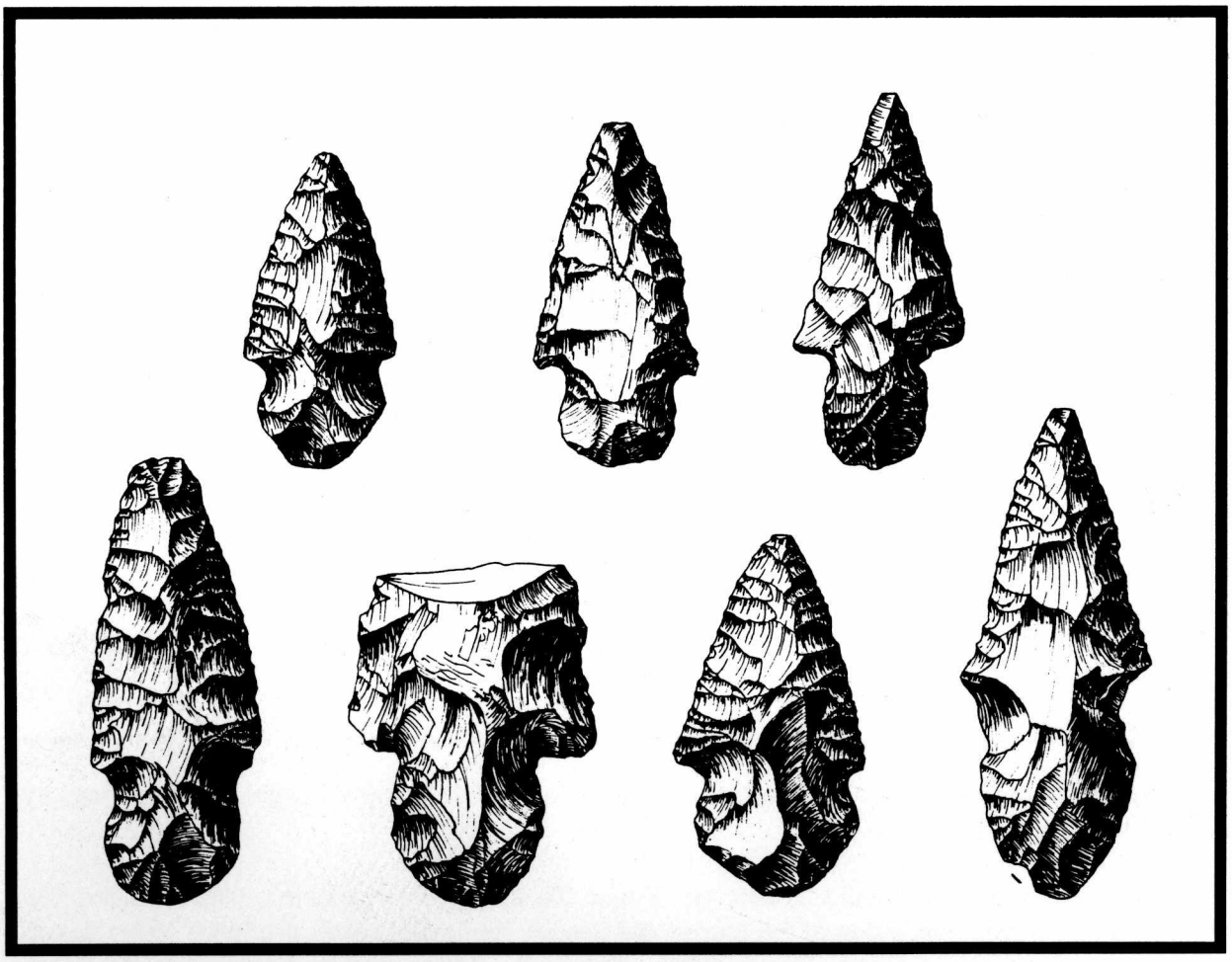
LA TIERRA



VOLUME 19, No. 1
January, 1992

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LA TIERRA

QUARTERLY JOURNAL OF THE SOUTHERN TEXAS ARCHAEOLOGICAL ASSOCIATION

Volume 19, No. 1
January, 1992

Evelyn Lewis
Editor

About the Cover: A new point type, Axtell, is shown (see report starting on page 15). Drawings by Richard McReynolds.

Manuscripts for the Journal should be sent to: Editor, *La Tierra*, Evelyn Lewis, 9219 Lasater, San Antonio, Texas 78250. Past issues of the Journal and Special Publications available from: Bette Street, 7119 Poniente Lane, San Antonio, Texas 78209. Dr. T. R. Hester may be contacted at the Texas Archeological Research Labaoratory, University of Texas, Austin, Texas 78712.

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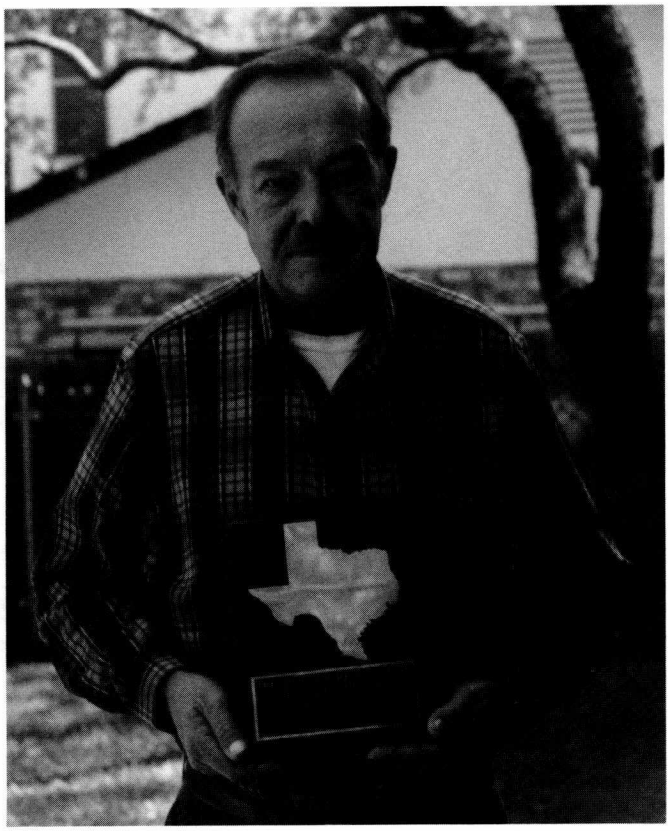
The ROBERT F. HEIZER Award
For Outstanding Contributions to Southern Texas Archaeology

FOR 1991



RAYMOND C. BLACKBURN

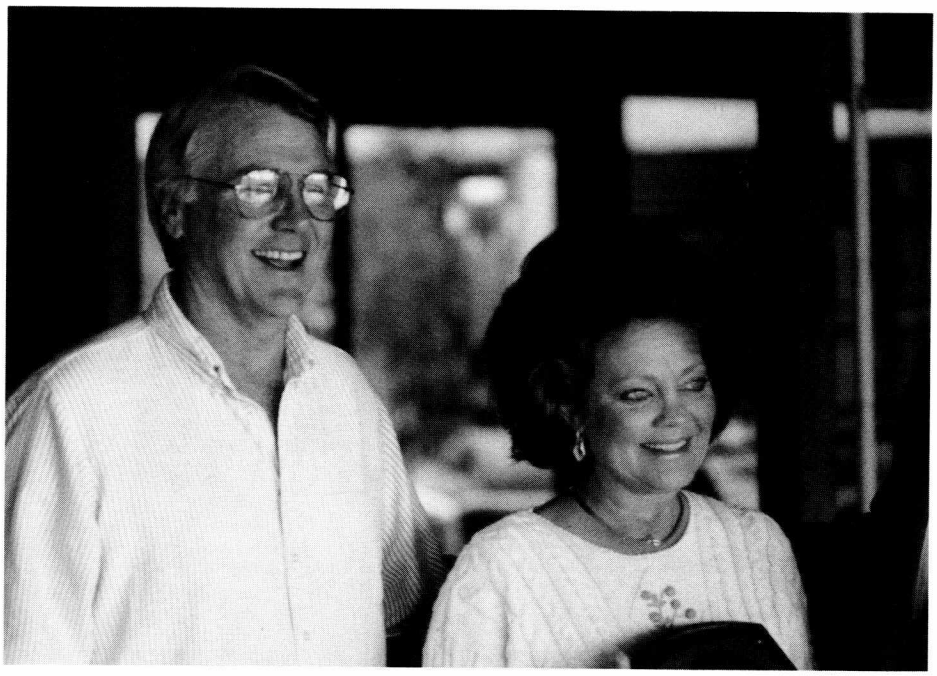
The 1991 Heizer Award is presented to Ray Blackburn for his continuing stewardship of the archaeological resources of Southern Texas. While Chairman of the Southern Texas Archaeological Association for 1991, Ray Blackburn exercised exceptional motivation, leadership, and planning which resulted in new levels of STAA activity and membership. At the same time, he also served as the Secretary of the Texas Archeological Society, managing its office at the Center for Archaeological Research of the University of Texas at San Antonio, and overseeing the correspondence and activities of the society; he also served on the TAS Board and Executive Committee traveling to all parts of the state to record meetings of these groups and to participate in society activities.

Even with this full workload, he always found time for STAA. He organized new membership activities for the STAA, developed and executed plans and budgets for an STAA Field School near Castroville, Texas in coordination with the Institute of Texan Cultures, and helped at every opportunity with the physical arrangements for this unique new STAA field activity. He also participated in the continuing excavations at the Dan Baker Site in Comal County, including coordinating a UTSA summer archaeological field school at that site.

Under his leadership, the STAA has enjoyed unprecedented growth and development both in terms of growth in membership and constructive activities for the organization, even when such activities have required exceptional personal effort and inconvenience on his part. For his outstanding dedication to Southern Texas archaeology, his creative leadership, and his exceptional success in enhancing the STAA role in the region and across the state, the committee is extremely pleased to honor his contributions by awarding him the 1991 Robert F. Heizer award.

The DEE ANN STORY CONSERVATION Award

FOR 1991



DAN AND BETTY BAKER

The Dee Ann Story Conservation Award is presented annually by the Southern Texas Archaeological Association. The committee this year consisted of Dr. Thomas R. Hester (Chairman), E. H. Schmiedlin, and Paul Ward.

The committee's task was a relatively easy one, since two people, Dan and Betty Baker, clearly met the criteria established for this very special STAA award.

Beginning in October, 1977, the Southern Texas Archaeological Association initiated field work at the Baker Site (41CM104) and this work--along with the laboratory chores--continues to the present time. It has even been expanded through the use of the site for the 1991 University of Texas at San Antonio summer archaeological Field School.

During the past 14 years Dan and Betty Baker have been great friends of archaeology and the STAA. They have not only permitted excavation at the Baker Site, but they have also worked to protect it and to discourage the looters who have occasionally damaged the site. In addition, the Bakers have been active in their participation in STAA including their help in hosting meetings and several annual barbeques. The site has been used many times over the years for visits by Gifted and Talented students and other school classes; several Teachers' Workshops have been held at the site.

The Southern Texas Archaeological Association is especially pleased to recognize Dan and Betty Baker with the Dee Ann Story Conservation Award. It acknowledges their effort to preserve this important archaeological site and the encouragement they have provided for its continuing study. This research will lead to important new contributions to southcentral Texas prehistory.

NOTES ON SOUTH TEXAS ARCHAEOLOGY: 1992-1

Archaeological Materials from Site 41UV20: Uvalde County, South-Central Texas

Thomas R. Hester and Charles M. Whatley

INTRODUCTION

In the late 1960s, a series of three burned rock middens (known as the Luce sites, 41UV20, 22 and 23) were heavily vandalized by relic-collectors. The senior author visited the sites in June of that year, and some observations on those sites were subsequently published (Hester 1970). At one of the burned rock middens (41UV20), the junior author was able to salvage a burial and to record the site's general stratigraphy. As noted in Hester (ibid.), this midden was about three feet thick, 70 feet long and 40 feet wide. The stratigraphic observations made by Whatley and J. W. House can be briefly summarized (see Hester 1970:243-245): Zone 1, surface to .5 ft., humus with artifactual materials, including arrow points (Sabinal points, preforms) and Transitional Archaic dart points (Ensor, Frio); Zone 2: .5 ft. to 2 ft. below the surface, characterized by ashy soil and scattered burned rock and animal bone, but with no diagnostic lithics; and, Zone 3, 2-3 ft. below the surface, with thickly packed burned rock (a burned rock midden), with numerous diagnostics (Pedernales, Kinney, Montell), debitage, and abundant land snails (*Rabdotus* sp.). The burial noted earlier was uncovered in Zone 3, though Whatley believes that the burial pit originated in Zone 2. Associated with the burial were a bone awl, two biface preforms, a stemmed biface, and a cache (?) of more than 430 *Rabdotus* snails near the burial's left foot. Wesolowsky (1970) identified the burial as that of a Native American female between 30-35 years of age.

Recently, the artifacts salvaged from 41UV20 by the junior author have been made available for study. Since no details on the lithics from this site were published in the 1970 paper, these new data are published here.

THE ARTIFACTS

Dart Points: The diagnostic dart points are from the Middle, Late and Transitional Archaic; no Early Archaic specimens are represented. These include Castroville (1), Ensor (1), Frio (2, basal notched), Kinney (27), Lange (1), Marshall (1), Montell (14, including two preforms), Pandale (1, with the distinctive twist characteristic of the Lower Pecos), Pedernales (17, including two large preforms), and Tortugas (2; these may actually be Kinney points with straight bases; they are not Early Triangular). Selected examples of these types are shown in Figs. 1 and 2.

The dart point preforms are of particular interest, as they indicate the reduction sequence used by the Archaic flintknappers. The two Montell preforms (Fig. 1,i,j,k) include one made on a flake and another made on a biface. In both cases, the stems appear to have been shaped (and even thinned) before reduction continued. Their respective lengths are 51 and 73 mm, widths, 37 and 57 mm, and thicknesses, 6.5 and 10 mm. The two Pedernales preforms (Fig. 2,g,h) are made on ovate bifaces, again with the stems formed initially (and thinned with the typical Pedernales "flute"). One (Fig. 2,g) was broken in reduction (and refitted by Whatley) by a perverse fracture when a thinning flake removal was attempted just above one shoulder. Their respective lengths are 103 and 110 mm, widths, 70 and 56.6 mm, and thicknesses, 11 and 11.5 mm. There is an additional preform fragment (Fig. 2,f) with a carefully shaped contracting stem (resembling the Arenosa type recently described by Bement [1991] for the

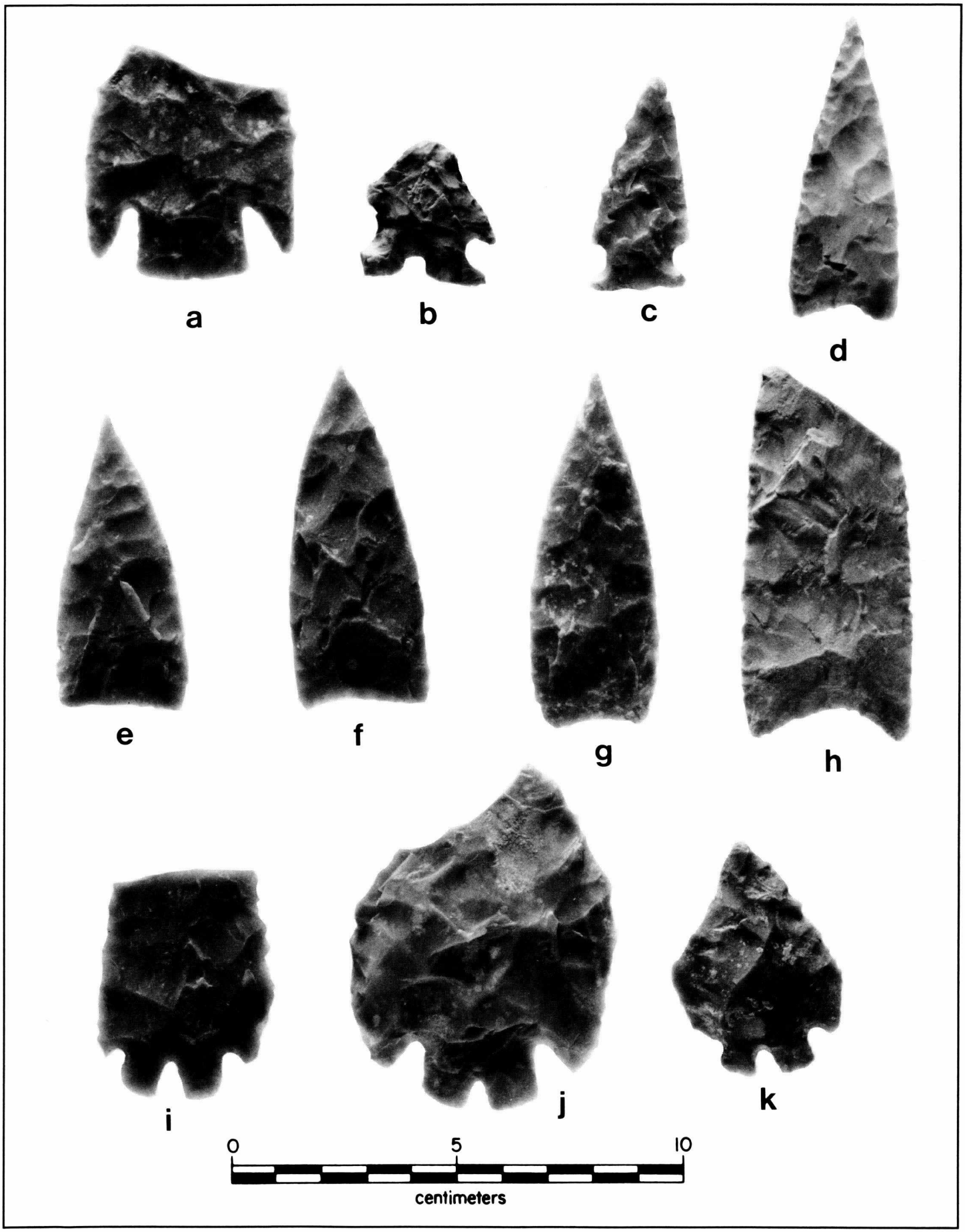


Figure 1. Dart Points from 41UV20. a, Castroville; b, Frio; c, Ensor, d-h, Kinney; i-k, Montell.

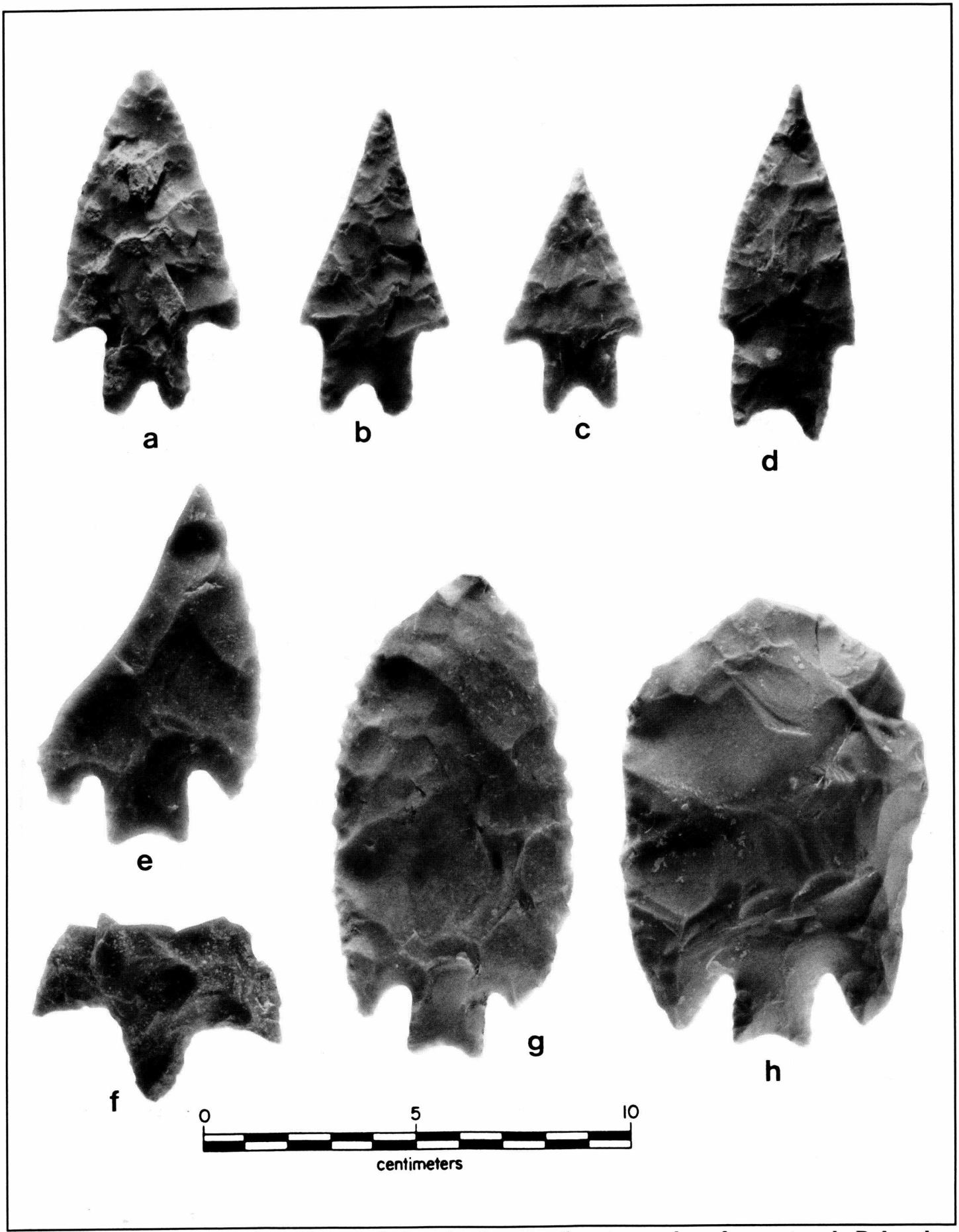


Figure 2. Dart Points from 41UV20. a-e, Pedernales; f, contracting stem preform fragment; g, h, Pedernales preforms.

Lower Pecos).

Arrow Points. Most common are Sabinal, with 13 complete and fragmentary specimens (Fig. 3,a-d). There are also two Scallorn points and one Perdiz point in the sample. There are at least 15 arrow point preforms (Fig. 3,e-h) mostly bifacial, and these greatly resemble the preforms published by Lukowski (1987: Fig. 56) from the Leona River Watershed sites in Uvalde County. Most from 41UV20 appear to be preforms for Sabinal points.

Other Bifaces. The collection also includes at least 16 crude bifaces that appear to be dart point preforms. These range from one early stage preform made on a flat cobble to intermediate preforms (large, pointed ovate bifaces; see Fig.4,a) and final stage preforms, including some thin bifaces that may have been used as tools.

Two stemmed bifaces (Fig.4,b) are similar to those reported by Hester and Green (1972) from Central Texas. The illustrated specimen was found with the burial in Zone 3, and only an outline of it appears in Hester (1970:Fig. 7,n). It is well made, with the base thinned for hafting and the distal edges exhibiting retouch (length, 94 mm; width, 48 mm; maximum thickness, 9 mm [thickness at the tip and along the distal edges is 2-3 mm]). The second specimen is larger, and the lateral edges have been beveled from retouch. It is plano-convex in cross section (length, 170 mm; width, 52.5 mm,and maximum thickness, 8 mm). Scattered light dulling can be detected along the lateral edges. The artifacts examined by Hester and Green (1972) from San Saba County exhibited microscopic indications that they had been used as knives. Perino (1985) calls these artifacts "San Saba Knives."

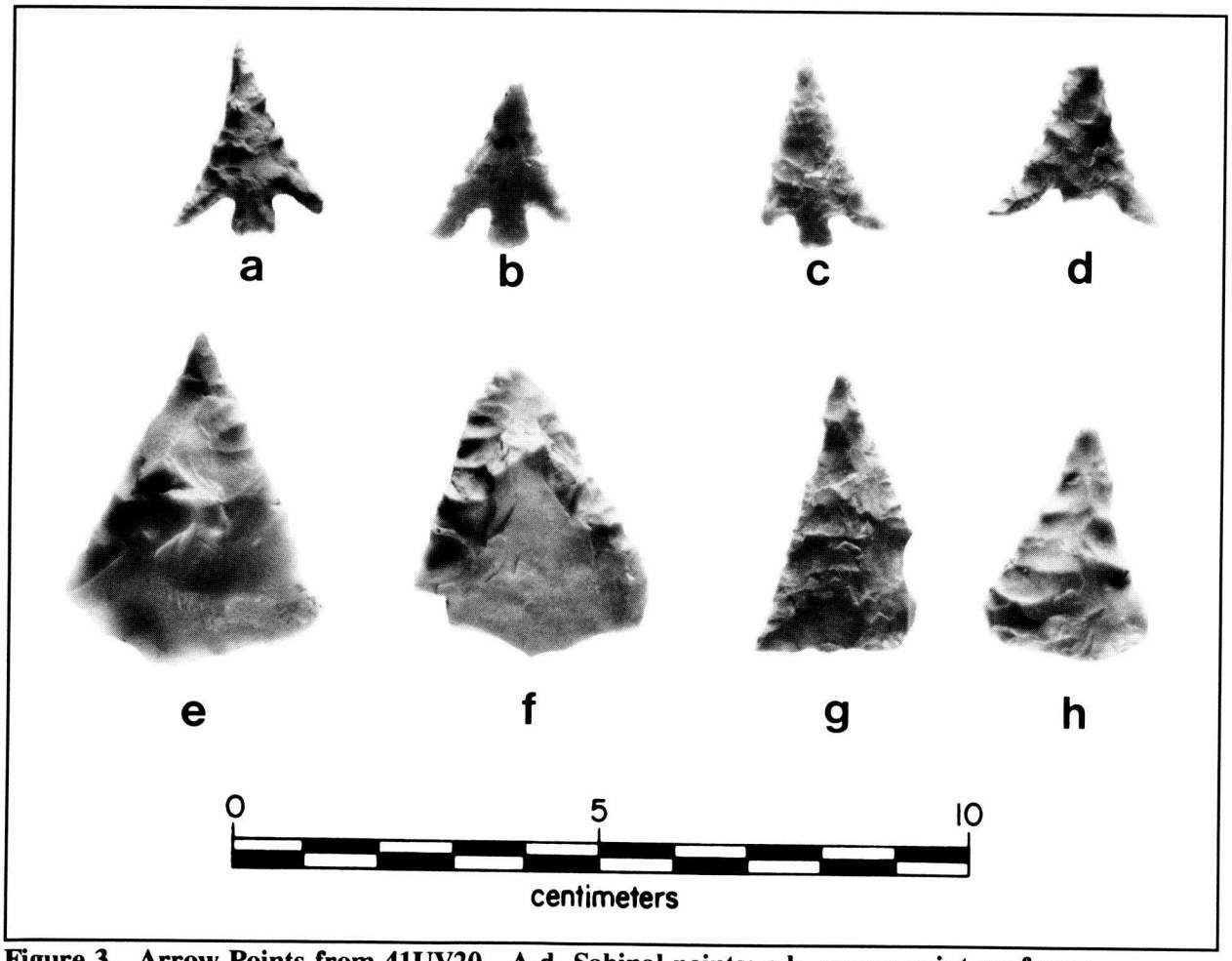


Figure 3. Arrow Points from 41UV20. A-d, Sabinal points; e-h, arrow point preforms.

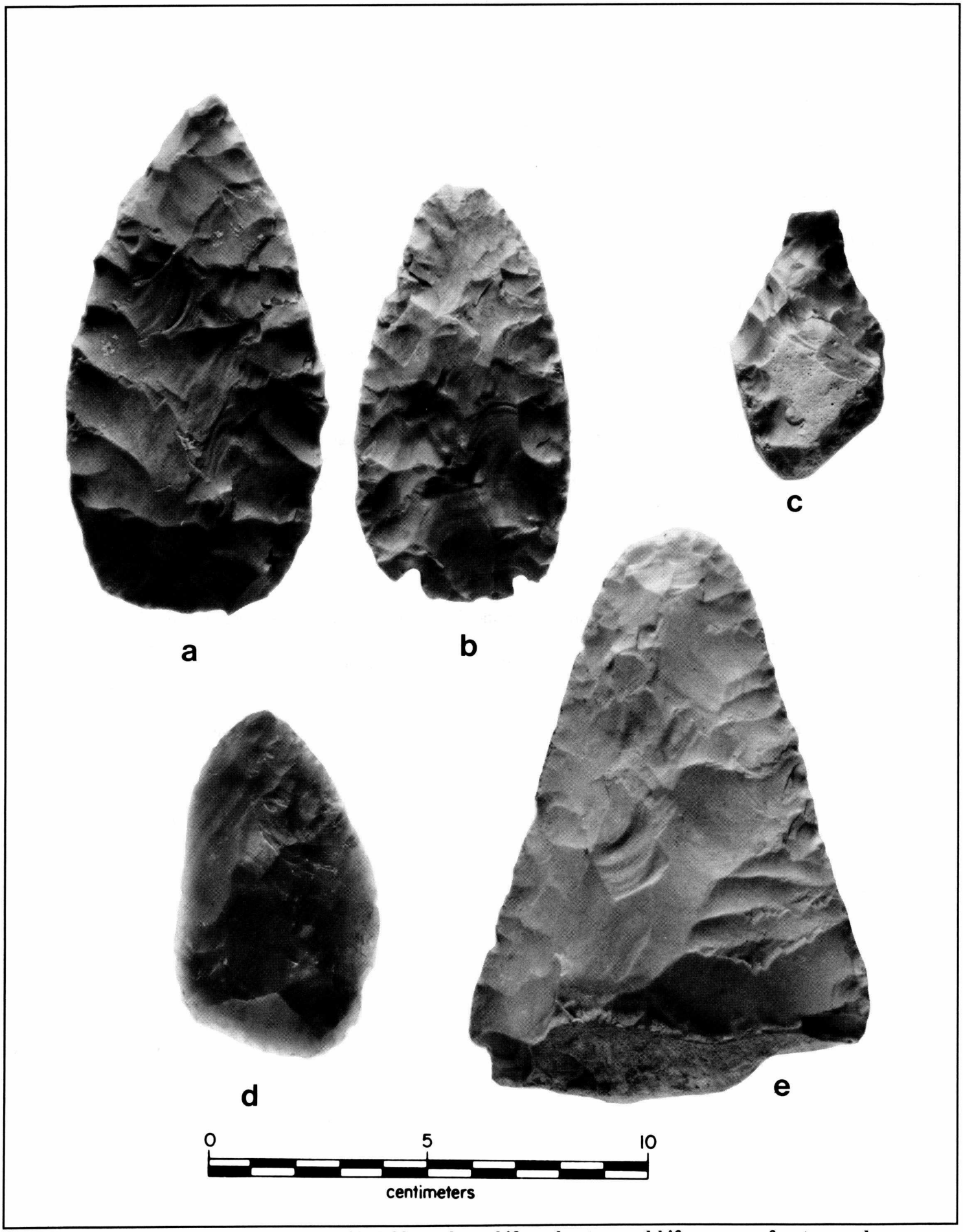


Figure 4. Chipped Stone Artifacts from 41UV20. a, large biface; b, stemmed biface; c, perforator made on pebble; d, uniface; e, butted knife biface.

Butted Knife Biface. This is an excellent example (Fig. 4,e) of the "butted knife biface" form (Turner and Hester 1985). It is 128 mm long, 89 mm wide and 30 mm thick. The tip is highly polished, with the polish extending 23 mm up from the tip on both faces. The poll end is covered with cortex. Such bifaces are Late Archaic in date.

Perforators Made on Pebbles. Two artifacts thought to have been perforators or drills (Fig. 4,c) are made on small, thick pebbles. The tips of the perforator shafts are broken in both cases. Their respective dimensions are: length, 54.5 and 61 mm; width, 40.5 and 34 mm; thickness, 12, and 17 mm.

Unifaces. One specimen appears to be a graver made on a large flake. Another is trimmed along one edge of a flake ("side scraper") and the third, a carefully flaked uniface, trimmed extensively along one side (Fig. 4,d).

Technological observations. All of the artifacts are made of local cherts -- gray, tan, light brown -- but there is considerable evidence of heat-treating. Some of the dart point preforms, as well as some specimens within the Kinney, Marshall, Montell, and Pedernales types, exhibit pink discoloration typical of thermal alteration.

CLOSING COMMENTS

Only a few observations could be offered on the artifacts from 41UV20 in the initial 1970 publication. Fortunately, 22 years later, the junior author's cataloged collection is still available, so that these descriptive notes could be put on record. The site can now be more fully seen as a buried burned rock midden, with Middle and Late Archaic diagnostics, capped by two stratigraphic units, the uppermost of which contained Transitional and Late Archaic materials.

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DOCUMENTING YOUR COLLECTION

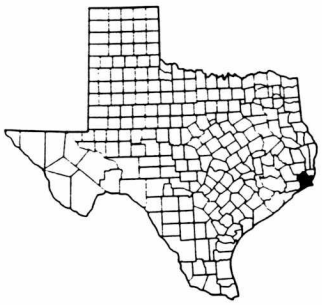
Ellen Sue Turner

Some months ago, I was contacted by an avocational archaeologist from Port Arthur, Paul Tanner, who has walked the beach with his friends for years collecting artifacts at the McFaddin Beach site, 41JF50. This site, on the upper Texas Gulf coast in Jefferson County, between Sabine Pass and High Island, consists of Paleo-Indian and Archaic artifacts and faunal remains collected as beach-lag from a shoreline stretch of about 35 km (Long 1977). The parent site is not known but the artifacts and bones are probably being redeposited from a relatively short distance offshore; perhaps a scarp or surf line that lies under about 6 meters of water (Aten 1983:104-130; Story et al. 1990:187). The site is of considerable importance and has yielded an exceptionally large number of Clovis points (65+ documented), faunal remains, stone and bone tools (see Figure 1) and projectile points.

When I answered Mr. Tanner's inquiries, I sent several copies of a form designed by the El Paso Archaeological Society (EPAS) for projectile point recording, and encouraged him to begin documentation of his collection. The response has been nothing short of heroic. To date we have received over 500 carefully filled out forms from Mr. Tanner and his friends! Tanner is a meticulous recorder and does beautiful soft pencil sketches and maps (see artifacts in Figure 2). In addition to his own material, he is now working on the documentation of some 12 more collections including the important collection of Dr. Russell Long. J. W. Coen, Joseph Louvier, Jesse Fremont, J. W. Henry Hathaway and Murray Brown have carefully filled out EPAS forms of their artifact finds also.

The wealth of valuable information these men are documenting has been deposited into an evergrowing file on site 41JF50 at the Texas Archeological Research Laboratory (TARL). Dedication and the conscientious efforts of Mr. Tanner and his friends are saving once diverse and scattered information for future studies; studies that could one day be back-up material for one of the most important Paleo-Indian sites in North America.

Here is a copy of the form to xerox and to use (Figure 3). Hopefully, this form will be an impetus for members to begin documentation of their personal collections before the historic material is disbursed amongst their heirs! In addition to the forms, maps that mark the original location of specimens are of great importance (no matter how amateur the rendition), and when you have a site number, please make copies of your completed forms and send them to the TARL archives (Texas Archeological Research Laboratory, Balcones Research Center 5, 10100 Burnet Road, Austin, Texas, 78712-1100.)



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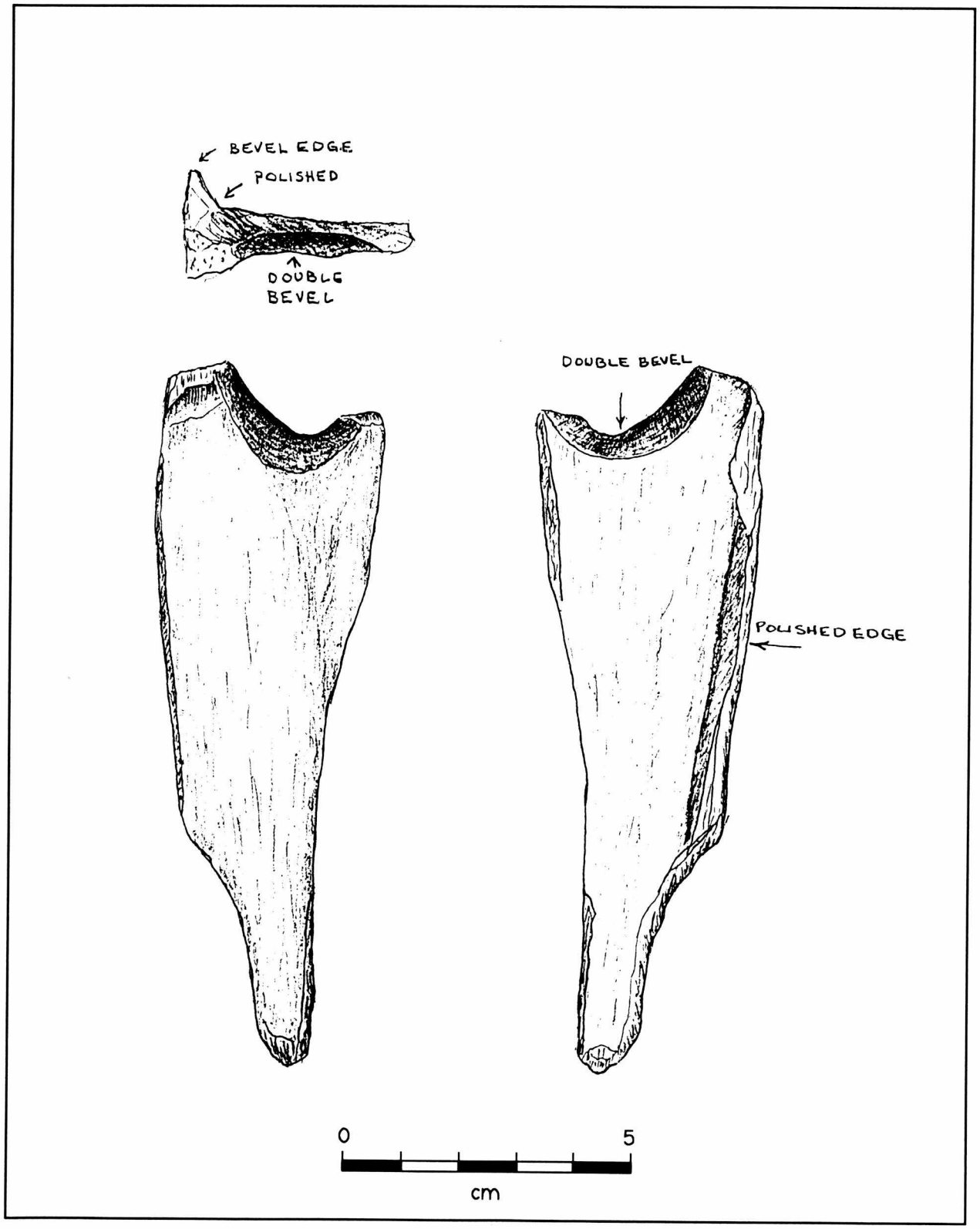


Figure 1. Bone tool found at the McFaddin Beach site (41JF50). Dimensions: L=122 mm, W=37mm, T=8 mm. Appears to have been made from fresh bone, then mineralization occurred. Drawn by Paul Tanner.

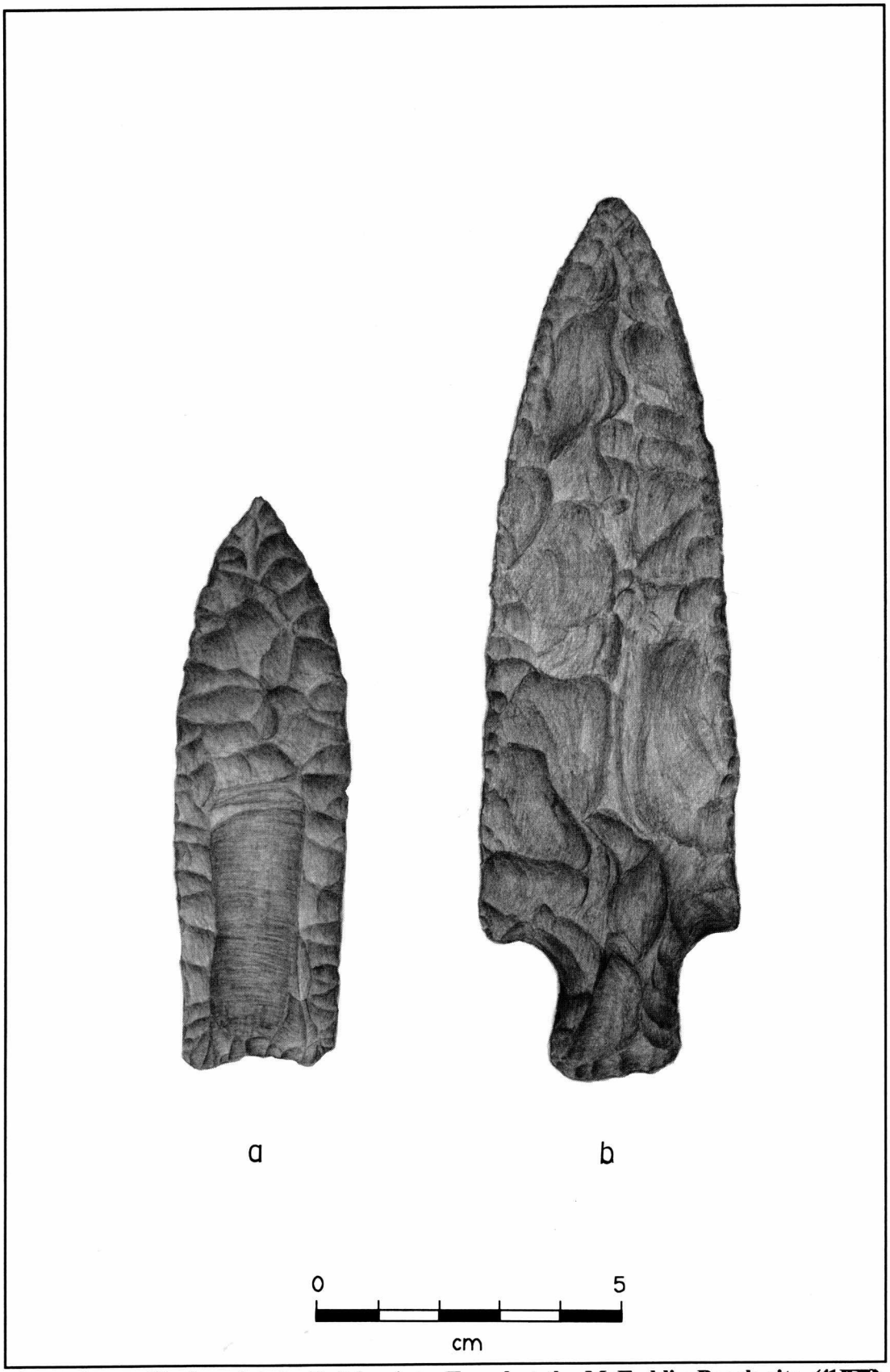


Figure 2. a, Clovis point; b, Delhi point. Found at the McFaddin Beach site (41JF50). Drawn by Paul Tanner.

EPAS PROJECTILE POINT ANALYSIS FORM

VERTICAL LOCATION:

HORIZONTAL LOCTION:

GRID NUMBER:

RANDOM SURFACE COLLECTED ☐ YES ☐ NO

PROJECT:

FIELD NO:

OTHER NOS.:

SEQUENCE NO.:

TYPE CODE NO.:

SITE NO.

ARTIFACT NO.

MEASUREMENTS			MM
T	MAXIMUM THICKNESS		
ML	MAXIMUM LENGTH		
HL	HAFT LENGTH		
MBW	MAXIMUM BLADE WIDTH		
BW	BASE WIDTH		
NW	NECK WIDTH		
BD	BASE DEPTH * + = CONVEX − = CONCAVE 00 = STRAIGHT	*	
SBTL	SHOULDER TO BLADE TIP LINE		
MBEC	MAXIMUM BLADE EDGE CURVATURE * + = CONVEX − = CONCAVE 00 = STRAIGHT	*	

TYPE NAME:

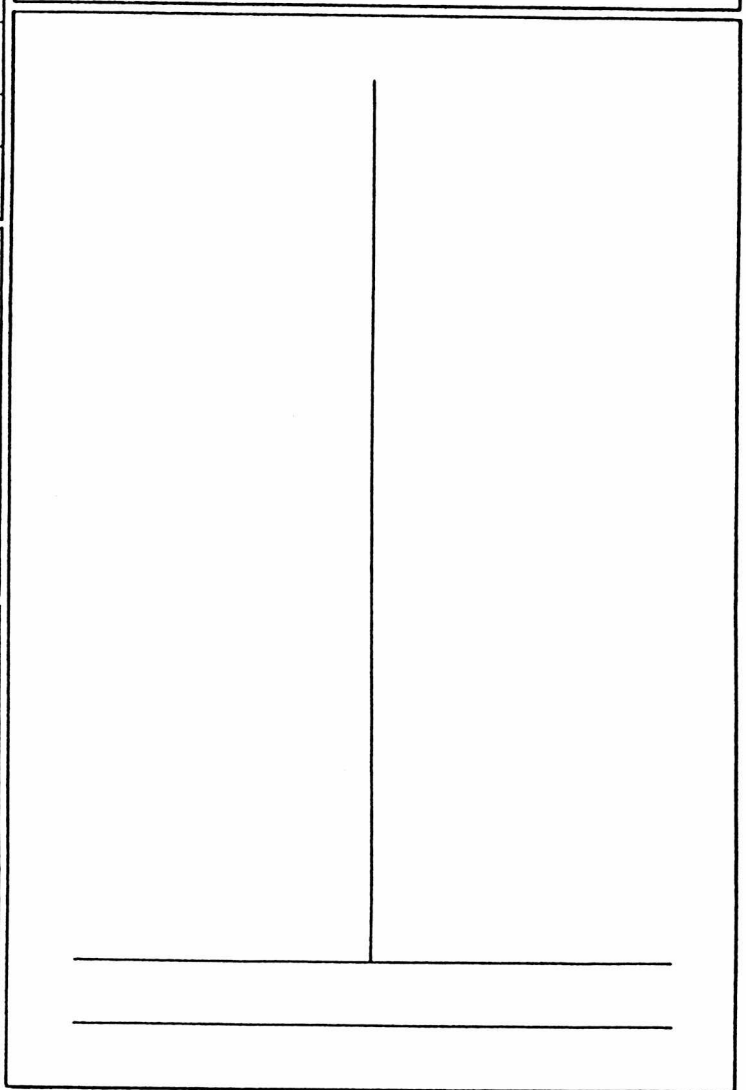
REFERENCE:

TYPE OF MATERIAL:

COLOR OF MATERIAL:

COLOR BY CHART:

SOURCE OF MATERIAL:



CHOOSE ONE: 1 = PRESENT 0 = ABSENT

STEM / BASE SMOOTHING	
BEVELED STEM	
BEVELED BLADE	
SERRATED	
RE-MODIFIED	

FLAKING METHOD / UNIFACE - BIFACE 0 = BIFACE 1 = UNIFACE	
FLAKING METHOD / EDGE RETOUCH 1 = EDGE RETOUCH 0 = NO EDGE RETOUCH	

BF	BLADE FORM		
SF	STEM FORM		
BT	BASE TYPE		
BN	BLADE NOTCHING		

WHERE PROJECTILE POINT IS LOCATED OR STORED

NAME:

ADDRESS:

CURATED BY:

PUBLISHED REFERENCE:

PHOTOGRAPHIC RECORD:

COMMENTS @ ASSOCIATED MATERIALS

RECORDED BY:

DATE:

Figure 3. Projectile Point Analysis Form developed by the El Paso Archaeological Society from an Artifact Quantification Coding form used by Elton Prewitt and Associates.

A FOLSOM POINT FROM SOUTHEAST DALLAS COUTY, TEXAS

Timothy D. Smith and Clay M. Garrett

ABSTRACT

This report describes and illustrates a fragmentary Folsom point from Southeast Dallas County, Texas.

INTRODUCTION

A recent survey of the spatiotemporal distribution of Folsom points in Texas revealed 329 such points from 57 counties (Largent et al. n.d.; Largent and Waters 1990:27). Since their reports at least two additional Folsom points have been documented (Chandler 1990:12; Kelly 1990:14). This report is the first documentation of a Folsom point from Dallas County, and represents an additional site along the blackland-prairie/woodland margin.

The site (TARL 41DL314) is situated on a T-2 terrace above the floodplain of the Trinity river system. It is not surprising that a Folsom point would be recovered from this site, as it has produced (from disturbed stratigraphy) a continuum of diagnostic point types from Clovis times through the Late Prehistoric (Smith and Garrett 1991:37).

ARTIFACT DESCRIPTION

This specimen (Figure 1) is a fragmentary artifact made from a glossy cream colored chert of fine quality. The specimen is 21.2 mm in length, and has a width of 20.1 mm. The weight is 2.5 grams. The maximum flute width on the obverse and reverse faces are 12.4 mm and 13.4 mm, respectively. Flute depth is .1 mm on the obverse face and .3 mm on the reverse face. A maximum thickness of 3.3 mm is located at the longitudinal ridges on either side of the chanel flutes. Retouch flake scars per centimeter of lateral edge = 6.5 - 8.0, x = 7.12. Smoothing is present the entire length of the lateral edges.

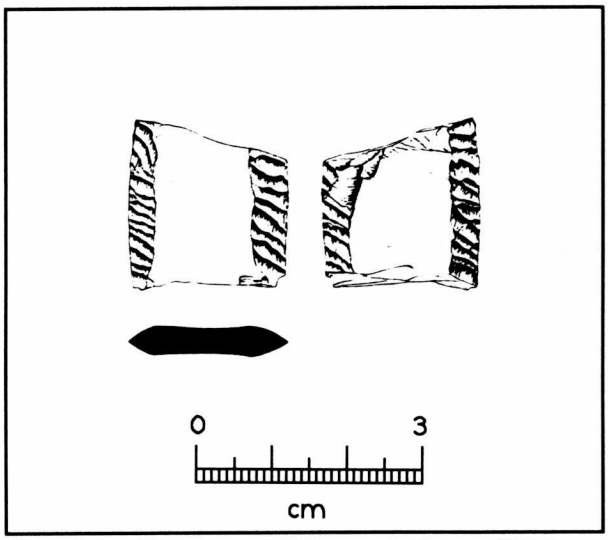


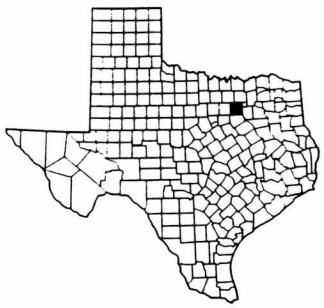
Figure 1. Obverse and Reverse views of Folsom Point from Southeast Dallas County, Texas.

DISCUSSION

This specimen very closely resembles the La Vernia Folsom point reported by Kelly (1990) from Wilson County, Texas. As evident in the La Vernia Folsom, final retouch flaking on this specimen was also by oblique force, which resulted in diagonal flake scars that start at the lateral edge, and terminate cleanly at the channel flute. Oblique pressure retouch is apparently rare for the Folsom type (Sollberger 1985; see Kelly 1990:15).

ACKNOWLEDGEMENT

We would like to thank the University of Texas at Arlington for allowing us access to the Camera Lucida.



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AXTELL: A MIDDLE ARCHAIC DART POINT TYPE

Elton R. Prewitt and C. K. Chandler

ABSTRACT

The Axtell dart point type named by Frank Bryan in 1936 is reviewed in order to provide current data regarding this presumed early Middle Archaic style. The rounded stems that are frequently dulled easily distinguish it from other types. The known distribution of Axtell points extends over an 18,000 km^2 area of eastcentral and southeastern Texas. Four isolates are known from south Texas.

INTRODUCTION

Several years ago the senior author promised to try publishing occasional descriptions of obscure or poorly known Texas projectile point types (Prewitt 1983:1). The present description of a most obscure type, Axtell, is prompted by the junior author and Steve Tomka requesting information about the type from the senior author.

Axtell was named Axtel (sic) Ballhaft by Frank Bryan (1936:92) on the basis of a little more than a dozen specimens from a series of sites near the community of Axtell located a few miles northeast of Waco in McLennan County, Texas. A geologist by training and profession, Bryan amassed a substantial collection of artifacts during the 1920s and 1930s as an outgrowth of his work as a consulting geologist. He constructed a map of the region in which he collected, made notations of site descriptions and locations, set up a site numbering system, and labelled his points with the appropriate site numbers. Bryan's work is on a par with that done by his contemporary in south Texas, A. E. Anderson, a civil engineer in Brownsville.

The Axtell and other types named by Bryan disappeared into obscurity almost immediately and were ignored by type-naming professional archaeologists. By 1947, Bryan's Delia points had been renamed Montell, Dead-Man was now Gary, and Tehuacana had become the equally obscure Steiner. In 1974 the Axtell type name was resurrected (and shortened) when a single specimen was found on site 41LT65 during the archaeological survey for Upper Navasota Reservoir, now named Lake Limestone (Prewitt 1974:56-57). In recent years pothunters in the northeastern part of central Texas have referred to this type as "penny-stem" points.

DESCRIPTION

The lateral edges of the long triangular blades vary from gently convex to gently concave. The shoulders are generally squared although infrequently specimens may exhibit small barbs (Figure 1,k). The expanding stems may be stereotyped as round, hence Bryan's original descriptor of "ballhaft" and the current pothunter term of "penny-stem." Stem edges usually (over 60%) are dulled, sometimes heavily so. There is, however, considerable variation in stem form that ranges from a bulbous rectangle (Figure 1 c,f,k), to diamond shaped (Figure 1 a,e,p), to the stereotypical round (Figure 1 d,h,j). Resharpening of blades results in about 20% of the edges being alternately beveled to the right although occasionally the beveling is alternate left. Serration also occurs on about 20% of the specimens, but does not necessarily coincide with blade beveling. Observed characteristics derived from 70 specimens are summarized in Table 1, and metric data are summarized in Table 2. Axtell points are relatively thick, but the workmanship usually is excellent. Original manufacturing produces broad flake scars while resharpening of the blades usually produced narrower more delicate flake scars around the lateral edges.

DISTRIBUTION

The geographic distribution of the presently-known 99 specimens is remarkably discrete (Figure 2). It is centered on the Brazos River drainage system from about Lake Whitney in Bosque and Hill counties on the northwest to Harris County on the southeast. The northern and eastern limits include the tier of counties on the west side of the Trinity River from Ellis County to Leon County. The western and southern limits include the tier of counties bordering the Brazos-Colorado systems

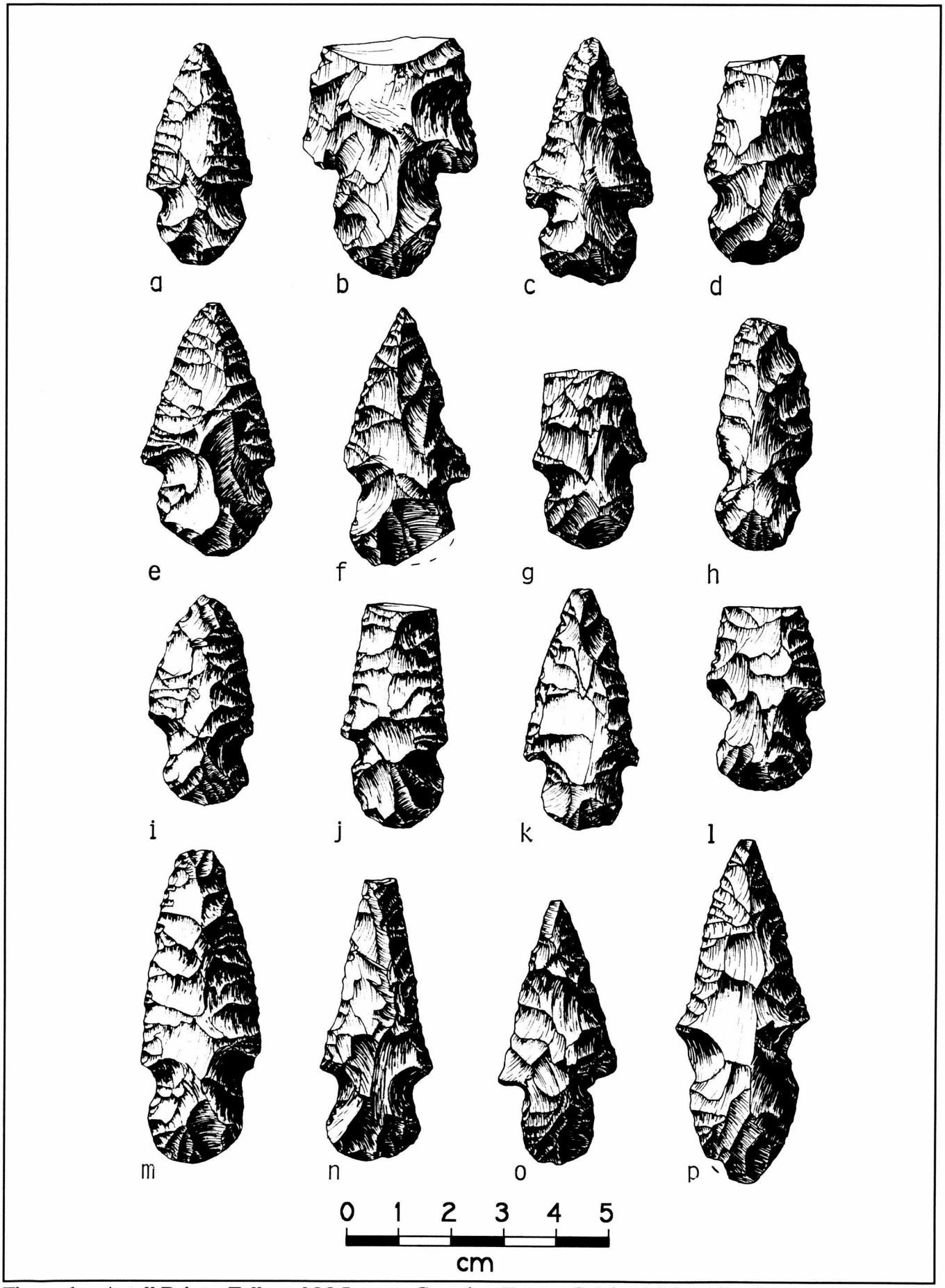

Figure 1. Axtell Points, Falls and McLennan Counties, Texas. Calvin E. Mansell collection. See text for discussion. Drawings by Richard McReynolds.

Table 1. Observed characteristics, Axtell Points (N=70).

	Stem/Base Smoothing	Beveled Blade	Beveled Stem	Serrated
Present	63% (N=44)	21.5% (N=15)	6% (N=4)	21.5% (N=15)
Absent	37% (N=26)	78.5% (N=55)	94% (N=66)	78.5% (N=55)

Table 2. Metric data, Axtell Points (N=70).

	Length*	Width	Thick-ness	Base Width	Haft Length	Neck Width	Base Depth
Minimum	41	17	6	15	12	12	-5
Maximum	94	53	11	25	29	29	-17
Mean	61.44	26.08	8.1	19.04	16.5	16.06	-8.01

* All measurements in millimeters

drainage divide: Coryell, Bell, Williamson, and Milam counties.

There is a distributional gap in the cluster of counties surrounding Brazos, Grimes and Waller counties. At the present, it is assumed that this is due to sampling error. However, it is possible that the five Harris and San Jacinto counties specimens are isolates and the primary distribution is even more limited on the southeast than is shown in Figure 2. Indeed, there is an isolate from Choke Canyon Reservoir in Live Oak County that is at least 150 miles distant from the core area. Another pair of isolates from Falcon Lake on the Rio Grande and one in San Patricio County north of Corpus Christi recently have come to light. These data are based on the Frank Bryan collection housed at the Texas Archeological Research Laboratory, The University of Texas at Austin; the Calvin Mansell collection (private) documented by C. K. Chandler; and various other collections documented in the unpublished files of Prewitt and Chandler. Also see Brown et al. (1987), Mallouf (1979), Roemer et al. (1989), and Stephenson (1970).

AGE AND CULTURAL AFFILIATIONS

Chronological assessments of Axtell points are tenuous at best. Very few specimens are from controlled excavations, and of those the most clearly stratified example is the single point from Evoe Terrace in Bell County. This specimen was recovered in association with a small burned rock and mussel shell cluster in Zone 5 of Area A approximately one meter below typical Middle Archaic artifacts (Sorrow, Shafer and Ross 1967:-Figures 25, 48 q; pp 53, 81; and Table 4). While a dozen or so specimens have been recovered from excavations at Jewett Mine, stratigraphic relationships are much more difficult to demonstrate in the sandy soils encountered there (Fields {ed.} 1987, 1988, 1990; Fields et al. 1990).

However, the Jewett Mine project has yielded the only radiocarbon dates that may be applicable to Axtell points. At 41LN247C, four age-corrected uncalibrated assays (Beta-37609, -38595, and -38596) obtained from wood charcoal collected in Analysis Units 3, 4 and 5 (reverse stratigraphic order) cluster at about 2500 to 3000 B.P. (Fields

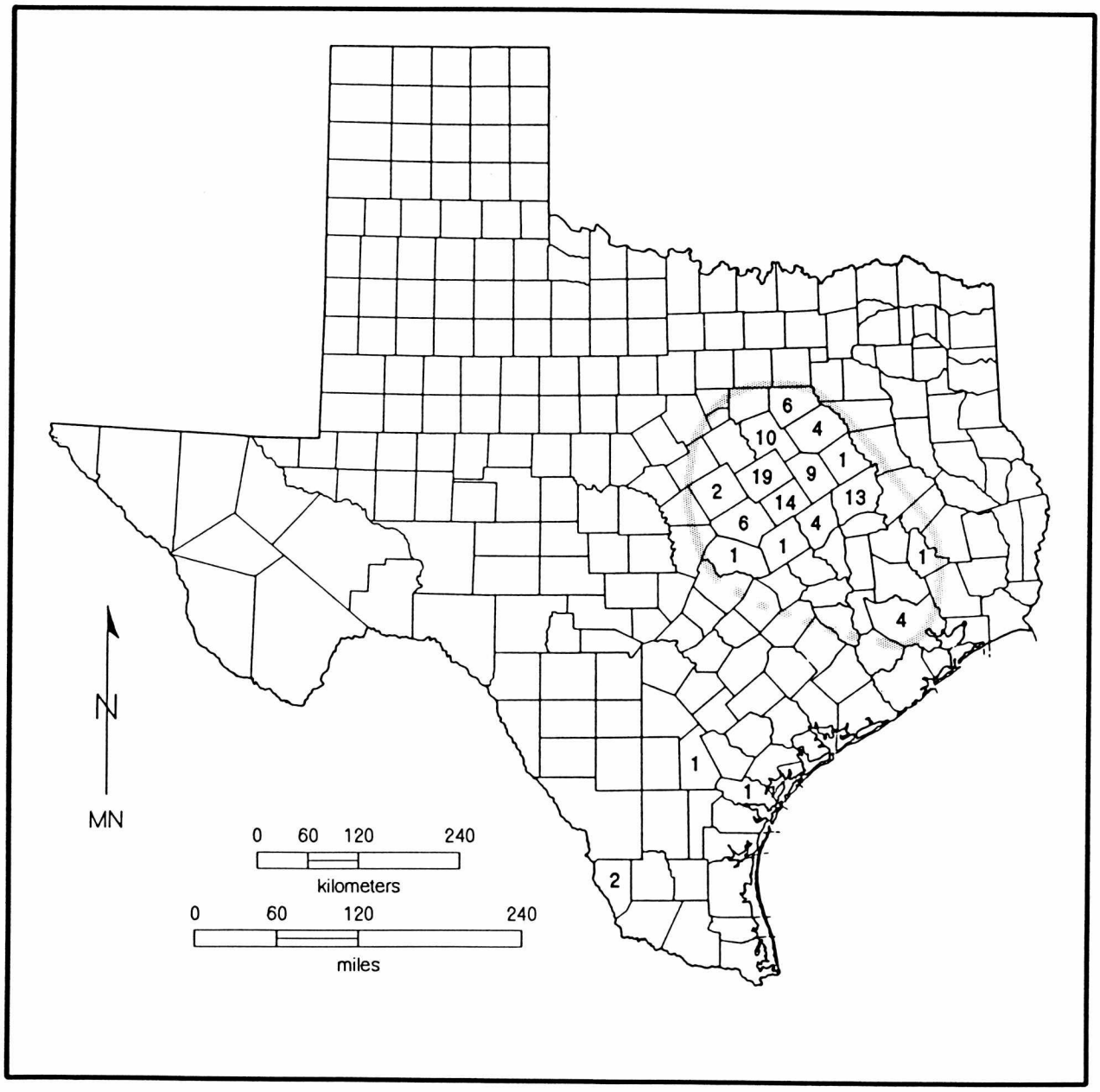

Figure 2. Distribution of the 99 known Axtell points. Numbers indicate frequency by county. Note isolates in Live Oak, San Patricio and Zapata counties in south Texas.

et al. 1991:Table 36). One Axtell was found below Analysis Unit 5, four in Analysis Unit 4 and one in Analysis Unit 3. It is cautioned that the stratigraphic integrity of this sandy matrix site is diffuse and the assays probably should be taken as minimum rather than maximum possible age ranges.

Pothunters working the Bell and Coryell counties area report they consistently find Axtell ("penny-stem") points below the Bulverde and Pedernales strata, and generally above the Gower, Bell, Baird and Taylor strata (Glen Goode, personal communication 1990). On the basis of these tenuous data, it is hypothesized that Axtell will eventually be found to occur somewhere in the early part of the Middle Archaic. In broad terms this can be expressed as roughly 4000 to 5000 B.P., but certainly no later than about 3000 B.P. Lacking clearly demonstrable associations or age assignments, the Axtell type is not relegated to any formal phase or other cultural unit beyond the parameters noted above.

DISCUSSION

In the literature, Axtell have been identified as Palmillas (Duffield 1960:Plate II,i; Koch and Mueller-Wille 1989:Figure 21,b; McGregor and Bruseth 1987:Figure 6-5 b,c), Trinity (Patterson 1980:Figures 5,h and 6,k), Williams (Shafer, Suhm and Scurlock 1964:Figure 6,c) or as an unidentified (Hall et al. 1986:Figure 75 1-3-22; Patterson 1980:Figure 8,k; Sorrow, Shafer and Ross 1967:Figure 48,q).While it is clear that Axtell is a minor type in terms of its frequency of occurrence, its distinctive morphology and discrete distribution suggests that it potentially can become an important index marker. All that is lacking is clear age/stratigraphic relationships. It is suggested that these omissions can be overcome by directing research toward selected sites in the Bell, Coryell, Falls and McLennan counties area.

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ARCHAEOLOGICAL SURVEY OF THE LOWER SAN GERONIMO CREEK WATERSHED, SOUTH-CENTRAL TEXAS

Mark C. Kuykendall

ABSTRACT

The current knowledge of type, size and distribution of prehistoric archaeological sites within the lower San Geronimo Creek Watershed is fairly sparse and limited. Because of the watersheds's important geographical location along the Balcones Escarpment, and the threat of site destruction due to recent highway construction, a thorough investigative survey of this area has been well needed.

Therefore, during the spring and summer of 1990 the author, under the direction of Dr. Tom Guderjan, and with the assistance of Mr. C. K. Chandler, carefully examined and surveyed the lower portions of the San Geronimo Creek Watershed with a focus along the margins of the Balcones Escarpment. The entire survey area was covered on foot, and by the fall of 1990 over twenty prehistoric archaeological sites were recorded. A field journal was kept and all sites were plotted on USGS topographic maps, recorded on site survey forms, and assigned a Medina County or Bexar County survey number (example, ME-1; BX-1). Artifact collection was restricted to projectile points, finished tools, and ground or pecked stone tools which could serve as diagnostic markers.

SETTING

The San Geronimo Creek originates in the rugged limestone hills of the eastern corner of Bandera County and the northwestern corner of Bexar County within the margins of the Edwards Plateau. From its origin it flows in a southeasterly direction along the border of Medina and Bexar counties (see Figure 1) until it meets the Medina River close to the town of Rio Medina in southeastern Medina County. The San Geronimo Creek Watershed is bounded to the north by the Cibolo Creek, to the east by the Leon Creek, and the west and south by the Medina River.

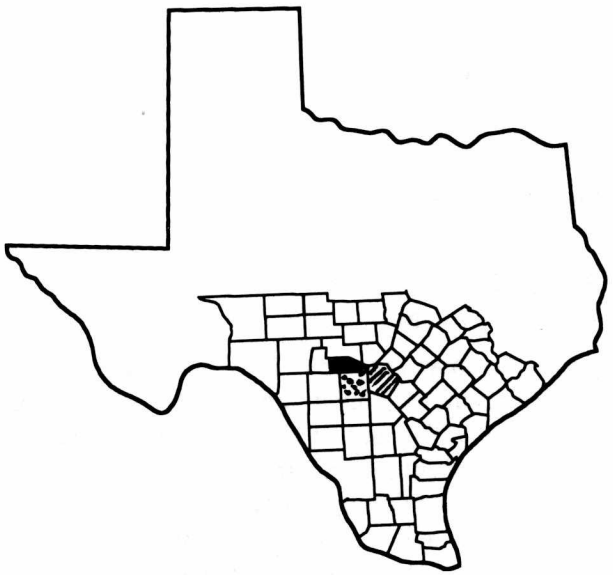

Figure 1. Medina County (dotted), Bexar County (striped), Bandera County (solid), of southern Texas.

The watershed lies along the Balcones Escarpment. The Balcones Fault Zone forms a boundary between several major physiographic regions and several major biotic provinces (Figure 2). To the north and west of the watershed lies the Edwards Plateau; to the east and south lies the Blackland Prairie, and to the south and southwest lay the Gulf Coastal Plain. Each physiographic region contains its own biotic province. The Balconian Province is associated with the Edwards Plateau, the Texas Biotic Province is associated with the Blackland Prairie, and the Tamaulipan Biotic Province is indicative of the South Texas Gulf Coastal Plain (Blair 1950).

The Balconian Biotic Province can be characterized as an Oak-juniper vegetational region

Figure 2. Approximate boundaries of biotic provinces in Texas (from Blair 1950).

within the upland regions. Mesquite is distributed throughout the Balconian, and to the west live oak is dominant. The narrow floodplains are occupied by a forest of elm, hackberry, live oak and pecan. Beargrass is the dominant grass with soils that are of a sandy variety. The Texas Biotic Province contains both the oak and hickory forests in which post-oak dominates and with clay soils which support tall-grass prairies. The alluvial soils of the river valleys support a mesic forest of oak, hackberry and pecan. The Tamaulipan Biotic province is dominated by thorny brush. This brushland stretches from the Balcones Fault Line southward into Mexico. Mesquite, acacia, mimosa, ceniso, condallia, whitebrush and granjeno are dominating vegetational species. Soils consist of both sandy and clayey varieties (Blair 1950).

The San Geronimo Creek Watershed clearly represents a transitional zone between these different physiographic regions and biotic provinces. However, it indicates stronger transition traits between the Balconian and the Tamaulipan Biotic Provinces in particular.

The survey area is composed chiefly of very hilly terrain with elevations that reach 1,410 feet. The San Geronimo Creek has, through time, cut a deep and narrow valley through the limestone hills. Through most of the survey areas the creek has a narrow floodplain that seldom exceeds 100 meters in width. The San Geronimo is typical of meandering streams with high steep bluffs, point bars with alluvial deposits and stream terraces as its major features. Another distinct feature of the survey region was the existence of numerous limestone rockshelters of various sizes where the more porous limestone bluffs have been undercut and eroded over time. Soils varied from a very thin clayey soil on the tops and bluffs of hills to deep clayey soils along the stream terraces and gradually turning to sand loam soils in the lower, southern portion of the survey area (Figure 3).

VEGETATION

(NOTE: For complete listing of vegetation within the survey area, refer to Table 1. See also Figure 4.)

The tops of the limestone hills and upland area are typically composed of stunted live oak, mountain laurel, Mexican persimmon, and cedar. The stream terraces are mainly covered with stunted live oak and large live oak, persimmon, mountain laurel, cedar, sotol, prickly pear and mesquite. The stream valleys are dominated by large cedar elm, spiny hackberry, black walnut, chinaberry, live oak, sycamore and cottonwood. Stream terraces in the lower survey area become increasingly characterized by thorny brush species such as condallia, whitebrush, acacia, mimosa and mesquite. Also noted are species of yucca, prickly pear and lacy cactus.

GEOLOGY AND LITHIC RESOURCES
(See Figure 5)

As stated earlier, the San Geronimo Creek Watershed lies within the Balcones Fault Zone. During the Miocene Epoch (21 million years ago) faults formed along the Balcones Fault Zone in south-central Texas and eventually uplifted the Edwards Plateau with respect to the Blackland Prairie and the South Texas Gulf Coastal Plain (Black and McGraw 1985).

The most important geologic formation at the survey area is the cretaceous Edwards lime-

stone. Porous limestone along the bluffs has been undercut and eroded in places to form rockshelters which have periodically provided protection and shelter for aboriginal populations throughout time. Archaeological evidence from the survey area reveals a major usage of limestone as material for grinding stones or manos, hammerstones, and also in certain fire-related activities, also abundant chert or flint is associated with the Edwards limestone. Much of the chert has been eroded out of these formations in cobble form and in outcroppings all throughout the watershed. Much of this high quality chert was utilized as a lithic resource by the aboriginal flint knappers for their chipped stone tools.

The Edwards formation not only supplied prehistoric peoples with direct applications for chert such as tool making and limestone for tools and hearth material, but also provided an indirect purpose. Certain porous sections of the formations served as aquifers and discharged as springs wherever the aquifer was intersected by erosion or fractures (Katz 1987). The Edwards Plateau region contains many such spring resources within the study area. One such spring resource is located at the Bear Springs site where water flows yearlong.

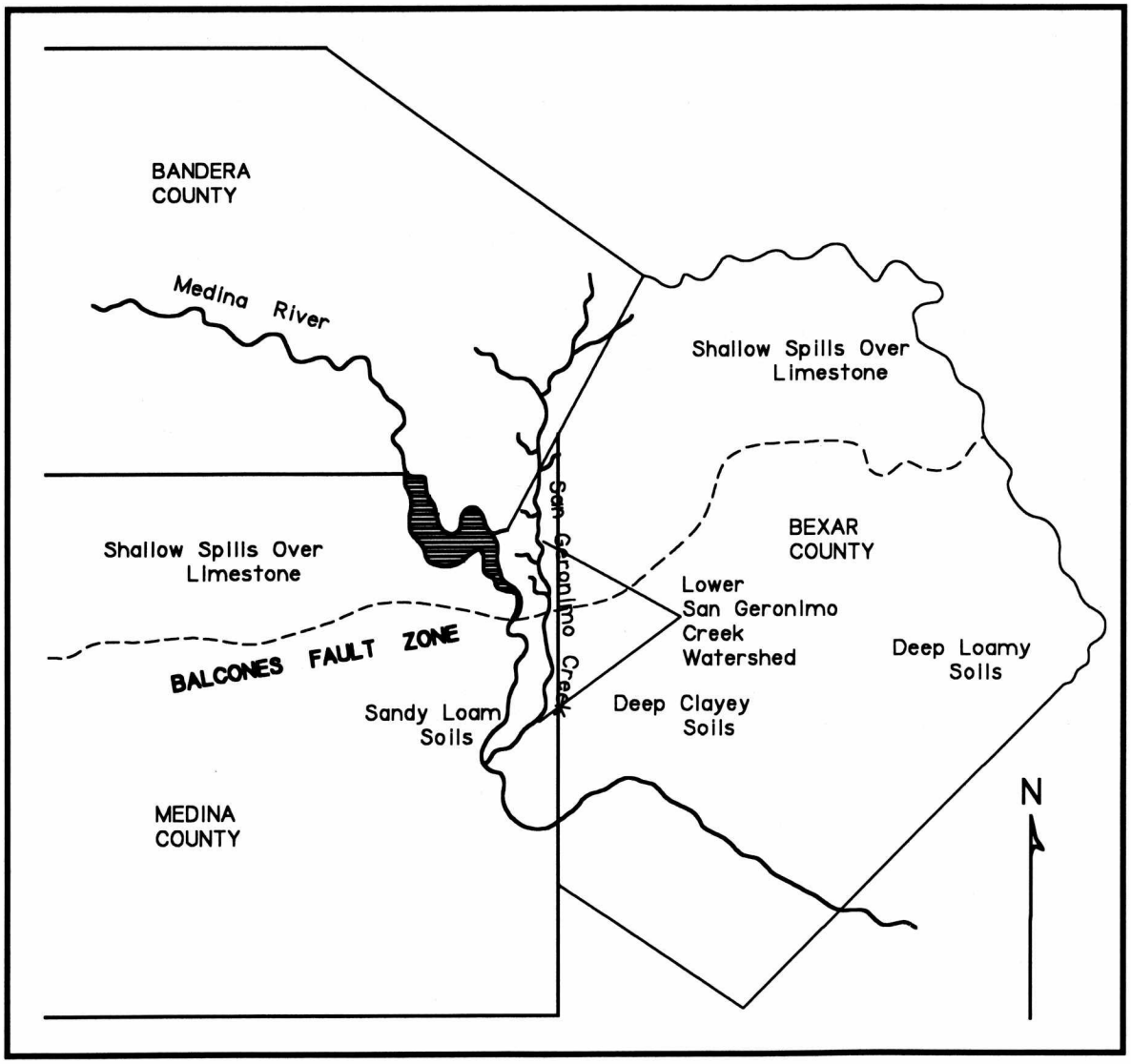

Figure 3. General Distributions of drainages soils within Medina County.

Table 1. Identified Vegetation from the Lower San Geronimo Creek Watershed (from Vines 1984)

Juniper "Cedar" (*Juniper ashei*)	Prickly Pear (*Opuntia lindeheimeri*)
Texas Persimmon (*Diospyros texana*)	Texas Black Walnut (*Juglans microcarpa*)
Live Oak (*Quercus Verginiana*)	Bluewood Condallia (*Condallis hookeri*)
Cedar Elm (*Ulmus crassifolia*)	Texas Kidneywood (*Epenhardtia texana*)
Cottonwood (*Populus deltoideus*)	Torrey Yucca (*Yucca torreyi*)
Hackberry (*Cetis reticulate*)	Flame-leaf Sumac (*Rhus copallina*)
Mesquite (*Prospopis*)	Chinaberry (*Melia azerdarach*)
Mountain Laurel (*Sophora secundiflora*)	Roemer Acacia (*Acacia Roemeriana*)
Texas Red Bud (*Cercis texensis*)	Buffalo grass (*Buchloe daclyoides*)
Whitebrush (*Aloysia ligustrina*)	Mustang Grape (*Vitus mustangensis*)
Agarita (*Berberis trifoliolata*)	Ceniso (*Artemisica*)
Sotol (*Dasylirion texensis*)	Bear Grass (*Yucca Nolina*)

THE SITES

(Refer to Figures 4 and 5)

Site ME-1: This site is located on a stream terrace on the east bank of San Geronimo Creek approximately 800 meters north of Highway 471 and the Medina and Bexar County line. The site faces a bluff and is located on a former point bar. It is marked by a topsoil of dark loamy soil with underlying limestone bedrock, and contains large live oak, elm, and hackberry. The site is four meters square and contains burned limestone rocks with a small lithic scatter. A finely chipped chert knife was collected and bifaces were noted (Figure 6). The site appears to have served as a short-term campsite. Recent gravel mining operations have destroyed much of this site.

Site ME-2: This site is located on a stretch of low rounded hills overlooking a tributary creek that feeds into San Geronimo Creek. It lies on the west bank and is approximately 250 meters northwest of Site ME-1. The site is covered with a secondary growth of mesquite, condallia, persimmon, agarita and prickly pear. Soil consists of a brown sandy loam. The site is 800 meters long and 40 meters wide. It contains thin lithic scatters and appeared to be a quarry site. Chert in the area seemed to be of poorer quality. Along with cores and bifaces two limestone hammerstones were found.

Site ME-3: The site is located 2.0 miles due north of Highway 471 and the Medina and Bear County line. A thicket of condallia, mesquite, agarita and prickly pear covers the area. The soil is a tan sandy loam. A thin lithic scatter with some burned rock was noted. The site is about five meters square and appears to be a small temporary campsite.

Site ME-4: The site is 1.2 miles north-northwest of Highway 471 and the Medina and Bear County line. This site is located 200 meters across from a steep bluff and on a stream terrace. The area consists of a deep dark clayey soil overlying limestone bedrock. Dominating vegetation is cedar, stunted live oak and mountain laurel. The site is six meters square. It contained a thin lithic scatter and a butted hand-axe (Figure 6). The site appears to be a temporary campsite.

Site ME-5: The site is about 1.5 miles north-northwest of Highway 471 and the Medina and Bexar County line. It is situated on a terrace 100 me ters across from a large steep bluff. There are large stands of live oak, mesquite, persimmon and Texas walnut. A heavy cover of grass impeded

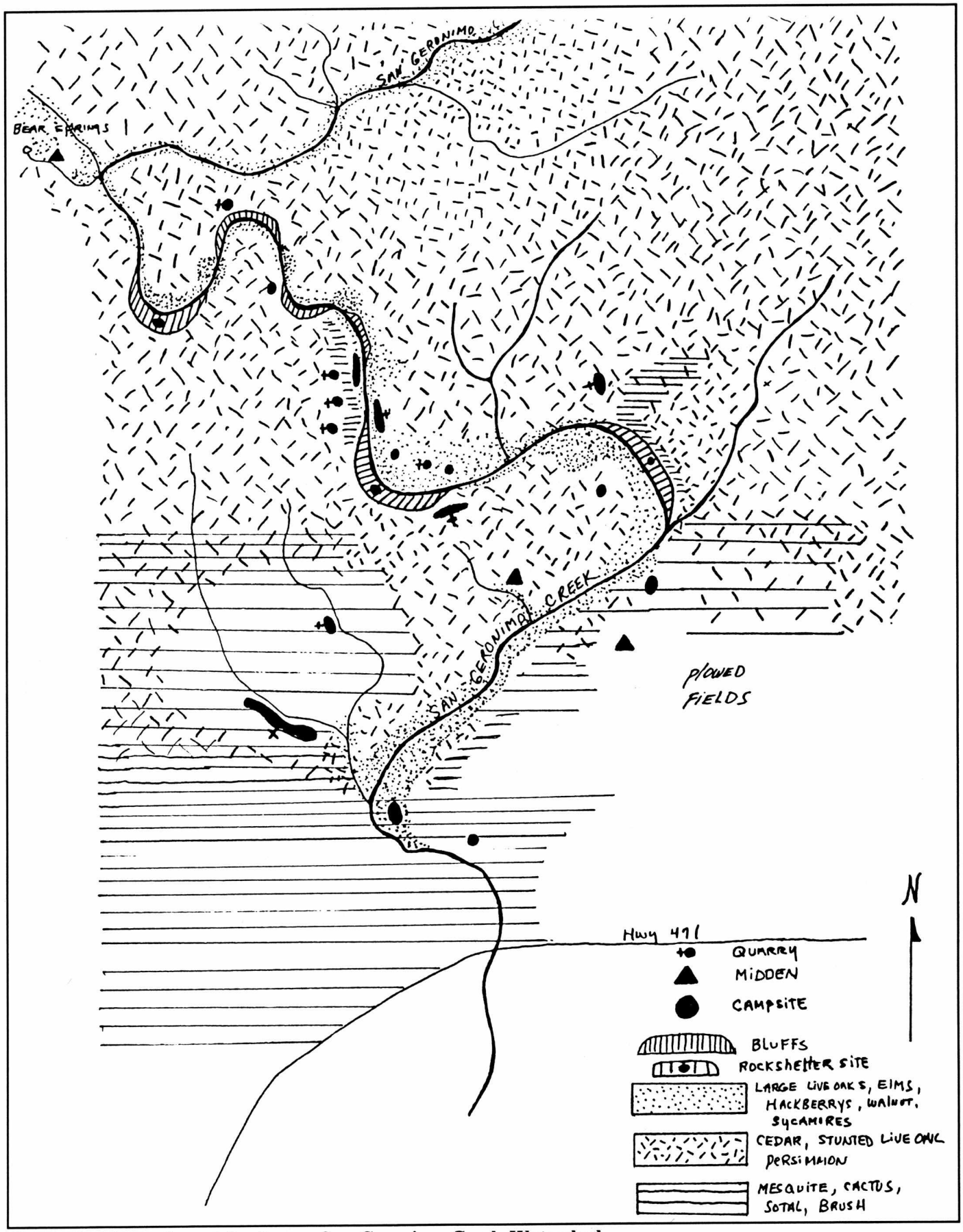

Figure 4. Vegetation of the Lower San Geronimo Creek Watershed.

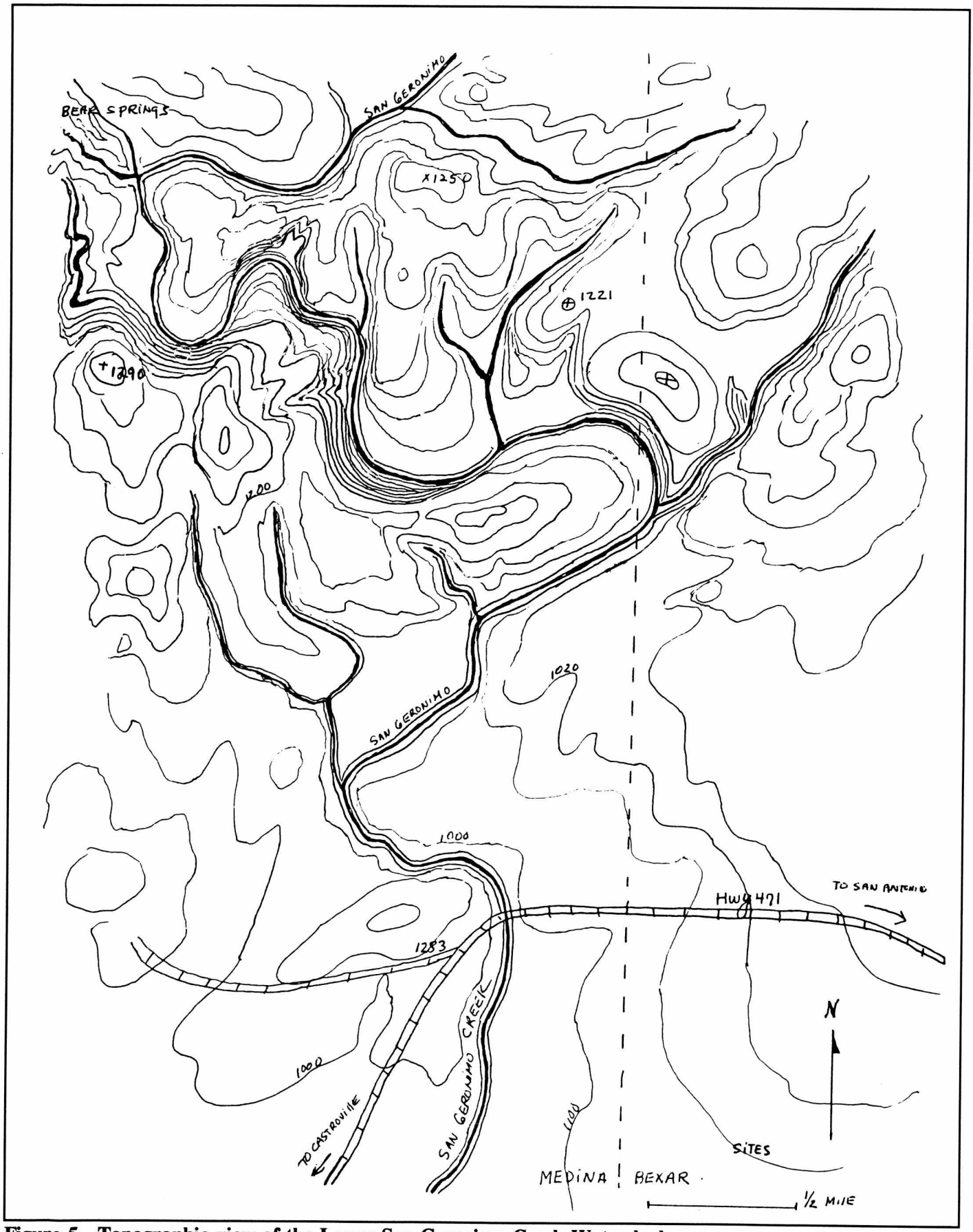

Figure 5. Topographic view of the Lower San Geronimo Creek Watershed.

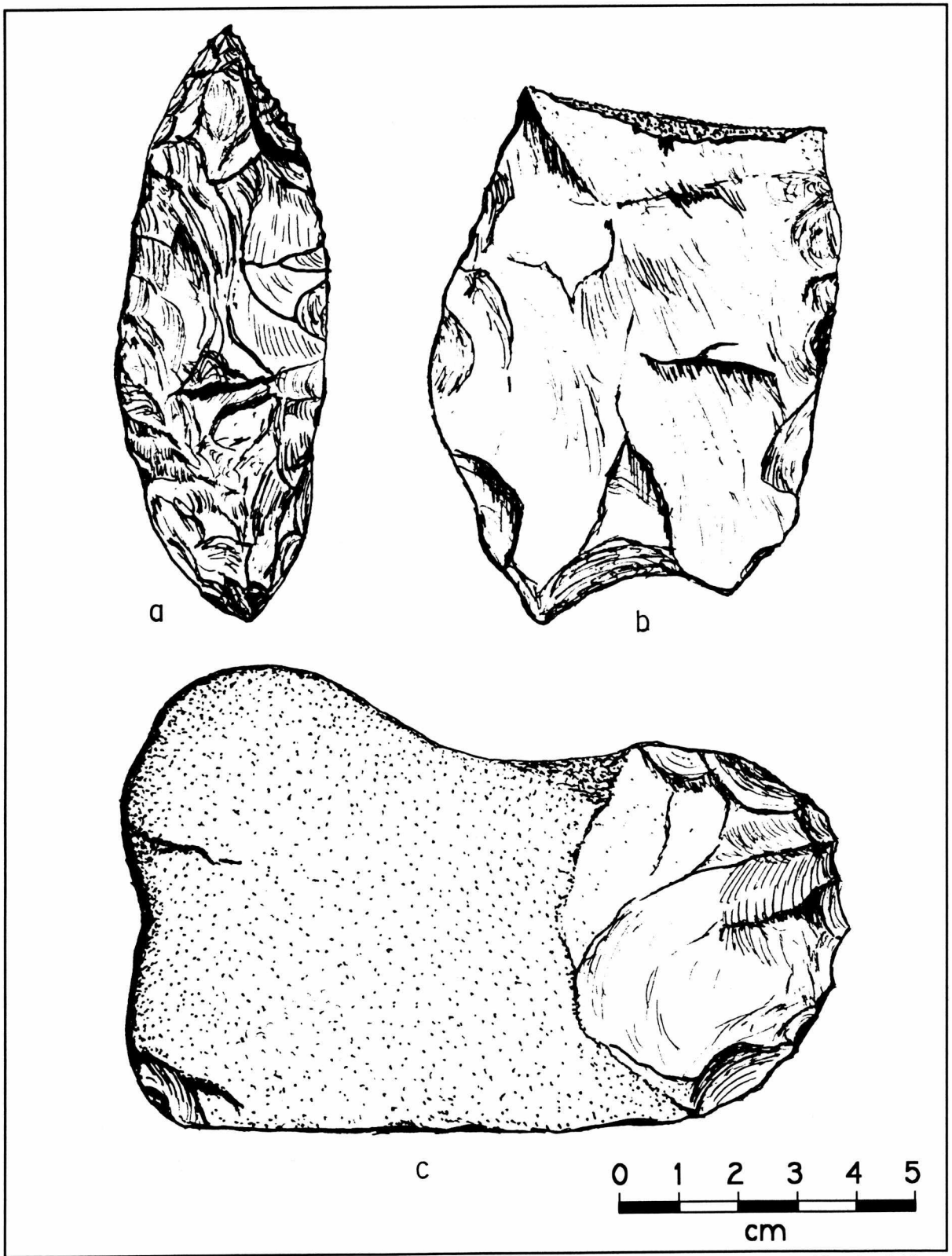

Figure 6. Artifacts from the Lower San Geronimo Creek Watershed. a, knife; b, biface (Terrace site ME-1); c, butted handaxe (Terrace site ME-4). Drawings by the author.

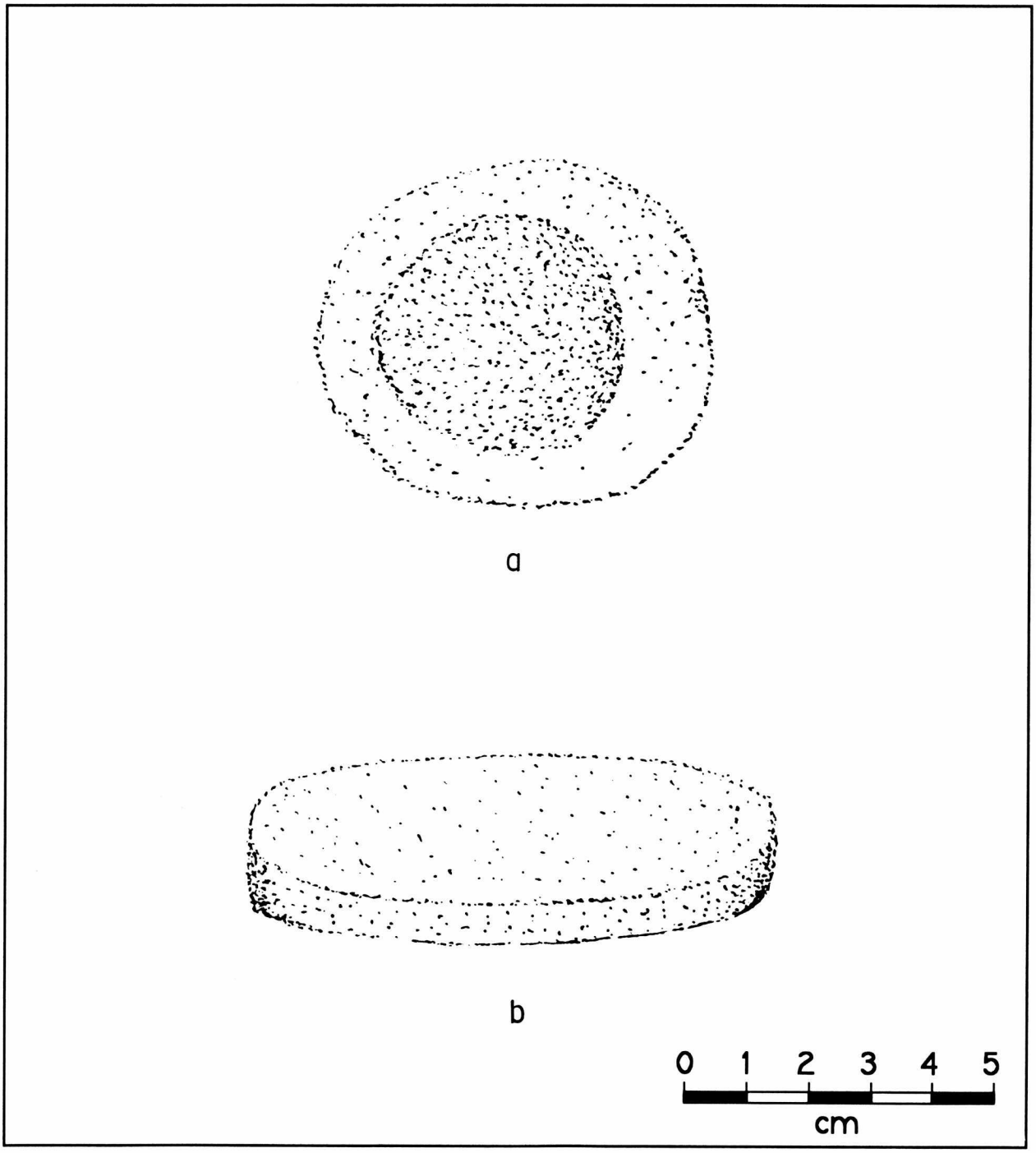

Figure 7. Ground and pecked artifacts from the San Geronimo Watershed. a, mano or grinding stone-one of two types. Specimen is of pecked and ground sandstone. Terrace site ME-5; b, mano or grinding stone, one of two types found. Specimen is of pecked limestone with grinding on both sides resulting in a flat surface bifacially. Bear Springs Site (ME-21). Drawing by the author.

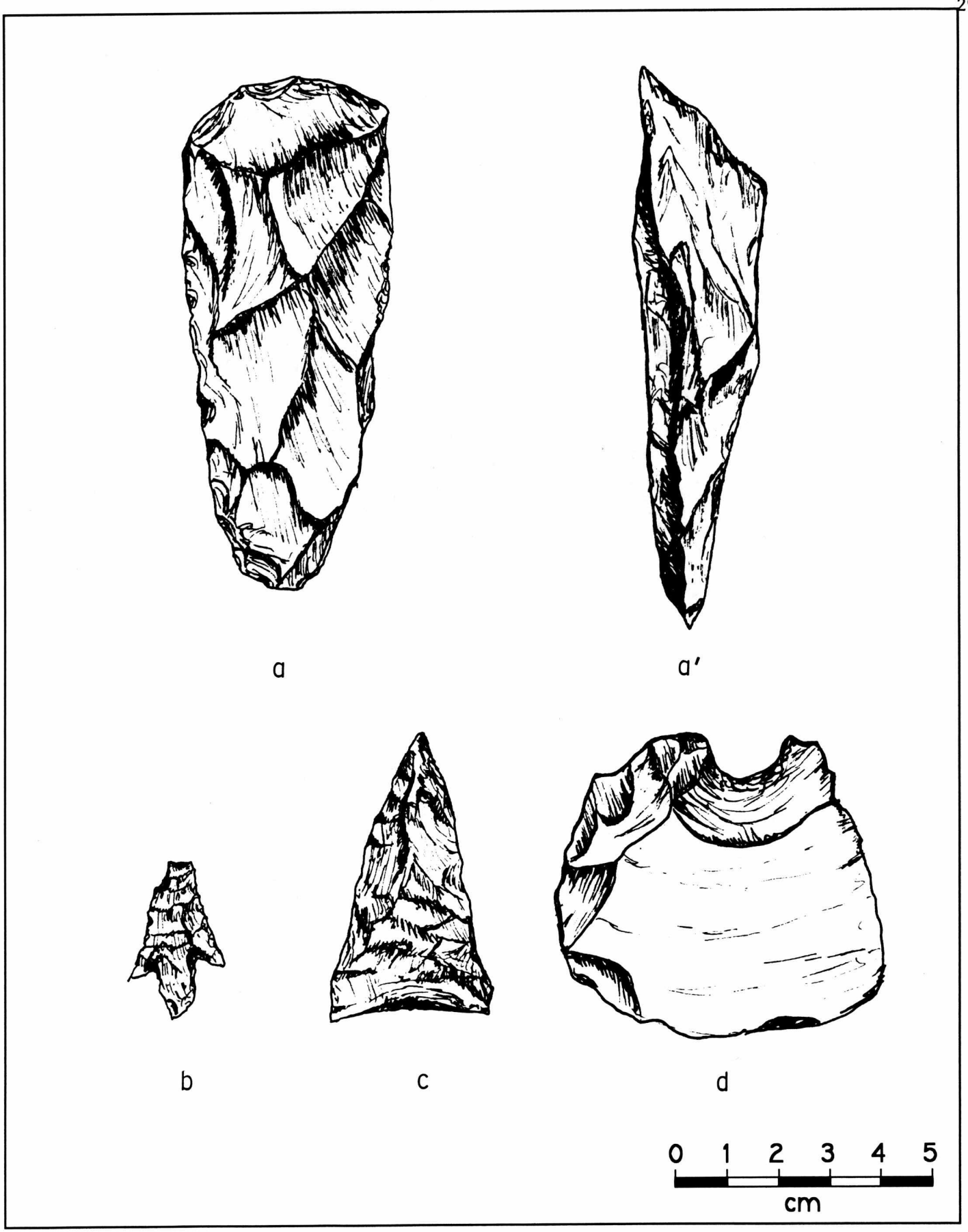

Figure 8. Artifacts from San Geronimo Creek Watershed. a, a', front and side views of Clear Fork tool from Terrace site ME-6; b, Perdiz point, and c, Tortugas point, both from Terrace site ME-7; d, possible arrow shaft scraper from Terrace site ME-15. Drawings by the author.

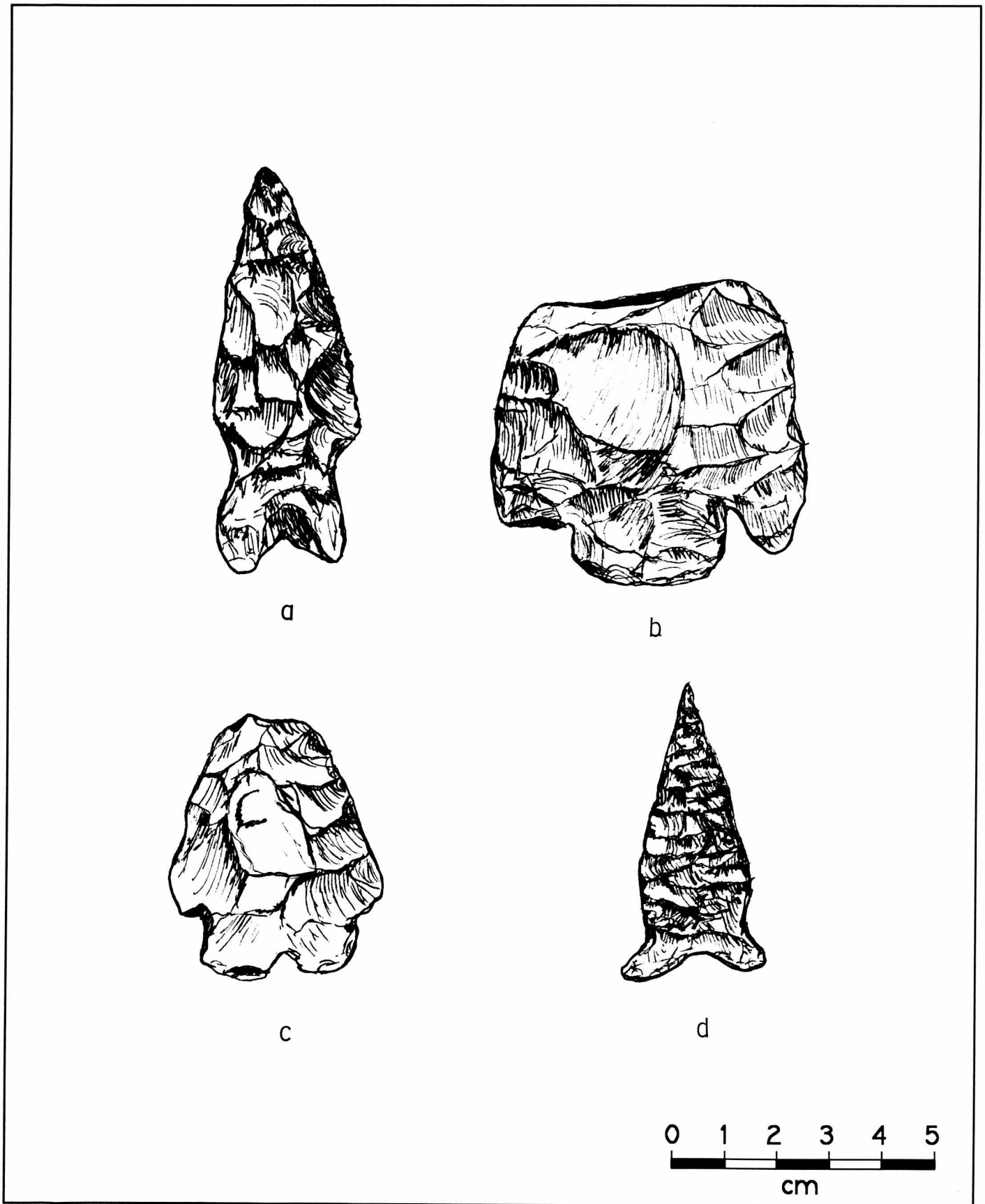

Figure 9. Projectile points from Lower San Geronimo Creek Terrace site ME-21. a, Pedernales point; b, Castroville; c, Montell, d, reworked Frio point. Drawings by the author.

ground view in this area. Topsoil was noted as a deep clay. The site exhibited a moderate lithic scatter with some burned rock. There was one sandstone grinding stone (mano) found (Figure 7). The site is approximately six meters by 10 meters and represents a temporary occupation site.

Site ME-6: This site is about 60 meters north of ME-5 along the same terrace. It contains the same type vegetation and soil as ME-5. The site is about 150 meters long and 30 meters wide. It contains a continuous moderate lithic scatter with flakes, bifaces and exhausted cores. An unidentified dart point and a Clear Fork tool (Figure 8) were also collected. It appears to be a chipping station.

Site ME-7: This site is about 70 meters north of Highway 471 and the San Geronimo Creek bridge. It is located on top of a 20-foot bluff on the northeast bank of San Geronimo Creek. Vegetation consists of thick contallia brush along with persimmon and prickly pear. The bluff is composed of deep tan sandy soil. Burned rock and a large scattering of tan colored chert flakes, cores, and bifaces are eroding from the bank. Further investigation yielded a Perdiz arrow point and a Tortugas dart point (Figure 8). This appears to be an occupation site.

Site ME-8: The site is located approximately 2.0 miles from Highway 471 and the Medina and Bexar County line and is about 200 meters due north of Site ME-2. The site is situated on the west bank of a feeder creek which flows into San Geronimo Creek. This site is covered by a thicket of large mesquite trees and grass. Deep, dark clayey soils were present. The site surface was covered with a large amount of exhausted cores, flakes and burned limestone rock. Size was estimated as 30 meters by 80 meters. A chipping station and temporary campsite seems likely.

Site ME-9: This site is situated on a stream terrace along the western bank of the San Geronimo Creek. It is opposite Site ME-6. This site is notably devoid of thick vegetation and may have undergone some sort of agriculture at times. The soil is a thick deposit of a tan sandy type. A thin secondary growth of mesquite pervades, along with small growths of persimmon and scattered prickly pear. This site is unique in that there are small "clusters" of burned rock and thin lithic scatters that appear sporadically throughout the terrace for approximately 200 meters.

Site ME-10: This site is located on the west side of San Geronimo Creek about 1.5 miles north of Highway 471 and the Medina and Bexar County line. It occupies the slope and top ridge along a large side canyon. A very thick cover of cedar, stunted live oak, mountain laurel, elm and persimmon dominate. A thin cover of dark clayey soil was noted. Quarrying activities were indicated by cores, bifaces, flakes and thin lithic scatters.

Site ME-11: This site is approximately 100 meters north of ME-10 along the same ridge. Vegetation and soil remained the same as Site ME-10. The site is located at an outcropping of chert. The site is 30 meters square and appears to be a quarry site and chipping station.

Site ME-12: Continuing north 30 meters from Site ME-11 lies ME-12. Vegetation and soils remained the same as ME-11. Stunted live oak and cedar dominate the area. Along this ridge there is an outcropping of chert. A large quarry site is indicated here by the many cores, bifaces and large flakes. Some burned limestone rock was also observed.

Site ME-13: The site is located 1.5 miles north of Highway 471 and the Medina and Bexar County line. The site lies atop a steep high bluff and along an exposed chert outcropping from a ridge overlooking San Geronimo Creek to the southwest. Other than this ridge the entire hilltop is covered in an almost impenetrable cover of condallia, cedar, whitebrush and acacia. Also noted were agarita, persimmon, sotol and several species of cactus. A thin layer of clayey soil is present overlaying limestone bedrock. The site contained abundant cores, flakes and chips. The site is approximately 10 meters by 20 meters. It appears to be a small quarry and chipping station.

Site ME-14: This site occurs along a large bluff overlooking the San Geronimo Creek to the north east. It is about 1.2 miles north of Highway 471

and the Medina and Bexar County line. The ridge and hilltop contain a thicket of cedar and stunted live oak. The soils overlay limestone bedrock. This site occurs along the slope's edge and in conjunction with a chert outcropping. It is about 10 meters wide and 30 meters long. Large amounts of cores, flakes and bifaces littered the site. The site appears to be an extensive quarry and chipping station.

Site ME-15: The site is 1.2 miles north of Highway 471 and the Medina and Bexar County line. It is approximately 100 meters north of the San Geronimo Creek and is located on a high stream terrace. The vegetation here consists of live oak, Texas walnut, mesquite and persimmon. Soils here consist of deep dark clays. The site is six meters by eight meters. Scattered burned limestone rock was noted. Several artifacts were found within a thin lithic scatter. A biface, an arrow shaft scraper (Figure 8), possible nutting stone, and a grinding stone (mano) were found. This site appears to be a temporary occupation site.

Site ME-16: This site is located about 60 meters east of site ME-15 and is along the same stream terrace. Vegetation and soils are the same as ME-15. The site is six meters by six meters and consists of a thin lithic scatter with a broken projectile point noted. A possible short-term campsite may be indicated.

Site ME-17: This site is situated on a stream terrace on the northeast bank of a feeder creek of the San Geronimo Creek. It is approximately 1.0 mile from Highway 471 and the Medina and Bexar County line. The type of vegetation encountered was cedar, stunted live oak, persimmon and mesquite. The site is 200 meters by 300 meters and contains a large burned rock midden. Permission was acquired to view a private collection of artifacts from this site. The collection was studied, typed and cataloged by the author. This is a list of artifacts from that private collection:

Arrow points: Perdiz and Scallorn
Dart points: Ensor, Frio, Castroville, Uvalde and Early Triangular
Tools: 27 Hammerstones (Figure 10)

The site is identified as a burned rock midden and represents possible long-term occupation from the Early Archaic through the Late Prehistoric.

Site ME-18: The site is located about 2.5 miles north of Highway 471 and the Medina and Bexar County line. It is situated on top of a 20-foot high terrace, 30 meters from the San Geronimo Creek. Cedar, stunted live oak, and persimmon dominate the bluff. Soil here is of a tan, sandy loam. The site contains a thin lithic scatter with some fire-cracked limestone rock indicating a short-term campsite.

Site ME-19: The site is located on the edge of a high bluff and side canyon on the north side of San Geronimo Creek. It is found approximately three miles north of Highway 471 and the Medina and Bexar County line. The slopes and ridge top of the bluff are covered with cedar, stunted live oak, yucca, sotol and agarita. A large accumulation of flakes, bifaces, and cores were noted. The site is 20 meters by 20 meters and indicative of a large quarry and chipping station.

Site ME-20: This site is approximately 1.0 mile northeast from Highway 471 and the Medina and Bexar County line. It is located on a very wide and flat stream terrace 120 meters east of San Geronimo Creek. The area has undergone intense agriculture and as a result is devoid of all vegetation. Because of plowing, artifacts from the site have been scattered about the field. There were many diagnostic projectile points collected from this site which are: Pedernales, Castroville, Frio, and Montell. Also found were fragments of burned limestone rock. This evidence indicates an area where long-term occupation may have occurred.

Site ME-21: (Bear Springs) This was the furthest site surveyed from Highway 471. It is located about 3.5 miles northwest of Highway 471 and the Medina and Bexar County line. ME-21 is situated on a stream terrace at the mouth of Bear Springs on either side of a feeder creek which meets the San Geronimo Creek about 0.5 mile east of there. Vegetation consists of cedar, live oak, elm, and hackberry. Soils are of a deep, black, and clayey type. Springs are still

present at the site. The site contains a burned rock midden. Permission was obtained to study a collection of artifacts taken from this site also. This is a listing of that collection based on the author's studies (also see Figures 7, 9):

Arrow points: Perdiz, Scallorn, Edwards
Dart Points:Ensor, Frio, Edgewood, Marshall, Montell, Castroville, Pedernales, Kinney, Gary-like point, and a reworked Golondrina
Stone tools: Clear Fork tool, Friday biface, Covington biface, Butted hand-axe.
Ground and pecked stone tools: Flat bifacial grinding stones (manos), hammerstones (Figure 10)

Site ME-22: (Cueva Corbin) This site is a rockshelter or one-room cave. It lies approximately 1.5 miles northwest of Highway 471 and the Medina and Bexar County line. It is located on a vertical bluff facing east about 2.5 meters above the San Geronimo Creek. Vegetation around the shelter consists of live oak, black walnut, hackberry, elm, sycamore, Texas walnut, persimmon, agarita, and spicewood. No permanent water was at the site, but the creek pools for long periods.

Cueva Corbin was excavated under the direction of Dr. Tom Guderjan with the help of several volunteers, including the author, during January of 1990. Cultural deposits were found to a depth of approximately one meter (Guderjan 1991).

Site BX-1 (41BX888): The site is a rockshelter and is located 2,000 feet northwest of a cement recharging dam on the San Geronimo Creek. It is 1.2 miles due north of Highway 471 and the Medina and Bexar County line. The rockshelter is about 60 feet above the creek channel and in a southwestern-facing near vertical bluff. The bluff and the entrance to the shelter is choked with whitebrush, condallia, mountain laurel, ceniso, acacia and persimmon. Soil eroding down from the shelter has enabled these brush species to gain a foothold. The shelter is approximately 15 meters across the entrance and 4 meters from floor to ceiling at the highest point. The shelter extends back some eight meters. A narrow passageway opens up at the back wall and extends into the bluff about seven meters. The floor of the shelter is very irregular due to large roof spall and a strong down slope. Several chert flakes, charcoal, and bone were found in an ashy area inside the shelter and down the slope from the entrance. This rockshelter shows signs of prehistoric occupation. A future excavation of the shelter has been planned.

Site ME-23: This site is a rockshelter located about 2.5 miles northwest of Highway 471 and the Medina and Bexar County line. It is approximately 60 feet above the creek and faces in a northeasterly direction. The site shows signs of prehistoric occupation by the occurrence of lithic scatters upon the floor, and deep cultural deposits. An excavation of the rockshelter is planned in the near future.

SUMMARY OF ARTIFACTS

Table 2 (below) lists artifacts recorded from the Lower San Geronimo Creek Watershed (from Turner and Hester 1985); see also Table 3.

Table 2. Artifacts Recorded from the Lower San Geronimo Creek Watershed

Arrow Points: Perdiz, Scallorn, Edwards
Dart Points: Ensor, Frio, Edgewood, Marshall, Montell, Castroville, Tortugas, Pedernales, Kinney, Bulverde-like, Gary-like, reworked Golondrina, Frio, Uvalde, Early Triangular
Bifaces and Tools: Friday Biface, Covington Biface, Clear Fork tools, "Butted Knife" Biface, Double-pointed Knife
Ground and Pecked Stone Artifacts: Hammerstones, manos, pitted stones (nutting stones?)--see Figure 10.

SITE CONCLUSIONS

(Refer to Figures 3 and 4, Tables 4 and 5)

The largest percentage of site "type" found within the Lower San Geronimo Creek survey area was the Quarry and Chipping Station (41%).

Table 3. Diagnostic Projectile Points and Tools Recovered from the Lower San Geronimo Creek Watershed as they relate to South-Central Texas Prehistoric Sequences and Paleo Environmental Data. (Adapted from Hester 1980).

Dates	Paleo Environmental Data	West Gulf Coastal Plain Climatic Intervals	South-Central Texas Prehistoric Sequence (Hester 1980)	Diagnostic Artifacts San Geronimo Creek
1500	Establishment		Late	Perdiz
1000	Of Modern	Modern Regional Patterns of	Prehistoric	Edwards
500	Vegetation	Biota,Climatic Oscillations	Period	Scallorn
AD	Communities	Continue Humid, East More Stable than Acid West	Late	Ensor Frio
BC 500			Archaic	Castroville Montell Edgewood
1000	Tall Grasses Dense Riverine Forests		Middle	Kinney-like Pedernales
1500		Amelioration of Dry conditions	Archaic	Marshall
2000	Short Grasses Reduction in Riverine Forests	More Frequent and More Extensive Droughts	Early	Bulverde-like Tortugas
2500			Archaic	Early Triangular Clear Fork Tools
3000	Tall Grasses Dense Riverine Forests			
3500		Generally Cooler and More Humid	Pre-Archaic	Uvalde Clear Fork Tools
4000				
4500				
5000				
6000				
6500			Paleo-Indian Period	Golondrina (Pre-worked)
7000				

Table 4. Summary of the Sites (Total sites documented = 24)

(A)	Major occupation sites (large campsites): Associated with burned rock middens: ME-17, ME-20, ME-21 Total = 3 Percentage = 13%
(B)	Temporary occupation sites (short-term campsites): ME-1, ME-3, ME-4, ME-5, ME-7, ME-9, ME-16, ME-18 Total = 8 Percentage = 33%
(C)	Chert quarries and chipping stations (workshops): ME-2, ME-6, ME-8, ME-10, ME-11, ME-12, ME-13, ME-14, ME-15, ME-19 Total = 10 Percentage = 41%
(D)	Rockshelters: ME-22, ME-23, BX-1 Total = 3 Percentage = 13%

Table 5. The sites as they occur in topographic situations

(A)	Terrace sites (lower terrace): ME-1, ME-3, ME-4, ME-8, ME-9, ME-17, ME-20, ME-21 Total = 8 Percentage = 33%
(B)	Terrace sites (upper terrace) ME-2, ME-5, ME-6, ME-7, ME-16, ME-17 Total = 6 Percentage = 25%
(C)	Bluff and upland sites: ME-10, ME-11, ME-12, ME-18 Total = 4 Percentage = 16%
(D)	Hilltops and Slopes: ME-13, ME-14, ME-19 Total = 3 Percentage = 13%
(E)	Rockshelters: ME-22, ME-23, BX-1 Total = 3 Percentage = 13%

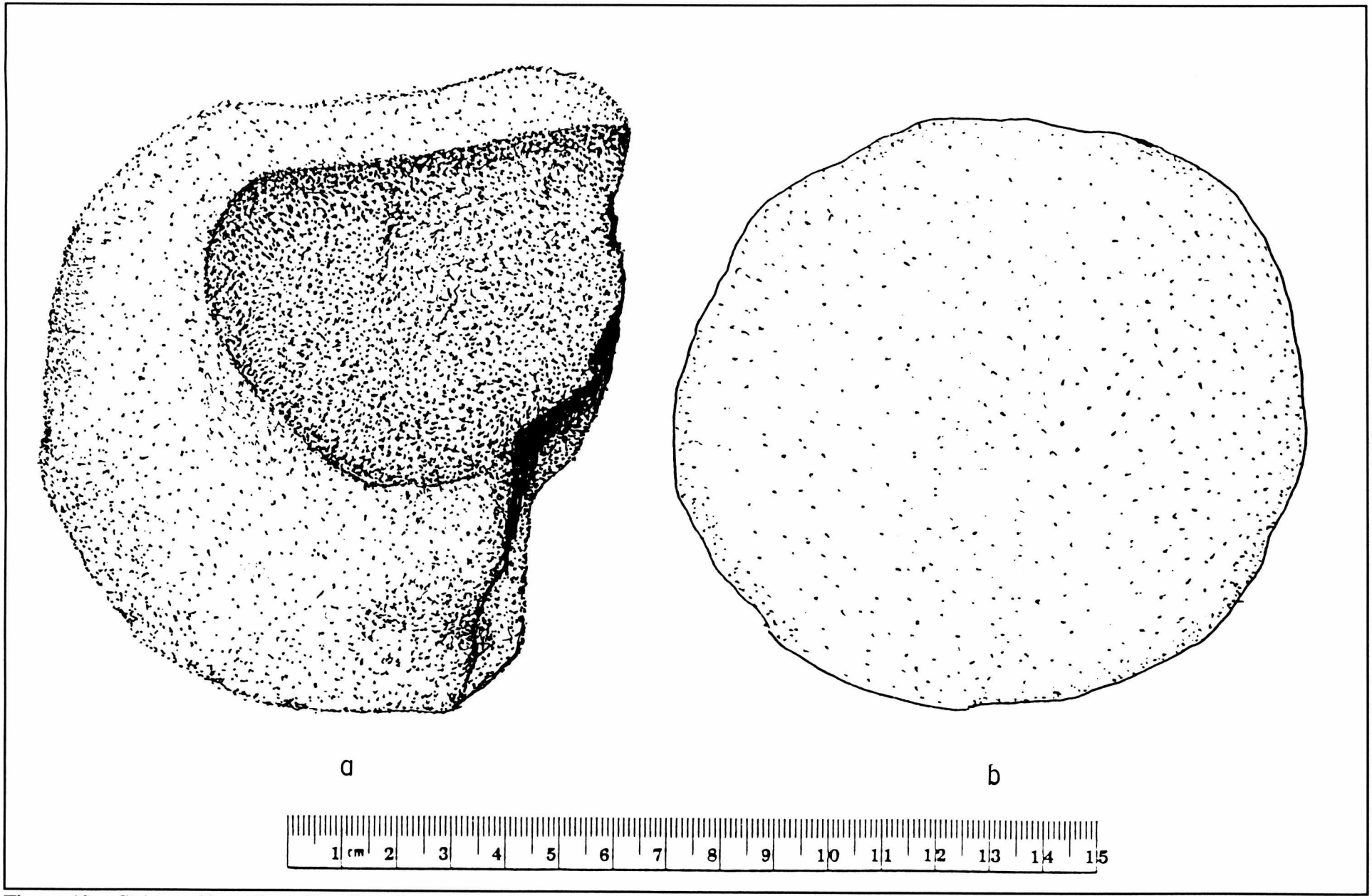

Figure 10. Stone artifacts from San Geronimo Creek Watershed. a, pitted stone (nutting stone?); b, Typical hammerstone. Oval to round in shape. Drawings by the author.

Of these quarry sites 8 out of 10 were located in upland areas such as high terraces, bluffs, ridges and hilltops. The majority of these were located at or near chert outcroppings along ridges, while those sites along the lower terrace were close to "Uvalde" stream gravels (chert cobbles (McGraw and Valdez 1978).

The next most frequent prehistoric sites in the survey area were the Temporary campsites. They comprise 33% of the recorded sites. The majority of these sites were found on the stream terraces of the San Geronimo Creek or along the lower terraces of the feeder creeks. They are notably characterized by small amounts of fire-cracked limestone rock, small lithic scatters, and thin cultural deposits. Several of these sites contained hammerstones and manos. Several authors identify these types of temporary campsites as hunting and gathering endeavors or other short-term functions (Hester 1980).

Major campsites associated with burned rock middens comprised 13% of the sites recorded. All three were located on lower stream terraces. One was located along a terrace of the San Geronimo Creek while the other two were located along the banks of feeder creeks. ME-21 (Bear Springs), probably the most important site within the survey area, represents a major base camp located close to a reliable water source and riparian resources. Diagnostic points indicate possible occupation from the Paleo-Indian period to the Late Prehistoric period. Excavation of the site would add greatly to the knowledge of prehistoric occupation within this area.

ME-17 also represents an important site within the survey area. Diagnostic points documented from this site indicate possible occupation from the Early Archaic through the Late Prehistoric periods. Excavation at ME-17 would also add considerable knowledge of the area.

ME-20 has largely been destroyed due to intense agriculture. However, diagnostic projectile points from this site indicate occupation during the Archaic period.

Rockshelters comprise the last 13% of all recorded sites within the survey area. There were five major "bluff systems" along the San Geronimo Creek that were investigated in the survey area. Within each bluff system were a large number of rockshelters of different shapes and sizes on the bluff face. Three were shelters identified as showing prehistoric occupations. All three have favorable locations where water and riparian resources could be exploited. Large nut-bearing trees such as walnut, live oak and hackberriy were located near each rockshelter.

In conclusion, the Lower San Geronimo Creek Watershed is very diverse in topographic and vegetational character; yet each particular setting has shown, through area survey, evidence of prehistoric utilization and/or occupation. Diagnostic points recorded during the survey indicate possible prehistoric occupation during the Paleo-Indian (9200-6000 BC), the Archaic period (6000 BC-AD 1000), and the Late Prehistoric (1000-1600) periods. The San Geronimo Creek Watershed's geographical location along the Balcones Escarpment raises important questions. Ecotones, such as the Balcones Escarpment, in modern times receive more moisture than surrounding areas during droughts. Under similar prehistoric conditions, escarpments may have served as refuges for human populations (McGraw and Valdez 1978). Furthermore, the exploitation of these ecotonal elements may act as a key to understanding the patterns of local site distribution (Black and McGraw 1985). Future excavations at middens such as Bear Springs, and at rockshelters throughout the drainage, will certainly further our knowledge regarding prehistoric site distribution and regional chronology.

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