also means great-great-grandchild or great-great-grandparent. I don't know if the same thing is true in the Mojave language.

A second custom is the reaction to sneezing. When an 'O'odham man sneezes, his friends will say, “S m chegito g m ma'ishpa! Your sweetheart thought of you!” When a Piipáash man sneezes, he knows that his sweetheart, wherever she is, is thinking of him. He will say, “Hótk uuvák! I'm doing fine!” He doesn't

Table 3. Directions and downstream			
Tribe	Word	Direction	Comments
Piipáash	Kvé	West	West is downstream on Gila and Salt Rivers.
Kwcháan	Kavée	South	South is downstream on the Colorado River.
Makháv	Kavéek	South	South is downstream on the Colorado River.
Yavapai	Kwéva	South	South is downstream on the Verde and Agua Fria Rivers.
Tohono 'O'odham	Kuiva/Kuivo	Varies	May mean north, west or south depending on the direction of flow of water in nearest main wash.
'Akimeli 'O'odham	Kuiva/Kuivo	West	West is downstream on the Gila and Salt Rivers.
Note: The above languages may have two or more words for any cardinal direction.			



Table 4. 'O'odham kahio vopo and Piipáash imé imís kinship terms

	'O'odham	Piipáash/Halychdúum
I	'aañi	nyaa
my son	ñ 'alidag	nyip humáy
my son's son	ñ vosmaḍ	nyip 'aw
my great-grandson	ñ viishaḍ	nyip nchén
my great-great-grandson	ñ kahio vopo or ñ siis	nyip imé imís

Notes: 'O'odham ñ kahio vopo and Piipáash/Halychdúum imé imís both mean the hair on my leg. For the 'O'odham kahio vopo is where the relationship ends. That is where they stop keeping track.

want her to worry. A Quechan friend told me that the appropriate Quechan response to a sneeze is, "Av'uuváak! Here I am!" When a Yavapai, Báaja, girl sneezes, her friends will say, "Baahmí mwíiwuch wamsíivgo! Your boyfriend (or man friend) is thinking about you!" Speakers of many languages wish good health to someone who sneezes. Maybe this 'O'odham and Piipáash custom is just coincidence. Maybe Adam and Eve started this!?

Creation Tradition. The Salt River Mountains, also called South Mountains, lie along the southern side of Phoenix (Figure 1). Their 'O'odham name is Muhaḍag, also pronounced Mohaḍag. It means

Greasy-Brown Color and refers to the color of some bedrock in those mountains. Muhaḍag is also a noun meaning a greasy brown substance found in stomachs that aids in the digestion of foods that could be difficult to digest without it. The Piipáash name of the Salt River Mountains is Vii Kw'aháas, Greasy Mountain. In each case the name comes from an episode in the tribe's creation tradition.

In the 'O'odham tradition, in early times after creation a jackrabbit is physically abusing a rattlesnake. The rattler has no fangs and cannot defend himself. He appeals to 'Titoi, a man with extraordinary supernatural powers but a mortal body, for a means of self-defense. 'Titoi gives the snake venomous fangs. The next time the rabbit harasses him, the snake bites it. The rabbit dies an agonizing death. This astonishes the 'O'odham. Nothing like it has happened before. The 'O'odham do not cremate their dead. They bury them. In this ominous situation, however, they decide to cremate the rabbit. They fear Coyote will make trouble so they stand in a ring around the funeral pyre to keep him away. Coyote snatches the heart anyway and flees south with it. The people chase him. He stops three times to try to eat the heart, but each time the people catch up with him and he has to run off again. He turns back north at Koomagi Do'ag, Gray Mountain, called Sierra Blanca on topographic maps (Figure 1), near the boundary between today's Gu Achi and Pisinimo Districts of the Tohono O'odham Nation. The mountain's gray color is due to the ashes Coyote shook off the heart. He finally reaches Muhaḍag where he eats the heart. Grease drips on the rocks, discoloring them and giving the mountain its name. The 'O'odham names of two of Coyote's three intermediate stops are known, as is the location of one of them (Winters 2020:486-487).

In the Piipáash and Halychdúum traditions a man with great supernatural powers but a mortal body dies. The people decide to cremate his body. They cremate him in the Dome Valley north of Wellton, Arizona. The Piipáash call the mountain near the cremation site Ráa Kwakyém, Fire Shooting Up. It is Muggins Peak on maps (Figure 1). The people try to keep Coyote away, but he snatches the heart and runs off with it toward the east. The people give chase. Coyote stops at three mountains or hills to try to eat the heart but each time the people catch up with him and he has to run off again. He makes a fourth and final stop on the south side of the Salt River Mountains. Coyote either rubs his greasy paws on the rocks or drips grease from the heart on them, giving them a greasy brown-gray color and their name. The Piipáash/Halychdúum names and locations of Coyote's three stops on the way to Vii Kw'aháas are known. From west to east they are 'Iihór Kwsnávk (Braided Seep Willow), Háak Shivadóo (Pushed Out of the Way), and Qáaq Ts'ósh (Raven Babies) (Figure 1). For details see Winters (2018:20-22, 76-79) and Wright and Winters (2020:27-28). Spier (1978:348-352) has a Halychdúum version of this episode of the creation tradition.

The Kwcháan creation tradition also includes the flight of Coyote with the heart from the first cremation. In their tradition, Marxókavék, the first Kwcháan man made by the Creator, has supernatural power but a mortal body. He dies at 'Avii 'Ax'áa, Cottonwood Mountain, in what is now downtown Yuma, Arizona.



According to Lorey Cachora, the Kwcháan elder who showed me the place, 'Avíi 'Ax'áa actually consists of two hills, the one where McDonald's Restaurant is located at the big bend in Interstate 8 and the one called Cerro Prieto or Sierra Prieta (Figure 1). He is cremated near the mountain Muggins Peak, in Kwcháan Aráa Kwakyém, Flames Shooting Up, in the Dome Valley north of Wellton (Figures 1 and 8). The people try to prevent it, but Coyote snatches the heart from the funeral pyre and flees east up the Gila. He ends up at the Salt River Mountains, 'Avíi Kwahás, Greasy Mountain, in the Kwcháan language. Grease from the heart stains the rocks.



Figure 8. Ráa Kwakyém (Muggins Peak in English) seen across the Dome Valley from the south (Photo by Peter L. Kresan)

The 'O'odham name of Ráa Kwakyém is 'Ali Chuukchug. The name has nothing to do with the Piipáash or Kwcháan creation traditions. It is based on the shape of the mountain as seen from the south (Winters 2020:923-924).

Last but not least the Makháv name of the Salt River Mountains is 'Avíi Kwa'aháth, Greasy Mountain. The Makháv have a tradition about an attack they made on an unnamed tribe at that mountain (Kroeber 1948:46-47).

In my opinion this is a good example of the blending of an episode from the 'O'odham creation tradition into an episode of the original Piipáash tradition. The first cremation, its location in the Dome Valley, and the flight of Coyote east to Greasy Mountain originated with the Piipáash and Kwcháan. The 'O'odham did not cremate their dead. The original Piipáash tradition, like the Kwcháan tradition, probably included the death and cremation of a man with supernatural powers. The episode of the rattlesnake's bite was probably adopted by the Piipáash from the 'O'odham creation tradition. As I heard in a recent Piipáash account of the episode, some animals were whipping the poor snake back and forth in a pond to torment it. In the 'O'odham version, Coyote flees south through 'O'odham country and then doubles back to Muha-dag.

On his 1695-1696 map Kino included a village that he spelled Angamtugbauí, apparently in the Lower Gila region (Burrus 1965:Plate VIII; 44). I believe this was 'Aangam Jegwoñik, also pronounced 'Aangam Jegwuañik. This means "Place Where A Stand Of Desert-willow Trees Was Uprooted." According to the 'O'odham creation tradition, one of the stops Coyote made on his way south with the heart was south of the Sierra Estrella at a place called 'Aangam Jegwuañik. Did Kino get the location wrong? Were there really two places more than 100 miles apart with this name? It would take quite a flood or microburst to



uproot an entire Desert-willow grove! Nobody today knows any place with that name. It is also interesting that the name 'Aangam Jegwuañik might refer to a village named 'Aangam, Place Where Desert Willow Trees Grow In Abundance, that had been abandoned, the population having been “uprooted.”

Eagleman Tradition. The Eagleman tradition has been widely known among 'O'odham elders into the present century (Winters and Darling 2024:266-281). The Piipáash respect the eagle, hshpá, because it lives up high close to the Creator. In my opinion, in spite of their respect for the eagle the Piipáash adopted this tradition from the 'O'odham, but with significant changes. In the 'O'odham tradition a young man is turned into an eagle, ba'ag, by 'T'ittoi. 'T'ittoi is jealous of the young man's good looks and ability at sports. The eagleman preys on the 'O'odham. In the Piipáash version a young boy who is a victim of bullying turns into a large carnivorous bird, but the Piipáash stress that he was not an eagle. He preys on the Piipáash. In both versions the villain kidnaps a woman to be his wife. In the 'O'odham tradition the woman is not physically harmed, but is trapped in a cave in a high, steep cliff (Figure 9; also see Figure 10). In the Piipáash version the bird cuts her legs off so she can't escape. In the 'O'odham version 'T'ittoi eventually kills the eagleman. In the Piipáash version a group of Piipáash men kill the bird. For details of the 'O'odham version see Winters and Darling (2024:266-281). Weaver's Needle in the Superstition Mountains is another prominent peak believed by some 'O'odham to be a nesting place of eagleman. I do not know of a written version of the Piipáash tradition.



Figure 9. Mo'ochbad, a nesting place of the eagleman according to elders of Koahadk village; the depression on top was caused by the eagleman's weight (Photo by Sue Winters)



Flute Players Tradition. This tradition was well known to 'O'odham, Piipáash, and Halychdúum elders at least into the 1980s. Two brothers make flutes to play to attract girls for wives. They sit on a mountain playing their flutes. Two girls hear the music coming from far away. They follow it until they find the brothers. The girls' quest is described in detail. Along the way the girls encounter various animals such as owls and lizards who try to convince them they are the ones making the music, but the girls are not fooled. The animals encountered vary between 'O'odham and Yuman accounts. There is a lot of humor in the description of the girls' search, especially in how they deal with the frauds. See Spier (1978:367-396) for a Halychdúum version of this tradition, which Spier calls "Flute Lure."

In the 1970s Joe Thomas, an elder of Ventana village in the Tohono O'odham Nation, told me that the ancient name of the mountain Kushpinod (Figures 1 and 11), 2.75 miles north-northeast of Ventana, was Kuhidam Do'ag, Flute Player Mountain. He said it is the mountain where the two brothers sat to play their flutes to attract girls. He summarized the



Figure 10. Petroglyphs near Ventana Cave in Hickiwan District, Tohono O'odham Nation; might the upper left one depict the Eagleman? (Photo by Miles Prescott)



Figure 11. Kushpinod Mountain north of Ventana village; its ancient name Kuhidam Do'ag came from the flute players tradition (Photo by Sue Winters)



flute players tradition that I would hear in detail ten years later in Cheechio in the northern Tohono O'odham Nation.

In the early 1980s Willie Enos of Cheechio told me the most detailed version I have heard. He really caught my attention when he said the brothers' names were Padahák and Padahán. He added that these are not 'O'odham names and he did not know what kind of names they are.

These brothers' names are River Yuman. They are found in episodes in the Makháv, Kwcháan, and Halychdúum versions of this tradition. For a Makháv version see the Satukhota Story in Kroeber (1972:99-116). Kroeber wrote the names as Para'āka and Paraháne. Para'āka was the older brother. In this Makháv version the girls that hear and respond to the music are said to be Hatpá, 'Akimeli 'O'odham, from "near Sacaton."

There are three Kwcháan versions of this tradition in Halpern and Miller (2014:1-5, 255-485). The two brother's names are Par'áak and Paaraxáan. It is important to read the introductory paragraphs of their book.

Padahán, spelled pada axane and paRaxán, also shows up in the Halychdúum version in Spier (1978:376, 387).

In the Makháv version the brothers are said to have had the power of witchcraft. There is a place off the western end of the Salt River Mountains where an evil spirit is said to have appeared repeatedly to an 'Akimeli 'O'odham maakai, a man with supernatural healing powers. The spirit tempted the maakai to join him in evil and practice witchcraft. He promised the maakai beautiful cowboy clothes and riches. The maakai finally gave in. When the people found out that he had turned to evil, they killed him. According to an 'O'odham familiar with this history, the spirit's name was Padahák.

This tradition may be more widespread than just among the River Yumans and 'O'odham (Halpern and Miller 2014:261). In my opinion, and it is just an opinion, it probably went from the Yumans to the 'O'o-dham. In any case over the centuries some details were changed, resulting in a blended Piipáash and 'O'o-dham version. But the names Padahák and Padahán did not disappear.



Owls and Owl Lore. There are four common species of owls in southwestern Arizona. They are the Great Horned Owl (*Bubo virginianus*), the Barn Owl (*Tyto alba*), the Western Screech Owl (*Megascops Kenecottii*), and the Burrowing Owl (*Athene cunicularia*) (Figure 12). The 'O'o-dham names of these four species have been well known to many 'O'odham elders into the twenty-first century. A few Piipáash and Halychdúum elders still knew the Piipáash names as recently as 2022. Some of the Quechan names are still known to a few elders. A number of Mojave names were recorded by Kroeber early in the twentieth century and by Munro et al. (1992).

Figure 12. Southern Arizona owls, clockwise from top: Great Horned Owl (*Bubo virginianus*) by Peter K. Burian, American Barn Owl (*Tyto alba*) by Charles J. Sharp, Western Screech Owl (*Megascops Kenecottii*) by Randy R Magnuson, and Burrowing Owl (*Athene cunicularia*) by Frank Schulenburg (Photos from commons.wikimedia.org)



The Great Horned Owl, in 'O'odham chukud, figures strongly in 'O'odham traditions concerning: (1) the life of a person's spirit after death, (2) the owl's role as a messenger, (3) the owl's curing power and its ability to cause illness, and (4) its ability to emit a dim or flickering light.

The Piipáash and Halychdúum call the Great Horned Owl mamdii or mamdiihán. The suffix -han just means the real McCoy lest some one should confuse it with one of the other species of owls. Although there are significant differences in details, this owl also figures strongly in Piipáash and Halychdúum traditions concerning: (1) connections with death and what happens to a person's heart after death, (2) role as a messenger, (3) powers to cure or cause illness, and (4) its ability to emit light, sometimes visible from a considerable distance.

I have never talked with Kwcháan or Makhav elders about owl lore.

The subject of owl lore of the 'O'odham, Piipáash and Halychdúum including the likelihood of borrowing by one tribe from the others could fill a 25-page essay. That must wait for another day.

Red Racers. The Red Racer, *Masticophis flagellum*, also known as Coachwhip (Figure 13), is a nonvenomous, aggressive snake that grows up to six feet long. It can race across the desert at speeds up to seven to fifteen miles per hour. It moves through trees like lightning. The 'O'odham name for the red racer is wegí vamaḍ. Wegí means red. There is also a black variety, chuk vamaḍ. Chuk means black. Winter rain that is whipped back and forth by strong winds from the north is called vamaḍ juuk, racer rain. The wind whips the rain the way the racer whips its body back and forth as it streaks across the desert. A large dust devil that spins fast is called vamaḍ hewel, racer wind.

The Piipáash and Halychdúum call the red racer mát kunyáal. When the wind is whipping back and forth, they say, "Matháy 'avé mát kunyáal lyvíik. The wind is blowing like a red racer snake." I am told that mát kunyáal means it can turn itself into something else, something unexpected.

Both 'O'odham and Piipáash say the red racer is evil because it can turn itself into a very handsome man and seduce a woman into becoming its wife. They are said to show up at dances. Elderly women told me less than 20 years ago that one had been spotted at a dance at Ventana village. The only way to distinguish them from an ordinary man is that the red racer's legs will be red. At dances women are cautioned to look at the lower legs of a man they don't know. If his legs, for example his shins, are red, he is probably a red racer in the form of a man. This is how the red racer at Ventana was spotted.

Influences in Other Areas

There are many other areas in which the Piipáash, Halychdúum and 'O'odham could have influenced each other: crafts such as pottery and basketry, agricultural practices, etc. I am not qualified to comment on most of them, but there is one thing I have first-hand knowledge of: taste for fish.



Figure 13. Sonoran Coachwhip (*Masticophis flagellum cinculum*), also called red racer, west of Patagonia, Arizona (Photo by Alan Schmierer, commons.wikimedia.org)



Figure 14. *Chii kushnáp*, the Arizona humpback chub: favorite food fish of the Piipáash (U.S. Fish & Wildlife Service photo)

Fish were the main source of protein of the Piipáash until the flow of water in the Gila and Salt Rivers was greatly diminished or completely gone. Fish formerly were abundant in the Colorado and Gila, and probably the lower Salt. The favorite food fish of the Piipáash was *chii kushnáp*, probably the humpback chub, a minnow species. According to Piipáash, it could be close to two feet long (Figure 14) and had few bones. Other fish eaten included *chii tát* (catfish), *chii takták* (crappie), and *chii nyór* (carp). The *tát* in *chii tát* means thorn and refers to the fish's "stickers." The *takták* in *chii*

takták is from its roughly circular shape. The *nyór* in *chii nyór* is from its coloring. The carp was not a favorite since it had too many bones.

On the other hand, I have never known a Tohono 'O'odham who liked or ate fish. Perhaps the Piipáash never convinced those who lived among them on the lower Gila to start eating them. One of the most unhappy 'O'odham men's names I know is Vatóp 'Uuv Chiñ, Mouth Smelling Like A Fish. Vatóp(i) is fish. 'Uuv is from the verb 'uuvk, to smell like something unpleasant. Chiñ is mouth. Vatóp(i) is also the word for worm.

The Hiach'ed 'O'odham did like fish. There was a place that they called Vatóp(i) Kii, Fish's Home, on the Gila near Wellton. They caught fish there that were stranded in pools of shallow water when floodwaters receded. This is the only 'O'odham place name I know based on fish.

Some 'Akimeli 'O'odham may have eaten fish. The word *hina* used by the 'Akimeli 'O'odham is said to mean carp. Grossman (1877:14) spelled it *hé-no* and translated it as carp in his English and Pima Vocabulary. Grossman (1877:27) also has the word 'o'oidakud, which he spells 'áw-oi-ta-kút, translated as fishhook. I have never heard any 'O'odham word for fishhook. It can be described as *vaptop(i) ha 'u'udakud*, gizmo for gathering fishes.

Editor's note re historical Edward S. Curtis photographs below. The images in the remaining pages of this article are reproductions of early 1900s photographs taken by Edward S. Curtis showing people, scenery, and artifacts of some of the cultural groups described by Harry Winters. Many of the photos were idealized views staged by Curtis. His captions for the photos are used below. He used the names "Maricopa" for Piipáash and Halychdúum, "Mohave" for Mojave/Mohave, "Papago" for Tohono 'O'odham, "Pima" for 'Akimeli 'O'odham, "Qahatika" for Tohono 'O'odham in the Koahadk (Kohatk) village vicinity, and "Yuma" for Quechan/Kwcháan. (I did not find any Curtis photos of Hiach'ed 'O'odham [Sand Papago].) Years are photo registration dates, not necessarily when they were taken. These photos are now in the U.S. Library of Congress collections. I have adjusted brightness and contrast in some of these images. AD

Appendix 1. Notes on Tribal Names

Yuma, Mojave, and Cocopa Tribal Names



The official tribal name of the Yumas is written Quechan. The word Yuma is derived from Yumyum, the 'O'odham name for the Quechan. Yumyum comes from the first words of the Quechan greeting song. I have heard the song on different occasions. The oldest reference to the name, Yumyum, that I know is in the journal of Father Juan Maria de Salvaterra, S.J. of a journey he made to the Gulf of California with Kino and Manje in 1701. See Burrus (1971:585-618). Yumyum, has been heard in the Hickiwan District until recent times.

Hwalya – Yuma 1907

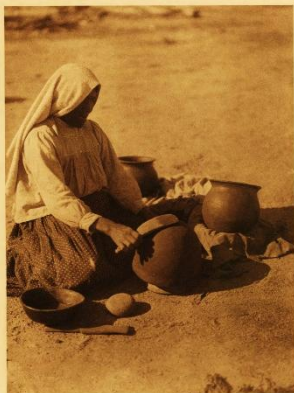


The official name of the Mojave tribe is written Pipa 'Aha Macav. The c is pronounced like English k. The tribe gives the meaning as People By The Water. The spelling in the dictionary by Munro et al. (1992:261) is 'Aha Makhav.

The official tribal name of the Cocopa is written Cocopah.

'O'odham Tribal Names

Tohono means an area lit by sunlight, a desert. 'O'odham means people who were born into and follow the 'O'odham himdag, the 'O'odham way of life. Tohono 'O'odham is freely translated as Desert People. Non-'O'odham names for these people in the past included Papagos, Papabotas, Pimas Papabotas, etc. Spanish-speaking people invented the name, Papago, from the 'O'odham “nickname” of one group of Tohono 'O'odham, the Babavi Ko'adam, Tepary Bean Eaters, who lived in the Baboquivari Valley on the west side of the Baboquivari Mountains.



The Papago Potter 1907

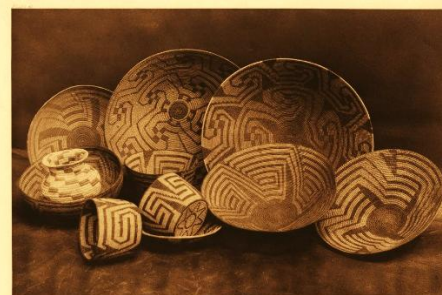
The 'Akimeli 'O'odham are the River People, the river being the Gila. The official tribal name of the 'Akimeli 'O'odham in English and Spanish is Pimas. Pima is not an 'Akimeli 'O'odham word. European explorers met Piman peoples such as the Pima Bajo in central Sonora long before they reached the middle Gila. In the Pima Bajo language the word for “No!” is “Pima!” (Pennington 1979:84). Frequent hearing of that word by the explorers may have given rise to the nickname Pima.

The Hiach'ed 'O'odham are called Sand Papagos in English and Areneños, Sand People, in Spanish.

Hia is very fine-grained sand, dune sand. The 'O'odham name means In-The-Fine-Sand People. Prior to 1900 these people spent much time on beaches of the Gulf of California and in areas of wind-blown dunes in northwestern Sonora.

Piipáash

Pima Baskets 1907

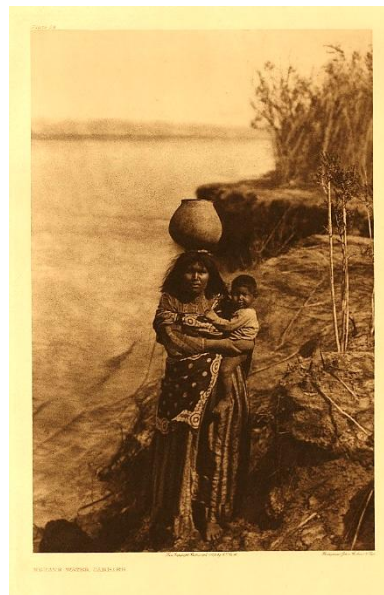


In Piipáash Chuukwér, the Piipáash language, piipáa means a person and piipáash means persons or people. The 'O'odham name for the Piipáash is 'O'obab, which has no meaning other than that. Two Kwcháan names for the Piipáash are Hatpáa 'Anyáa and 'Akyétt Kwamáach. The first name may refer to the Piipáash who lived near the 'O'odham. Stand-alone Hatpáa means 'O'odham person or people. One meaning of 'an-yaá is east, which is the direction from Yuma to the 'O'odham.

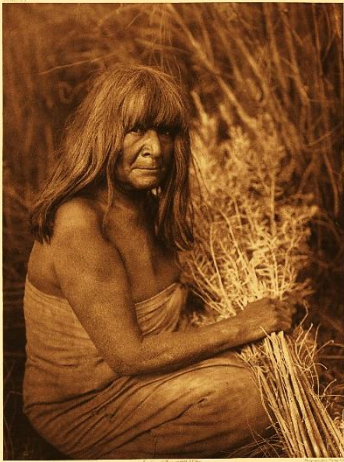


The second name means Sunflower Eaters, from 'akyétt, sunflowers, and amáach-k, to eat habitually (plural). Sunflowers were abundant along the lower Gila. A Kwcháan elder drove me to an area east of the Highway 95 crossing over the Gila where sunflowers were growing in profusion to show me the basis for this name.

Havachách Weaving - Maricopa 1907



Mohave water carrier 1903



Halychdúum

This tribal name is a Piipáash word. It is also spelled Halchidom and Halchidhoma. The Kwcháan name for this tribe is spelled Haalychadúum. The meaning of Halychdúum/Haalychadúum is unclear, but there may be clues to it in certain expressions in the Kwcháan and Piipáash languages. One of these is the Kwcháan expression *iiwáa háaly tadóm-k*, to have a change of heart. *Ii-wáa* means heart. At least for some Yumans the heart often plays the role of what we call the mind in English. For example, in the Kwcháan language *iiwáa ookavék* means to change one's mind. In Piipáash *iiwáa pét-k* means to forget. A Piipáash elder told me repeatedly that the tribe is called Halychdúum because they often do the opposite of what one would expect.

Maricopa Hipah with arrow-brush 1907

Halykwamáí and Kahwín

I have never heard a translation of these tribal names.

Appendix 2: Hiach'ed 'O'odham and Kwcháan

Prior to 1800 there was a friendly relationship, including trading, between the Hiach'ed 'O'odham and the Kwcháan. From time to time they also shared campsites and watering places in the northwestern Sonoran coastal area of the Gulf of California and in the adjacent desert. In early 1701 Salvatierra, Kino, and Manje rode west-northwest from Shon 'Oidag, Sonoyta, Sonora, on maps, across Hiach'ed 'O'odham country to try to learn if a land route to Baja California was feasible. On March 21st the expedition arrived at a Hiach'ed 'O'odham campsite about five miles from the coast. Salvatierra wrote in his journal that the campsite and nearby coastal area was occupied by Pimas (Hiach'ed 'O'odham), mixed with the “quitama (Kwcháan)” nation or with a branch of the said nation called “yumyum.” On March 24th and 25th, Salvatierra received friendly “ambassadors” from the yumyum. (Burrus 1971:606, 610, 612-613). Yumyum is the 'O'odham name for the Kwcháan. There must have been Hiach'ed 'O'odham or Kwcháan or both who were bilingual to at least some degree.

The number of Hiach'ed 'O'odham in Sonora decreased substantially between 1800 and 1900 (Winters 2024:126-127, 136-137, 143-144, 152-153). I do not know when visits and trading between Hiach'ed 'O'odham and Kwcháan finally stopped. Their long-term friendship and time spent together at campsites in Sonora and during trading sessions in Kwcháan country provided opportunities for swapping all kinds of information, including tribal traditions.

The Hiach'ed 'O'odham also were friends of the Tohono 'O'odham at Shon 'Oidag. They regularly visited that village, for example to harvest mesquite beans. This provided another channel for flow of information between the Kwcháan and the Tohono 'O'odham. It would not have provided the richness of opportunities that the situation on the lower Gila did.



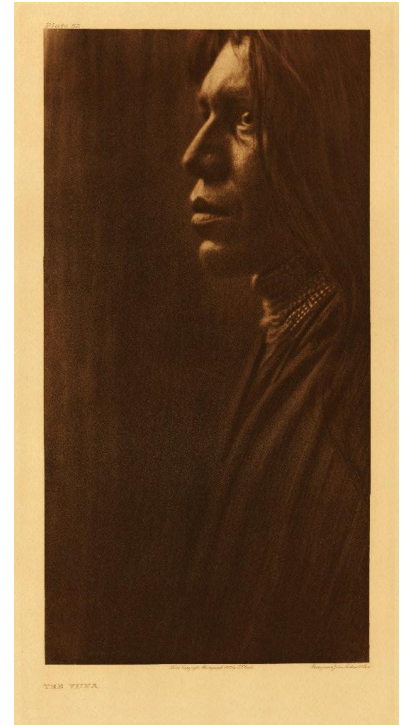
Kiho Carrier - Qahatica 1907



Appendix 3: Spier's Kvelychdúum

Spier (1978:ix, 9), reported in 1933 that he had recognized a “hitherto unrecorded Halchidhoma (Halychdúum) speaking group” that “lay from the Bend (Gila Bend) downstream halfway to the Colorado.” He wrote the name of this group as “Kaveltcadom.” His “c” represents English “sh.” He thus divided the Yuman people formerly living on the lower Gila into groups from two tribes: (1) the “Kaveltcadom”, a Halychdúum group living downstream from the Gila Bend area, and (2) a “Maricopa” group living upstream from the Gila Bend area.

I disagree with Spier. In the first place, his claim that the Yuman-speaking people living downstream from the Gila Bend area were “a hitherto unrecorded group” is ridiculous. They had been visited, recorded and described by several explorers and travelers who left written records, beginning with Kino and Manje in 1699. Later came Sedelmayr, Garcés, Anza, Font, Eixarch, Fages, and perhaps others including Keller. Spier was aware of the records of at least some of these men. He mentions them in his book (Winters 2018:xxxiv). In December 1743 Sedelmayr visited the principal village in the Gila Bend area. Its name was 'Uupaḍ 'Oidag in 'O'odham and Kwa'ák Mát in Piipáash, both meaning Catclaw Field. He described it as being “in the middle of Cocomaricopería,” the land of the Cocomaricopas. His “in the middle” referred to its location on the Gila between the upstream village of S-Chuk Kavidk near today's Hassayampa and the downstream village of S-Toñ Shuudag (Agua Caliente). His Cocomaricopería refers to one tribe, the Cocomaricopas. This was the European name for the Piipáash at that time. He doesn't say a word about two different tribes, one extending upstream from the Gila Bend area and one extending downstream from it (Winters 2018:xxxvi, 46-51; 2020:754-755, 927-949; Sedelmayr 1743).



The Yuma 1907

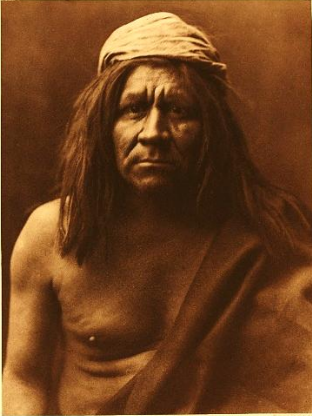
In the second place, the early explorers' mentions of the Halychdúum place them on the Colorado, not the lower Gila. They recorded a trail to the Halychdúum going from Agua Caliente to the Colorado where they lived. To my knowledge there is not a single mention of a Halychdúum village on the Gila in the old records. Kino's 1702 map shows the Alchedomas on the Colorado and nowhere else (Burrus 1965:Plate X).

In the third place, the Piipáash verb dúum does not imply the existence of a tribe. It simply means to be, to exist (Gordon 1987:170-171, 359, 361). Kvelychdúum means those who are in the west or those who are downstream. Some Piipáash and Halychdúum interviewed by Spier may well have referred to the people who formerly lived in the Gila Bend-to-Agua Caliente area as kvelychdúum, but that is no reason to declare them to be of a particular tribe, specifically the Halychdúum, different from the Piipáash living between Hassayampa and Gila Bend.

Spier's Kaveltcadom, Piipáash kvelychdúum, “people who are downstream” or “people who are in the west,” is not a tribal name. The Piipáash living in the Laveen area in GRIC District 7 today are referred to as kvelychdúum because they live downstream from the old Piipáash village sites west of Pima Butte, Vii Váav. That does not mean they were one tribe when they lived near Vii Váav and a different tribe after they moved 20 miles downstream. The Halychdúum at SRPMIC also refer to the Piipáash in GRIC District 7 as kvelychdúum since they live near the junction of the Salt and Gila Rivers downstream (west) on the Salt from SRPMIC.



One of the three divisions of the Kwcháan tribe is the Kavéelychadóm meaning southern people. It is the southern division of the tribe, not a separate tribe. Kavéely means in the south, which is downstream on the Colorado. A second division of the tribe, again not a separate tribe, is the Mathálychadóm, meaning northern people. Mathá means both wind and north. Lorey Cachora showed me the boundaries of these peoples when we drove up the west bank of the Colorado River.



The Mojave tribe has three bands with different names. Spellings of the first band's name are Mat-halyaadom, Mat-halychaadom, Mat-halyvaadom and Matha lyaduum. These all may be Mathalyduum. The t and h are two separate consonants, not the th in English think. Mathalyduum means People in the Wind. This is the northern band of Mojaves. Mataha means wind and mat-hak means north. The second band's name is Hutto-pah, translated as the in-between band. The third band's name is Kavelyaadom, also spelled Kavi lyathuum. It is the southern band. The name means People in the South, Downstream People. Kaveek means south or downstream since south is downstream on the Colorado in Mojave country. Kavelyaadom is not the name of a tribe. It is the name of a band of the Mojave tribe (Munro et al. 1992:138, 264, 287, 303).

Mohave Chief 1903

Gifford (1936:248) in his Introduction to *Northeastern and Western Yavapai* wrote, "Among the Western Yavapai, I found no informant who knew of the former Gila River Yuman Tribe, the Kaveltkadom." He continued, "This is not surprising when it is recalled that the Kaveltkadom deserted the lower Gila country between 1835 and 1846." His sole reference is Spier (1933:39). Since there never was such a tribe, it is not surprising at all.

Acknowledgments. I thank Al Dart, Pete Kresan, and Sue Winters for their contributions to this essay. They brought the essay to life. I also thank the following men and women for spending a lot of time teaching me their languages, histories and something of their past and present ways of life: Carl Sundust, Maricopa and U.S. Navy Seal; Lorey Cachora, Quechan (Yuma) and U.S. Army Special Forces soldier; Barbara Levy and several other good-natured Quechan ladies; Thomas Stevens and Sheldon Swick, Mojaves; Irene McLevain, my Yavapai tutor.

I thank the countless Tohono 'O'odham and 'Akimeli 'O'odham who have shared their language, ways of life and histories with me over almost seventy years. They include the members of the Ortega family of the Hickiwan District who adopted my family into theirs years ago in the 'O'odham way; the many members of the Miguel family of the Sif Oidak District who were my first 'O'odham language teachers; Ismael Lewis and Cesario Lewis of 'Imiga and Vavhia Chiñ; Willie Enos of Cheechio (Chuichu); Joe Thomas of Ventana village; Andres and Leslie Pascual and Joker Jones of Sacaton; José and Joe Enriquez of Queens Well; Juan Gregorio and Simon Lopez of Santa Rosa; Frank Harris of Chuulik; Salvador and Dora Lopez, Steven Joaquin and George One-Shot Gomez of Vivpulik (San Pedro); Juan and Ramona Mattias of Sells, Che'ul Sha'ik and Sivol Chuuchk; Steven Lispin of Tađai Do'ag and Hikwoñ, and many more from literally all over 'O'odham country. Many of these people have gone to their eternal reward. I hope to meet them again.

About the Author

Harry J. Winters, Jr., PhD is a registered geological engineer in Arizona. He is fluent in the 'O'odham language and speaks enough of the Maricopa and Yavapai languages to stay out of trouble and never starve in their company.

Harry Winters's Place Names Books Available from Old Pueblo Archaeology Center

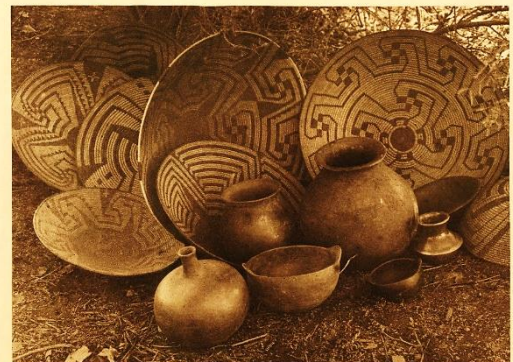
The 2020 edition of Harry Winters's *'O'odham Place Names* book listed in this article's bibliography is out of print. However, he has made the original 2012 version of *'O'odham Place Names* as well as his *Maricopa Place Names* (2018) and *'O'odham Course Notes: First through Fourth Semesters* (2024) books available for sale through Old Pueblo Archaeology Center to benefit Old Pueblo's education programs. These volumes are used by several Arizona tribal communities as go-to sources of information about place names and their native languages. [Click Here](#) for detailed book descriptions and pricing.





References Cited

- Burrus, Ernest J., S.J.
1965 *Kino and the Cartography of Northwestern New Spain*. Arizona Pioneers' Historical Society, Tucson.
- 1971 *Kino and Manje: Explorers of Sonora and Arizona*. Sources and Studies for the History of the Americas No. 10. Jesuit Historical Institute, Rome, Italy, and St. Louis, Missouri.
- Gifford, E. W.
1936 *Northeastern and Western Yavapai*. Publications in American Archaeology and Ethnology, vol. 34, No. 4. University of California Press, Berkeley.
- Gordon, Lynn
1987 *Maricopa Morphology and Syntax*. Publications in Linguistics, University of California. University of California Press, Berkeley and Los Angeles.
- Grossmann, F. E.
1877 English & Pima Dictionary. Typescript. Manuscript 641-a-c. National Anthropological Archives, Smithsonian Museum Support Center, Suitland, Maryland. Author also known as Capt. Frederick E. Grossmann.
- Halpern, A. M., and Amy Miller
2014 *Stories from Quechan Oral Literature*, Barbara Levy, translator. Open Book Publishers, Cambridge, United Kingdom.
- Kroeber, Alfred L.
1948 Seven Mohave Myths. *Anthropological Records* 11(1):1-70.
- 1972 More Mojave Myths. *Anthropological Records* 27(1).
- Munro, Pamela, Nellie Brown, and Judith G. Crawford
1992 *A Mojave Dictionary*. Occasional Papers in Linguistics No. 10. Department of Linguistics, University of California, Los Angeles.
- Nentvig, Juan, S.J.
1980 *Rudo Ensayo: A Description of Sonora and Arizona in 1764*. Translated and annotated by Alberto Francisco Pradeau and Robert R. Rasmussen. University of Arizona Press, Tucson.
- Pennington, Campbell W.
1979 *The Pima Bajo of Central Sonora, Mexico. Vol. 2, Vocabulario en la Lengua Nevome*. University of Utah Press, Salt Lake City.
- Spier, Leslie
1978 *Yuman Tribes of the Gila River*. Reprint of University of Chicago Press 1933 ed. Dover Publications, New York.
- Watahomigie, Lucille J., Jorigine Bender, and Akira Y. Yamamoto
2001 *Hualapai Reference Grammar*. Revised and expanded ed. Contributions by Elnora Mapatis, Josie Manakaja, and Malinda Powskey. Endangered Languages of the Pacific Rim, A2-003. Nakanishi Printing, Kyoto, Japan.
- Winters, Harry J., Jr.
2012 *'O'odham Place Names: Meanings, Origins, and Histories Arizona and Sonora*. Nighthorses, Tucson.
- 2018 *Maricopa Place Names*. SRI Press, Tucson.
- 2020 *'O'odham Place Names: Meanings, Origins and Histories, Arizona and Sonora, Second Edition*. SRI Press, Tucson.
- 2021 'O'odham Traditions of the Sivañ Va'aki. *Old Pueblo Archaeology* 84:1-9. Old Pueblo Archaeology Center, Tucson.
<https://www.oldpueblo.org/wp-content/uploads/2021/11/Issue-84-%E2%80%93-March-2021-%E2%80%93-%E2%80%99O%E2%80%99odham-Traditions-of-the-Siva%C3%B1-Va%E2%80%99aki.pdf>
- 2024 Arizona Indian Peoples' Territories in the Nineteenth Century. *Journal of the Southwest* 66(1):118-164.
- 2024 The 'O'odham Eagleman Tradition or Ba'ag Ho'ok 'Aaga. *Journal of the Southwest* 66(2):266-281.
- Wright, Aaron M., and Harry J. Winters, Jr.
2020 'Iihor Kwsnavk: A Sacred Place Central to the Great Bend of the Gila. *Archaeology Southwest* 34(1):27-28.



Maricopa Still Life 1907



Old Pueblo Archaeology Center

Upcoming Activities



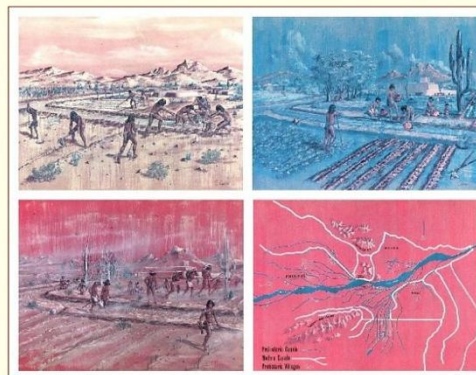
Old Pueblo Archaeology Center's The Hohokam Culture of Southern Arizona Online Class in 14 Two-Hour Sessions

Instructed by Archaeologist Allen Dart, RPA

Executive Director, Old Pueblo Archaeology Center

Wednesday Evenings 6:30-8:30 pm (Arizona/Mountain Standard Time)
September 9-December 16, 2026 (No class on October 21)

Explore the American Southwest's ancient Hohokam archaeological culture. In 14 sessions (total 28 hours) the class provides an up-to-date review of southern Arizona's Hohokam culture for anyone interested in southwestern archaeology. The instructor, Registered Professional Archaeologist Allen Dart, discusses Hohokam origins, material culture (including ceramics, other artifacts, architecture, and petroglyphs), subsistence and settlement systems, social and organizational systems, social interaction and exchange within and beyond the Hohokam culture's regional boundaries, ideas about Hohokam religion, and Hohokam ancestors and descendants. All class sessions are online via Zoom.



The class can be taken for Arizona Archaeological Society (AAS) Certification. The AAS's basic Archaeology of the Southwest class is recommended as a prerequisite but this is negotiable with the instructor. Participants seeking the AAS Certification are expected to prepare a brief research report on some aspect of the Hohokam archaeological culture. See box below for more information about the AAS Certification program.

\$109 donation per person benefits Old Pueblo's education programs (\$90 for Old Pueblo Archaeology Center, Arizona Archaeological Society, and Arizona Site Stewards members)

Donation is due 10 days after reservation request
or by Friday September 4, 2026 at
12 pm Arizona Time, whichever is earlier.

**To register contact Old Pueblo Archaeology
Center at info@oldpueblo.org 520-798-1201.**

* Donation does not include cost of AAS membership, AAS Certification Program enrollment, or the recommended text (*The Hohokam Millennium* edited by Paul R. Fish and Suzanne K. Fish; available online).

Children under age 16 may enroll in the class only if parent or guardian also enrolls.

Zoom link for class will be provided only to persons who have registered and paid.

Flyer date
March 16, 2026

The Arizona Archaeological Society (AAS) Training, Certification and Education Program (TCEP) is designed with help from professional archaeologists to give training in various aspects of archaeology outside an academic degree program. Because many of the program's courses provide field experience in addition to classroom training, students can develop those skills to become qualified and valuable members of archaeological projects. For students who join the Certification program, AAS keeps records of courses taken and issues certificates upon successful completion of course requirements.

To enroll in the AAS TCEP program an individual must be a member of the Arizona Archaeological Society (AAS), complete the Certification Program Application form, and pay AAS a one-time fee of \$10. When the application is accepted, the Department Recorder will establish a file in the individual's name to maintain a permanent record of qualifications. As each course is completed the applicant will receive a certificate that the instructor will sign, and the individual becomes certified in that aspect of archaeology.

AAS members and others who are not seeking certification may take these courses without joining the TCEP. For complete information on the TCEP go to Certification Program under Activities on the AAS website: <http://www.azarchsoc.org>.

AAS is a separate organization from Old Pueblo Archaeology Center.

Santa Cruz Red-on-buff jar photo courtesy of the Arizona State Museum; Hohokam irrigation paintings by Charles O. Kemper, Salt River Project; Casa Grande Ruins photo by Flor de María Jane Dart



Old Pueblo Archaeology Center Presents

Flyer date
April 28, 2026

Autumn Equinox Tour to Los Morteros and Picture Rocks Petroglyphs Archaeological Sites

**Tuesday September 22, 2026
8 to 11:30 am**



Los Morteros is named for these bedrock mortars.
(Pima County Cultural Resources & Historic Preservation Office photo)

Old Pueblo Archaeology Center's executive director, archaeologist Allen Dart, leads this tour to two of the Tucson area's premier pre-European archaeological sites. The tour will meet at Los Morteros, and after visiting that site will caravan to Picture Rocks.

Los Morteros, an ancient village site of the Hohokam archaeological culture from about 850 to 1300 CE, has been studied by archaeologists and historians for more than a century. During its heyday it was the center of an extended community of related Hohokam sites along the Santa Cruz River. The core of Los Morteros, now preserved in a Pima County natural and cultural resources park, encompasses a large public architectural feature interpreted as a ballcourt used for ritual and other purposes, plus many refuse mounds, room blocks, probably hundreds of pithouses, and thousands of artifacts. Also present are petroglyphs and the bedrock mortars that inspired the site's name – *Los Morteros* is Spanish for "The Mortars."

The Picture Rocks site in the Tucson Mountains foothills contains over 400 ancient rock symbols made mostly by the Hohokam, although some of the rock images may predate 500 CE. Some of the Picture Rocks petroglyphs depict dancing human-like figures and mammals, while others are more abstract. At least some of the glyphs evidently were ritually important because at least one of them is a marker for both the spring and autumn equinoxes and for the summer solstice of each year. This calendar petroglyph exhibits a "sun dagger" (a pointed sunlight image) on the morning of each equinox regardless of the hour and minute of the actual celestial equinox event. Participants in this tour will get to see the equinox sun dagger appear on the calendar glyph if clouds do not block the sunlight on the tour day.



Participants provide their own transportation and are advised to wear sturdy shoes and bring drinking water.

A donation of \$45 per person (\$36 for Old Pueblo Archaeology Center members) is due 10 days after reservation request or by 5 pm Sunday September 20, whichever is earlier.

Tour meeting place is near N Silverbell Rd and W Linda Vista Blvd in Marana, Arizona. Attendance is limited to 24 participants.

Contact Old Pueblo Archaeology Center at info@oldpueblo.org or 520-798-1201 to register and obtain meeting place directions.

Cancellations made 30 days or more before departure will not be charged.

Cancellations 8 to 30 days before departure will be refundable at 50% of the fee paid unless the canceled space can be filled.

Cancellations 0 to 7 days prior to departure date are not refundable.



Old Pueblo Archaeology Center Presents:



Excavation scenes and some artifacts encountered at the Yuma Wash site (above) and Bojórquez-Aguirre Ranch site

Yuma Wash Hohokam Village and Bojórquez-Aguirre Ranch Archaeological Sites Tour

with archaeologist Allen Dart, RPA
3 to 5 pm Saturday October 3, 2026

The Yuma Wash archaeological site in Marana, Arizona, was a settlement founded sometime after 750 CE by native people of the ancient Hohokam culture, whose descendants continued to live and farm there until their culture collapsed, perhaps as late as 1450.

The historic Bojórquez-Aguirre Ranch archaeological site covered much the same area as the Yuma Wash site in the decades before and after the turn of the twentieth century. Juan and María Bojórquez, who operated a grocery store in Tucson, founded the ranch in 1878. After they left, Tucson entrepreneur Feliberto Aguirre filed a homestead petition on the property in 1896 and acquired title to it in 1900 after proving up on the homestead.

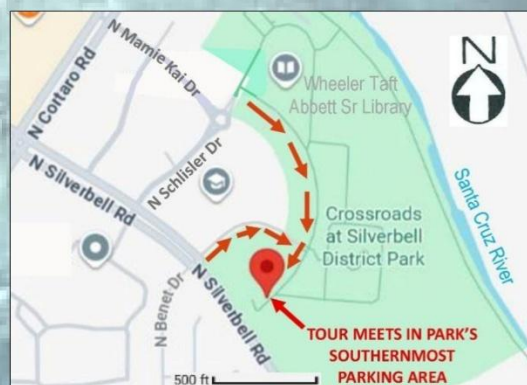
These two sites covered a large area west of the Santa Cruz River south of Cortaro Road, along Silverbell Road and on private properties to the southwest and in the Crossroads at Silverbell District Park northeast of Silverbell. Old Pueblo Archaeology Center and Desert Archaeology, Inc. conducted archaeological excavations to recover information and artifacts from both sites before Silverbell Road was widened and the area became developed.

The Yuma Wash site excavations identified over 100 Hohokam house ruins, most of which were the partly underground pithouse type but some were above-ground, pueblo-like homes. Many Hohokam outdoor features also were encountered including human burials, an irrigation canal, middens, hearths, pits, and thousands of artifacts. Old Pueblo also excavated the original Bojórquez Ranch house and outlying structures, and the Aguirre Ranch residence, bunkhouse, a substantial rock-masonry tank used for watering cattle, and other built features.

Traces of the Yuma Wash Hohokam site occupation are still present in the Marana district park, as are some visible vestiges of the Bojórquez and Aguirre families' buildings and other structures. Old Pueblo Archaeology Center's Executive Director Allen Dart leads this tour to portions of the sites that are still preserved in the park.

The tour begins in the southernmost paved parking area of the Crossroads at Silverbell District Park along Silverbell Road in Marana. Participants provide their own transportation and are advised to wear sturdy shoes and bring drinking water.

Reservations are required. A \$20 donation per person (\$15 for Old Pueblo Archaeology Center members) supports Old Pueblo's education programs about archaeology and traditional cultures. Donations are due 10 days after reservation request or by 5 pm Wednesday September 30, whichever is earlier. Attendance is limited to 24 people.



FOR RESERVATIONS OR MORE INFORMATION CONTACT OLD PUEBLO ARCHAEOLOGY CENTER:

info@oldpueblo.org or 520-798-1201

Cancellations made 30 days or more before the tour date will not be charged. Cancellations 8 to 30 days before the tour date will be refundable at 50% of the fee paid unless the canceled space can be filled.

Cancellations zero to 7 days prior to the tour date are not refundable.



Information as of
May 21, 2026

Arrowhead Making & Flintknapping Workshop

at Old Pueblo Archaeology Center
2201 W 44th St, Tucson

Donation of \$45 per participant

(\$36 for Old Pueblo Archaeology Center members)
supports Old Pueblo's education programs
in archaeology & traditional cultures.

50% off for persons who have taken
this Old Pueblo class previously.



Donation is due 10 days after
reservation request or by
5 pm Thursday October 22,
whichever is earlier.



Some projectile points made by the **WORKSHOP INSTRUCTOR:**

SAM GREENLEAF

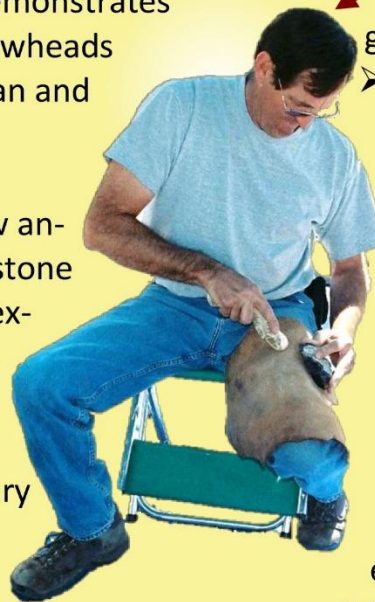
In this 3-hour workshop Old Pueblo's expert
flintknapper Sam Greenleaf demonstrates
and teaches how to make arrowheads
and spear points out of obsidian and
other kinds of stone.

Sam provides insights into how an-
cient peoples made and used stone
tools, and provides hands-on ex-
perience in making and recog-
nizing flaked stone artifacts.

Obsidian stone and all necessary
equipment are provided.

Limited to six participants.

Children under age 16 may enroll only if
parent or guardian also enrolls in the class.



Register for this workshop to
get hands-on instruction in how to:

- Produce a flaked stone tool using
a hammerstone to break a desired
size of flake off of a core of rock.
- Thin and shape the flake into a
projectile point or other stone
implement using an antler tool.
- Finish the artifact using fine
pressure flaking.

This activity is designed to help
modern people understand how
early peoples made and used tools.
It is not intended to train people how
to make crafts for sale.

To register contact Old Pueblo Archaeology Center at info@oldpueblo.org or 520-798-1201.

Checks, cash, and Visa, MasterCard, Discover, and American Express cards are accepted. Please do not send cash in the mail.

Donations for reservations made less than five days before a class date are nonrefundable.

Donation for a missed session will be refunded only if Old Pueblo Archaeology Center cancels
the workshop or receives at least 24 hours advance notice of absence from a registrant.



Old Pueblo Archaeology Center presents
**Coyote Ruin, Fitzmaurice Ruin,
and Museum of Indigenous People**

**A Two-Day Cultural Education Tour to the Prescott, Arizona Area
with archaeologist Andrew L. Christenson, PhD**

Starting at 11:30 am Saturday November 21, ending around noon Sunday November 22, 2026

\$109 donation per person (\$99 for Old Pueblo Archaeology Center members)

Donations are due 10 days after reservation request or by 5 pm November 17, whichever is earlier.

Donation covers all site entry fees and Old Pueblo's expenses.

Participants are responsible for their own transportation, lodging, and meals.

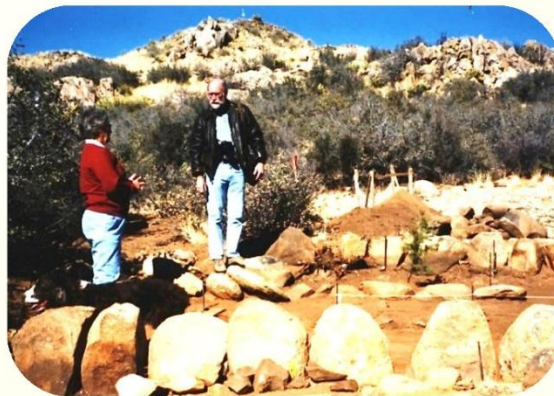


Above: A view of Fitzmaurice Ruin, a Prescott-area hilltop site, after excavations by the University of Arizona in 1933

**Accompany archaeologist Dr. Andy Christenson
on this tour to two of the most prominent
Prescott culture hilltop archaeological sites and
one of Arizona's oldest anthropology museums.**

**To register contact
Old Pueblo Archaeology Center
at info@oldpueblo.org or 520-798-1201.**

Photos courtesy of Andy Christenson



*Archaeologist Peter Pilles, Jr., and Coyote Ruin
monograph author Mary Spall in the
terraced garden area of Coyote Ruin; main part
of the site is on outcrops in background.*



Old Pueblo Archaeology Center is participating in
the Jim Click Automotive Team's 2026 Millions for Tucson Charity Raffle!

WIN ONE

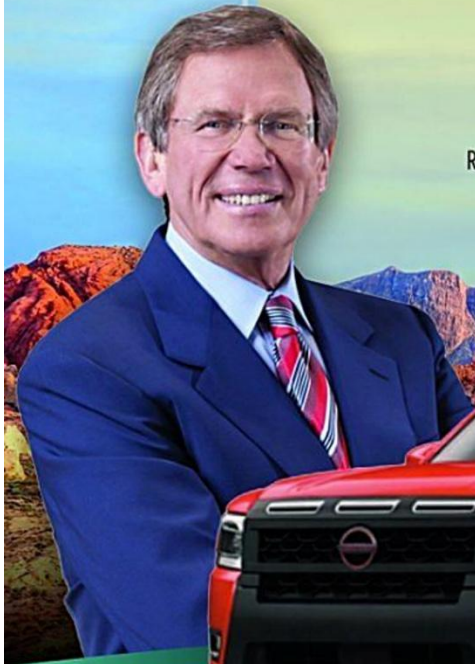
OF THREE GREAT PRIZES!

TICKET PRICE

\$25 EACH OR 5 FOR \$100

Raffle benefiting Tucson charities with 100% of funds raised staying here.

Whatever amount
you contribute to
Old Pueblo
Archaeology
Center for tickets
goes directly into
our archaeology,
history, and
cultures education
programs!
Email us at
info@oldpueblo.org
or call us at
520-798-1201
to request
your tickets!



*Image for
illustration
purposes only



ROUSH.
PERFORMANCE



GRAND PRIZE

NEW 2026 Nissan Frontier Pro-4X Roush® Edition



2ND PRIZE

TWO ROUND-TRIP,
FIRST CLASS AIRLINE TICKETS
TO ANYWHERE IN THE WORLD!*



3RD PRIZE

\$5,000 CASH!

The Jim Click Automotive Team is presenting a NEW 2026 Nissan Frontier Pro-4X Roush® Edition to the entire community to be used as the featured prize in our ongoing effort to raise millions of dollars for non-profit organizations in Southern Arizona. With your \$25 contribution you could win this stunning vehicle or one of two other great prizes! The best part is that 100% of your contribution will support Southern Arizona charities that keep all the proceeds from the maximum 120,000 tickets which will be sold. The drawing will be held on December 10, 2026.

Entries must be received by December 4, 2026 at Raffle Headquarters.

For campaign and ticket information, contact the Millions for Tucson Raffle Management Team at 520.342.5210 or at:
jimclickraffle@russellpublic.com

THE JIM CLICK
MILLIONS
FOR TUCSON
RAFFLE
MillionsForTucson.org





Old Pueblo Archaeology Center's Archaeology of the Southwest Course

Online Course for General Interest or Arizona Archaeological Society Certification

Paleoindian culture

Clovis projectile point, Blackwater Draw Museum, Gwen Buttrill photo

Late Archaic culture

San Pedro projectile point, Archaeology Southwest/Desert Archaeology, Inc. photo



Mogollon culture

Rectangular pithouse at the Harris site
University of Nevada, Las Vegas photo



Ancestral Pueblo culture

Pueblo Bonito in Chaco Canyon
National Park Service, Russ Bodnar photo



Hohokam culture

The Casa Grande in 1891
Bureau of American Ethnology, C. Mindeleff photo

Offered in eighteen
two-hour sessions,
online via Zoom

Archaeology of the Southwest
is an introductory course in the
study of the American Southwest.

Wednesdays 6:30-8:30 pm
Arizona/Mt. Std. Time*
January 20-May 19, 2027

Developed by the Arizona Archaeological Society (AAS), this class provides a basic overview of the region's archaeology and cultures. It includes discussions of the artifacts and general characteristics of major cultural groups who have lived in the Southwest over the past 13,000-plus years, dating systems, cultural sequences, subsistence strategies, development of urbanization, and depopulation of different areas at different times.

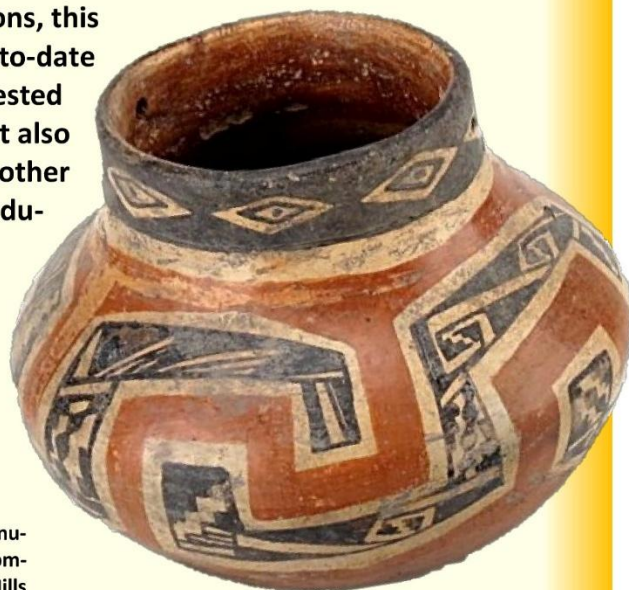
In 36 hours of online class time in Zoom open sessions, this Old Pueblo Archaeology Center course provides an up-to-date synthesis of the regional archaeology for anyone interested in the Southwest's Indigenous and historical cultures. It also is a prerequisite for persons seeking certification in all other courses offered in the AAS Training, Certification and Education Program. See next page for TCEP information.

\$145 donation per registrant
(\$115 for Old Pueblo Archaeology Center,
AAS, and Arizona Site Steward members)**

To register contact Old Pueblo Archaeology Center
at 520-798-1201 or info@oldpueblo.org.

* Same as Pacific Daylight Time from March 17 through May 19.

** Donations are due 10 days after reservation request or by 5 pm Monday January 18, whichever is earlier. Donation does not cover costs of the recommended text (*The Oxford Handbook of Southwest Archaeology*, Barbara J. Mills & Severin Fowles, editors), optional Arizona Archaeological Society membership, or optional AAS Certification Program registration fee. The Zoom link for the class will be provided only to persons who have registered and paid.



Salado blended culture

Tonto Polychrome jar, Pottery Typology Project,
New Mexico Office of Archaeological Studies photo



Old Pueblo Archaeology Center Presents

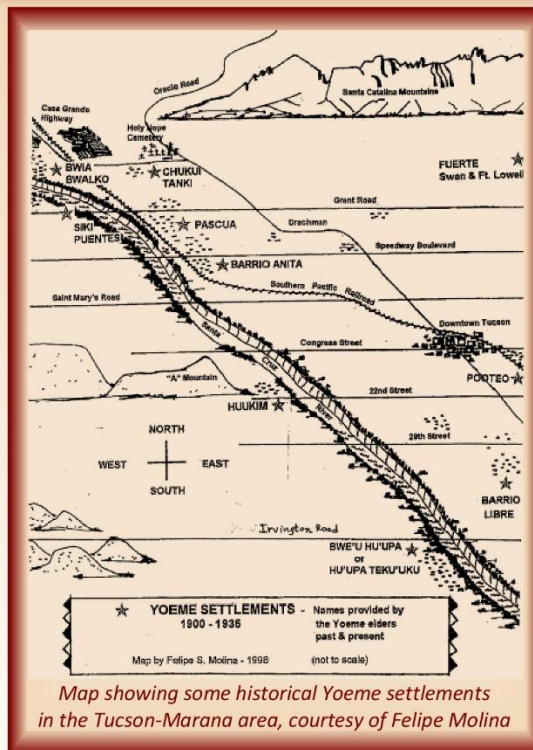
Tucson and Marana Yoeme (Yaqui Indian) Communities

**A Tour to Historic Cultural Sites
with Yoeme Historian Felipe S. Molina
Saturday January 30, 2027, 8 am to 1 pm**

THE YOEME (YACUI INDIANS) have been present in southern Arizona at least since Father Kino began exploring in the 1690s, but they established several settlements in our state later to escape the Mexican government's 1890s-early 1900s war with the Yoeme in the state of Sonora.

From 1880 through the early 1900s, Mexico began deporting Yoeme from their Sonora homeland to other Mexican states, prompting a steady stream of Yoeme to migrate north into Arizona. By 1908 hundreds of Yoeme had fled to the US to settle permanently, and in the 1920s more came to seek political asylum and join existing Arizona Yoeme settlements. By 1940 there were about 3,000 Yoeme in Arizona, mostly living in the well-established villages of Libre (Barrio Libre) and Pascua in Tucson, Yoem Pueblo and Wiilo Kampo in Marana, and others near Eloy, Somerton, Phoenix, and Scottsdale.

In 1978 the US Government granted federal recognition to the Pascua Yaqui Tribe and soon after established the Pascua Yaqui Indian Reservation at New Pascua.



*Typical home in Yoem Village, Marana, Arizona, 1936
Homes were built with railroad ties, saguaro cactus ribs, and mud, with sheet metal roofing.
R. B. Spicer photo courtesy of Felipe Molina*

THIS TOUR WILL VISIT TUCSON AND MARANA PLACES SETTLED HISTORICALLY BY YOEME WHO FLED MEXICO.

In Tucson we'll visit Bwe'u Hu'upa Village, San Martin Church and plaza in the 39th Community (Barrio Libre), Pascua, and possibly the San Ignacio Church and plaza. Then we will caravan to Marana to stop at Ili Hu'upa, Wiilo Kampo, and Yoem Pueblo's San Juan Church and plaza. Mr. Molina also will point out the Bwia Bwanko (Soft Earth) site east of the Santa Cruz River and Chukui Kawi west of Yoem Pueblo.

Contact Old Pueblo Archaeology Center at 520-798-1201

**or info@oldpueblo.org to register and
obtain meeting place directions.**

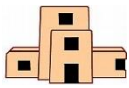
\$45 donation per person (\$36 for Old Pueblo Archaeology Center members)

supports Old Pueblo's and Mr. Molina's education programs about archaeology and traditional cultures.

Donations are due 10 days after reservation request or by 5 pm Wednesday January 27, whichever is earlier.

Cancellations made 30 days or more before departure will not be charged. Cancellations 8 to 30 days before departure will be refundable at 50% of the donation paid unless the cancelled space can be filled. Cancellations 0 to 7 days prior to departure date are not refundable.

See more information on next page.



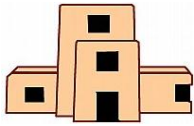
Old Pueblo Archaeology Center

PO Box 40577
Tucson AZ 85717-0577

Apply
Postage
Here for
Mailing



Old Pueblo Archaeology



Bulletin of Old Pueblo Archaeology Center

Located at 2201 W. 44th Street in the Tucson Unified School District's Ajo Service Center

Mailing Address: PO Box 40577, Tucson AZ 85717-0577

www.oldpueblo.org

520-798-1201

info@oldpueblo.org

Old Pueblo Archaeology Center's *Archaeology Opportunities* Membership and Discounts Program

Archaeology Opportunities is a membership program for persons who wish to support Old Pueblo Archaeology Center's education efforts and perhaps even to experience for themselves the thrill of discovery by participating in research. Membership is also a means of getting discounts on the amounts Old Pueblo normally charges for publications, education programs, and tours. Members of *Archaeology Opportunities* at the Individual membership level and above are allowed to participate in certain of Old Pueblo's archaeological excavation, survey, and other field research projects, and can assist with studies and reconstruction of pottery and other artifacts in the archaeology laboratory. Membership benefits include a one-year subscription to the **Old Pueblo Archaeology** electronic quarterly bulletin, opportunities to participate in Old Pueblo's member-assisted field research programs, discounts on publications and archaeology-related items, and invitations and discounts for field trips and other events.

Old Pueblo Archaeology is the electronic quarterly bulletin of Old Pueblo Archaeology Center, a 501(c)(3) nonprofit corporation. Questions, comments, and news items can be addressed to the editor, Allen Dart, at info@oldpueblo.org or 520-798-1201, or by mail to Old Pueblo Archaeology Center, PO Box 40577, Tucson AZ 85717-0577. For more information please visit our web site: www.oldpueblo.org. Your *Archaeology Opportunities* membership helps support Old Pueblo's children's education programs.