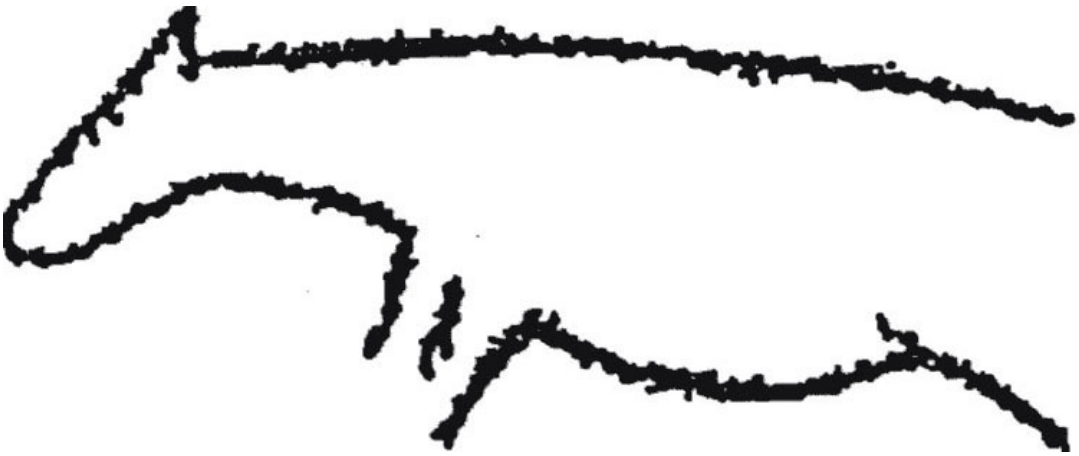
ANCIENT ECHOES



JOURNAL OF THE HILL COUNTRY ARCHEOLOGICAL ASSOCIATION

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2017

ANCIENT ECHOES

JOURNAL OF THE HILL COUNTRY ARCHEOLOGICAL ASSOCIATION

2017 VOLUME 7 **John Benedict, Editor**

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BOOK REVIEW

ABOUT THE COVER: Drawing made from a pictograph at the Hatfield Shelter, 41KR493 by Bobby Rector

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Dedicated to Kay and Woody Woodward

Kay and Woody Woodward are Charter Members of Hill Country Archeological Association (HCAA)-–they helped establish it in 1999. For their many contributions to HCAA and Texas Archeology they were award Honorary Lifetime Membership in HCAA in 2016. Over the years they have been wonderful teachers, mentors and friends to us in HCAA. Kay has lead many activities from teaching school children about archeology, to field work, to General Meetings, to Archeology Celebrations for the general Public! Woody and Kay have been the "spark plugs" in HCAA. Their kindness and support to the archeological community is legendary and much appreciated.

They have received numerous awards from HCAA and the Texas Historical Commission (THC) for their work and public outreach in archeology. Woody and Kay have served as Stewards for the THC, recording many new archeology sites across the Hill Country. Kay is unique in her ability to find diagnostic points when surveying new sites—earning the nickname, "Frio Queen" for all the Frio points she has found.

Kay and Woody have for years provided an archeological laboratory and storage facility at their home for HCAA to use in processing material from archeology sites being surveyed by our Association. Also training classes for new HCAA Field Workers were conducted at their lab. Kay and Woody were instrumental in the creation of the HCAA Field Manual used to train new HCAA members in the methods used to properly survey and excavate prehistoric archeological sites.

The Woodward team are well recognized and appreciated by the professional archeological community in Texas. Thus we dedicate this volume of Ancient Echoes to Kay and Woody for their kindness, support, contributions, and leadership in the study of archeology, and the education of the public about Texas Archeology. (Photo, L to R: Woody and Kay Woodward, and their daughter, Terry (Woodward) Farley.

An Unexpected Radiocarbon Date From Hearth Feature 1 at Site 41MS100, Mason Mountain Wildlife Management Area, Mason County, Texas.

Christopher Lintz

ABSTRACT

Year-end funds in 2013 provided an opportunity to conduct species identification and radiocarbon dating of charcoal chunks from basin hearth Feature 1 at site 41MS100 at the Mason Mountain Wildlife Management Area. This hearth was one of two found in the graded drainage ditches of a crowned dirt roadway associated with a high density of artifacts. The recovery of two large Marcos/Castroville and one Elam dart points during 2010 fieldwork, suggested that site 41MS100 was a probable single component, Late Archaic campsite, with a relatively intact occupation zone buried about 30 cm below modern ground surface (Lintz 2011). Based on the integrity of buried cultural deposits from a thin occupation zone, the site is a potentially significant cultural resource which should be managed by avoidance of the ca. 260 by 130 m site area. The 2013 chronometric program determined that the oak charcoal from hearth Feature 1 dated to 840 +/- 30 uncalibrated radiocarbon years before present (B.P. = 1950). The calendrical calibration age indicates that the hearth dates between Cal A.D. 1160 and 1260 at a 95% level of confidence (Beta-355976). This date is nearly a millennium more recent than is commonly attributed to the recovered diagnostic Marcos/Castroville and Elam dart point types.

INTRODUCTION

An archaeological survey of eroded pasture roadways over several days in 2010 along the northwestern pastures of the Mason Mountain Wildlife Management Area (MMWMA) provided an opportunity for the Wildlife Division archaeologist to spend several nights at the WMA headquarter complex bunkhouse. During evening walks along roads near the headquarter complex, an area of relatively high density prehistoric chipped stone manufacturing flake debris and a few stone tools was observed. This site was near a fork in the main roadway and formed an area of ca. 260 m (NW-SE) by 130 m (SW-NE). The site, recorded as 41MS100, occurs near the headwaters of an unnamed tributary of Comanche Creek near the northern edge of the decomposed granitic zone ascribed to the Llano Uplift.

Two adjacent charcoal and rock hearths were found in the west borrow ditch next to crowned north fork dirt road (Figure 1). Limited excavations of the adjacent cut bank and collection of the hearth matrices were used to help document cultural activities at site 41MS100 (Lintz 2011). Funding limitations initially prevented specialized studies of the hearth contents, and since the investigations were not related to proposed infrastructure project development, limited recommendations were made to protect and minimize site disturbances. Subsequently, resources allowed for the processing and chronometric dating of one hearth fill. This present note provides a brief summary of the 2010 investigations and discusses the results of charcoal

wood species identification and radiocarbon studies. The one radiocarbon date for the charcoal is more recent than anticipated. Several alternatives are suggested that might reconcile this discrepancy and provide greater insights into the use of this cultural resource at MMWMA.

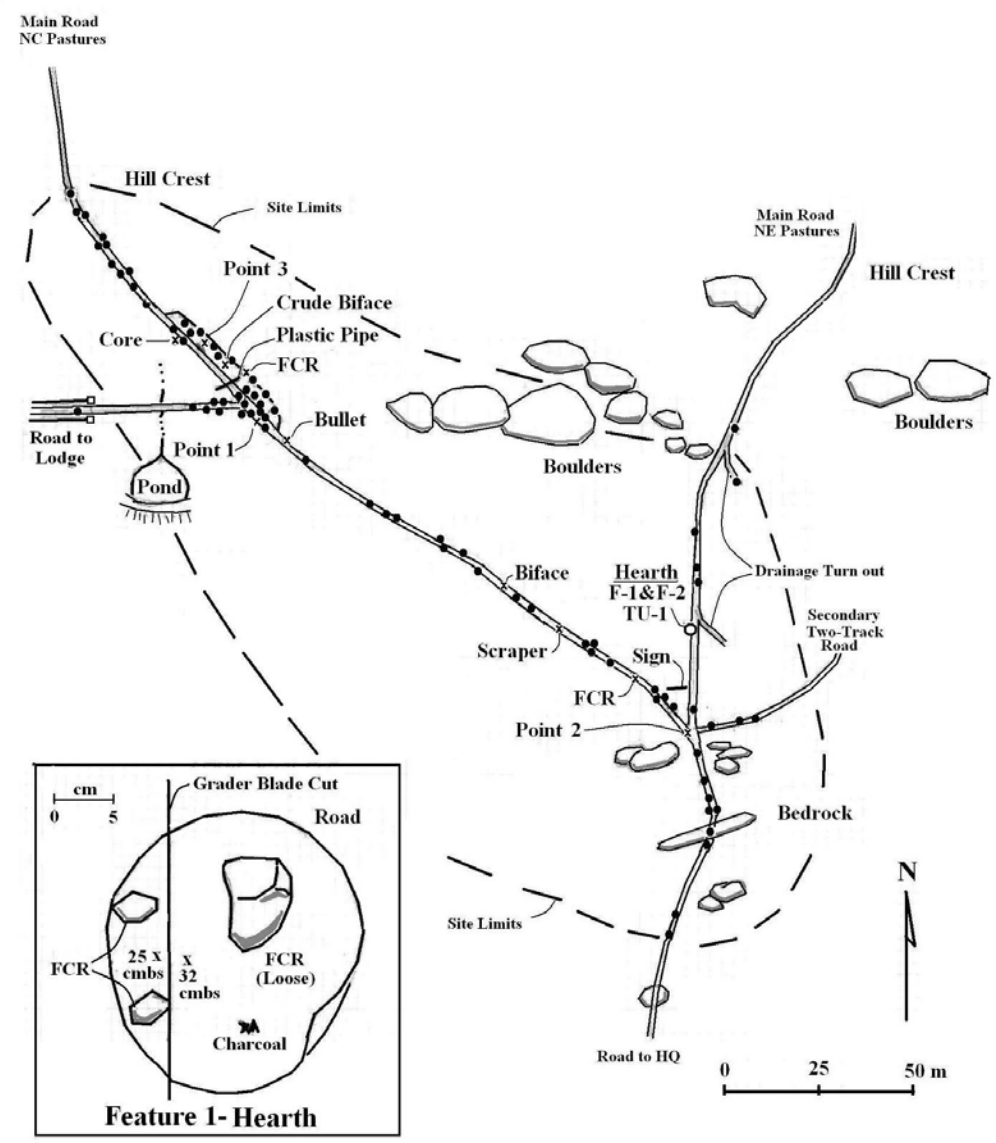

Figure 1. Sketch map of 41MS100 showing the distribution of flakes, tools and two hearth features.

SUMMARY OF THE 2010 INVESTIGATIONS AT 41MS100

Inspection of the dirt road resulted in 83 chipped stone flakes, 2 large dart points bearing similarities to the Marcos-Castroville types, 1 smaller dart point of the Elam type, 2 crude bifaces, 1 extensively resharpened scraper, two fire-cracked rocks and 1 metal cartridge case displaced along the ca. 450 m by 3 m wide primary and secondary roads crossing the 0.68-acre

archaeological site area (Figure 1). No artifacts were observed outside the incised crowned dirt road area, and the recognition of a buried occupation midden exposed in one granite sand road cut suggested that one or more sealed and largely intact prehistoric components were present. The two large, broad-bladed dart points share attributes of the Castroville (ca. 800 to 400 B.C.) and Marcos points (ca. 600 B.C. to A.D. 200; Figure 2). Both types temporally over-lap and are attributed to the Late Archaic or Late Archaic-Transitional Archaic periods (Turner, et al. 2011: 71, 130). The crudely made Elam dart point is also a Late Archaic period type that is poorly dated (ibid 2011: 92).

The two basin-shaped hearths were found only 75 cm apart in the bottom of the west borrow ditch of this north-south road fork. Hearth Feature 1 consisted of grayish brown-to-very dark grayish brown (10YR 3.5/2) charcoal-stained soil within a 40 by 33 cm area along the deepest part of the road cut. Nearby hearth Feature 2 was in the sloping surface of the crowned road and contained an amorphous brown (10YR 4.5/3) loamy sand stain measuring about 35 cm in diameter.

Investigations of these features consisted of the excavation of a 1.0 by 0.5 m test unit partly placed on the original ground surface and extending over Feature 1 stain (Figures 3 and 4). Excavations conducted in 10- cm arbitrary levels encountered nine flakes and two pieces of chert shatter from ca. 28 to 35 cm below surface, and about 5 cm above Feature 1 stain in the roadway. Most flakes from the test pit were of Edward Plateau chert and measured between 1 by 1 cm and 2 by 2.5 cm in size; one other flake and a piece of shatter were from opaque quartz common in the local granite boulders around the site.

Excavations of hearth fill in Feature 1 found that the basin shaped pit extended to a depth of 15 cm. The hearth fill contained three small (less than 8 x 8 cm) burned granite rocks, two Edwards chert flakes. Flotation of the hearth fill recovered an estimated 100 to 175 flecks of wood charcoal from the 6.245 liters of collected ash and charcoal hearth fill. The adjacent hearth fill 2 yielded 21 burned pieces of granite. A few cobbles appeared to be ringing the hearth edges, and the rest were dispersed within the 4.796 liters of collected ash and charcoal matrix fill of the basin hearth. Flotation of samples from Feature 2 hearth fill yielded one siltstone flake and 15 to 20 flecks of charcoal.

Based on the buried midden exposed in the road cut, the discrete occurrence of flakes encountered during the test excavation at 28 to 35 cm below the present ground surface, and the recovery of three Late Archaic/Transitional Archaic dart points of styles dating between 800 B.C. to A.D. 200, site 41MS100 was interpreted as an expansive campsite attributed to the Late Archaic period. Because the site occurred in a pasture that had never been plowed or farmed, the buried component appeared to have good integrity from a possible single component occupation. TPWD archaeologists recommended that the site was eligible for the State Archaeological Landmark designation (Lintz 2011). Grading and mechanical maintenance should continue within the existing roadways with a stipulation that should other charcoal stains be encountered, work should stop and archaeologists should be called to assess the discovery. Otherwise, planned developments that included any ground disturbing activities within the 0.68 acre area should be avoided in order to preserve and protect this important cultural resource.

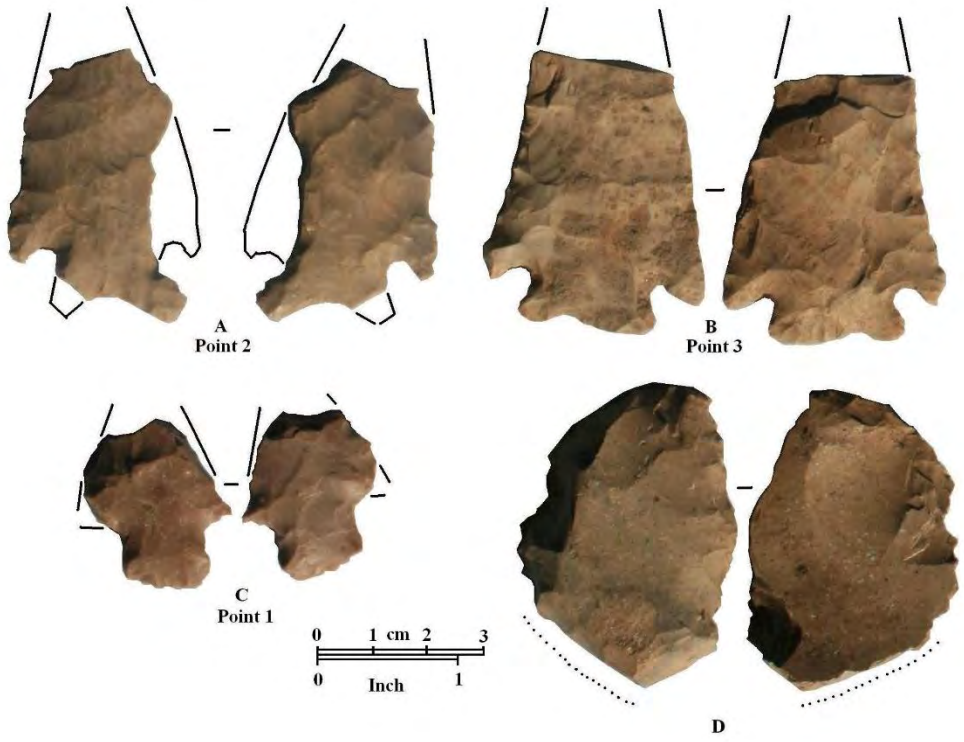

Figure 2. Diagnostic projectile points recovered from the roadway of 41MS100. A, B are Marcos-Castroville point forms; C is an Elam point form, and D is a unifacial end scraper.

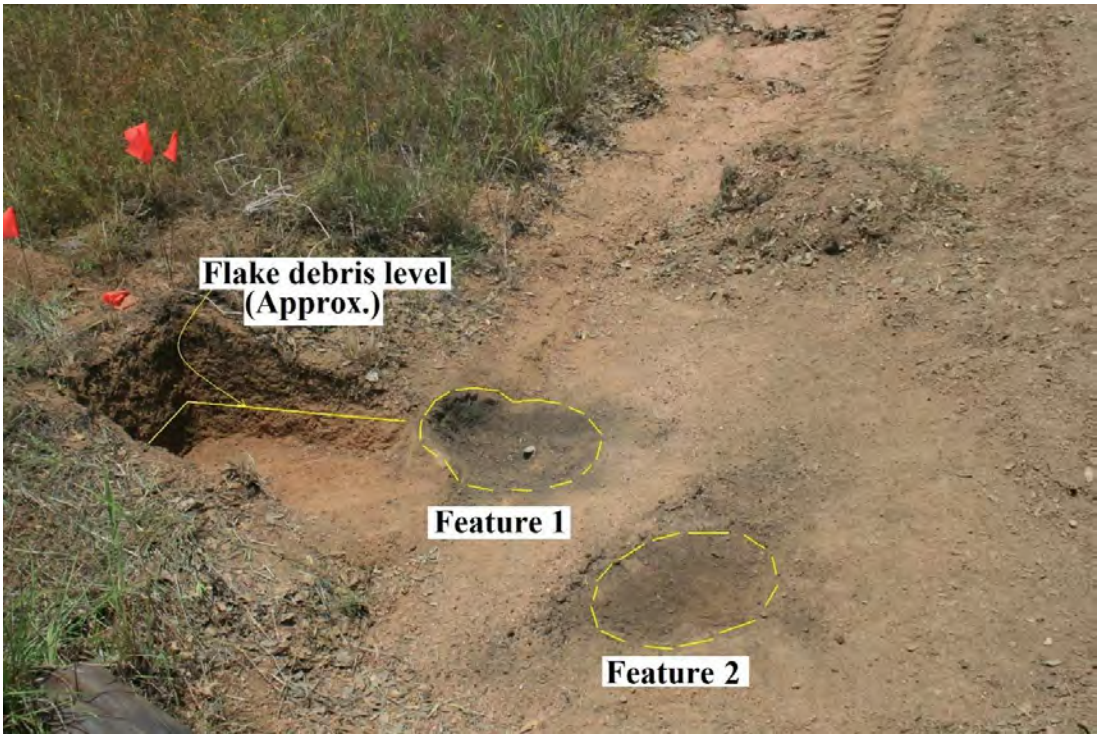

Figure 3. Photograph of hearth Feature 1 (left) and feature 2 (right) next to Test Unit 1.

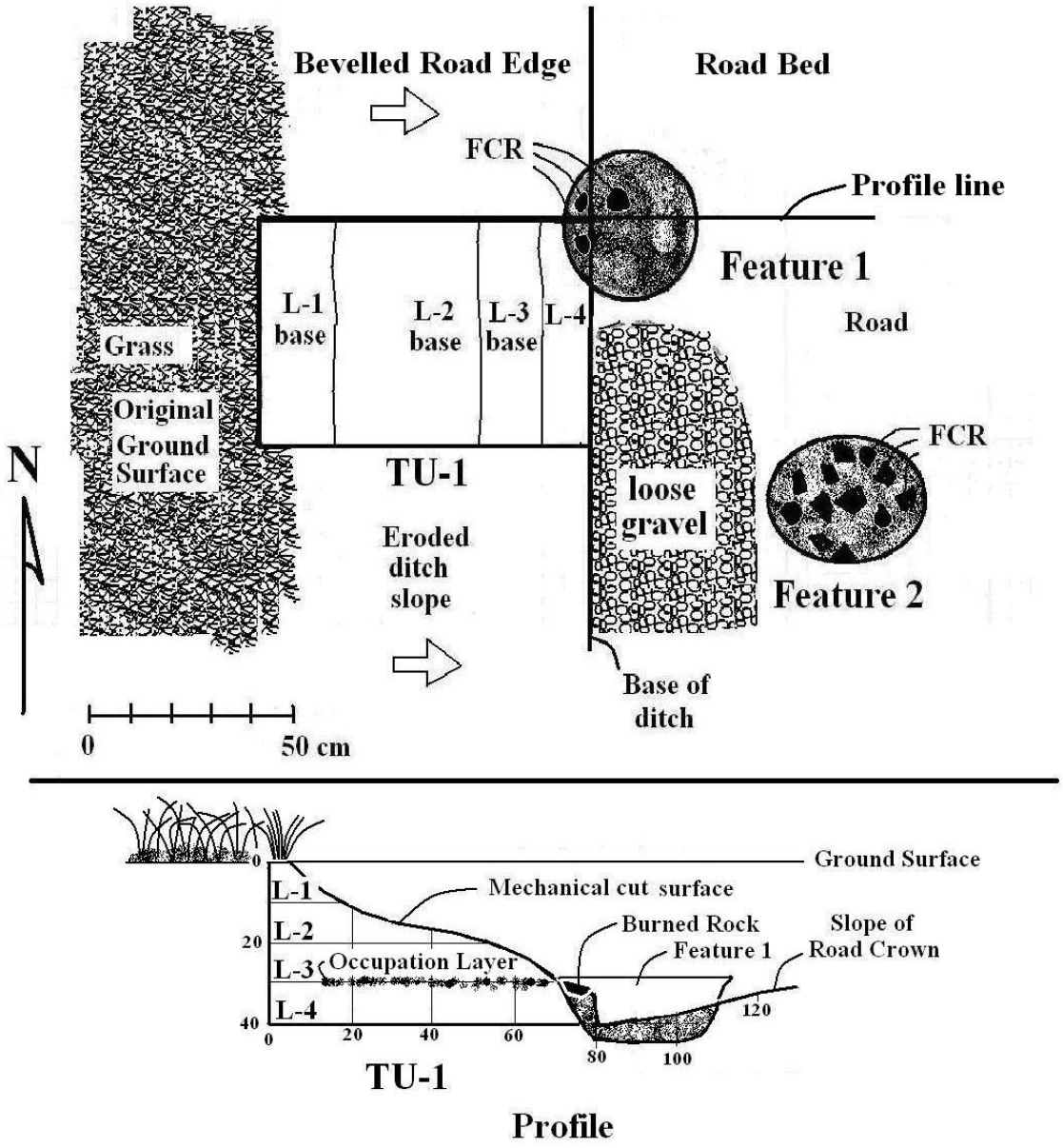

Figure 4. Plan and Profile drawing of Test Unit 1 and hearth Features 1 and 2 at 41MS100.

Results of Feature 1 Hearth Matrix Processing

With the availability of fiscal year-end funds in 2013, a decision was made to obtain additional information about the species of wood and age of the ash/charcoal samples from hearth Feature 1 at 41MS100. The dried charcoal sample recovered by flotation methods from was removed from the TPWD curation facility and initially submitted to Dr. Leslie Bush of Macrobotanical Analysis Inc. for species identification (See ATTACHMENT A). Her analysis

indicates that the 3.34-gram organic sample consisted of "wood charcoal from oak(s) of the white group oak (*Quercus* species). The largest piece of charcoal had only seven annular growth ring segments. All carefully examined chunks of charcoal seem to be of the same white oak group type" (Bush 2013). Oak dominates the upper story trees in this part of MMWMA today, but what is also interesting is that no seeds, pits, tubers, onions, or other plant parts commonly found in earth ovens were present in this small hearth feature. The combustion of wood charcoal might have been a small open-air cooking feature.

A sample of oak charcoal from hearth Feature 1 was picked clean of modern rootlets and subsequently sent Mr. Darden Hood of Beta Analytics Inc. of Miami Florida for radiocarbon dating. The sample was pretreated using the standard acid/alkali/acid pretreatment wash to remove caliche and other organic contaminates. The processing of the sample yielded a preliminary (unadjusted, uncorrected) radiocarbon age of 840 +/- 30 radiocarbon years before present (B.P. defined by convention as A.D. 1950). A comparison of the carbon 12 to carbon 13 isotope content determined that the delta 13C/12C ratio was a -25.9 $^{o}/_{oo}$, which necessitated an adjusted and refined radiocarbon date of 830 +/- 30 B.P. (Beta-355976). This raw radiocarbon date is not accurate indication of a true calendrical age because of fluctuations in the amounts of atmospheric carbon in the past. The compilation of radiocarbon dates of tree ring growth samples of known calendrical ages has yielded a tree ring calibration correlation curve that shows the carbon atmospheric fluctuations as a correction line often with relatively flat "plateau" or "steep" slopes. Thus the raw radiocarbon date and standard deviation interval B.P. needs to be recalibrated to obtain a range of calendrical dates for the sample. Turns out that the raw 830 +/- 30 B.P. radiocarbon date for this sample falls on a portion of the calibration curve with a rather flat plateau configuration. Thus at a one standard deviation level of confidence (68% certainty), the correlation intersects the calibration curve in four places and has a maximum calendrical span of CAL A.D. 1190 to 1250 (Figure 5). However if the confidence level is increased to two standard deviation levels (95% certainty) the correlation intersects that calibration curve once and yields a calendrical span of CAL. A.D. 1160 to 1260. At either level of confidence, the radiocarbon date indicates that the hearth feature has a Late Prehistoric cultural affiliation. (For additional information on carbon dating see https://en.wikipedia.org/wiki/Radiocarbon_dating.)

DISCUSSION AND CONCLUSIONS

The calendrical radiocarbon date on oak charcoal from Feature 1 (CAL A.D. 1160-1260) is at a minimum, 960 years younger than the A.D. 200 estimated terminal age of the Marcos/Castroville dart points from central Texas according to Turner, and others (2011: 130). This chronometric discrepancy might be reconciled or interpreted in a number of ways. First, the small basin hearths at 41MS100 might possibly relate to a different and more recent occupational component than the Late Archaic group(s) who used the large Marcos-Castroville and Elam dart points. Arguments against this proposition are that only a single thin zone of artifacts was documented in the Test Unit 1 overlying hearth Feature 1, and no temporally diagnostic arrow point types were recovered from the road way that are indicative of ca. A.D. 1160-1260 Late Prehistoric cultures. However, it is possible that the granitic colluvial sediments on site

accumulated so slow during the first millennium, that both Late Archaic and Late Prehistoric people lived on the same surface, and left a mixture of remains in a single thin layer, which then became buried by more recent colluvial sediments arising from the droughts of the 12th century. And it is possible that the Late Archaic period occupation was so intense and for of such a long period that it left a more substantial artifact signature on the landscape than the ephemeral Late Prehistoric group who briefly camped atop the older site, leaving two small basin hearths and little else.

Second, the ascribed ages for the diagnostic Archaic dart points as suggested by Turner et al. (2011) may be in error, and the use of atlatls and large corner notched points did not abruptly end with the initial appearance of the technologically different bow/small arrow point hunting technology, which occurred between A.D. 500 and 1100. Regional studies on hunting technologies in Africa and North America indicate that the use of the atlatl and large dart points was quickly replaced entirely by the more efficient bow and arrow in areas where the game animals are medium and large size (e.g. sheep, antelope and deer); but the atlatl and dart technology used throughout the Archaic period persisted along-side the innovative bow and arrow hunting technology in areas where game animals are very large (e.g. bison, elk, moose, etc.; Tomka 2013). The increase of bison herds on the southern Plains during the end of the first millennium might have prolonged the use of the atlatl and dart as an effective hunting technology.

Indeed, the archaeological record shows that a series of arroyo trap bison kill sites on the southern Plains and western Oklahoma are associated with large corner notched dart points, including Williams, Trinity, Marcos, Palmillas, and Castroville types (Hughes 1989: 189). At least seven associated radiocarbon dates processed on bone collagen indicate that these bison kills with large dart points usually date between 20 +/-85 B.C. (Beta-1929) and A.D. 970 +/- 100 (RL-572) (non-calibrated, one standard deviation interval; Lintz et al. 1991). Even though none of these dates from bison kills are as recent as the age radiocarbon date from 41MS100, the age difference is less than 200 years. If the dart points found at site 41MS100 in Mason County date much later than the ages suggested by Turner and others (2011), then conceivably this site with large dart points could be a single component occupation by Late Prehistoric bison hunting people using atlatl hunting technologies. Additional studies at other sites are needed to resolve which of these possibilities are represented at the MMWMA prehistoric campsite.

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beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Dr. Christopher Lintz
Texas Parks and Wildlife

Report Date: 8/12/2013
Material Received: 8/6/2013

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 355976	840 +/- 30 BP	-25.9 o/oo	830 +/- 30 BP

SAMPLE : 41MS100-F1S
ANALYSIS : AMS-Standard delivery
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid
2 SIGMA CALIBRATION : Cal AD 1160 to 1260 (Cal BP 790 to 690)

Dates are reported as RCYBP (radiocarbon years before present, "present" = AD 1950). By international convention, the modern reference standard was 95% the 14C activity of the National Institute of Standards and Technology (NIST) Oxalic Acid (SRM 4990C) and calculated using the Libby 14C half-life (5568 years). Quoted errors represent 1 relative standard deviation statistics (68% probability) counting errors based on the combined measurements of the sample, background, and modern reference standards. Measured 13C/12C ratios (delta 13C) were calculated relative to the PDB-1 standard.

The Conventional Radiocarbon Age represents the Measured Radiocarbon Age corrected for isotopic fractionation, calculated using the delta 13C. On rare occasion where the Conventional Radiocarbon Age was calculated using an assumed delta 13C, the ratio and the Conventional Radiocarbon Age will be followed by "*". The Conventional Radiocarbon Age is not calendar calibrated. When available, the Calendar Calibrated result is calculated from the Conventional Radiocarbon Age and is listed as the "Two Sigma Calibrated Result" for each sample.

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

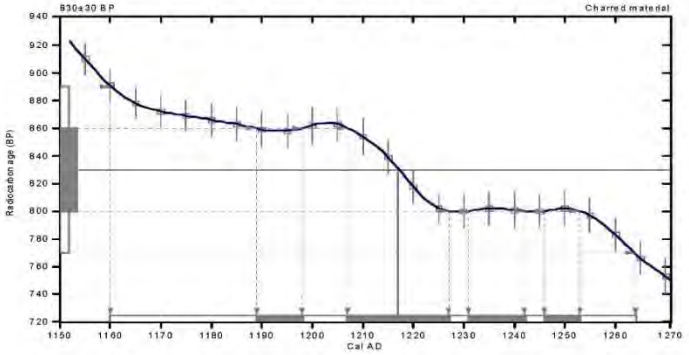
(Variables: C13/C12=-25.9:lab. mult=1)

Laboratory number: Beta-355976
Conventional radiocarbon age: 830±30 BP
2 Sigma calibrated result: (95% probability) Cal AD 1160 to 1260 (Cal BP 790 to 690)

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 1220 (Cal BP 730)

1 Sigma calibrated results: (68% probability) Cal AD 1190 to 1200 (Cal BP 760 to 750) and Cal AD 1210 to 1230 (Cal BP 740 to 720) and Cal AD 1230 to 1240 (Cal BP 720 to 710) and Cal AD 1250 to 1250 (Cal BP 700 to 700)



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Database used
INTCAL09
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Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2): 317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

Figure 5. Calibration intercept curve for radiocarbon date from 41MS100.

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ATTACHMENT A

Dr. Christopher Lintz
Cultural Resource Specialist
Wildlife Division
Texas Parks and Wildlife
4200 Smith School Road, Austin, TX 78744

Subject: Re: wood identification from 41MS100, Hearth Feature 1.

Chris:

The botanical specimens in two foil pouches you submitted for analysis was examined in my laboratory on July 30, 2013. The study involved a cursory scan of all materials from each pouch to ensure that no seeds were among the floated botanical specimens from hearth 1 matrix, followed by an examination of cell structure on a few of the larger pieces for species identification using a Micros stereozoom light microscope at 7-28 X magnification. The specimen was subject to radiocarbon protocols in the laboratory, meaning that it was examined on clean glassware and handled only with latex gloves, a paintbrush, or forceps. The samples were weighed on a Scout II 200 x 0.01 g electronic balance; new sheets of foil were weighted and then the charcoal from each pouch was weighted with the foil sheet to derive a sample weight.

The specimens are identified as pieces of wood charcoal from oak of the white group oak (Quercus, quercus spp.). The largest piece of charcoal had seven annular growth ring segments. All carefully examined chunks of charcoal seem to be of the same white group oak type. The charcoal (subtracting the foil pouch) from the south half of Feature 1 weighed 2.06 g; whereas the charcoal from the north half of Feature 1 weighted 1.28 g.

Sincerely,

Leslie L. Bush, Ph.D.
Macrobotanical Analysis
12308 Twin Creeks Road B—104,
Manchaca, Texas 78652

A Wooden Foreshaft from Val Verde County, Texas

Christopher Lintz[1]

ABSTRACT

A possible dart foreshaft from a rock shelter in the Lower Pecos, Val Verde County, Texas, is described and discussed. Its construction and use are suggested.

INTRODUCTION

My colleague at TPWD, Dr. Craig Farquhar, showed me a small collection of artifacts his family made many years ago while living in the Eagle Pass region. The collection consisted of mostly chipped stone items from many different sites. But one item was a broken, removable wooden foreshaft that was probably used to haft a dart point to the long dart shaft in an atlatl set. Dr. Farquhar indicated that his father, Charles Farquhar, found it on a ledge inside a small shelter in the Lower Pecos region, Val Verde County, Texas. Insofar as I have seen few of these items, I thought a brief descriptive note of this specimen might be of interest.

ARTIFACT DESCRIPTION

The sharpened point is the most noticeable attribute, and it initially appeared to be a wooden awl (Figure 1). But details on the bifurcated end suggested that this artifact is a wooden foreshaft used to haft dart points. The specimen is made of unidentified hard wood. It is cigar-shaped with a tapered, moderately sharp point at the proximal end, while the distal end is split or bifurcated with one squared flange and a broken flange. The specimen measures 11.49 cm long and has a maximum oval diameter of 1.19 to 1.12 cm. It weighs 5 g. The distal termination of the squared end is 0.88 cm wide. The exterior surface at the widest portion of this artifact has longitudinal scrape or shaving marks and mild polish, possibly from manual wear and hand oils. The proximal tapered/pointed end is covered with faint diagonal cut marks that extend some 3.40 cm up the length of the foreshaft. These minute cuts might have served to roughen the hard wood and enhanced the contact area when jammed into the concave socket of a long dart shaft.

The proximal squared end has bifurcated flanges separated by a gap. One commonly-mentioned way of making a bifurcated nock in arrow shafts or a gap for seating a projectile point in a foreshaft is by cutting two pairs of off-set notches in the hardwood shaft and then bending the shaft until the wood splits between the off-set pairs of notches. However, in this specimen a different gapping method was used, and no evidence exists for the off-set notches on the side of the foreshaft at the base of the gap. In this case, the bifurcation was made by cutting the twig in half and making two longitudinal and parallel splits from the end of the foreshaft. Then a 2 mm

[1] Retired, Wildlife Division, Texas Parks and Wildlife Department.

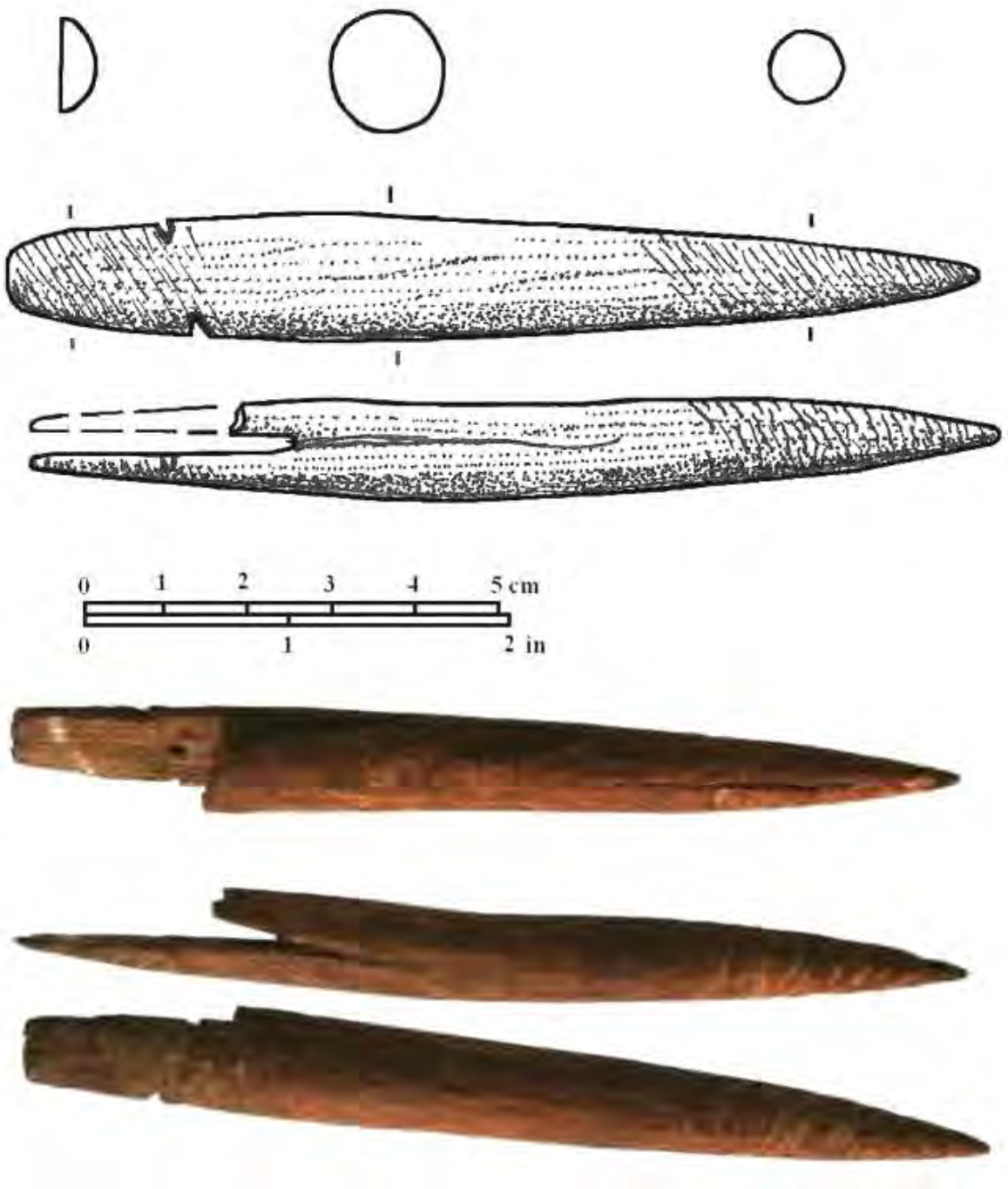

Figure 1. Drawings and photographs of different sides of a prehistoric wooden foreshaft of a two piece prehistoric dart. Discovered in the crevice of a rock shelter in the Lower Pecos, Val Verde County, by Charles Farquhar. Shown to the author by Dr. Craig Farquhar. Photo and drawings by Chris Lintz.

wide by 3.40 cm long piece of wood was removed from the middle. This gap between the two flanges accommodated the insertion of the stone dart point.

A crack at the base of the gap extends 3.98 cm from the squared end on one side and 7.21 cm on the other. The longer crack stops close to where the diagonal cuts end on the tapered/pointed end. The split might have occurred when the stone dart head jammed into the foreshaft upon impact with the ground; the resulting crack persisted up one side of the foreshaft until it encountered the support of the surrounding dart shaft. One of the projecting flanges that supported the projectile point is broken and missing at 3.05 cm from the squared end. Most likely, this break occurred when the dart point was laterally jarred or twisted during impact against the hard ground or a rock.

The exterior surface of the one remaining distal end flange also has a series of fine diagonal slice or score marks over the longitudinal scrape marks that extend on the outside for a distance of 2.56 cm from the squared end. Notches that are slightly more prominent than the slice marks (each 0.15 cm wide) are on each side of the flange at a distance of 1.98 and 1.61 cm from the distal squared end. These slight notches and the overall surface roughening cause by the diagonal slice marks helped secure the sinew, thong, or fiber binding of the stone dart tip to the foreshaft. In this regard, the flange at the small notches is 0.95 cm wide, but since the notches are diagonally off-set, the distance between them is 0.97 cm. This diameter perhaps corresponds to critical projectile point neck or stem width of the stone points used with the foreshaft. The interior surface of the remaining flange has a brightly polished band 0.2 cm wide that diagonally crosses the flange at a distance of 0.5 to 0.9 cm from the squared end, and distally beyond the small notches in the edge of the flange. This polished zone of crushed wood cells probably resulted from wear caused by slight movements of the stone dart head in the wooden shaft. The specimen shows no evidence of paint or incised decorations. Slight darkening at the exterior tip of the flange suggests that the wood might have been fire-hardened.

DISCUSSION

The age and cultural affiliation of this specimen are unknown, as unfortunately the kind of dart point used with this specimen was not recovered. Foreshafts of bone, antler and perhaps wood have been recovered from Clovis complex, dating around 12,600 years ago (Stanford 1996). Many people regard the Paleo-Indian complexes to have used throwing spears, more often than atlatls; however, atlatl spear-thrower devices have been recovered in France that date about 30,000 years ago, so they might have been part of the Paleo-Indian tool kits when people first entered the New World. Studies by Hughes (1998) on the prehistoric changes in weaponry, as based on fundamental changes in point hafting forms from Wyoming conclude that atlatls were in use before 7,500 years ago. Current dates on the archaeological sequence for the Lower Pecos suggest that the bow and arrow was adopted during the Fecha phase that is roughly dated at 620 years ago (Turpin 1991). While it seems safe to claim that atlatls were the dominant kind of weaponry in the Lower Pecos for at least 7,000 years, insufficient information is available about their perishable wooden parts to be certain whether foreshafts were continuously employed throughout the use of atlatls in the region's long time span.

Wooden foreshafts have been recovered as isolated specimens or in caches from several dry caves in the Lower Pecos, and Trans-Pecos regions of west Texas and the adjacent Southwest (Black and Dering 2001; Cosgrove 1947; Justice 2002; Wheat 1939). The foreshaft caches suggest that hunters using atlatls, carried pouches of hafted points which were used to "reload" the long darts after the tips became embedded in the game, or, the foreshaft shattered and failed. Indeed, a considerable number of dart foreshafts have been recovered from the dry caves of Nevada; however, measured foreshafts in the western Great Basin range from twice to four times as long (16 to 45 cm) and usually half to three-fourths as wide (0.5 to 0.9 cm) as this Val Verde County specimen (Tuohy 1982).

Most likely this specimen from the Farquhar collection was broken during field use, and returned to the campsite at the rock shelter for post-hunting retooling events. The loss of the flange clearly indicates that it was no longer a functional piece of equipment. It is fortuitous that the artifact was stashed in a crevice of the dry shelter, where it was preserved, rather than discarded in the open where the environment would have quickly deteriorated this artifact.

The rare preservation of an atlatl dart foreshaft, and especially the scoring on both ends and small notching of the distal flange margins, provides insights into how these implements were made and held into the compound dart, and how the stone tipped points were lashed to the removable foreshafts. The relatively broad flange width at the small notches (0.95 to 0.97 cm) reinforces the notion that this wood foreshaft was used with large, broad stemmed projectile points. The detailed descriptive information obtained from this wooden foreshaft specimen provides insights into dart point hafting that is useful for archaeologists to interpret the occurrence of use-wear polish occasionally observed on the faces of stone dart points in the region and beyond.

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Site Report for Excavations at HCAA-GL-6, Gillespie County, Texas, 2016

Mike McBride

ABSTRACT

During calendar years 2015-16, Hill Country Archeological Association (HCAA) performed field work investigations of a Burned Rock Midden site (BRM) in Gillespie County, Texas. At the request of the landowner, several areas of the property were surveyed, identifying 3 prospective midden areas. The largest and least disturbed of those areas was chosen to investigate, and excavations took place during 3 multiple-day field work sessions over the next several months. The site and surrounding area produced a very rich assemblage of lithic cultural material, mainly chert debitage, bifaces in varying stages of manufacture, whole and broken diagnostic points, whole and broken *manos*, and significantly, a small obsidian discoid biface. The diagnostic point types recovered *in situ* suggest a recurring occupation timeline of approximately (ca.) 6,400 to 800 years ago, Early Archaic Period to Late Prehistoric.

INTRODUCTION

In 2015, a conversation developed between Steve Stoutamire and a Gillespie County landowne**r**[1] which included the owner's attendance at a HCAA monthly meeting. Arrangements were made for a site visit, and in June, 2015 Steve led a group of HCAA members on a pedestrian survey on the property. The group tentatively identified 3 small burned rock middens (BRM) on the property and collected several incomplete points and chert debitage as evidence of cultural activity. The area around what appears to be the largest of the BRM's was chosen to be the site for HCAA to more thoroughly investigated. A datum was established, site boundaries were determined, and an initial site map was produced. In February, 2016 Steve again led a group of HCAA members on a pedestrian survey on the property, and preparations were made to begin excavations around the midden site. The unique site identifier of HCAA GL-6 (i.e. Gillespie County site #6) was assigned.

As part of my Principal Archeologist training, I (Mike McBride) was assigned the management of this project, with oversight by Steve and the HCAA Fieldwork Committee. With enthusiastic support from the landowner, excavation and documentation was begun in March, 2016. HCAA members participated in further excavation and recording days in June and September, 2016, with the landowner on hand for most of those field work days. These initial

[1] NOTE: Due to a confidentiality requested by the landowner, the site location, identifying names, and other unique location data are not included in this report.

excavations of the site have produced a large number of diagnostic artifacts, mainly intact and broken stone tools, and an abundance of chert debitage.

Additionally, a local resident had been previously granted access to the property, and surface-collected a number of chert artifacts. These artifacts were found within an approximate ¼ mile area around the midden site, and consisted of whole points, broken points, bifaces, and various lithics. Of note, the collector also found a small chipped obsidian discoid biface. These artifacts were added to the HCAA assemblage for recording as out-of-context surface finds and further lab analysis. The obsidian disc was sent to a professional lithics lab for further analysis (see Attachment A).

A lab session was held on October 20th at the HCAA lab facility in Kerrville. Preliminary results of the field work were presented as part of the HCAA meeting presentation in November, 2016. Additionally, Dr. Tom Hester reviewed the assemblage in May and June, 2017, and made several valuable observations on point types and other artifacts.

LOCALITY AND SITE ENVIRONS

The area under investigation is part of an approximately 300 acre land parcel in western Gillespie County, Texas. It is near a spring fed creek. The landowner has asked that the exact location of the ranch and site HCAA GL-6 be kept confidential.

The property contains a historic farmstead, with extant stone structures of a farmhouse, a small storage building, multiple field walls, and a spring house (a small building adjacent to the house to contain and create a cistern-like water catchment formed by enclosing the headwater of a small year-round spring). The landowner has an ongoing project of reconsolidation and restoration of these historic buildings. Recording further information on the history of the farmstead would be a valuable endeavor, but is not part of the current HCAA project.

The surface topography is made up of several low hilltop areas of high ground at approximately 1680 ft. above mean sea level (FAMSL), with many ledgestone-like outcrops of Cambrian age Wilberns Formation limestone (Barnes, 1981). The hilltops gently slope into 2 lower creek bottoms, one containing a year-round creek fed by multiple spring headwaters. A second creek bed is generally dry, but contains occasional rain runoff, and apparently is not spring-fed. The HCAA-GL6 site is on a low flat terrace at an elevation of 1651 FAMSL (ref: Google Earth imagery, 2014), approximately 2-3 meters above the dry creek bed, and near its confluence with the spring-fed creek bed. This location may indicate that the now-dry creek bed may have been the product of a previously flowing year-round spring.

Notably, the immediate site area appears to lack any significant toolstone quarry sites. Stoutamire (personal communication, 2017) notes some examples of low quality chert deposits within the local Cambrian limestone, however large scatters of primary flakes and quarrying-type debitage which might indicate an active quarrying industry were not identified on the property. He also notes a possible procurement site for Edwards chert nodules in a local streambed within a mile of the site (see also Barnes, 1981). However, the presence of a wide variety of chert lithic artifacts in various colors and quality, plus chert tools in various stages of preparation, suggest at least moderate (perhaps multiple-mile) transport distances to these resources, from other unknown procurement sites. Three prehistoric chert procurement sites have been recorded within 1 to 5 miles of HCAA GL-6. They can be found on the Texas Archeological Sites Atlas on the Texas Historical Commission website (https://atlas.thc.state.tx.us/).

The biotic environment is typical Live Oak-Savanna composed of Mesquite, Ashe Juniper, prickly pear cactus, various types of yucca, native and introduced grasses, small stands of Live Oak, rabbits, deer, turkey, small game, and fish, all typical of Central Texas Hill Country.

SITE INVESTIGATION

The site is generally centered on a low mound containing a small burned rock midden feature. The mound is approximately 0.5 meters above the surrounding flat terrace area, and is ovoid shaped with a North-South length of 16 meters, and an East-West width of 14 meters. A stand of narrowly-spaced young Live Oak trees covers over half of the mound, with native grasses and other short vegetation covering the remainder. Pieces of fire cracked rock (FCR) are exposed on the surface and perimeter of the mound (Figure 1).

A dry-stacked stone fence, approximately 0.6 meter high, runs through the western edge of the site on a general north-south axis. The age of the fence could not be determined, but was presumed to be part of the original field wall structures of the farmstead.

The initial day for HCAA field work was March 25, 2016. A site investigation strategy was proposed by Mike and discussed with Steve. Initially, excavation units were to be placed at intervals around the perimeter of the midden to identify any living surfaces or areas of recurring occupation. Upon determining the presence or lack of such areas, further units could be opened to determine the extent of occupation and related activities based on artifacts, ecofacts and features discovered.

Initial units (#1&2), each 1x1m, were placed on the southeast and eastern sides respectively of the mound, each approximately 3-4 meters from the perimeter of the mounded FCR. With the number of HCAA members participating, there were ample members to do adequate excavation, screening, and recording with 2 crews. Unit 1 immediately produced copious debitage, and bifaces of various stages of manufacture. Among the bifaces, 2 well-

formed (stages 5 & 6) bifaces were recovered in proximate association (Figure 2), along with a well-formed Travis middle-archaic point (Figure 3) (personal communication: Hester, 2016).

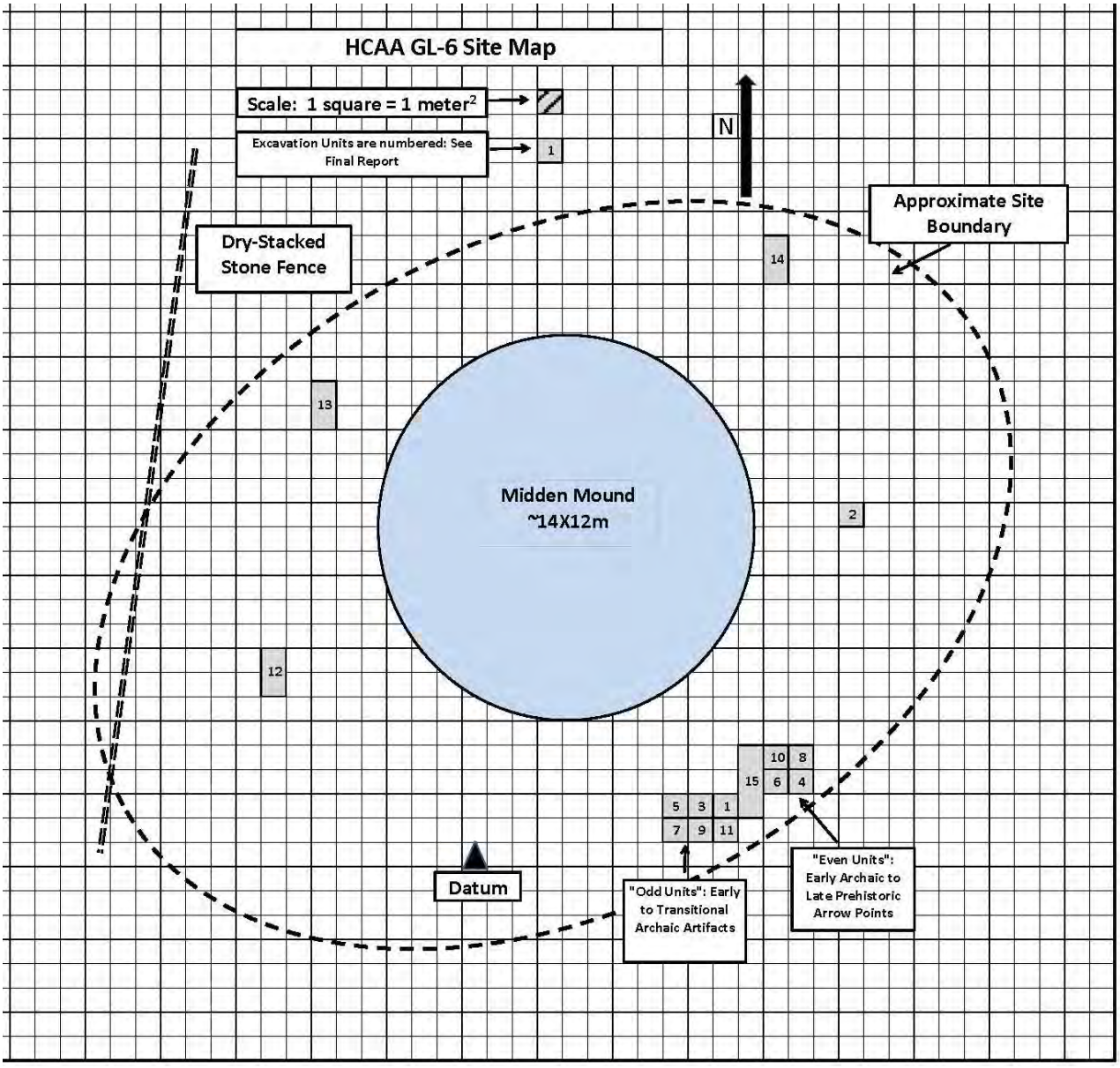

Figure 1. HCAA GL-6 Site Map showing site burned rock midden feature, unit locations, site boundary and landmarks. Site dimensions approximate 30 meters North-South by 35 meters East-West. North is Magnetic North.

Unit 1 stratigraphy was limited to a total bedrock depth of 26cm; this was an initial indicator of the thin soil lens that we would experience covering most of the terrace area. Unit 2 produced limited debitage and no diagnostic artifacts to a bedrock depth of 40 cm.

Figure 2. Thin-leaf-shaped biface knife *in-situ,* in Excavation Unit 1, Site HCAA GL-6.

Figure 3. Travis dart point *in-situ*, in Excavation Unit 1, Site HCAA GL-6. A Middle Archaic period point, used approximately 4,650-4,000 years before present..

Based on the productive results of Unit 1, Unit 3 was placed to expand Unit 1, directly west. Unit 3 produced copious lithics, including a slender knife-shaped biface (Figure 4) and a broken *mano*. We placed Unit 4 approximately 4 meters to the northeast of Unit 1 in order to further explore that productive area. As work continued on these 2 areas, subsequent units were placed connecting to previously opened units, i.e., units 3, 5, 7, 9, and 11 were placed sequentially, each sharing 2 or more edges with the previous unit. The same sequential arrangement was used with units 4, 6, 8, and 10. The unit grouping became characterized as "The Odd Units" and "The Even Units" between the crews, and a friendly rivalry between the crews ensued (Figure 5).

An important observation in the 2 areas rapidly arose. That being, even though the areas were relatively close together, the "Odds" continued to produce mainly Middle to Late Archaic diagnostic material, the "Evens" produced complete and partial Late Prehistoric arrow points (Edwards & Scallorn), along with Early, Middle and Late Archaic points, all with reasonable stratigraphy (See notes in Figure 1). Notably, to complement recovering the arrow points in Units 4, 6, 8, and 10, Unit 4 produced a striated stone fragment which was prospectively identified as part of an arrow shaft straightener (Hester, personal communication; Figure 18).

Figure 4. Biface knife *in-situ*, in Excavation Unit 1, Site HCAA GL-6.

Field work days continued on June 11 & 12, and September 15 & 16. Excavation results of both areas proved to be very productive, with continued copious debitage, various biface types, and diagnostic material.

The "Odd Units", Units 1, 3, 5, 7, 9, and 11, each a 1x1m unit, were place sequentially to open a total of $6m^2$ area, and were excavated to bedrock. The "Even Units", Units 4, 6, 8, and 10, each a 1x1m unit, along with the final unit #15, a 1x3m unit, were placed to expand and connect each area. It is notable in all of these units, that the soil depth was relatively thin and they produced considerable cultural material. All 12 adjacent units were excavated to (somewhat uneven) bedrock, and unit depth varied from 26cm to approximately 35cm (Figure 6).

During the June and September work days, local residents were on hand. They had previously been given permission by the landowner to surface collect the area, excluding the midden site area being investigated by HCAA. On both occasions, they presented multiple surface-collected artifacts for inclusion into the assemblage for HCAA recording and further analysis. Notably, their collections included a small obsidian disc (see Attachment A for obsidian analysis).

Figure 5. HCAA members' fieldwork session, March, 2016. Excavation Unit 4 in the foreground, Units 1 & 3 in the background, Site HCAA GL-6.

Figure 6. Units 9 & 11 excavated to bedrock. Note the shallow soil lens. Site HCAA GL-6.

During the field work days of September 15 &16, Units 12, 13 and 14 (each 1x2m units), were placed (respectively) on the southwest, west, and north of the mound to add additional context to our 2 main areas of investigation. Unit 12 showed a very thin soil lens with few pieces of debitage. Unit 13 was placed in the grove of Live Oak trees. Effective excavation proved difficult due to very compacted dry soil and tree roots, and was abandoned at a level of 20cm with no significant results. Unit 14 was abandoned at a level of less than 10cm, with minimal cultural debitage deposits, due to very compacted dry soil and time constraints.

ARTIFACT ANALYSIS AND SUMMARY

Artifacts from GL-6 were cleaned and recorded during the lab session on October 11, 2016 (Figures 7, 8, 9). The exceptions were multiple sacks of debitage which were not included in the lab session due to time constraints. Further debitage cleaning and recording will be done by the author and any further significant observations or recoveries will be noted in additional reports as addendums.

Figure 7. Lab session to clean, identify and catalogue the HCAA GL-6 site artifacts, October, 2016.

The site and lithic assemblage characterize a number of elements of prehistoric human behavior. Chart 1 lists the diagnostic point types and associated time periods represented by the entire assemblage. Other artifacts recovered in this project are detailed and placed in context below. They lead to the following conclusions:

1. Recurring site occupation events over a long timeline. A prospective 6,500 year timeline (See Turner et al. 2011; pg. 51, Figure 3-6) is evidenced by multiple diagnostic projectile points from various time periods (Chart 1).
    a. Early Archaic, ca. 6,400 years before present (YBP) [Andice, Martindale] (Figure 10).
    b. Middle Archaic, ca. 4,000 YBP [Bulverde, Pedernales, La Jita, Langtry, Travis] (Figure 11).
    c. Late and Transitional Archaic, ca. 2,800 YBP [Castroville, Edgewood, Ellis-Ensor, Fairland, Frio] (Figures 12 &13).
    d. Late Prehistoric ca. 1,200 YBP [Edwards & Scallorn] (Figure 14).

    Additionally, artifacts such as several *manos*, perforators , drills, and gravers (Turner et al: 239), scrapers, cores which could produce expedient cutting blades, as well as the midden of fire cracked rock suggest that occupation events occurred over a long time period (Figures 15 & 16). Prospective "camp" activities such as hide and/or wood working, plant processing, and stone tool preparation are represented by the artifacts. Such activities suggest possible seasonal occupation during times of game or plant availability in the area, and the subsequent time needed to take full advantage of these resources.

2. Evidence of wide ranging resource procurement. The profuse amount of lithics, ranging from complete biface "knives" of 4.5 inches (13cm.) (Figure 17) to 3rd degree "finishing flakes" of ¼ inch (0.5cm.), recovered in the 11 connected units, and present throughout the site, supports the characterization of long-term recurring occupation of the area. The entire lithic assemblage consists of lithic materials sourced from a vast array of toolstone sources. Although no systematic analysis of the possible identification of toolstone quarry origin or acquisition sites was performed, visual survey of the lithic assemblage, including >10,000 individual flakes of debitage equaling >40 pounds (20

Figure 8. Lab session to sort and record the debitage from HCAA GL-6, October, 2016.

kg), along with the author's avocation familiarity with chert sources in Central Texas, point toward great variety of toolstone sources. Wide variations in chert characteristics such as color, banding, texture, and knapping workability point to many differing sources of the toolstone. The exploitation of diverse resources fits well into the foraging (or perhaps trading) strategies of prehistoric hunter-gatherers. Importantly, the recovery of the above mentioned obsidian disc supports wide-range trading practices because it was originally quarried from the Obsidian Ridge source in the Jemez Mountains. of New Mexico, 550 miles north west of GL-6 (See attachment A).

3. Technological adaptability. Bow and arrow technology was introduced into Texas approximately 1,300 YBP (Turner et al, 2011: pg. 48; Texas Beyond History https://www.texasbeyondhistory.net/plateaus/prehistory/images/bow.html). The presence of arrow points [Edwards and Scallorn] (Figure 14), accompanied by a fragment of a shaft straightener (Figure 18), show this prehistoric Native American adaptation among the peoples inhabiting our study area.

4. Reliance on both plant and animal subsistence. The presence of the midden, as well as artifacts such as multiple *manos*, and large, knife-shaped bifaces (Figure 17) are evidence of subsistence from gathering and processing a variety of both plant and animal resources. Turner et al. (2011: pg. 46) note that midden cooking of plant resources dates to the Middle Archaic period. Although carbon dating of the GL-6 site midden was not attempted, its close proximal association with *in-situ* diagnostic artifacts from a wide range of time periods suggests this BRM developed from multiple cooking events over many incidents of occupation.

Figure 9. Lab session to sort and record the debitage from HCAA GL-6, October, 2016.

5. In summary, this site is similar to other open hunter-gatherer occupational BRM sites across central Texas Hill Country (Collins 2004; Kelly 1947; Weir 1976). Nearby recorded sites present a similar time period of use and consist of lithic procurement sites, lithic scatter sites, short term camp sites, burial sites, and rock shelter long term occupational sites (See Texas Archeological Site Atlas).

Chart 1. HCAA Site GL-6: Diagnostic Projectile Points Recovered

Time Period	Type Name	# of Samples	Age: YBP	Location [1]	Notes
Late Prehistoric	Edwards	6	900 - 1000	*Subsurface*	
(Figure 14)	Scallorn	1	800 - 900	*Subsurface*	
Transitional Archaic	Edgewood	1	1200 - 2300	*Subsurface*	
(Figures 12 & 13)	Ensor - Ellis	3	1400 - 2200	*Subsurface*	
	Fairland	1	1200 - 2300	*Subsurface*	
	Frio	1	1200 - 2300	*Subsurface*	(2)
Late Archaic (Figure 12)	Castroville	3	2400 - 2800	*Subsurface*	(2,4)
Middle Archaic	Bulverde	1	3000 - 4500	*Surface*	
(Figure 11)	La Jita	1	3980 - 4820	*Subsurface*	(3)
	Langtry	2	3000 - 4500	*Subsurface*	(4)
	Pedernales	4	3000 - 4500	*Subsurface*	(4)
	Travis	1	4050 - 4650	*Subsurface*	
Early Archaic	Andice	2	5500 - 6500	*Surface*	
(Figure 10)	Martindale	3	5040 - 6440	*Subsurface*	(4)

(1) Surface collection occurred in various areas within approximately 1/4 mile of the site.
(2) Base reduced to drill & graver: see Figure 15.
(3) Note: Early Middle Archaic
(4) One or 2 samples also surface collected.

(References: Turner et. al. 2011; personal communication: Hester 2017)

Figure 10. Early Archaic projectile points (L to R): Andice (2 each) and Martindale (2 each) from HCAA GL-6.

Figure 11. Middle Archaic Projectile points: (top row L to R) Pedernales (2 each) & Langtry (2 each); (bottom row L to R) Bulverde, Travis & La Jita from HCAA GL-6.

Figure 12. Late and Transitional Archaic Projectile points (L to R): Fairland, Edgewood, Castroville (modified as a perforator/drill and graver), & Frio (modified as a graver) from HCAA GL-6.

Figure 13. Transitional Archaic Ensor-Ellis projectile points (all three) from HCAA GL-6.

Figure 14. Prehistoric Period Arrow points (L to R): Scallorn (1 each) & Edwards (3 each) from HCAA GL-6.

Figure 15. Manos. Note red pigment in center of middle tool. From HCAA GL-6.

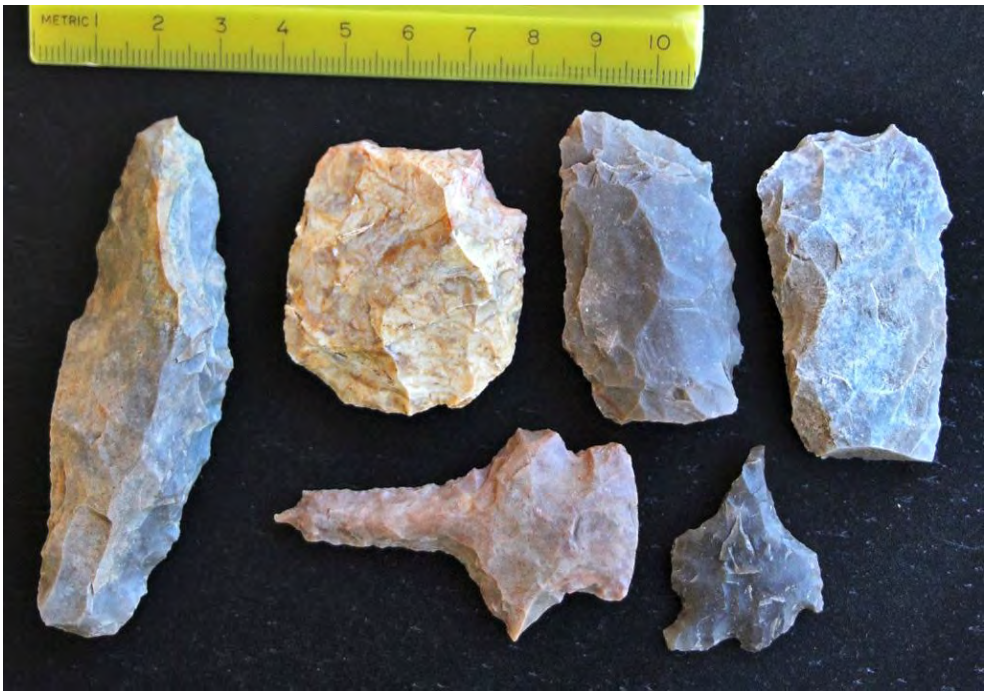

Figure 16. Chert tools modified: (L to R top row) scrapers (4 each) & (L to R bottom row) perforator/drill/graver (1 each), graver (1 each), from HCAA GL-6.

Figure 17. Biface chert knives. Note all have edge wear on all. From HCAA GL-6.

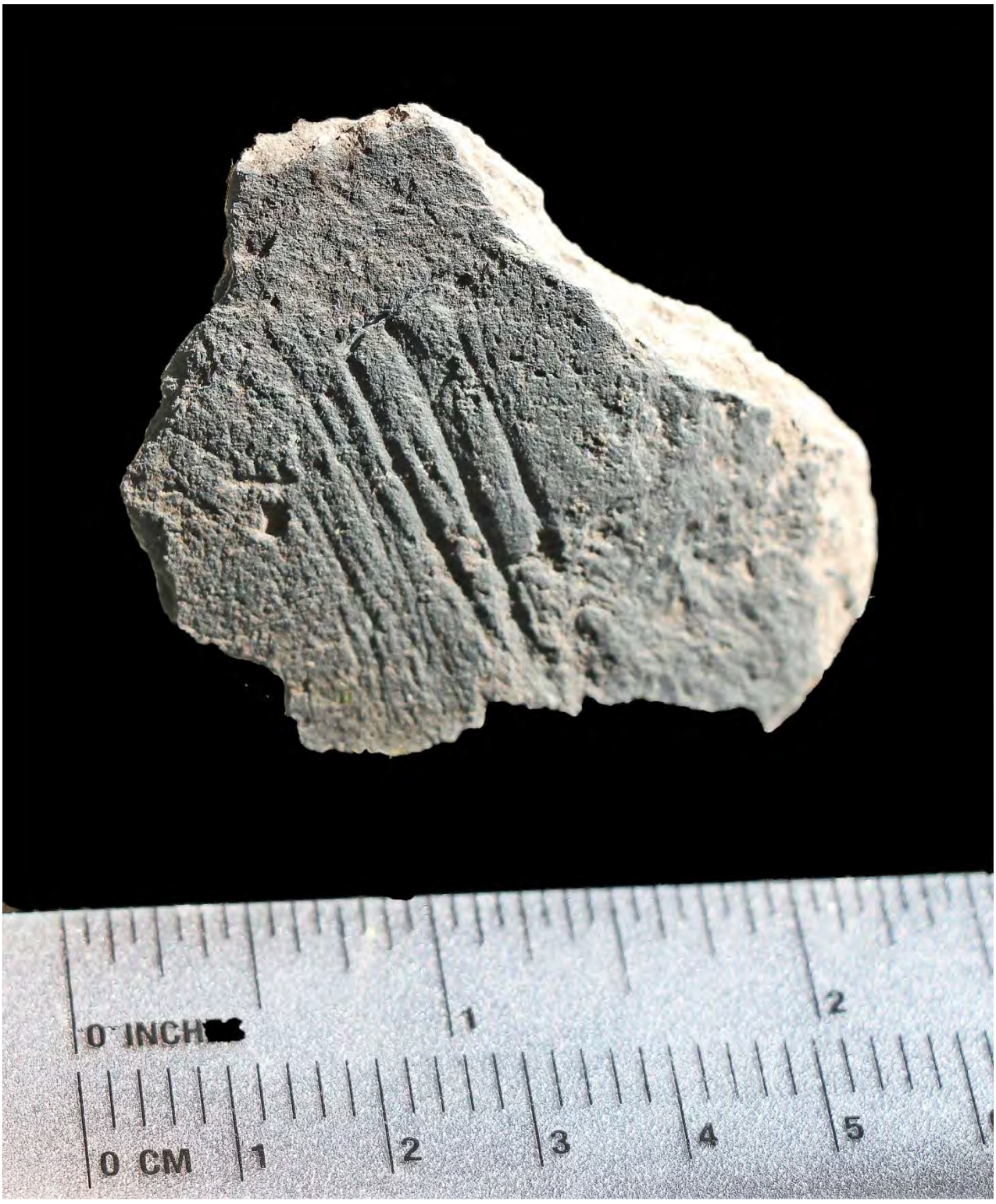

Figure 18. Fragment of possible arrow shaft straightener. From HCAA GL-6.

ACKNOWLEDGEMENTS

Many thanks to our landowner for his enthusiastic support of our work. From making the area available for our study to having his ranch staff clear weeds and cactus, his interest and participation made our field work very enjoyable and productive. Thanks also to Steve Stoutamire for his leadership and steady hand in initiating this project, his ongoing organization and guidance as the project progressed, and his help and expertise in producing this report. John Benedict has been an ongoing resource with his field work participation, providing constant reference resources and personal support, and doing the final review and editing of this report. Dr. Tom Hester took great interest in our work and facilitated the lab analysis of the obsidian artifact. He also reviewed and lent great expertise in identifying points and other artifacts in our assemblage. Finally, to all the HCAA members who participated in the field work planning and excavations, as well as a very productive lab day, my personal thanks for your enthusiasm and support of this project. Any errors in this report are solely my own.

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ATTACHMENT A

As described on the main body of this report, the Hill Country Archeological Association (HCAA) fieldwork at HCAA-GL-6 included surface finds presented to us from a local collector. The artifacts presented were all considered to be out-of-context surface finds, but were added to the artifact assemblage for recording, and possibly to add context to the site and immediate surrounding area. These artifacts are listed and described in the Lab Catalogue.

The most notable of these artifacts is a small discoid obsidian biface (see Figures A1-A3 below). Due to the rarity of such obsidian artifacts in Texas archeology, the piece was selected for further analysis. After a conversation with Dr. Tom Hester of Marble Falls, he offered to have it analyzed by a professional lab which specializes in such analysis. I presented the piece to Dr. Hester in October, 2016 and he forwarded it to Dr. Michael Glascock at the University of Missouri's Archaeometry Laboratory.

Analysis was performed using energy dispersive X-ray fluorescence (ED-XRF), which determined the unique elemental makeup of the specimen. By comparison to known obsidian sources and their unique elemental signatures, the source was positively identified as Rabbit Mountain-Obsidian Ridge in the Jemez Mountains of Northern New Mexico.

Dr. Glascock's report came back in December, 2016, with documentation of the procedures and results of the analysis. His report is part of this Attachment. The artifact was returned to me for inclusion in the final assemblage and inclusion in the final site report.

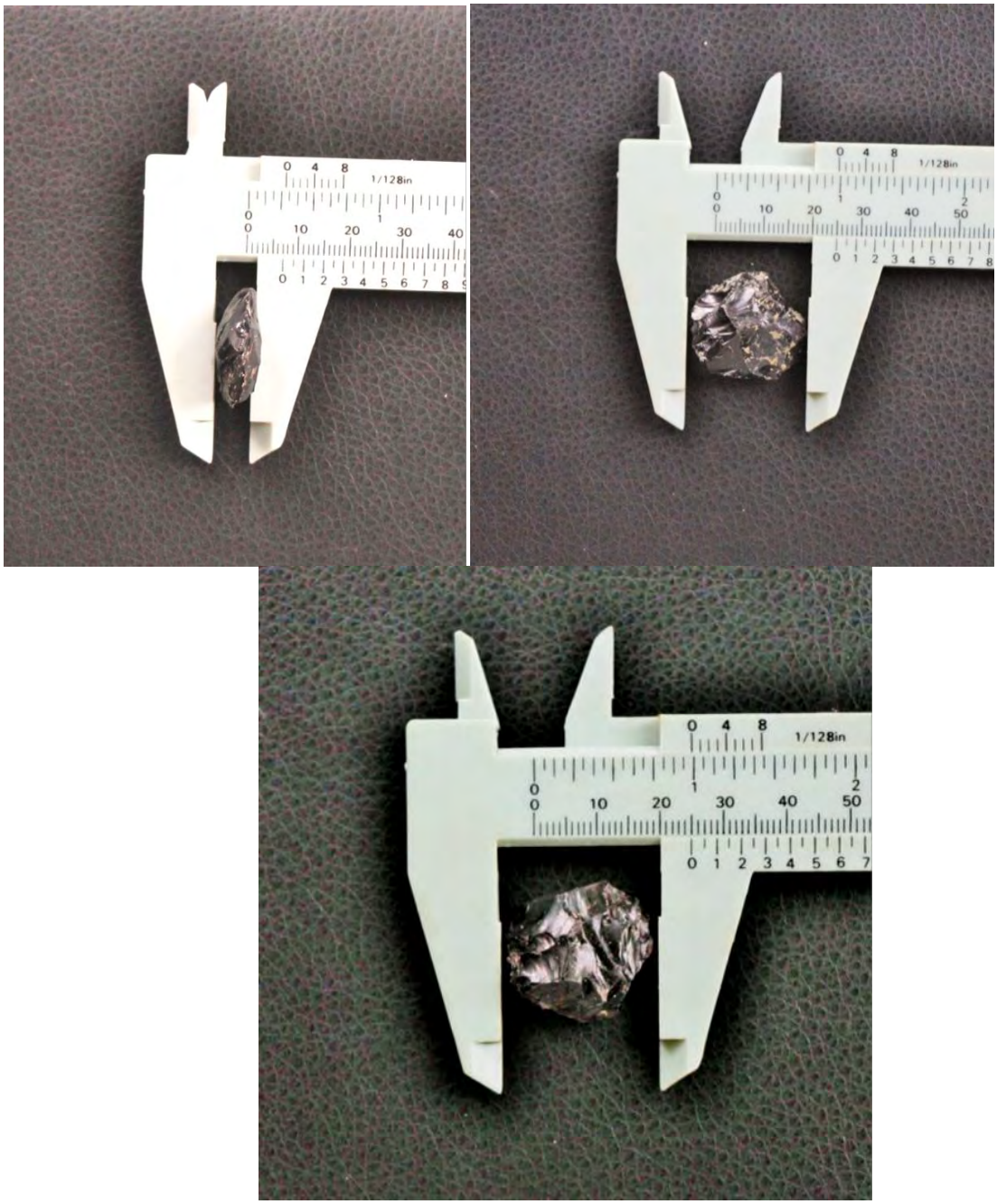
We have listed the piece as a discoid biface. Round, slightly ovoid, its measurements are 25mm x 25mm x 9mm thick. Its appearance is dark grey-black, with translucent edges in daylight, and is completely translucent with a few small inclusions when placed in bright focused artificial light (viewed with a high-power flashlight). Prospectively once part of a larger piece of obsidian, it appears that the finishing flaking was done by pressure flaking on all edges to yield the current shape. The type or function of this artifact is unknown, although it is somewhat similar to "Button Scrapers" shown in Turner et al, page 248. Informal speculation among HCAA members is that of a possible Native American "gaming piece", or some ritualistic piece.

Also included in this Attachment is a list of obsidian artifacts from Texas sites which also have their sources in New Mexico. This list is part of an ongoing project led by Dr. Hester called the Texas Obsidian Project (TOP) (Hester et. al. 2017). The TOP has collected data for all known obsidian artifacts throughout Texas Archeology, including sites, locations, and sources (when available). The GL-6 piece was given the unique ID numbers of TOP#248 as well as the Archaeometry Laboratory ID of HCAA01 for permanent recording. We noted that in the TOP listing, a large number of artifacts were sourced as coming from Rabbit Mountain-Obsidian Ridge; however in the TOP listing, the source is stated as Cerro Toledo which is another name for this same location (see Hester's note on the TOP list, page 35 below).

In May, 2017, Dr. Hester gave a presentation at the HCAA general meeting on the subject of obsidian artifacts in Texas archeology. Although the presentation focused on sources

in central Mexico, and prospective trade routes along the Mexico/Texas Gulf Coast, he did describe other trade routes between northern New Mexico, through north Texas, into Central Texas. These New Mexico trade routes are borne out by the wide expanse of sites where artifacts of New Mexico obsidian are recorded, extending from the Texas Panhandle (including a Paleo Indian point at Lubbock Lake), into western, central, and southern Texas (see TOP list below).

Figure A1. Obsidian biface Edge view
Figure A2. Obsidian biface Face 1 view
Figure A3. Obsidian biface Face 2 view



Mike note: The Cerro Toledo obsidian source in New Mexico is also known as = Obsidian Ridge, and Rabbit Mountain. Per Tom Hester.

TEXAS OBSIDIAN PROJECT

Specimens from sources in the
Jemez Mountains, New Mexico

Preliminary list (e.g., not all sites fully analyzed as to date, etc.) based on XRF and NAA Analyses by Robert Jack (1970,1971; Dept. of Geosciences, UC-Berkeley) and all the rest by Asaro, Stross,Michels, Giauque and others at the LBL-Berkeley.

TOP#	Site/Locational	Source	Form/Age
1	Dimmit Co., South TX	Cerro Toledo	flake
32	TV39	"	
33	WM56	"	
34	AD2 (Andrews Lake)	"	all flakes (AD, RB)
35	AD9	"	
36	AD9	"	
37	AD8	"	
38	RB2	"	
45	RB2	"	
48	HC2	"	flake
50	HI36	"	flake
52	DL148	Cerro del Medio	flake/Late Prehis.
58	CJ4 (Comanche Co.)	Polvadera Peak	flake
61	CJ (Comanche Co.)	Cerro Toledo	arrow pt, bipoint
63	KX10	Cerro del Medio	Archaic/flake
64	KX26	"	Late Preh/flake
66	BQ47 (Horn Shelter)	Cerro del Medio	flake
67	BQ47	Cerro Toledo	flake
74, 75, 76			
78, 79	EP sites (TXDot)	all C. Toledo	all flakes
80	GR56 (Lott site)	Cerro del Medio	Garza point
81	GR56	"	Garza point
82	GR56	"	flake
83, 84	GR56	Cerro Toledo	flakes
85	LU1 (Lubbock Lake)	Cerro Toledo	Paleoindian point
89	Bandera Co.	Cerro Toledo	flake
92	41VV215	Cerro del Medio	flake
93	VN6 (Van Zandt)	Cerro del Medio	flake
102	Williamson Co.	Cerro del Medio	flake
109	NL17	Cerro Toledo	flake
110	NL17	Cerro del Medio	flake
111	CK87	"	arrow pt, side-notched
112	TA124	"	Late Archaic/LP flake
113	TA124	"	ditto
118	HZ311	Cerro Toledo	flake

119	HZ311	Cerro Toledo	6 flakes from feature
120	HZ311	"	1 flake, feature
122	BL322	Cerro Toledo	Middle Archaic flake
123A	Midland Co.(dry lake bed)	Polvadera Peak	flake
123B	Midland Co.	Cerro del Medio	2 flakes
129, 130, 131	VV99 (Arenosa)	all from Cerro Toledo	Late Archaic flakes,3
133	TV240	Cerro del Medio	flake
134, 135, 136	LN247C	all are " "	all 3 are flakes
137	WM763	Cerro del Medio	flake
146	TV1568	Cerro Toledo	arrow point
147	SV5	Cerro del Medio	flake
149, 150, 151	KT51 (Justiceberg)	all Cerro del Medio	3 flakes
178	TR148 (Tarrant Co.)	Cerro Toledo	flake
180	RN74	"	flake
182	Crane Co. (Harrell #10)	"	flake
184	Nuevo Leon, Mexico	Cerro Toledo	pt tip lower Rio Gr
190	WM13	Polvadera Peak	Late Archaic flake
191	KE146	Cerro Toledo	flake
202	BI206 (Caprock Canyon)	Cerro Toledo	side-notched arrow pt
211	Gaines Co.	Cerro Toledo	Firstview base
248	Gillespie Co. (HCAA01)	Obsidian Ridge	biface disc

Phil et al.

I have not rechecked every file on these specimens. If there is something that strikes your eye and you need more data, let me know. The typologically definable arrow points from Late Prehistoric times are almost all small, side-notched, Harrell? Points or, as at the Lott site, the distinctive basal notched Garza type.

I hope you have access to the Texas trinomial code (Carolyn can fax you one from TARL); all of the trinomials listed here are, of course, preceded by 41 (e.g., 41BI206). While there are concentrations of Jemez obsidians, they are widely distributed from Nuevo Leon to the Panhandle, West Texas to near-East Texas.

Unfortunately, most of the specimens are not securely dated, though I anticipate that a few additional ones will be assigned to a general period in final analysis.

A great deal of the material above has been published in several venues by Asaro, Stross and myself; there are also contributions to various monographs (e.g., KE146, WM13) that report results done for a PI. I'll get you copies of most of this stuff. Eileen Johnson has published the LU1 specimen in CRP, Margaret Howard the HZ (Hudspeth) and Canyonlands, Prewitt and Assoc., Justiceberg, etc. I do not presently have a well-ordered (!!) list of these keyed to the TOP #s...

Please use this list for the Jemez Mtn Database Project, your SAA talk, etc.

Tom Hester 01/12/07

Archaeometry Laboratory

Analysis of Obsidian Artifacts from Gillespie County, TX by Energy Dispersive X-Ray Fluorescence

ANIDs: TOP248

Report prepared by:
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Reported to:
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December 21, 2016

Abstract

This report concerns the non-destructive analysis of one obsidian artifact. The artifact (TOP248 also known as HCAA01) was recovered by the Hill Country Archaeological Society of Kerrville, TX. The artifact was submitted to the Archaeometry Lab at MURR by Tom Hester. By using energy dispersive X-ray fluorescence (ED-XRF) and comparing to the XRF database at MURR, it was possible to positively identify the source as the Rabbit Mtn-Obsidian Ridge subsource located in the Jemez Mtns.

X-Ray Fluorescence Analysis at MURR

In this study, all XRF measurements were performed using a ThermoScientific ARL Quantx energy-dispersive XRF spectrometer. The instrument has a rhodium-based X-ray tube and thermoelectrically-cooled silicon-drift detector (SDD). The tube was operated at 35kV, with a 3.5mm collimator, and the current was automatically adjusted to create a deadtime of approximately 25%. The artifact and source samples were counted for two minutes each allowing measurement of nine elements: Mn, Fe, Zn, Rb, Sr, Y, Zr, Nb, and Th. Normalization of element peaks to the Compton scattering peak was used to account for differences in sample size and thickness. However, the method has limitations when the artifacts are very small or thin.

The instrument was calibrated for obsidian by previously measuring a set of 40 very well-characterized obsidian source samples previously analyzed by neutron activation analysis (NAA), inductively coupled plasma-mass spectrometry (ICP-MS), and XRF. More information about the calibration is available in a report by Glascock and Ferguson (2012).

Results

The concentration data are presented in Table I. The process of assigning a source actually involves eliminating the sources that clearly do not match the artifacts and then selecting the best match from the remainder. Previous studies in this region have found that sources most frequently exploited are those in the Jemez Mountains.

A scatterplot of Rubidium/Yttrium versus Zirconium/Niobium is shown in Figure 1. The sources groups are defined by confidence ellipses which indicate that 90% of source samples from each source are inside the confidence ellipse. The subsources from Jemez are all very different from one another. The artifact TOP248 was projected against the sources with a very clear result that the Rabbit Mtn-Obsidian Ridge source is the correct source.

Acknowledgments

The Archaeometry Laboratory at MURR is supported in part by a grant from the National Science Foundation (NSF-1621158). We request that this grant be acknowledged on all reports, theses, and publications mentioning these data.

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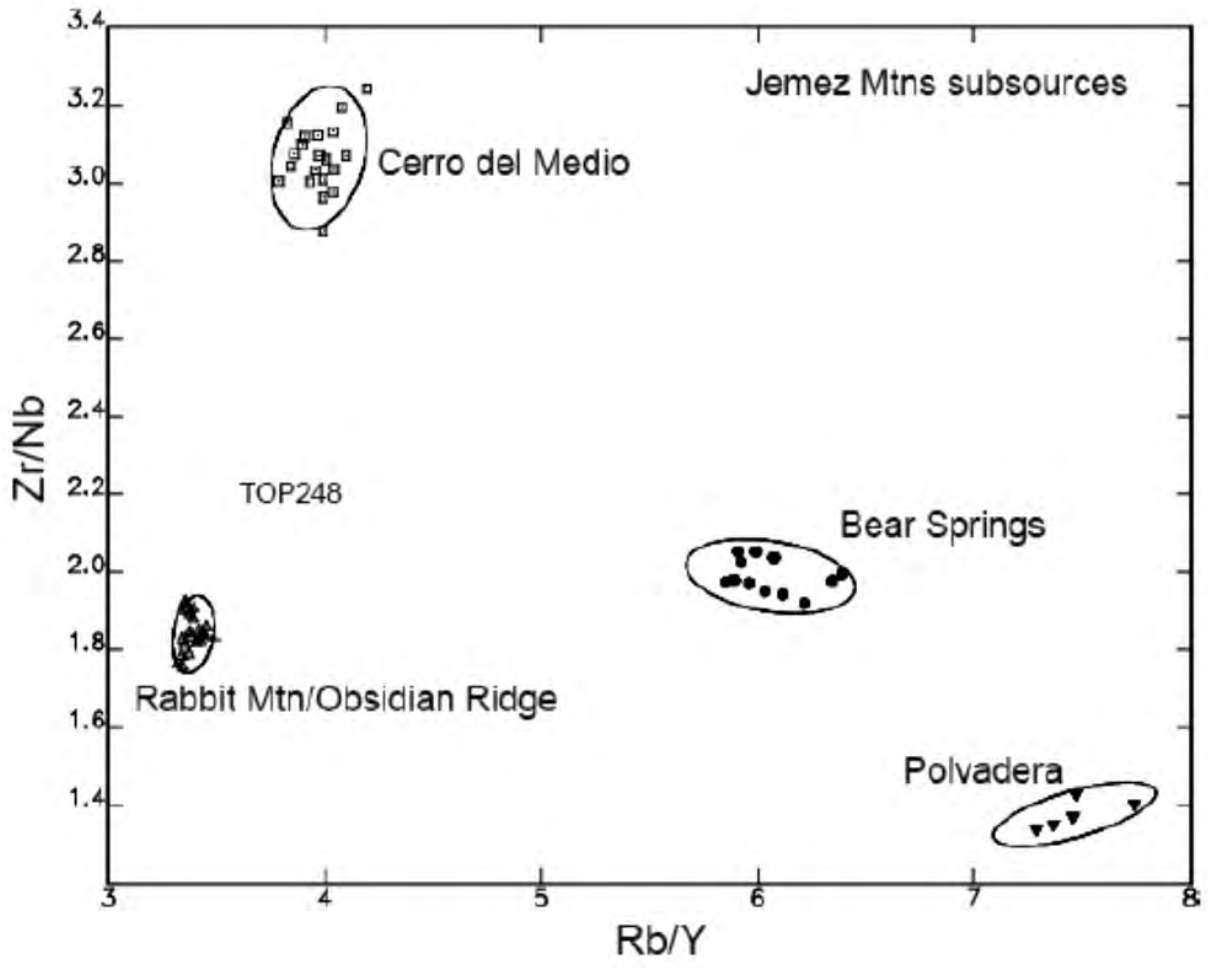

Figure 1. Scatterplot of Rubidium/Yttrium versus Zirconium/Niobium for sources from the Jemez Mountains measured by ED-XRF with sources surrounded by 90% confidence ellipses. Artifact TOP248 is been projected against the sources with the clear result that the artifact is from the Rabbit Mtn/Obsidian Ridge subsource.

Table I. Concentrations of elements in parts per million measured in artifact TOP248.

ANID	Chemgrp	Mn	Fe	Zn	Rb	Sr	Y	Zr	Nb	Th
TOP248	JM-RM	601	7860	76	206	0	61	185	98	26

A Cache of Three Pedernales Dart Points Found at 41KR15 in Southern Kerr County, Texas

Bryant Saner, Jr.

ABSTRACT

In the early 1970s, a cache containing three Pedernales dart points, two complete and one preform were found in southern Kerr County, Texas. This type of dart point dates to between 2,500 BC and 500 BC. The location of the cache was below the FCR of a burned rock midden. This cache is significant in that the vast majority of chert caches recorded are not associated with a midden. Most of these caches are groups of chert artifacts in a late stage of manufacture, but not complete. The vast majority of late stage manufacture chert caches are found outside of the Edwards Plateau. In many areas outside the Edwards Plateau the chert is of lower quality.

INTRODUCTION

A cache is defined two ways by the Merriam-Webster Online dictionary. First, "a hiding place for concealing or preserving provisions or implements". Second, "a secure place for storage," (Merriam-Webster Online, http://www.merriam-webster.com/dictionary/cache).

A cache can be dictated by the environment, terrain or cultural beliefs. The artifacts in storage are to insure they will be available in the future (Miller 2007:9). This is especially true in areas that don't have immediate access to chert, such as areas outside the Edwards Plateau (Lintz 2010). Material was stored in various stages of manufacture to replace tools and weapons that were broken or expended. They were also stored for use elsewhere as trade items. This type of cache is sometimes found in burials (Lintz and Saner 2002:37).

The idea of storage for later use indicates the early inhabitants were planning ahead. The natives would travel from place to place in search of food, water and fuel. They may not return to the stored material for some time. The complete tools and weapons would be available for use without the need to collect raw material and manufacture new ones. By storing partially complete items, time was saved in the manufacture process (Lintz and Saner 2002:38).

SITE DESCRIPTION

A cache was found in southern Kerr County, Texas at site 41KR15. The site consisted of four burned rock middens. The middens are along the north side of a creek. Both sides of the creek have cultural material present on the surface. One of the middens had the center portion removed by a bulldozer. The material was used to build an approach to a creek crossing. The cut was about 70-100 cm deep. The old surface beneath the burned rock midden was exposed. The soil was a lighter color while the upper soil was black. A test unit was placed in the soil where the midden had been. It was lower in elevation than the burned rocks of the midden.

Scattered burned rocks were seen in the same level as the cache, but were not part of the midden. The three artifacts making up the cache were found about 20-30 cm below the bottom of the midden.

ARTIFACT DESCRIPTION

The artifacts found in the cache are two complete Pedernales dart points and a Pedernales preform (Figs. 1 & 2). When the points were found they were laying parallel to the ground surface with all of the points facing toward the north and the stems to the south. Artifact 1 was on the left side with Artifact 2 approximately 5cm to the right. Artifact 3 was on top of Artifact 2. The top surface of 2 was touching the bottom of 3. Information as to which side was up and which side was down is not available.

Artifacts 1 and 2 had remnants of a thinning flute-like flake removed from both sides of the stem, which is characteristic of Pedernales dart points as described by (Turner, Hester & McReynolds 2011:148-150). The lateral edges of artifacts 1 and 2 are straight. Artifact 3 has a small remnant of a thinning flute-like flake on one side of the stem. The outline of 3 is not symmetrical and the lateral edges are uneven and rough indicating it is an unfinished Pedernales dart preform.

Figure 1. Side A. L to R Artifacts 1 & 2 are finished Pedernales dart points. Artifact 3 is an unfinished Pedernales dart point, a preform.

Figure 2. Side B. L to R Artifacts 1 & 2 are finished Pedernales dart points. Artifact 3 is an unfinished Pedernales dart point, a preform.

Artifact 1 is light gray 10YR7/1. Dimensions length 82.5 mm, width at shoulders 35.0 mm, thickness 7.0 mm, stem length 20.2 mm, stem width at blade 22.1 mm, stem width at base 22.4 mm, stem thickness 5.9 and depth of stem concavity 5.5 mm.

Artifact 2 is light brownish gray 10YR6/2. Dimensions length 79.7 mm, width 40.5 mm, thickness 7.6 mm, stem length 19.3 mm, stem width at blade 23.9 mm, stem width at base 23.2 mm stem thickness 7.2 and depth of stem concavity 5.5 mm.

Artifact 3 is gray 10YR5/1. Dimensions length 69.1 mm, width 45.8 mm, thickness 7.0 mm, stem length 14.3 mm, stem width at blade 19.6 mm, stem width at base 20.3 stem thickness 6.3 mm and depth of stem concavity 2.4 mm.

CONCLUSION

The discovery of a cache consisting of three Pedernales dart points, two complete and one Pedernales preform in soil beneath a burned rock midden is significant because most caches are not associated with burned rock middens (Lintz 2010). It also adds to the data that has been accumulated about the age of burned rock middens.

The basic reason for this cache is so tools and weapons are stored for later use. Outside of the Edwards Plateau, chert flakes, quarry blanks and other types of chert are place in caches so

they would be available for future use. In this case the complete and near complete dart point would have been available for use when the makers returned to this site. The two complete points could have been used immediately to replace broken dart points. The preform would require some work to complete. In any case none of the points require the user to find suitable flint and start from scratch to make a new point. Near the area where the points were recovered there are many sources of Edwards chert readily available.

Pedernales dart points are the most commonly found dart points in the Texas Hill Country. They were made and used by prehistoric peoples about 4,500 to 2,500 years ago, during the Middle Archaic Period (Turner, Hester & McReynolds 2011:148-150).

The cache was found beneath a burned rock midden. This suggests the cache was in place before the midden was in use and had started to accumulate FCR. This would also indicate that the midden may be less than 4,500 years old.

ACKNOWLEDGEMENTS

Thanks go to Kevin Miller, Chris Lintz and John Benedict for their suggestions that improved this report. Thanks to Steve Stoutamire for editing this paper.

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Artifacts Found at the Big Knife Occupational Site, 41GL477 Gillespie County, Texas

John Benedict and Bryant Saner, Jr.

ABSTRACT

This article summarizes the more than 200 chert, quartzite, hematite, sandstone and limestone artifacts, and one shell fragment collected from the surface of the Big Knife Site, 41GL477. This site is a prehistoric occupational site near Spring Creek in western Gillespie County. The artifacts suggest the site was occupied, intermittently by nomadic hunter-gatherer peoples from the Paleoindian Period to the Late Prehistoric Period, that is from 10,000 years BP (before present) to 750 years BP. Much of the site has been disturbed by modern farming activities, especially cultivation.

INTRODUCTION

In early 2015 Ron Corbyn contacted the senior author (Benedict) about recording a prehistoric archeological site and the many artifacts collected at this site by Ron, his family and the co-landowner. The authors agreed to write a report and record this site with the Texas Archeological Research Laboratory (TARL) at the University of Texas at Austin. Ron Corbyn is a professional archeologist that retired from the National Park Service in 1994.

The site was visited by Ron Corbyn and the senior author on April 29, 2015 and named the Big Knife Site, HCAA GL-2 (Figure 1). The site was recorded at TARL on September 15, 2015 and given the trinomial site number 41GL477. Ron Corbyn gave the senior author permission to donate the artifacts Ron and his family had collected from the site, to an archeological school to be used for educational purposes. The collection was given to the Center for Archaeological Studies at Texas State University in San Marcos during the winter of 2017-2018.

Figure 1. Big Knife Site, looking north. In the center is Ron Corbyn, who discovered this site in Gillespie, Co., TX.

The property on the east side of the fence has since been sold and is no longer controlled by the former co-

property owner who is a close friend of Ron Corbyn's. The former co-owner and Ron have moved out of the Gillespie County region.

This paper describes and discusses the artifacts found at the Big Knife Site and briefly discusses land use by nomadic hunter-gatherers that inhabited this region of Texas.

SITE DESCRIPTION

The site is located on the second river terrace about 9 meters (30 feet) above Spring Creek, in deep alluvial soil deposits on the higher east bank (See Figures 1 & 2). Stone artifacts and chert flake debitage are spread down the slope almost to the creek. However much of the cultural deposit is spread across the nearly level upper east terrace. Using the presence of artifacts on the surface, the site size is approximately 820 feet (250 meters) north-south, by 460 feet (140 meters) east-west. Since much of the site is in a cultivated field, the artifacts have likely been spread further than the original deposit by cultivation equipment and erosion. However west of the high fence, the western third of the site appears to be relatively undisturbed and intact (Figure 1, left side of the fence is west).

Several years ago the discoverer with his family and the former co-landowner tested the site by digging a single 5 foot by 5 foot (1.5 meters x 1.5 meters) unit in the cultivated field, just east of the primary datum (Figure 2). They found the undisturbed cultural deposit starts about 1 foot (30 centimeters) below the current surface—this is about the depth of the plow zone—and extends about 2 feet (60 cm) below the current surface. This is based on presence of artifacts and flake debitage found in the test unit excavation, per Ron Corbyn (personal communications). We dug no additional test pits or excavation units at the site.

Most of the artifacts collected by Ron Corbyn and his family were surface collected, with the acceptation of a possible Williams point discovered in their test unit in the plow zone. Most of these artifacts are discussed below.

The site elevation is about 1,800 feet above mean sea level (ca. 550 m), located in the wide alluvial-colluvial deposits along the creek, which is bordered on two sides by limestone valley walls that reach 2,000 feet (ca, 600 m) in elevation. The valley runs more or less North-South at the site. Geological formations that make up the valley wall are first Hensell Sand and then Glen Rose limestone overlaid by Edwards limestone, of the Fort Terrett member which is a chert-bearing unit (Barnes 1986). Loose chert cobbles and tabular material occur on the surface across the valley floor and walls, up to the highest elevations. These were likely displaced in the distant past by erosion of the overlying Edwards limestone. At the highest elevations we found chert cobbles imbedded in the limestone. The discoverer of the Big Knife site is a geologist as well as a archeologist, and Ron states that metamorphic cobbles and gravels also currently blanket much of the surface of the western Hill Country, overlie the upper limestone formation, and were relied on by prehistoric hunter-gatherers for hammerstones and other uses (Ron Corbyn personal communication).

Soils of the valley floor are Frio-silty clay loam, of the Frio-Guadalupe Association. They are deep, loamy, nearly level to gently sloping and undulating soils of bottom lands (Allison et. al. 1975).

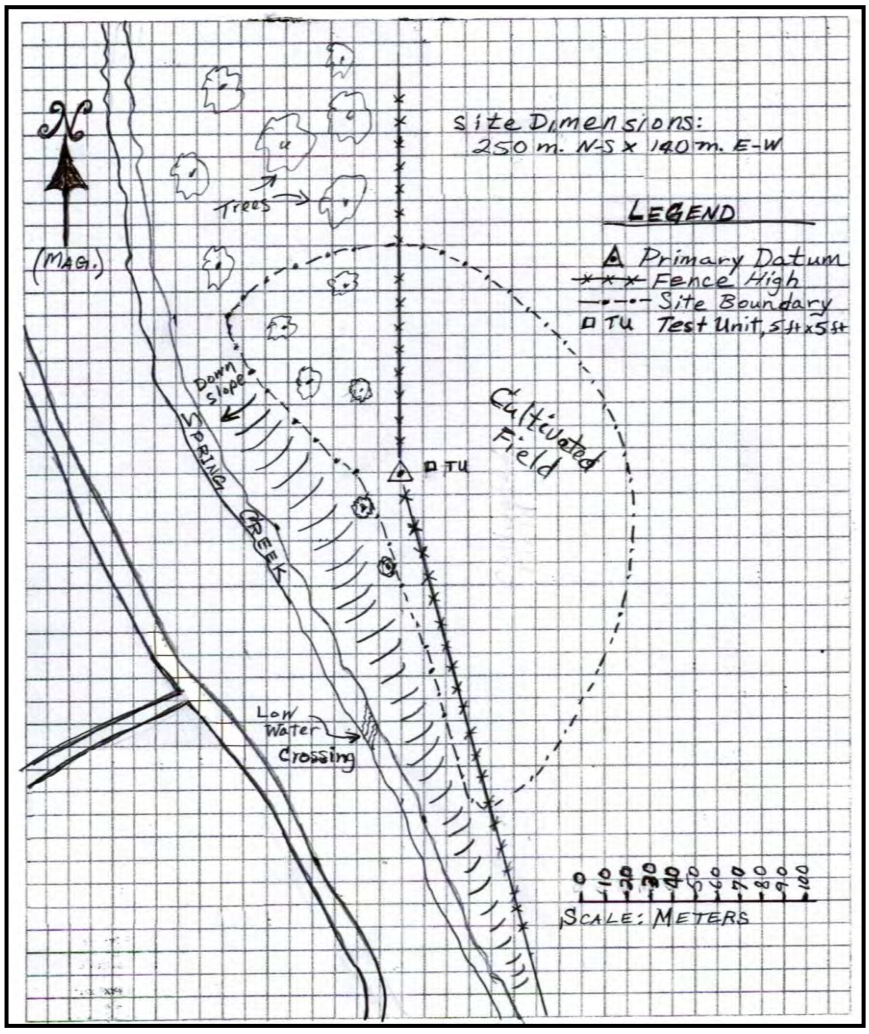

Figure 2. Sketch map of the Big Knife Site, 41GL477, HCAA GL-2, in Gillespie County, Texas.

Ron Corbyn also discovered a prehistoric chert procurement site, HCAA GL-3, about 1.25 miles (2 km) southeast of the Big Knife site. In this site is a large pit at the bottom of the valley wall that was dug into an unconsolidated yellow marl formation that contained large rounded chert nodules. The nodules had been dug out and were strewn around the outside of the pit. There were tested, broken and whole chert nodules, from fist sized cobbles up to volley ball sized boulders with a yellowish-white cortex coating them. Ron Corbyn suggested that hydrated chert was obtained here and likely prized for its ease of workability by prehistoric hunter-gatherers.

Thus chert tool stone is readily available near the Big Knife Site as bedrock outcrop nodules, surface cobbles eroded from limestone, and cobbles in the gravel beds of Spring Creek and nearby Pedernales River. Many of the recovered Big Knife artifacts discussed below were chipped from river rolled cobbles.

Spring Creek joins the Pedernales River not far from the site, and both valleys in prehistoric times were likely covered with prairie grasses, which during favorable climatic periods provided food for bison, deer, and antelope. A bison mandible was found associated with the artifacts in the test unit at the Big Knife Site (Ron Corbyn, personal communications).

Today the vegetation along the creek is typical a riparian zone with grasses, Bald Cypress, Pecan, Walnut, Willows, Oaks, Cedar Elm, Hackberry, Texas Persimmon, Agarita, and Ashe Juniper. On the valley walls vegetation is typical Oak-Cedar woodland with grasses, Texas Persimmon, Agarita, cactus and Sotol.

ARTIFACTS DISCOVERED

More than 200 artifacts were examined and tentatively identified, where possible, by Dr. Harry Shafer, Dr. Chris Lintz, and the authors. Sixty-six projectile points were typed (i.e. were identified) ranging from St. Mary's Hall, a Paleoindian Period dart point, to the recent Scallorn arrow point, a Late Prehistoric Period diagnostic point (Table 1). These points represent 23 specific types of points and all time periods of human prehistory in the Hill Country of Texas from Paleoindian into the Late Prehistoric. Many of these points are shown in Figures 3-6.

The most common points in the collection were 21 Edgewood-Ensor-Fairland Group points, in use during the Transitional Archaic period, around the time of Christ (Figure 3f-h). These 21 points represent 25%, of all the points collected. Seventeen additional points were found but could not be identified with confidence, making a total of 83 points in the Big Knife site collection. Artifact names and identifications listed in the following Figures and Tables are based on Turner et al. (2011).

Because many of these point and tool artifacts are worn and broken, we found it difficult to accurately identify them as a particular type. For example a point base that was typed as a possible Kinney point (Figure 4a) actually may be a Paleoindian Barber-Golondrina like point modified as a perforator—indicating it is perhaps 8,800 years old. Thus making it 4,000 years older than a Kinney point. But we can't be sure what type it is. Further, artifacts in the collection are from many time periods, but were found mixed together on the surface of a cultivated field, and thus lacking stratigraphy and associated typeable artifacts that would also help us in determing the age when they were used, and to type them more accurately.

Table 1. Point Types* Collected from the Surface of the Big Knife Site, 41GL477 (HCAA GL-2), by the Corbyn Family.

Item	Archeological Period	Point Type*	Time Used BP	Number in Collection
1	Paleo-Indian	St. Mary's Hall	9,900 – 8,700	1
2	Late Paleo-Indian	Angostura like ?	8,800 - 7,900	2
3	Early Archaic	Martindale	8,400 – 7,000	6
4	"	Gower-Baker-Merrell Group	8,000 – 6,000	3
5	"	Laguna	7,000 – 6,000	2
6	"	Andice ?	6,500 – 5,500	1
7	Early to Middle Archaic	Nolan	6,000 – 4,500	5
8	"	Evant-like ?	"	2
9	"	La Jita	4,820 – 3,980	1
10	Middle Archaic	Travis	4,650 – 4,050	1
11	"	Pedernales	4,420 – 2,500	4
12	"	Bulverde	4,000 – 3,500	1
13	"	Kinney perforator?	4,000 – 2,500	1
14	"	Langtry	4,000	1
15	Middle to Late Archaic	Williams	4,500 – 3,000?	1
16	"	Palmillas	3,000?	1
17	Late Archaic	Shumla	3,000 – 2,200	1
18	"	Castroville	2,800 – 2,400	1
19	"	Montell	2,800 – 2,400	4
20	Late Archaic to Transitional	Marcos	2,800 – 1,800	1
21	Transitional Archaic	Edgewood-Ensor-Fairland Group	2,200 – 1,400	21
22	"	Frio	2,200 – 1,400	3
23	Late Prehistoric	Scallorn	1,250 - 750	2
Total Identified Points*				66
Unidentified Points				17
Total Points Collected				83

*Note: We have less confidence in the identifications of artifacts whose names are followed by a question mark.

Figure 3. Dart points: (a) Andice, (b-c) possible Angostura? fragments, (d) Bulverde, (e) Castroville, (f-h) Ensor-Edgewood, (I-J) Evant, and (k-l) Frio, found on the surface of the cultivated field at the Big Knife Site, 41GL477, Gillespie Co., TX

Figure 4. Dart points: (a) possible Kinney drill, (b-c) Laguna, (d) Langtry, (e) La Jita, (f) Martindale, (g-i) Montell, and (j-l) Nolan, found on the surface of a cultivated field at Big Knife Site, 41GL477 (HCAA GL-2), Gillespie Co., TX.

Figure 5. View of sides A and B for: (a) Plainview base fragment , (b) Possible Paleoindian Point base?, (c) Pedernales, and (d) possible arrow point preform, found on the surface of the Big Knife Site, 41GL477 (HCAA GL-2), Gillespie Co. TX.

Figure 6. Dart and arrow points, and a perforator: (a-b) Scallorn arrow points, (c) Shumla dart point, (d) Travis dart point, (e-f) Pedernales dart points, (g) Palmillas dart point, (h) St. Mary's Hall dart point, (i-j) Uvalde dart point, (k) Williams dart point, and (l) a perforator fragment. Found on the surface of the Big Knife Site, 41GL477 (HCAA GL-2), Gillespie Co. TX.

In addition to the 83 projectile points in the Big Knife site assemblage there are 120 non-point artifacts (Table 2 and Figures 7-15). These are every day utilitarian items, and the remnants of stone tool making, resharpening and reworking. They include: scrapers, thick and thin bifaces, choppers, perforators, butted biface, hammer stones, manos, metate, abraders, and cores. Also spread across the site there is an average amount of flake debitage from tool-making activities—mostly secondary and tertiary flakes. A single mussel shell was also found.

Most of the non-projectile point artifacts are broken, which is common during manufacture or tool kit repairs, and were likely discarded as no longer of value by the prehistoric Indians that made and used them. Additionally many cores and early stage thick biface quarry blanks are present, representing early stages in the stone tool-making process. Again many of the early stage quarry blanks are broken, or contain uncorrectable knapping errors, or are of poor quality stone.

One of the most common types of non-point artifacts found in the collection are thin bifaces; 32 fragments were present, 26% of all the non-point artifacts. These likely represent knives and points that broke during use or manufacture. We do not know what period of time these represent, since bifacial knives have generalized forms and were commonly used throughout much of prehistory. However, Dr. Shafer suggested one thin distal and one thin basal biface fragment are Paleoindian (approx. 8,000-12,000 years old) based on the fine workmanship and oblique parallel flaking (Figure 14) (Collins & Hemmings 2005, Kelly 1983, Turner et. al. 2011:59, 152, 157).

Other possible Paleoindian artifacts in the collection are two Angostura point fragments, one Plainview base fragment, and one St. Mary's Hall base fragment. Most show fine parallel oblique flaking (Figures 3b, 3c, 5a, and 6h).

Also collected were a perforator distal fragment or what some call a drill (Figure 6,l), a large butted biface (Figure 13) showing some polish near the cutting edge, likely from use on plant materials or meat (Chandler & Marchbanks 1996), and two small discoidal bifaces (Figure 15). The most unusual artifact in this collection maybe one of the small discoidal bifaces because it is knapped from quartz or quartzite with a red streak on one side of an otherwise nearly clear crystal stone (Figure 15a).

DISCUSSION AND CONCLUSIONS

The artifact assemblage from the Big Knife site indicates that it was a favored occupational campsite for typical hunter-gatherer activities. It was likely used by numerous groups spanning thousands of years, when plant and game resources in the area were good. In addition to the artifacts listed above, angular fire cracked limestone rocks was scattered across the site indicated that hot rock cooking was done here. However no clear evidence of a mounded earth and hot rock oven feature was identified. Perhaps the burned rock midden is buried or was scattered by the historic land leveling and farming practices.

Table 2. Additional Artifacts Surface Collected from the Big Knife Site, 41GL477 (HCAA GL-2), by the Corbyn Family.

Item	Artifact Type*	Number in Collection
1	Scrapers; 5 biface, 2 uniface	7
2	Thick Bifaces: quarry blanks	23
3	Thick Bifaces: 3-choppers, 3-adz like, 1-Guadalupe biface, 1-butted biface	8
4	Thick Biface fragments, late stage	13
5	Thick Biface Cores and Core tools	8
6	Thin Bifaces: Preforms, including, 1-arrow and 1-dart point preform	6
7	Thin Biface fragments, "Knives": 10-rectangular bases, 3-round base, 2-concave bases, 5-mid sections, & 12-distal ends. Some appear heat treated. Two are Paleoindian.	32
8	Quartzite Hammer Stones	4
9	Clear quartz or quartzite discoid; a possible game piece, power stone, scraper, or adze?	1
10	Drill/Perforator Bit fragment	1
11	Manos sandstone in heavy silica cement and chert	5
12	Metate fragment sandstone in silica cement	1
13	Sandstone Abrader	1
14	Cobbles of hematite, quartzite, & polished red chert	10
15	Mussel Shell umbo/hinge	1
16	Total Other Non-Point Artifacts Collected Table 2.	120
17	Total Artifacts Collected, Tables 1 & 2	205

*Note: We have less confidence in the identifications of artifacts whose name is followed by a question mark.

Figure 7. Scrapers (sides A & B), uniface and biface, found on the surface of the cultivated field at the Big Knife site, 41GL477 (HCAA GL-2), Gillespie Co., TX.

Figure 8. Thick biface quarry blanks and cores, found on the surface of the cultivated field at the Big Knife Site, 41GL477 (HCAA GL-2), Gillespie Co., TX.

Figure 9. Thick biface tools: (a-c) possible adzes, and (d) gouge. Found on the surface of a cultivated field at the Big Knife Site, 41GL477 (HCAA GL-2), Gillespie Co., TX.

Figure 10. Thick biface core tools, possible choppers, found on the surface of a cultivated field at the Big Knife Site, 41GL477 (HCAA GL-2), Gillespie Co., TX.

Figure 11. Thin biface fragments, possible knives and early stage preforms, and trade blanks, found on the surface of a cultivated field at the Big Knife Site, 41GL477 (HCAA GL-2), Gillespie Co., TX.

Figure 12. Hammer stones found on the surface of a cultivated field at the Big Knife Site, 41GL477 (HCAA GL-2), Gillespie Co., TX. Left to right, quartzite, quartzite, and chert.

Figure 13. Kerrville Biface found on the surface of a cultivated field at the Big Knife Site, 41GL477 (HCAA GL-2), Gillespie Co., TX.

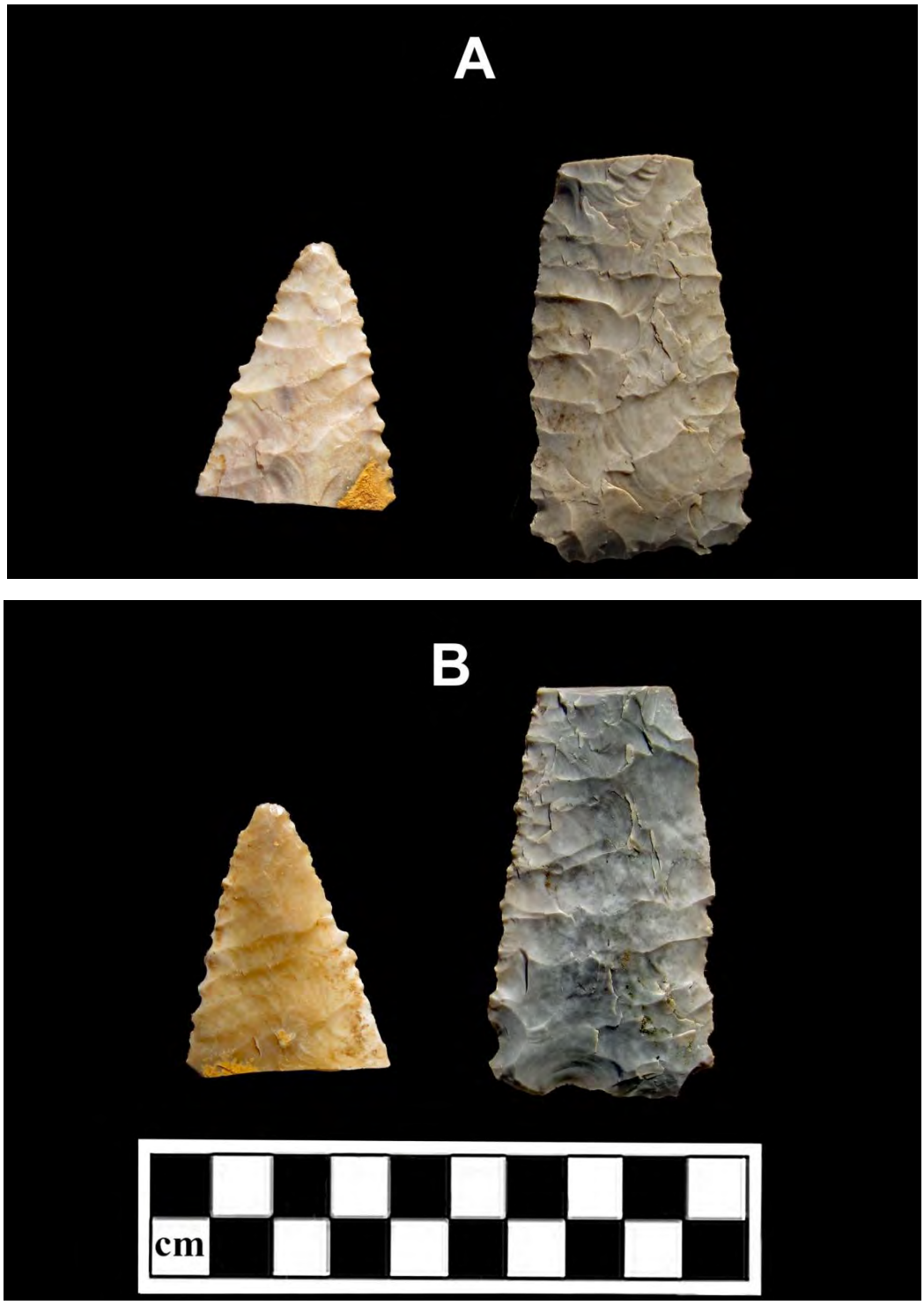

Figure 14. Thin biface knife fragments (sides A & B), distal and basal fragments showing collateral diagonal flake scar patterns indicative of Paleoindian Period technologies, approximately 9,000-12,000 years BP. Found on the surface of a cultivated field at the Big Knife Site, 41GL477 (HCAA GL-2), Gillespie Co., TX.

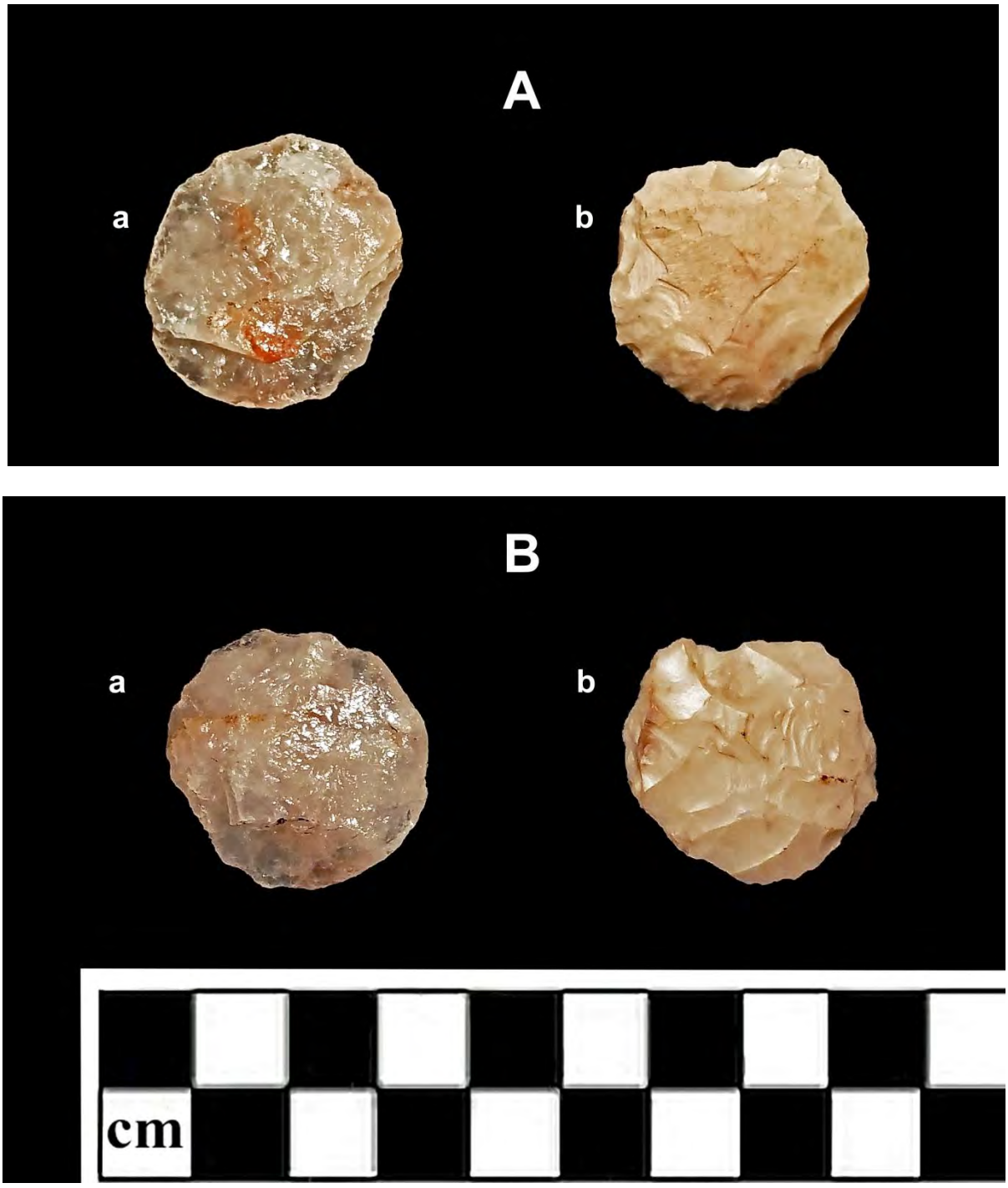

Figure 15. Thin bifacially-knapped quartz or quartzite discoidal (a), possibly a power stone, gaming piece or scraper; and a thin bifacially-knapped chert discoidal, (b), likely used as a cutting or scraping tool. Found on the surface of a cultivated field at the Big Knife Site, 41GL477 (HCAA GL-2), Gillespie Co., TX. Note the discover believes artifact (a) is of quartzite not quartz. Other geologists disagree and believe it is quartz.

(DISCUSSION CONTINUED)

Ron Corbyn found what he identified as a bison jaw bone fragment in the excavation unit in the undisturbed level below the plow zone, suggesting the hunter-gatherer Indians at this site were killing and eating bison. The Spring Creek Valley and nearby Pedernales Valley were thought to be grasslands during part of the prehistoric times before Europeans arrived, and that bison herds were probably present at such times because bison bone has been found at this and other nearby sites. Ron Corbyn suggests, when the environment was favorable for bison, that prehistoric people temporarily occupying the Big Knife site hunted bison here in the Spring Creek Valley; possibly bison were even ambushed near the site as they crossed the creek in shallow water on the hard limestone bottom. Because of the presences of Paleoindian artifacts at this site and the nearby Gamenthaler Valley sites we suggest that now extinct game, like *Bison antiquus* may also have been hunted in these valleys during the Paleoindian period, 10,000 to 12,000 years BP (Hester 2005, Bousman et.al. 2004, Kelly 1987, Kelly 1947).

Most of the stone artifacts found at the Big Knife site are utilitarian household items, weapons, and tool stone used to make items like these. For example: the scrapers were likely used in preparing animal hides; thin bifaces were likely knives use to cut; choppers/core tools were used to chop wood, plant, bone, or meat; Kerrville Bifaces to butcher animals or cut up soft plant material; and gouges were use to plane wood. They were used in typical household activities like: butchering animals; hide preparation and leather work; construction of shelters; food preparation; crushing bone to obtain marrow; preparing fiber and making cord, mats and sandals; constructing weapons/tools; preparing medicinal or ritual items; and making clothing (Shafer 2013, Chapter 4; Turner et.al. 2011, pp. 232, 246).

The quartz/quartzite crystal chipped stone discoidal artifact is of interest because of its small size, form and the material it is make of, and is rarely found in Hill Country prehistoric sites. Knapping crystalline quartz/quartzite is more difficult than the chert that is common throughout the Hill Country. We have shown this unusual quartz/quartzite biface artifact to professional archeologists and they suggest three possibilities for its use: (1) As a small scraper that was likely hafted (per Dr. Harry Shafer), (2) as a gaming piece (per Mr. Ron Corbyn) and (3) as a power stone used alone or with a medicine bag or bundle (per Dr. Chris Lintz).

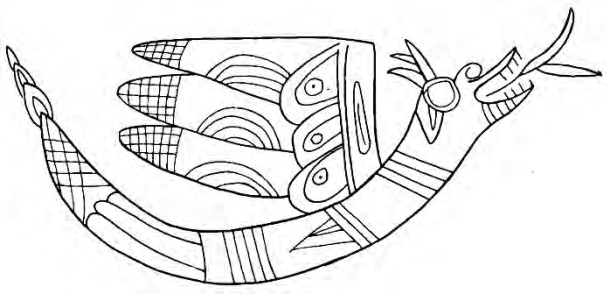

Figure 16. Drawing of Uktena from a prehistoric Moundville pot, Hudson 1976, p. 145.

Some indigenous peoples believe clear crystals are imbued with greater power than attributed to most other stones (Hudson 1976, pp.166). These people used them in the divination of illnesses or future events, suggesting this artifact could be far more important than a gaming piece—a shaman believed he could see into the future when gazing into a crystal (Hudson 1976,

pp. 166-169)! They believed crystals to be from the scales or forehead of the plumed or horned serpent (Hudson 1976, pp. 356-357).

Southeastern Indians have an oral history regarding a large monster-like horned serpent called Uktena (Figure 16), that lives in water, and has crystal scales and a large crystal in its forehead that can shoot out a beam of light that kills people instantly (similar to the Puebloan Awanyu/Avanyu, Figure 17) (Hudson 1976, pp. 130-132, 166-169, 356-357). The Cherokee believed Uktena is real and one of the most feared and powerful Underworld monsters. They believe it kills men whenever it can. Uktena is associated with rivers, lakes, waterfalls, and caves, because these prehistoric Indians believed these locations are entrances to the Underworld where these spirit beings live.

In addition to allowing the owner of the crystal to see the future, crystals were also believed to bring special power to their owner, who kept them in a medicine bundle or bag with red powder, likely red ocher (Hudson 1976, pp. 356-357). When a shaman possesses a crystal from Uktena he must fed it by rubbing the blood of a recently killed animal over the stone every 7 days. A famous prehistoric Cherokee power crystal has a blood red streak running through it (Hudson p. 167), as does the crystal found at Big Knife site (Figure 15a).

Figure 17. Drawing of Awanyu.

Possible sources of relatively clear quartz crystals near the Big Knife Site are unknown, although deposits of small white quartz crystals are present within a mile that can be dug from the ground and found on the surface. Also the central Texas mineral region is about 15 miles north of the site and contains quartz deposits. Quartz/quartzite gravels are present on the surface of the Spring Creek Valley floor and in the creek near the Big Knife Site.

We do not know what the spiritual beliefs were of the prehistoric indigenous peoples that lived at the Big Knife Site but Carolyn Boyd (2013, 2016) and Charles Hudson (1976, pp. 122-168) have suggested that beliefs of indigenous peoples of the Lower Pecos, as long ago as 2,000 years, had common threads to indigenous peoples of northern Mexico, the Aztec, Southwest US Puebloan tribes, and Southeastern US tribes. These peoples may have believed in a Uktena/Awanyu like deity that is enduring to this day (Boyd 2013, p. 204).

You have to wonder if this crystal artifact, discovered at the Big Knife Site, was used by the prehistoric inhabitants as a pebble of power from Uktena/Awanyu to heal or predict the future? Or was it just a scraper used to clean hides, or a simple gaming piece? We suggest the prehistoric inhabitants of the Big Knife site believed in a Uktena "like" being and the predictive power of crystals. However we are only suggesting that the spiritual plumed serpent monster/deity believed in by the Cherokee, bares some similarities to the Puebloan Awanyu and

the Aztecan Quetzalcoatl feathered serpent deity. And perhaps the widespread occurrence of similar beliefs in a form of horned or plumed serpent could simply reflect a common ancient spiritual belief that has been regionally interpreted in different ways.

In summary, the Big Knife Site and its 200 plus artifacts, fire cracked cooking rocks, flake debitage, and its location on a high alluvial terrace above a perennial spring fed creek, is a typical occupational site of the prehistoric hunter-gatherer nomads of the Texas hill country (Collins 2004, Hester 2005, Kelly 1947, Kelly 1987, Weir 1976). Like most of the hill country occupational sites, this site was used on an infrequent but repeat bases over thousands of years, when plant and animal resources, and seasons of the year made the area most suitable to support these prehistoric hunter-gatherers. The Big Knife Site was likely used intermittently for the last 10,000 years, until Europeans arrived.

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We thank Ron Corbyn and Maggie for their support and assistance with all aspects of this project. We also thank Dr. Harry Shafer for his help in identifying some of the projectile points from the site. Special thanks go to Dr. Chris Lintz for identifications, and reviewing the paper—he added more than a little polish. Chris also help improve the artifact photographs used in this report. Special thanks also to M. J. for helping us access the site, Steve Stoutamire for rock identifications and advice, and to Louise Doyen for her assistance and friendship during the field survey of the Big Knife Site and especially surveying HCAA GL-3, the Big Knife Quarry Site. Finally to my wife, Sharon, much appreciation for her support and kindness in revising and editing text with Word and figures with Photo Shop. Thank you all very much.

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Contributions of Women in Pre-History

Frank Binetti

ABSTRACT

This paper discusses archeological evidence indicating that women in prehistory made major contributions to our success as a species. The evidence is not absolute but shows that through time women have made discoveries and applied this knowledge in the development of art, agriculture, animal domestication, language, and science. Of special note is their contributions to the use of fiber as string, cordage, mats, and fabric. However the division of labor by gender is rarely fixed in any culture, and our success as a species is due to both women and men working together.

INTRODUCTION

Modern man and woman did not leave Africa until approximately 130,000 years ago. At that time human evolution, climate and environmental conditions allowed for passage out of Africa. Current evidence suggests much of the first emigrant group died out and the remaining individuals returned to Africa. Then roughly 60,000 years ago, another opportunity to emigrate out of Africa became available and modern humans again made that journey. Neanderthals and Denisovans, our close relatives, were already living in Europe and Russia (see Neanderthals and Denisovans in references). There is genetic evidence that these modern humans emigrants bred with Neanderthals and Denisovans during both migrations. If you are of European decent you likely have about 2% Neanderthal DNA and characters. By about 30,000 years ago Denisovans and Neanderthals had died out leaving only us modern humans (*Homo sapiens*) on planet earth. We are in fact hybrids, with Neanderthals and Denisovans.

During the next 30,000 years of prehistory, humans developed advanced stone tool technology, and creative art work, domesticated plants and animals, invented agriculture, developed sciences, and eventually created large and complex societies. This paper discusses the question of **"What were the Contributions of Women During Prehistory?"**

DISCUSSION

The question of women's roles in prehistory was not easily answered until relatively recently. Mainly because the field of archeology, as well as the sciences, was mostly dominated by men. Thus any mention of women’s contributions was usually reported from a male perspective. The male hunter that killed large mega fauna, such as the Wooly Mammoth, was

portrayed almost exclusively throughout the general media. It was presumed that hunting was exclusively done by males, and that they made all the stone tools. These stone tools, that survived the test of time, were the major focus of archeological site discoveries. In many incidences, cordage and other perishable artifacts, were ignored or not recognized. In reality, hunting was only one means of providing food and one measure of cultural success. The hunting of game was unpredictable and for the most part, meat could not be stored properly. Hunting improved with the advent of stone tools. Many scholars are now saying that women may have been gathering food long before big game hunting became a way for mankind to procure food. Scientific studies have shown that hunters strenuously hunted for about a week and then rested for approximately three weeks. Hunting provided approximately 20% of the nourishment needed to survive compared to 80% of the food stuffs mostly provided by women. Teeth analysis of prehistoric men and women show that grain, nuts, and fruits were the major foods eaten, not meat.

Today several scientific disciplines, that include women, are working together to take a fresh look at the archeological evidence. New dating techniques such as human tissue DNA testing, dental calculus DNA testing, and other scientific testing methods are adding insights into what the prehistoric peoples used their teeth for and what they ate.

Who invented string? Between 70,000 and 50,000 years ago a significant invention begins to show up in archeological sites where moisture and decay are limited. This is the invention of twisting weak fibers together to make long and strong string and cordage. It opened new ways to save labor and improve the odds of survival. Women, whose long past experiences in gathering, preserving, and storing food are thought to be the pioneers of the **String Revolution**. This invention was the prerequisite for making woven cloth and sails. It enabled humans to tie things together, catch and hold animals in nets, catch fish by making snare lines and fish lines, make carrying bags and back packs, and even using rope to tie objects together and to secure objects like boats. Once small items were made by weaving, the creation of textiles for coverings, garments, and lodging followed. Woven cloth was invented possibly 8,000 years ago. The invention of string allowed humans to move out into all parts of the world.

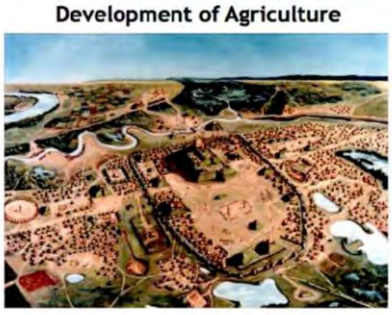
In the book “Women’s Work,” Elizabeth Wayland Barber (1994) states that whenever the String Revolution happened, it opened the doors to an enormous array of new ways to save labor and improve the odds of survival, much as the harnessing of steam and the Industrial Revolution did.

According to J. M. Adovasio (2007), some of the oldest sewing needles we know of come from a site called Denisova Cave in the Altai Mountains of southern Siberia near the juncture of Russia, Kazakhstan, and China. The needles were in remarkably good shape for being approximately 37,000 years old, and illustrate that advanced sewing techniques were taking place that far back in time. It is significant to note that in archeological sites where artifacts do not deteriorate, fiber artifacts outnumber stone artifacts 20 to 1.

Were women the first artists? Throughout the world there is no real evidence that men were the only ones creating cave paintings. New analysis suggests that women made many of the oldest known cave paintings. John Manning, a British biologist, found that men and women differ in relative lengths of their fingers. Women tend to have ring and index fingers of about the same length, whereas men's ring fingers tend to be longer than their index fingers. The study was determined to be 60% accurate. Archeologist Dean Snow of Pennsylvania State University analyzed hand stencils from prehistoric cave walls in France and Spain. Snow compared the relative lengths of certain fingers and determined that 75% of these handprints were female.

Who taught language to children during prehistory? Linguistic research has shown that children basically learn words from their mothers and only secondarily from their fathers. Also, socialization was predominately in the presence of mothers and started at birth. This happened in the preparation of meals, organizing care, play, and learning about rituals. Linguistic experts are now giving women a key role in the creation of language and social organization.

Who was responsible for the development of agriculture? At the end of the Paleolithic Period and the beginning of the Neolithic Period (approx.10,000 BC) life may have taken a downturn for women. During the Paleolithic Period men and women likely enjoyed relative equality.



Effects of Agriculture

The Neolithic Period is marked by the domestication of plants and animals and the establishment of agriculture as the main source of food. The ability to acquire food on a regular basis drastically changed life. Life now revolved around different activity patterns, such as following the seasons for planting and harvesting. The most significant change was the dramatic increase in population. Surplus food could now sustained more people. The excess food and the sedentary life style caused women's body mass index to increase, and birth rates skyrocketed. More children were now needed to help with the increased farming activities. Women's roles

became more delineated as the men took over the farming roles. In Adovasio's book "The Invisible Sex" (2007), a study by Marsha Ogilvie is mentioned. Marsha was a biological anthropologist who was blinded by diabetes at age 27. Her PhD was from the University of Mexico and her thesis was to determine who were the horticulturists, men or women? The period she was studying was approximately 3,500 years ago when people in the Southwest were transitioning from foraging to farming. Her study of the femur bones of both women and men showed that male femurs had pronounced ridges, consistent with the continuance of hunting and spending time walking looking for game. Women's femurs did not have the ridge and were less robust, clearly a result of a more sedentary life style. Because women remained close to the settlements, and judging from their distant past as gatherers focusing on various useful plants, it is probable that women invented agriculture there in the Southwest. This theory holds true in other parts of the new world as documented by the Spanish when they entered the Americas—women were the farmers.

Did only men make stone tools? Oral tradition and ethnographic studies have shown that stone end scrapers were formal tools that were used almost exclusively by women to process hides during prehistoric into historic times by Inuit and Great Plains Indians (Turner et al. 2011; p. 246). Logic suggests that the women users of these stone end scrapers would have to know how to sharpen and repair these tools in order to go about their daily business. If a tool broke or needed sharpening they could not wait until a man came home from the hunt to fix the tool.

CONCLUSIONS

These examples are just a few of the contributions of women in prehistory. However it is evident that these contributions were vital in shaping our world today. Sarah Milledge Nelson notes, based on several studies, that the division of labor by gender is rarely absolute. She cautions against generalizing that only one sex was always responsible for a particular activity. Just as it is foolish to suppose that women could not or did not make and use stone implements, Moreover it is unwarranted to insist that no man participated in planting, weaving, cooking, child care and so forth. We know that some men did so, even when it was designated women's work. We must keep an open mind and realize that the contributions of both men and women have allowed us to survive and flourish to this day.

As new scientific technologies are developed, along with the scientific community becoming more diverse and inclusive for women, I am hopeful women's contributions will be better understood, reported, and appreciated.

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BOOK REVIEW

THE WINDY WALLS OF TROY:
A Biography of Heinrich Schliemann
by Marjorie Braymer
Harcourt, Brace & World, N.Y. 1960.

Reviewed by:
John Benedict**,** November 2016

Ever imagine yourself using clues from maps or old stories to search for a lost civilization, then digging on a windswept hill above the ocean to find ancient buildings, tombs, gold and silver jewelry, magnificent weapons, and the bones of an ancient king? Well Heinrich Schliemann dreamed and imagined this as a boy and worked his entire life to realize his dream and so much more.

This book is a biography of the fascinating life of Heinrich Schliemann. He was an unusually astute and bright young man, born in 1822 in the city of Neubukow, northern Germany, the son of a poor Lutheran pastor. As a boy, his father entertained him with the Greek poems, the *Iliad* and the *Odyssey,* written by the ancient Greek, Homer. (These are the two oldest works of western literature, written about 2,700 years before present.) Heinrich became obsessed with finding Troy and proving it was a real place with real heroes, kings and queens, fighting with the Greeks in the Trojan Wars, and not fiction as was believe then.

In Heinrich's time the study of archeology was just developing, and most archeologists were "arm chair" wealthy royals, that believed Troy did not exist and the stories of its down fall were imagined. Heinrich was driven to prove Troy and the stories were real. First he needed the money to pursue his dream of excavating Troy. He became a highly successful merchant, learned more than 8 languages. And after amassing a fortune as a merchant operating throughout much of Europe, Russia, and the USA (a wonderful story by itself), Heinrich retired at the age of 36 to pursue his dream of finding Troy!

Our biographer, Marjorie Braymer, leads us down the exciting path Heinrich followed to locate the site of Troy using passages in the *Iliad*—this alone is worth reading the book. In 1870 he began his excavations for Troy. Great complexities arose as he found multiple cities, built one on top of the another like a layer cake. Which one was the Troy that Homer wrote about? At times he had more than 100 men digging on his archeology projects. His second wife, Sophie, was his constant companion and supported him through it all.

This book is about what he found, the archeological methods he developed, the archeological sites he discovered, and the controversies with other archeologists and governments over artifact ownership, methods and findings. He died in 1890 after 20 years of continuous archeological work. Yes he was brilliant, at times arrogant, and made mistakes, but his contributions to the art and science of archeology were great. His work stimulated a renaissance in archeology in Europe. And he increased our understanding of western civilization by opening our view of our past!.

One of his favorite verses from the Iliad that Sophie frequently quoted to him from memory when he was feeling down was, "*O my friend, if escaping death in this fight would make us immortal forever, I would certainly not put myself in the front rank, nor would I let you take part in this struggle that brings men recognition. But since the evils of death, which no mortal can avoid or escape, await us anyway, let us go on, whether we bring fame to another or win it for ourselves."*

A wonderful read for anyone interested in the history of civilization and archeology!

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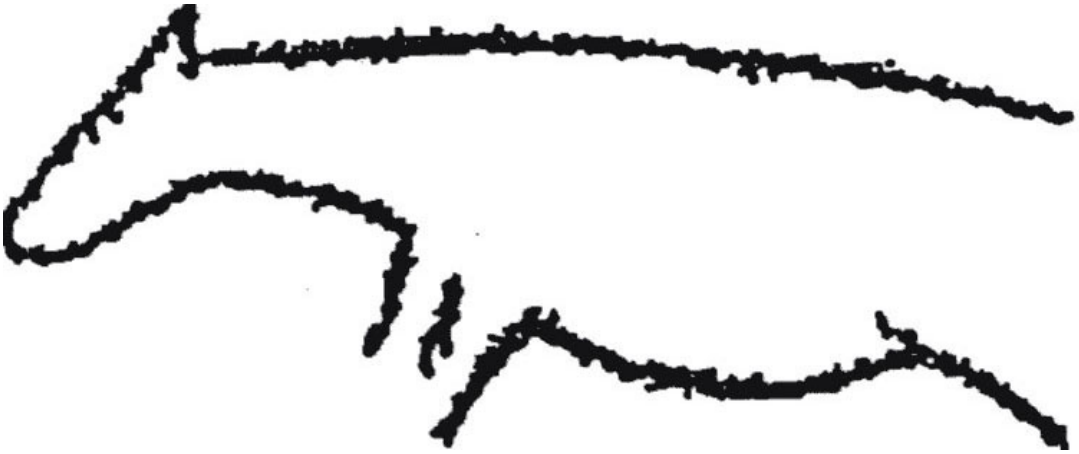

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The Hill Country Archeological Association (HCAA) is a non-profit organization. Our main purpose is to bring people together who have an active interest in the archeology and prehistory of the Texas Hill Country, in an atmosphere conducive to the exchange of information and ideas. Foremost, in our activities, we promote recording and preservation of archeological sites, and offer proper training in archeological field and laboratory methods.

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