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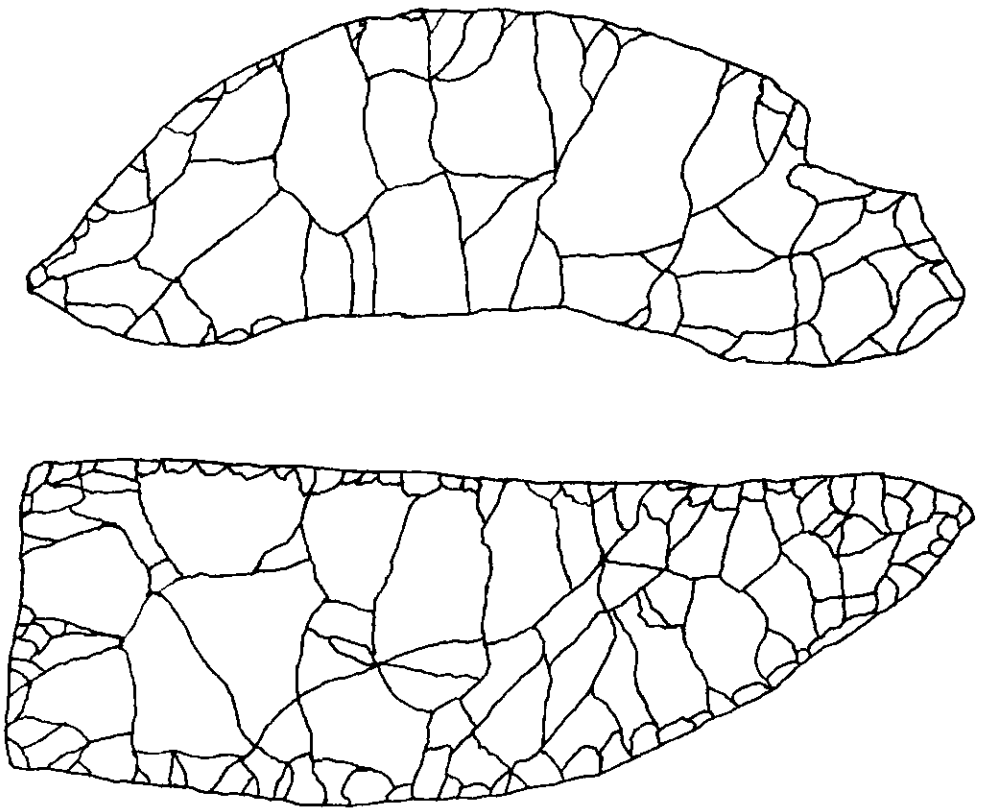

Bifacial Knives

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Contents

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Excavations at the Hornbuckle Site, 41WL27, Waller Co., Texas

L. W. Patterson, J. D. Hudgins, E. Palmer, and T. Palmer

Introduction

This report gives the results of excavations by the Houston Archeological Society at site 41WL27 in the winter of 2003-4. The project was made possible through the courtesy of the landowner, Tom Hornbuckle.

Persons who participated in the excavations include Truett Bell, Monroe Gonzalez, Joe Hudgins, Etta Palmer, Tom Palmer, Lee Patterson, Gary Ryman, Dudgeon Walker, and Bob Whitcomb. Excavations were directed by Joe Hudgins. Etta Palmer handled field records and site measurements. Tom Palmer prepared the excavation layout drawing. Lee Patterson analyzed the artifacts.

Site 41WL27 is a stratified site with components in the Late Archaic, Early Ceramic, and Late Prehistoric periods, with an occupation sequence from sometime after 1500 BC through Late Prehistoric until about AD 1500. Judged by the concentration of artifacts and faunal remains, there were many occupation events here.

Site Setting

Site 41WL27 is in a farm field located on the edge of a terrace that slopes down about 50 meters to an inactive stream bed. Mussel shell and gar scales from the excavations indicate that there was an active stream here at the time of site occupation. The general area is a mixture of woodlands and coastal prairie. A variety of faunal and floral food resources would have been available to prehistoric site occupants. There are still deer in the area, and ducks on a seasonal basis. There are many native pecan trees in this area.

Excavation Details

Excavation layout is shown in Figure 1. Two one-meter-square pits were excavated, and 11 shovel tests were done to define the site size along the terrace of the stream bed. Excavations were done to depths where cultural materials were not present. All soil was processed through 1/4-inch (6 mm) mesh screens.

Cultural materials were founds at depths of 15 to 55 cm in Pit A, and at depths of 20 to 55 cm in Pit B. Plowing of this area probably disturbed soil to a depth of about 20 cm. Excavations were done in 5 cm depth intervals because little natural stratigraphy could be observed. Shovel tests are discussed in a following section.

Radiocarbon Dates

The stratigraphic sequence of artifact types indicated that bifacial arrow points started in the 25-30 cm depth interval, and that pottery started in the 35-40 cm depth interval. Radiocarbon dating of mussel shell in the 25-30 cm depth interval of Pit B gave a date of 2090 ±40 BP (GX-30712), for a calibrated date of 80 BC. Radiocarbon dating of mussel shell in the 35-40 cm depth interval of Pit B gave a date of 2500 ±50 BP, for a calibrated date of 570 BC (Stuiver and Becker 1993). These dates are several hundred years earlier than the start of bifacial arrow points and the start of pottery, respectively, in the Galveston Bay area (Patterson et al. 2001:4). It is likely that there has been some stratigraphic mixing at the 25-30 cm and 35-40 cm depth intervals.

An AMS radiocarbon date was obtained for a small piece of charcoal for the 25-30 cm depth interval of Pit A. This date is 590 ±30 BP, with a calibrated date of AD 1400. This date is much too late for the depth interval involved. It is likely that the small charcoal sample was displaced deeper by bio-disturbance.

The radiocarbon dates for this site cannot be used to date excavation depth intervals. However, the time range of these radiocarbon dates support the original conclusion that there is an occupation sequence with components in the Late Archaic, Early Ceramic, and Late Prehistoric time periods.

Projectile Points

Projectile points found by excavations are summarized in Table 1, and illustrated in Figure 2. Bifacial arrow points and arrow point preforms were found at depths of 15 to 30 cm. This depth interval represents the Late Prehistoric period (AD 600-1500). A Kent dart point in the 35-40 cm depth interval is from the Early Ceramic period (AD 100-600). A dart point preform and three preform fragments were recovered. A possible unifacial arrow point was found in Pit A (15-20 cm). Two possible gar scale arrow points were found in Pit B (30-35 cm), in the Early Ceramic period. No finished projectile points were found at depths below 40 cm in the Late Archaic period, before the start of pottery.

Ceramics

Potsherds found by excavations are summarized in Table 2. A total of 39 sherds were recovered, including 34 Goose Creek sandy paste sherds, and 5 Bone Tempered sherds. Bone tempered pottery was found at depths of 15-30 cm only in the Late Prehistoric period, which is typical for the western part of Southeast Texas. Goose Creek pottery was found in both the Late Prehistoric and Early Ceramic periods, as would be expected for Southeast Texas. One Goose Creek sherd found in Pit B (30-25 cm) is a notched rim sherd (Figure 3E).

The modest amounts of potsherds found here may indicate that occupation events were generally for short time periods, where time was not available to manufacture pottery.

Stone Tools

Only a few formal types of stone tools were found by excavations, as given in Table 3, including five scrapers and a bifacial knife (Figures 2,3). Only small quantities of formal types of stone tools are usually found at prehistoric sites in Southeast Texas, because the unmodified utilized lithic flake was the dominant stone tool type.

The bifacial knife (Figure 3D) is from the Late Prehistoric period, and was found next to a bison bone. This specimen is made of a chert type from the Colorado River Basin, rather than from chert from a closer Brazos River source. Bifacial knives are not common at sites in Southeast Texas. The use of bifacial knives during the Late Prehistoric period in this region, such as at site 41WH19 (Patterson et al. 1987: Figures 4,5), may be related to the increased presence of bison after AD 1200 (Story 1990:244). It was not determined whether the bifacial knife from this site was hafted.

It is difficult to detect edge wear on a bifacial knife because the edges have been modified during the manufacture of the tool. Edge wear from cutting produces a series of small scallops with some smoothing of the scallop tips (Patterson 1975; Tringham et al. 1974). Experimental deer skinning with a bifacial knife by Patterson (1976) produced some small scallops and smoothing

of the working edge on the central part of the edge, but surprisingly little evidence of use-wear damage on most of the working edge. The bifacial knife from this site has a series of small fracture facets on one edge but no developed pattern of small scallops. This probably represents edge wear from cutting, but the use-wear pattern is not fully developed. If this specimen was used mainly for cutting meat, a use-wear pattern would be slow to develop (Patterson 1984).

Lithic Manufacturing

A total of 312 chert flakes were recovered by excavations, as given in Table 4 for each level of each pit. This is a relatively small quantity of flakes, indicating that there was a low level of lithic manufacturing at the location of Pits A and B. Some flakes have indications of heat treatment, but many flakes do not.

Flake size distributions are given in Table 5, combined for Pits A and B. Low percentages of flakes under 15 mm square show that finished projectile points were not being made here. Eight small amorphous cores were found as summarized in Table 6, but no unmodified chert cobbles were found. For flakes over 15 mm square, there are 3.8% primary flakes (covered with cortex), 21.0% secondary flakes (partially covered with cortex), and 75.2% interior flakes (no remaining cortex). It appears that small chert cores were brought to this location from Brazos River sources mainly to make flake tools. Finished projectile points found by excavations were made either at other parts of the site or at other locations. Two quartzite hammerstones were found in Pit A, at 20-25 cm depth interval with a maximum dimension of 67 mm, and at 40-45 cm depth interval with a maximum dimension of 35 mm.

Ten sandstone abraders were found as summarized in Table 7. This type of tool would have been used to manufacture wood and bone artifacts.

Bone Tools

Five bone tools were found as summarized in Table 8 and illustrated in Figure 4. Two specimens are made from deer ulna (Figures 4A,B). Four of the bone tools are awls. Another specimen is worked bone with a single incised line. The rounded end may have been used as a scraper.

Vertebrate Remains

Many vertebrate remains were found by excavations as summarized in Table 9. Deer bones and teeth and turtle bones were the most numerous specimens. Deer and turtle are the most common vertebrate remains at prehistoric sites in Southeast Texas (Patterson 1996: Table 16). There was one bison bone in Pit A (20-25 cm) from the Late Prehistoric period. Many gar scales were found that indicate that the inactive stream bed at this site was an active stream at the times of site occupations. Both hunting and fishing were apparent at this site. Judged by the concentration of faunal remains, this site was a good location for subsistence activities.

Mussel Shell

Many mussel shells were found by excavations, as given in Table 10. This is another indication that the inactive stream bed was an active stream at the times of site occupations. Meat from mussel was utilized here, but meat from shellfish is not a high quality food for either calories or protein.

Fired Clayballs

A total of 279 fired clayballs were found by excavations. There were clayballs at all excavation levels as summarized in Table 11. Specimen sizes ranged from 15 to 60 mm square. Clayballs were used as heating elements for earth ovens, probably to process plant foods such as roots on a seasonal basis. While there are many prehistoric sites with fired clayballs in Southeast Texas (Patterson 1995: Table 1), a high proportion of sites do not have clayballs. This indicates that earth ovens were used for certain types of applications but not for general cooking of meat.

Shovel Tests

Eleven shovel tests were done to define site size as shown in Figure 1, with results summarized in Table 12. There is evidence for occupations for 349 meters along the terrace edge which runs southwest from Pit A along the inactive stream bed. None of the shovel tests indicate a density of artifacts as high as found in Pits A and B. The lack of artifacts in Pit 6 indicates that occupations occurred in a narrow band along the terrace edge. In the shovel tests, most artifacts were found deeper than 30 cm. It is concluded that there were frequent occupation events in the area of Pits A and B, and less frequent occupation events along the terrace edge to the southwest. Shovel Test 9 had a high concentration of mussel shell.

Conclusions

Site 41WL27 is a campsite of nomadic hunter-gatherers with an occupation sequence in the Late Archaic, Early Ceramic, and Late Prehistoric time periods. Shovel tests show occupation events for a long distance along a terrace above a now inactive stream bed. Artifact types are typical of sites in the western part of inland Southeast Texas. Faunal remains indicate that this area had good food resources. Data from this site are important because of the small amount of archeological survey work done in Waller County.

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Table 1. Projectile Points

type	pit	depth, cm	dimensions, mm L	W	T	Figure
Perdiz	A	15-20	29.2	17.5	4.5	2A
Perdiz	A	25-30	32.5	14.8	2.5	2B
arrow point preform	A	25-30			3.7	2C
arrow point preform	B	25-30		14.2	3.4	2D
Kent	B	30-35	57.0	24.2	8.0	2F
dart point preform	A	15-20	46.9	21.9	8.7	2G
dart point preform	A	25-30		32.8	6.8	2I
dart point preform	A	40-45		38.5	11.0	
dart point preform	B	20-25			8.9	2H
unifacial arrow pt.?	A	15-20	20.2	11.8	4.1	2E
gar scale arrow pt.?	B	30-35	29.3	13.9	3.9	2J
gar scale arrow pt.?	B	30-35	25.2	11.0	4.0	2K

Table 2. Numbers of Potsherds

	Pit A		Pit B	
level, cm	Goose Creek	Bone Tempered	Goose Creek	Bone Tempered
15-20		4		
20-25			21	
25-30			6	1
30-35			5	
35-40	1		1	

Table 3. Stone Tools

type	pit	depth, cm	Figure
scraper	A	15-20	3A
scraper	A	15-20	3B
scraper	A	20-25	3C
scraper	A	20-25	2L
scraper	A	25-30	2M
bifacial knife	A	20-25	3D

knife: L=89.2 mm, W=28.9 mm, T=7.3 mm

Table 4. Numbers of Chert Flakes

depth, cm	Pit A	Pit B	total
15-20	31		31
20-25	46	31	77
25-30	21	23	44
30-35	23	32	55
35-40	23	15	38
40-45	13	6	19
45-50	11	11	22
50-55	13	13	26
total	181	131	312

Table 5. Flake Site Distributions, % of Flakes

	flake size, mm square					
depth, cm	under 15	15-20	20-25	25-30	30-35	over 35
15-20	25.8	48.4	12.9		12.9	
20-25	23.4	40.3	15.5	13.0	7.8	
25-30	34.1	36.4	13.6	6.8	9.1	
30-35	21.8	40.0	23.6	9.1	5.5	
35-40	23.7	39.5	18.4	13.2	2.6	2.6
40-45	5.3	36.8	36.8	10.5		10.6
45-50	4.5	27.3	45.5	22.7		
50-55	38.5	34.6	7.7	11.5	7.7	

Table 6. Chert Cores

pit	depth, cm	maximum dimension, mm
A	15–20	56
A	25–30	45
A	25–30	42
A	40–45	43
A	40–45	55
A	45–50	59
B	35–40	40
B	45–50	30

Table 7. Sandstone Abraders

pit	depth, cm	maximum dimension, mm
B	25–30	38
A	30–35	105
A	30–35	44
B	30–35	25
B	30–35	31
B	30–35	24
A	40–45	28
A	40–45	26
B	40–45	26
B	40–45	30

Table 8. Bone Tools

type	pit	depth, cm	Figure
awl	B	30–35	4A
awl	B	40–45	4B
awl	A	15–20	4C
awl	S5		4D
incised tool	B	35–40	4E

Table 9. Vertebrate Remains

Pit A

depth, cm	weight, gm	type
15-20	47	deer, turtle
20-25	155	bison, deer turtle
25-30	86	deer, turtle
30-35	115	deer, turtle, gar (3 scales)
35-40	243	deer, turtle
40-45	63	deer. turtle
45-50	146	deer, turtle
50-55	30	deer, turtle

Pit B

depth, cm	weight, gm	type
20-25	127	deer, turtle
25-30	89	deer, turtle, gar (8 scales)
30-35	151	deer, turtle, gar (24 scales)
35-40	82	deer, turtle, gar (8 scales)
40-45	146	deer, turtle, gar (8 scales)
45-50	41	deer, turtle
50-55	23	deer

Table 10. Mussel Shell Weights, gm

depth, cm	Pit A	Pit B
20-25	16	100
25-30	87	176
30-35	176	708
35-40	453	520
40-45	340	849
45-50	269	566
50-55	26	107

Table 11. Fired Clayballs

depth, cm	Pit A no.	Pit A wt.,gm	Pit B no.	Pit B wt.,gm	size range mm square
15-20	2	44			40
20-25	1	7	25	340	20-60
25-30	9	37	24	184	20-40
30-35	13	158	30	311	15-50
35-40	51	708	13	142	15-40
40-45	40	453	15	212	15-50
45-50	6	35	19	143	15-35
50-55	10	56	21	283	20-50
total	132		147		

Table 12. Shovel Tests

test	distance from Pit A, meters	items
1	10	deer bone, potsherd
2	20	chert flake, bone, mussel shell
3	30	chert flake, bone, sandstone
4	40	chert flake
5	50	3 chert flakes, turtle, bone awl
6	33	no artifacts
7	7	no artifacts
8	25	mussel shell
9	140	bone, 5 clayballs, chert flake, bone, 154 gm mussel shell
10	223	2 chert flakes, mussel shell
11	349	3 chert flakes

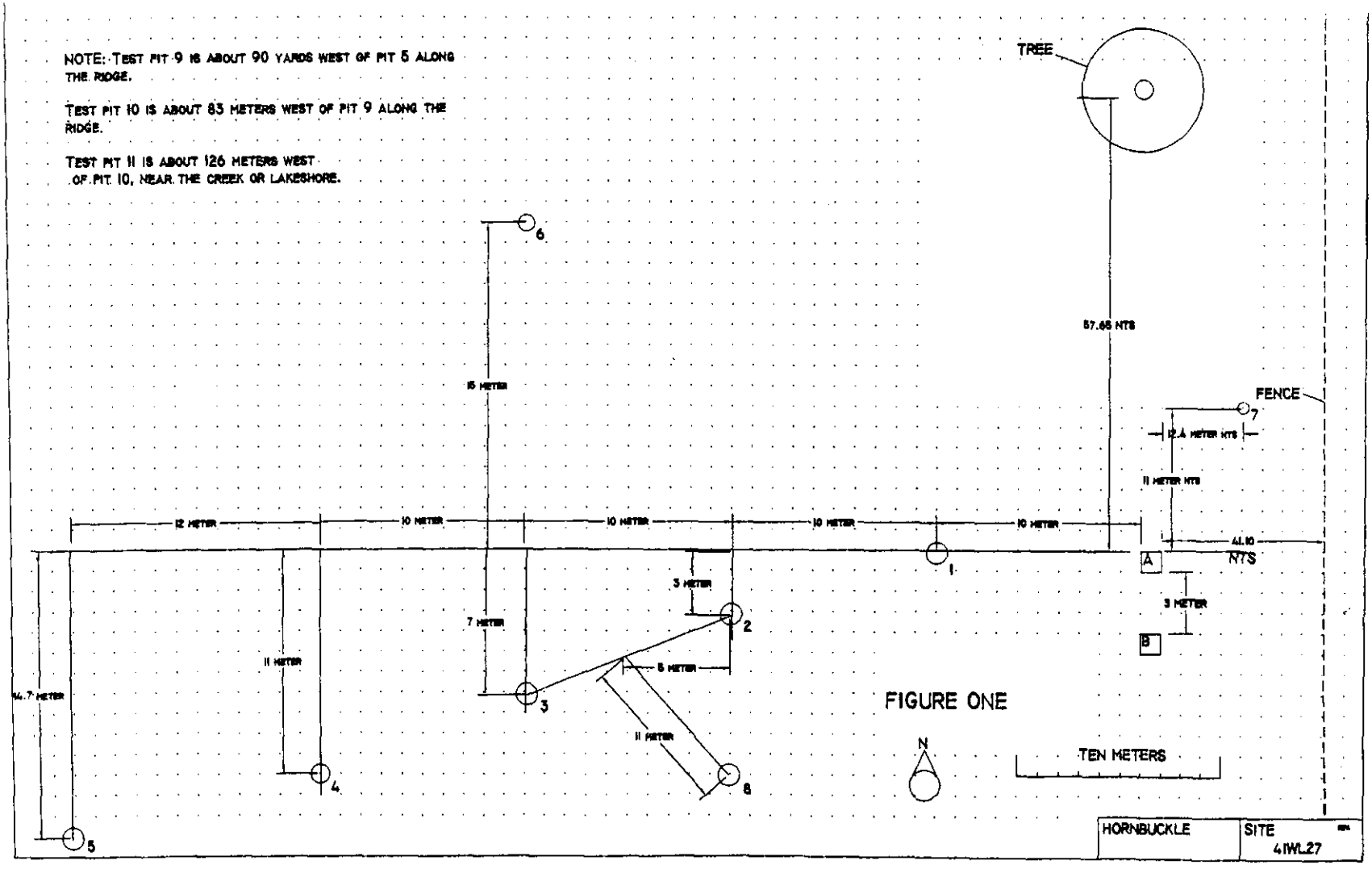
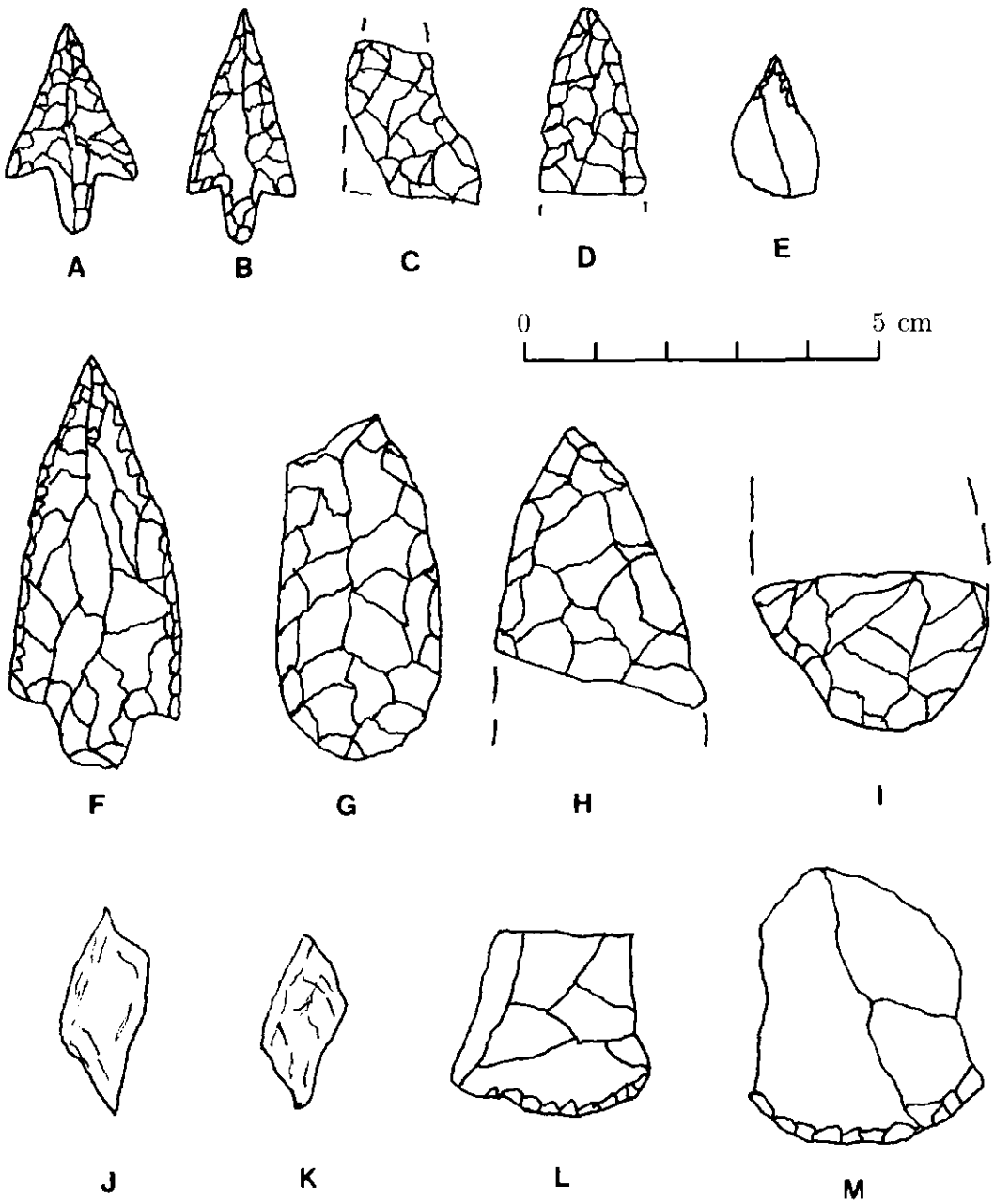


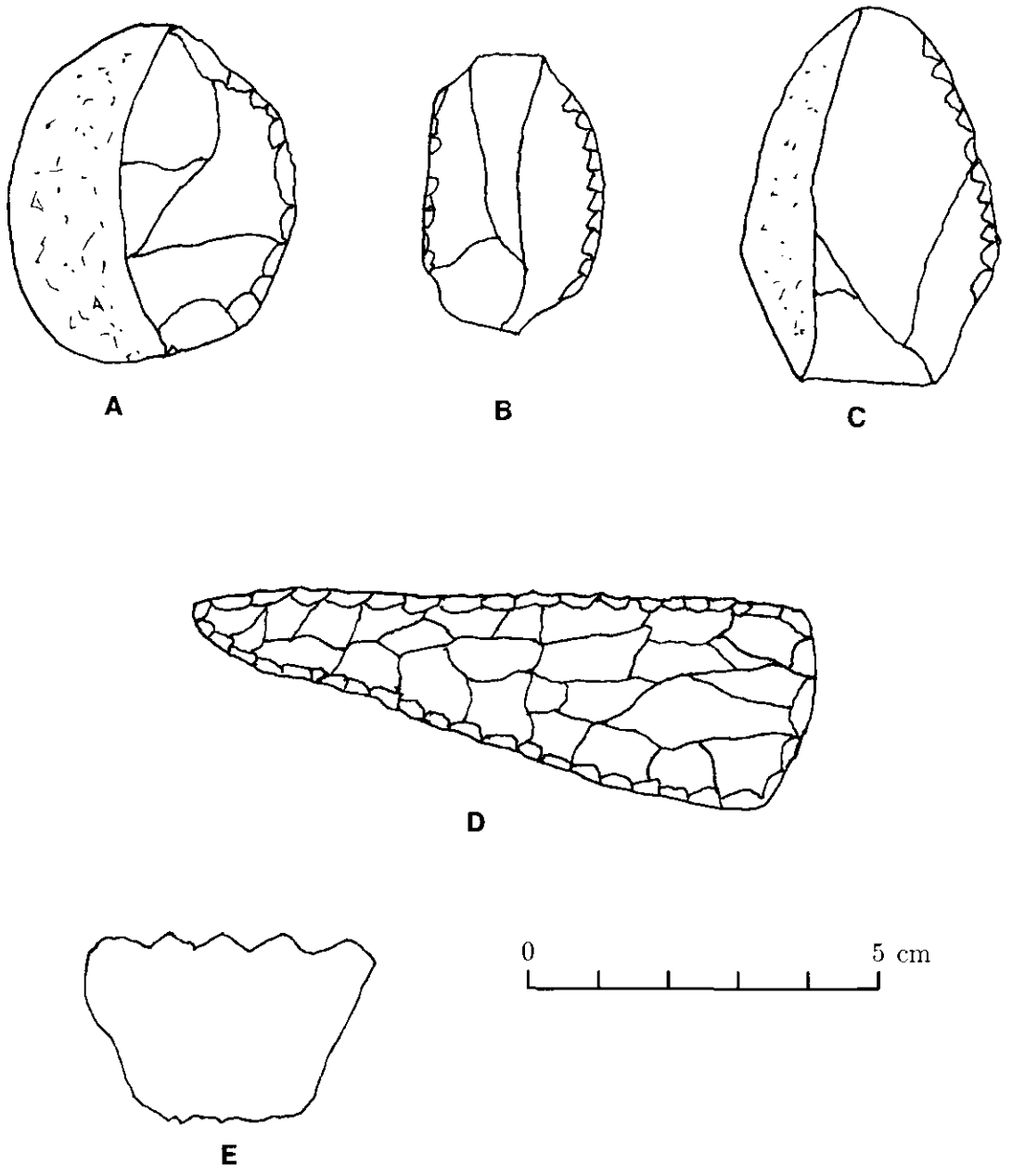
FIGURE ONE

Figure 1. Excavation Layout



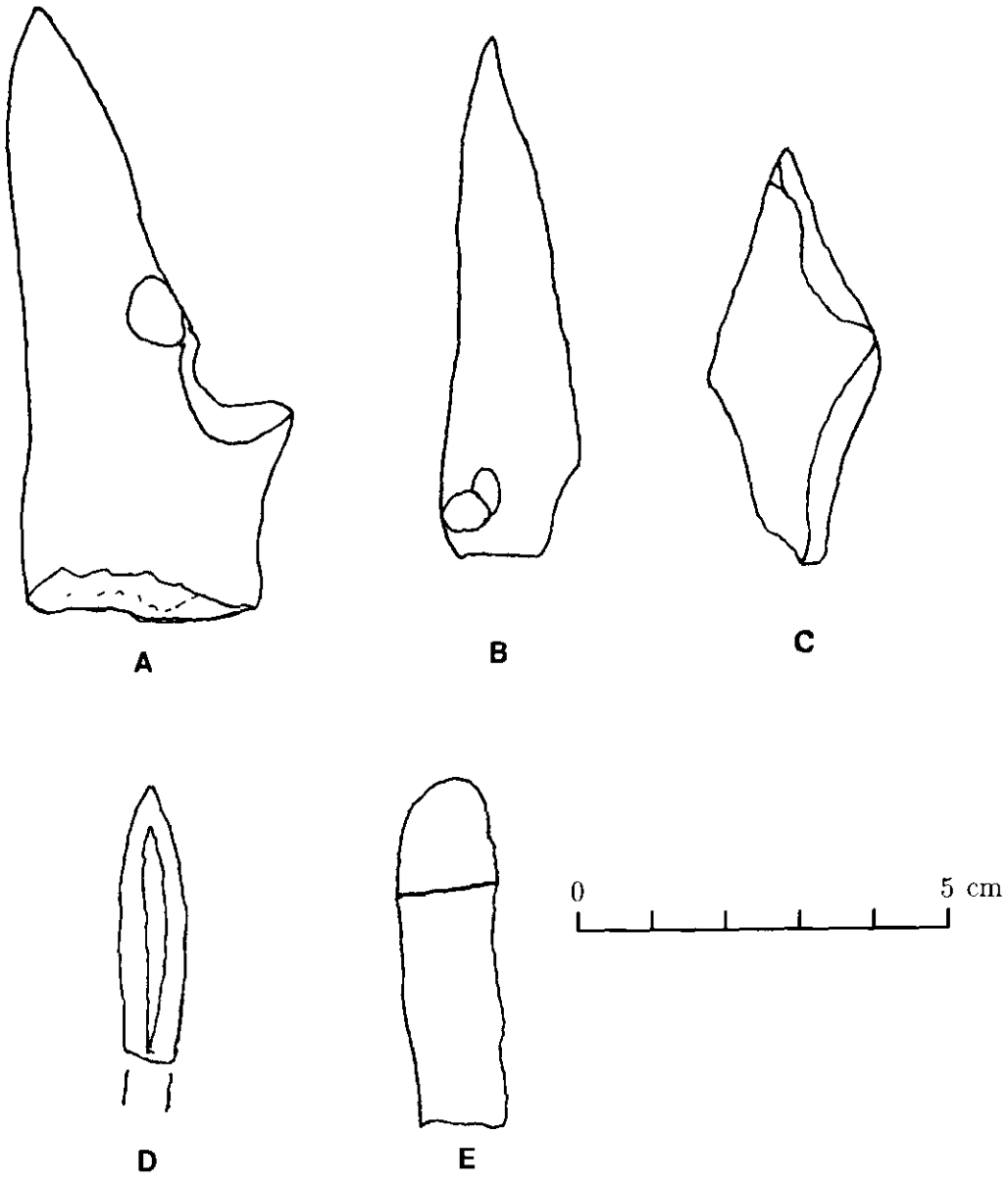
A, B – Perdiz points; C,D – arrow point preforms;
E – unifacial arrow point?; F – Kent point;
G,H,I – dart point preforms; J,K – gar scale
arrow points?; L,M – scrapers

Figure 2. Diagnostic Artifacts



A,B,C – scrapers; D - bifacial knife; E – notched rim sherd

Figure 3. More Diagnostic Artifacts



A to D - awls, E - incised bone tool

Figure 4. Bone Tools

Fort Polk Research as Seen from Southeast Texas

Leland W. Patterson

Introduction

Anderson and Smith (2003) have published a book that summarizes archeological research at Fort Polk for a thirty year period from 1972 to 2002. This is the first time that substantial amounts of data and interpretations have been made public for the previously little known area of west-central Louisiana. This book should be of interest to archeologists in Louisiana and Texas. It is a revised and updated version of the technical synthesis monograph produced as part of the Historic Preservation Plan for Fort Polk completed in 1999.

Research done at Fort Polk is of interest to me because Fort Polk is near the northeast corner of Southeast Texas. Comparisons are made here between the details of the archeology of Fort Polk and Southeast Texas. In both areas, a hunter-gatherer lifeway was practiced over the entire prehistoric period.

Over 100 projects by contract archeologists at Fort Polk have resulted in the identification of 2690 archeological sites, with 646 sites involved in major excavations or intensive testing. Fort Polk is one of the most intensively examined archeological areas in the United States. However, other areas of western Louisiana are not well understood. Nearby counties in Texas along the Sabine River are poorly surveyed. However, there are sufficient archeological data for Southeast Texas in general to make comparisons with data from Fort Polk.

Predictive Models and Settlement Patterns

Chapter 3 of the book on Fort Polk is devoted to discussion of various predictive models for local land use and settlement patterns. A wide variety of predictive models are considered. Major variables considered include land slope for drainage, nearest water, lithic raw material locations, piney woods resources, forager-collector patterns, and lithic procurement patterns. Several conclusions have been made. Gravel deposits were intensively exploited by prehistoric peoples who came from across a wider area (Anderson and Smith 2003:144). Local land use was strongly conditioned by proximity to watercourses and floodplain areas, and by outcrops of lithic raw materials (Anderson and Smith 2003:126). There is little evidence for collector strategies in the Fort Polk area, with base camps and logistic procurement sites. Instead, Fort Polk prehistoric sites mainly represent short-time occupation events by small size, highly mobile forager groups, and visits by groups from a wider area to procure lithic raw materials.

In inland Southeast Texas, the major factor for prehistoric site location is nearness to water, in both coastal prairie and piney woods areas. Some lithic raw material procurement was probably embedded in seasonal subsistence rounds, but there is also evidence for direct procurement of lithic materials over significant distances, up to at least 80 kilometers. Lithic sources in Southeast Texas are patchy, with small chert cobbles at the Brazos River, large chert cobbles at the Colorado River, and petrified wood at the Trinity River (Patterson 1996:33). Evidence for direct procurement of lithic raw materials is indicated by lack of correlation between intensity of lithic manufacturing and distances from lithic sources (Patterson 1996:34). Prehistoric Indians in Southeast Texas were mobile foragers, with little evidence for Binford's (1980) collector category with base camps and logistic sites, as also shown for the Fort Polk area.

Dart Point Typologies and Chronologies

Types of projectile points found at Fort Polk are discussed in Chapter 5 of the book on Fort Polk research, with quantities given in Table 5.1. Only point types with significant quantities are discussed here. Many of the dart point types represent technological influences from Texas west of Fort Polk. Late Paleoindian lanceolate point types from the Southern Plains include Plainview, Scottsbluff, and Angostura. The Pelican point from the Late Paleoindian period can be classified as a Louisiana type. The San Patrice point is common to both East Texas and Louisiana in the Late Paleoindian period. San Patrice points are found throughout Southeast Texas with a nominal time range of 10,000-9,000 RCBP (Patterson 1997:3).

The exact time range of each dart point type will not be debated here because no dart point type has enough radiocarbon dates to establish a statistically reliable time range. It should be noted that the Late Paleoindian period in Texas corresponds to the Early Archaic period in Louisiana of 10,000-8,000 RCBP. This difference in nomenclature can be confusing in regard to temporal placement of projectile point types in Texas and Louisiana.

A variety of early side notched points, other than the classic San Patrice varieties, are found in both Texas and Louisiana in the period of about 10,000-9,000 RCBP, although some early side notched points occur earlier. After about 9,000 RCBP there is a trend from side notched to corner notched points in both Texas (Patterson 1997) and Louisiana (Anderson and Smith 2003:366). It should be noted that the Keithville point type is side notched (Turner and Hester 1993:134), not corner notched as stated by Anderson and Smith (2003:366). In Southeast Texas, the many varieties of early side notched points are grouped together (Patterson 1997), with Keithville being one variety. In Southeast Texas, early corner notched point types have also been grouped together (Patterson 1997) instead of naming individual varieties such as Kirk and Palmer, as done in the Southeast.

A period of 8000-5000 RCBP is designated as Middle Archaic at Fort Polk (Anderson and Smith 2003:369) and as Early Archaic in Southeast Texas (Patterson 1996:9). Dart point types at Fort Polk for this time period are listed as Evans, Sinner, Carrollton, Marshall, and Morrill (Anderson and Smith 2003: Table 5.1). Evans and Sinner points only occur in far eastern Texas in counties along the Sabine River (Turner and Hester 1993). It is doubtful that Marshall and Morrill point types listed for Fort Polk are the same as Texas examples, because these point types are mainly from Central Texas, some distance from Fort Polk. In Southeast Texas, principle dart point types are Early Stemmed (straight stemmed), Carrollton, and some Wells, all with smoothed stem edges (Patterson 1998a). Carrollton seems to be a variant of other early straight-stemmed points. The dominance of straight stemmed points in Southeast Texas during this time period does not correspond to Fort Polk data. Bulverde and Yarbrough point types are listed as possibly being from this time period at Fort Polk (Anderson and Smith 2003:373), but these point types occur in time periods after 5000 RCBP in Southeast Texas (Patterson 1996: Table 4).

The Late Archaic at Fort Polk is designated as a period of 5000-3000 RCBP. Dart point types include Ensor, Gary, Epps, Delhi, Kent, Macon, Motley, Ponchartrain, Trinity, Woden, and Yarbrough (Anderson and Smith 2003: Table 5.1). There is a question as to whether all of these point type names are meaningful. The Epps point could be classified as an Ensor variant. Woden points could be classified as Kent, and Macon points could be classified as Delhi variants. In Southeast Texas, Gary, Kent, and Yarbrough are major point types. The few Ponchartrain points in Southeast Texas are outliers from Louisiana. Motley and Delhi points are found in Texas only along the Sabine River. The Delhi point may be related to some of the points classified as Bulverde-like in Southeast Texas (Patterson 1996: Table 7). The Late Archaic of the Fort Polk area is roughly equivalent to the Middle Archaic time interval of Southeast Texas.

The Woodland in the Fort Polk Area is designated as a time period of 3000-1100 RCBP. In Southeast Texas this time interval would cover much of the Late Archaic period, all of the Early Ceramic period, and some of the Late Prehistoric period (Patterson 1995a:243,1996:9). Dart point types listed for the Woodland period at Fort Polk include Darl, Edgewood, Ellis, Fairland, Gary, Godley, Lange, Morhiss, Palmillas, Kent, and Williams (Anderson and Smith 2003: Table 5.1,6.3). All of these point types are found in Southeast Texas, probably showing technological influences on the Fort Polk area from East Texas. Gary and Kent points are found throughout much of the Southeast.

There are no dart points listed for the Fort Polk area after 1100 RCBP. In contrast, in inland Southeast Texas, small Gary and Kent dart points occur until historic time, with the spear and bow and arrow both used (Aten 1983:306; Patterson 1980, 1995a: Table 3, 1996: Table 4). Dart points do not occur in the Late Prehistoric period on the coastal margin of Southeast Texas (Aten 1983:306).

Arrow Point Typologies and Chronologies

In the Fort Polk area, bifacial arrow points start in the Baytown period of about AD 400-800. This is consistent with Jeter and Williams's (1989:148) observation that bifacial arrow points started in the Troyville period of AD 300-600 in the southern Lower Mississippi River Valley, and in the Baytown period farther north. In Southeast Texas, a Perdiz point specimen can be placed as early as a calibrated radiocarbon date of AD390, GX-27963 (Patterson et al. 2001:4) at a shell midden site in Galveston County. The Perdiz point type may have originated in Southeast Texas. This point type starts later in Northeast and Central Texas than in Southeast Texas.

Early use of the bow and arrow at Fort Polk, with use of unifacial arrow points, may have been overlooked. Archeologists seldom look for unifacial arrow points in assemblages of lithic flakes (Patterson 1994a). In Southeast Texas, use of the bow and arrow starts about 3000-1500 RCBP (Patterson 1992). In Louisiana, the Poverty Point culture may have used the bow and arrow with use of the Jaketown perforator as an arrow point (Gibson 1976).

Bifacial arrow point types listed for the Fort Polk area are Agee, Alba, Bassett, Bonham, Catahoula, Colbert, Friley, Hayes, Maud, Perdiz, and Scallorn (Anderson and Smith 2003: Table 5.1). In Southeast Texas, the only major arrow point types are Alba, Catahoula, Perdiz, and Scallorn, with no serial sequence (Patterson 1999). Other arrow point types found at Fort Polk are found mainly in Northeast Texas and Northwest Louisiana, with a few on the northern fringe of Southeast Texas. These arrow point types may indicate Caddoan influences on the Fort Polk area.

Scallorn arrow points illustrated for Fort Polk could be classified alternately as Colbert, because of narrow stem widths (Anderson and Smith 2003: Figure 5.13ii,jj). In Southeast Texas, the Scallorn point is regarded as a Central Texas type with a decrease in frequency to the east in Southeast Texas (Patterson 1996: Table 6). Some of the Bassett points illustrated for Fort Polk would be classified as Perdiz in Southeast Texas (Anderson and Smith 2003: Figure 5.13h-q).

Ceramics

Pottery at Fort Polk starts with Tchefuncte pottery in the Early Woodland period about 3000 RCBP. The sequence of pottery types then follows recognized time periods in Louisiana, with Marksville in the Middle Woodland period (2200-1700 RCBP), Baytown and Coles Creek in the Late Woodland period (1700-1100 RCBP), and Caddoan (Late Prehistoric-early historic) after 1100 RCBP. There are 65 types of pottery identified (Anderson and Smith 2003: Table 5.2), including 2 types for the Early Woodland, 10 for the Middle Woodland, 29 for the Late Woodland, and 24

Caddoan. The Fort Polk area is on the southern edge of the Caddoan area of Northeast Texas and Northwest Louisiana. In Southeast Texas, Caddoan pottery is found only at the northern edge due west of Fort Polk.

No obvious patterning in the occurrence of sand tempered as opposed to grog tempered pottery has been noted for Fort Polk. It is suggested that the Fort Polk area is a transitional zone of the distributional limits of predominantly grog tempered pottery to the east and sand tempered pottery, such as Goose Creek, to the west (Anderson and Smith 2003:313). Goose Creek pottery is the predominant ceramic type in Southeast Texas, made from clay naturally containing small size sand grains, without intentional addition of sand temper (Aten 1983:231). Grog tempered pottery (San Jacinto) is not important in inland Southeast Texas, with Goose Creek sandy paste pottery being the dominant type in both the Early Ceramic and Late Prehistoric periods (Patterson 1996: Table 12). Less than one percent of pottery at Fort Polk is bone tempered (Anderson and Smith 2003: Table 5.2) and about two percent of pottery in inland Southeast Texas is bone tempered (Patterson 1996: Table 12). Bone tempered pottery in Southeast Texas occurs in the Late Prehistoric period after AD 600, in both inland and coastal margin areas.

The use of pottery diffused from Louisiana into Texas, with the start of pottery several hundred years later in Southeast Texas (Aten 1983:297). The timing of the diffusion of use of pottery from the Fort Polk area westward into the northern counties of Southeast Texas is not well established (Story 1990:246). Pottery is not common at sites in the Fort Polk area, similar to sites of inland Southeast Texas. The low use of pottery suggests a mobile foraging lifestyle with few longtime site occupation events. In inland Southeast Texas, there was a decrease in the use of pottery in the Late Prehistoric period, corresponding to a more mobile lifestyle (Patterson 1976a). In contrast, pottery was very important in both the Early Ceramic and Late Prehistoric periods at shell midden sites on the coastal margin of Louisiana and Southeast Texas.

Other Topics

There is little discussion of faunal remains and related subsistence patterns in the Fort Polk book due to poor preservation of organic materials. In Southeast Texas, faunal remains at sites indicate a wide range of faunal food resources (Patterson 1995a: Table 2, 1996: Tables 16,17), from large animals such as deer and bison to small animals such as squirrel and rabbit. Fish remains are found at both inland and coastal margin sites. Deer and turtle are the most common faunal remains in this region. As with faunal remains, there is little preservation of human remains at Fort Polk.

The Fort Polk area and inland Southeast Texas appear to have similar prehistoric population dynamics. At Fort Polk, population levels are fairly low from Paleoindian through Middle Archaic periods, with a sharp increase in population growth rate starting in the Late Archaic period with population level peaking in the Woodland Period. There is then some decrease in population level in the Late Prehistoric period (Anderson and Smith 2003: Figure 5.14 top). In inland Southeast Texas, there is a fairly low population level from Paleoindian through Middle Archaic periods, with a sharp increase in population growth rate starting in the Late Archaic period with population level peaking in the Early Ceramic period and then decreasing in the Late Prehistoric period (Patterson 1995a: Figure 3, 1996:58). The decrease in population level for the Late Prehistoric period of inland Southeast Texas may have resulted from higher mobility during this time period (Patterson 1996:60). In contrast, on the coastal margin of Southeast Texas, population level did not decrease during the Late Prehistoric period, but the population growth rate did decrease compared to that of the previous Early Ceramic period (Patterson 1995a: Figure 3, 1996:60). The population level did not decrease on the coastal margin of Southeast Texas during the Late Prehistoric period perhaps

because there was no increase in mobility during this period, and there were good aquatic food resources.

The Albany scraper is associated with the San Patrice point at Fort Polk (Anderson and Smith 2003:248). The Albany scraper is also associated with the San Patrice point in Southeast Texas (Patterson 1997: Table 1).

Baked clay objects occur in the Late Archaic and Early Woodland periods at Fort Polk and nearby areas (Anderson and Smith 2003:380). This type of artifact was probably used as heating elements for earth ovens, in the same manner as baked clay objects of the Poverty Point and Marksville cultures (Morse and Morse 1983:125). In Southeast Texas, fired clayballs were used as heating elements for earth ovens from about 10,000 RCBP until historic time (Patterson 1995), possibly for cooking plant foods such as roots.

At prehistoric sites at Fort Polk, there is a general tendency for lithic flake size to increase with excavation depth (Anderson and Smith 2003:153), which is attributed to use of smaller pebbles in later occupations. In Southeast Texas, there was also a general tendency for flake size to increase with excavation depth (Patterson 1980: Figure 19; Patterson et al. 1987: Figure 20). In Southeast Texas, this trend in flake size has been attributed to the manufacture of smaller projectile points in later time, with the corresponding use of smaller flake blanks, ending with very small flake blanks to make arrow points.

At Fort Polk, microblade technology appears to occur infrequently but in assemblages across a wide temporal range (Anderson and Smith 2003:147). In Southeast Texas, production of small prismatic blades appears to start about 3000-1500 RCBP, with several sites having significant quantities of blades (Patterson 1998b), and some polyhedral blade cores. In this region, small prismatic blades were used to make perforators and unifacial arrow points, with some utilized as flake tools (Patterson 1994, 1998).

Because of poor preservation of organic materials, only 14 radiocarbon dates have been obtained by Fort Polk research. There are also 11 TL dates and 69 OCR dates. Inland Southeast Texas also has poor preservation of organic materials, but has over 70 radiocarbon dates and 25 OCR dates. The coastal margin of Southeast Texas has 205 radiocarbon dates. Also, there are a number of excavated sites in Southeast Texas with long occupation sequences. Therefore, chronological sequences of artifact types are fairly well understood in Southeast Texas, which can be useful in comparison with chronological sequences of artifact types at Fort Polk.

Fort Polk Cultural Sequence

Chapter 6 of the book on Fort Polk research is devoted to the prehistoric cultural sequence of the area. After a brief tabular presentation of the sequence (Table 6.3), there is a discussion of each time period. Nomenclature for time periods follows a pattern usually used for Louisiana, including Paleoindian, Archaic, Woodland, Late Prehistoric, and Proto-historic time periods. It should be noted that the cultural sequence for Fort Polk is not a sequence of cultural stages, but rather a technological sequence of artifact types that are associated with a continuous mobile hunter-gatherer lifeway. There were perhaps some differences in mobility in various time periods. There are also no specific cultural stages for the prehistory of inland Southeast Texas.

Anderson and Smith (2003:349) comment that the cultural sequence for Fort Polk must be viewed as somewhat tentative and hypothetical. However, the sequence of artifact types is probably a good relative sequence. Total time ranges for many artifact types will probably never be obtained in the future, because statistically significant time ranges require many radiocarbon dates (about 30 for each artifact type).

The Woodland period at Fort Polk is divided into cultural subperiods (Anderson and Smith 2003: Table 6.3), with Early Woodland associated with Tchefuncte, Middle Woodland associated with Marksville, and Late Woodland with Baytown and Coles Creek. None of these named cultural relationships fit the Fort Polk mobile hunter-gatherer lifestyle in a close manner. These cultural relationships may represent visits to the Fort Polk area by groups from wider areas of Louisiana. This same comment could also be used to describe Caddoan influences on the Fort Polk area in the Late Prehistoric period.

The starting date for the Early Woodland period is subject to various interpretations. Anderson and Smith (2003:382) start the Early Woodland period at 1250 BC, while Jeter and Williams (1989:111) start the Early Woodland at 600 BC. It can also be noted that while the Early Woodland is identified with the Tchefuncte culture at Fort Polk (Anderson and Smith 2003: Table 6.3), only 30 Tchefuncte sherds were found. This indicates that there was not a close relationship of Fort Polk groups with the Tchefuncte culture.

Use of Fort Polk Data

Anderson and Smith (2003) have synthesized a significant body of data for Fort Polk, but results of much of the Fort Polk research over a 30 year period remain unused, in the gray literature of the CRM world. There are over 100 monographs and technical studies for Fort Polk, occupying over 10 linear feet of shelf space (Anderson and Smith (2003:1). A significant portion of the millions of dollars already spent on Fort Polk CRM work have been wasted because of lack of use of data obtained. There is also the question of how much future research at Fort Polk would be justified to picture a simple mobile hunter-gatherer lifeway.

Lack of use of the vast body of CRM reports for further research and syntheses is a major problem throughout the United States (Patterson 2002). Billions of dollars have been spent on CRM archeology in the past 25 years, with few results shown in the public domain. There is a great need to change CRM laws and regulations to provide for better use of data obtained by CRM projects. However, CRM laws and regulations represent entrenched bureaucracy that defies suggestions for improvements.

Conclusions

Anderson and Smith (2003) should be commended for producing a synthesis of Fort Polk research for the public domain. This is a significant rescue of data from the gray literature of CRM archeology, for a previously little known area of west-central Louisiana. Assemblages of artifacts from many sites at Fort Polk indicate a mobile hunter-gatherer lifeway throughout prehistory, similar to the lifeway of prehistoric groups from adjacent inland Southeast Texas and inland Southwest Louisiana.

There is evidence of technological influences on the Fort Polk area from wider areas east and west. Some of the outside technological influences may have resulted from visits by groups for lithic procurement. Projectile point types show influences from wider areas of Texas and Louisiana. Pottery types show influences from wider areas of Louisiana. The low frequency of pottery indicates a lack of permanent settlement at Fort Polk.

Fort Polk is a good example of a major problem of CRM archeology, where data from many site reports have not been used for further research and synthesis. Large amounts of CRM field work have been wasted. CRM field work in general should have a provision to use data obtained to produce syntheses that are published in the public domain. Anderson and Smith (2003:2) note that the vast mass of information obtained by Fort Polk work is all but impossible to examine and

understand in its totality. This is the result of not doing ongoing synthesis work as field data were being obtained.

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Prehistoric Bifacial Knives in Southeast Texas

Leland W. Patterson

Introduction

Formal stone tool types are not numerous in Southeast Texas, because the dominant stone tool type was the unmodified lithic flake used as an expedient tool for cutting, scraping, and miscellaneous tasks. Formal types of unifacial tools, such as scrapers and gravers, should also be regarded as expedient tools, because they are easy to make. This article is concerned with bifacial stone artifacts that were purposefully made for use as knives (cutting tools). It should be noted that dart point preforms and finished dart points could also have been used as cutting tools.

It is concluded here that only a few bifacial forms were purposefully made for use as knives. Typologies of knife forms are discussed, and geographic distributions, chronologies, and relations to bison hunting are considered.

Typologies of Bifacial Knives

Archeological site reports from Southeast Texas have been reviewed where knives were reported. It is concluded that a high proportion of symmetrical specimens reported as knives are actually dart point preforms, with only asymmetrical bifaces representing purposefully made knives. In a synthesis of Southeast Texas archeology, there were 31 published sites of the inland subregion that reported a total of 373 knives (Patterson 1996: Table 13). Under 10% of published archeological sites of inland Southeast Texas reported bifacial knife specimens. However, when symmetrical biface forms were removed, there were only 20 sites (less than 7% of published sites) with a total of 44 knife specimens, as given in Table 1. The total is not exact, because Wheat (1953: Table 6) combined symmetrical and asymmetrical biface forms in Type 2 for the Kobs (41HR7) and Doering (41HR5) sites. Only the inland subregion of Southeast Texas is considered here, because only a few site publications for the coastal margin report bifacial knives in this lithic-poor area.

Asymmetrical biface forms considered to be purposefully made knives are shown in Figure 1, including a corner-tang biface from site 41WH19 in Wharton County (Patterson et al. 1987). This corner-tang biface is from the Late Prehistoric period, and has different workmanship than the finely made corner-tang bifaces used as grave goods at sites of the Late Archaic Mortuary Tradition of western inland Southeast Texas (Hall 1981: Figure 18; Patterson et al. 1998: Figure 8).

There is a symmetrical biface form that can be identified as a knife, not as a dart point preform. At the Kobs site (41HR7), one specimen of a diamond-shaped Plains Knife (Turner and Hester 1993:274) was found from the Late Prehistoric period (Wheat 1953: Table 6, Form 6b).

Edge-Wear Patterns on Stone Cutting Tools

Edge wear from cutting produces a series of small scallops with some smoothing of the scallop tips (Patterson 1975; Tringham et al. 1974). This type of edge-wear pattern can be easily seen with a 10x magnifier on a flake edge that has been used for cutting. However, it is difficult to detect an edge-wear pattern on a bifacial knife because the edges have been modified during the manufacture of the tool. Experimental deer skinning with a bifacial knife by Patterson (1976a) produced some small scallops and smoothing of the working edge on the central part of the edge, but surprisingly little evidence of use wear on most of the working edge.

Geographic Distribution of Knives

Bifacial knives in Southeast Texas are mainly from the Late Prehistoric period (AD 600-1500) and are found mainly in the western half of the inland part of the region. The geographic distribution of bifacial knives corresponds roughly to the geographic distribution of bison remains (Patterson 1996: Figure 9). A bifacial knife from the Late Prehistoric period was excavated next to a bison bone at site 41WL27 (Patterson et al. 2005: Figure 3D). There was an increased presence of bison after AD 1200 (Story 1990:244).

Bifacial knives in the western half of Southeast Texas may indicate influences from Central Texas, especially after the increased presence of bison in the Late Prehistoric period, by trade or movement of hunter-gatherer groups. The Plains Knife from the Kobs site (41HR7) and the corner-tang biface from 41WH19 are indications of influences from Central Texas. Some bifacial knives are made of Central Texas cherts, such as a large knife from 41WH19 (Figure 1D).

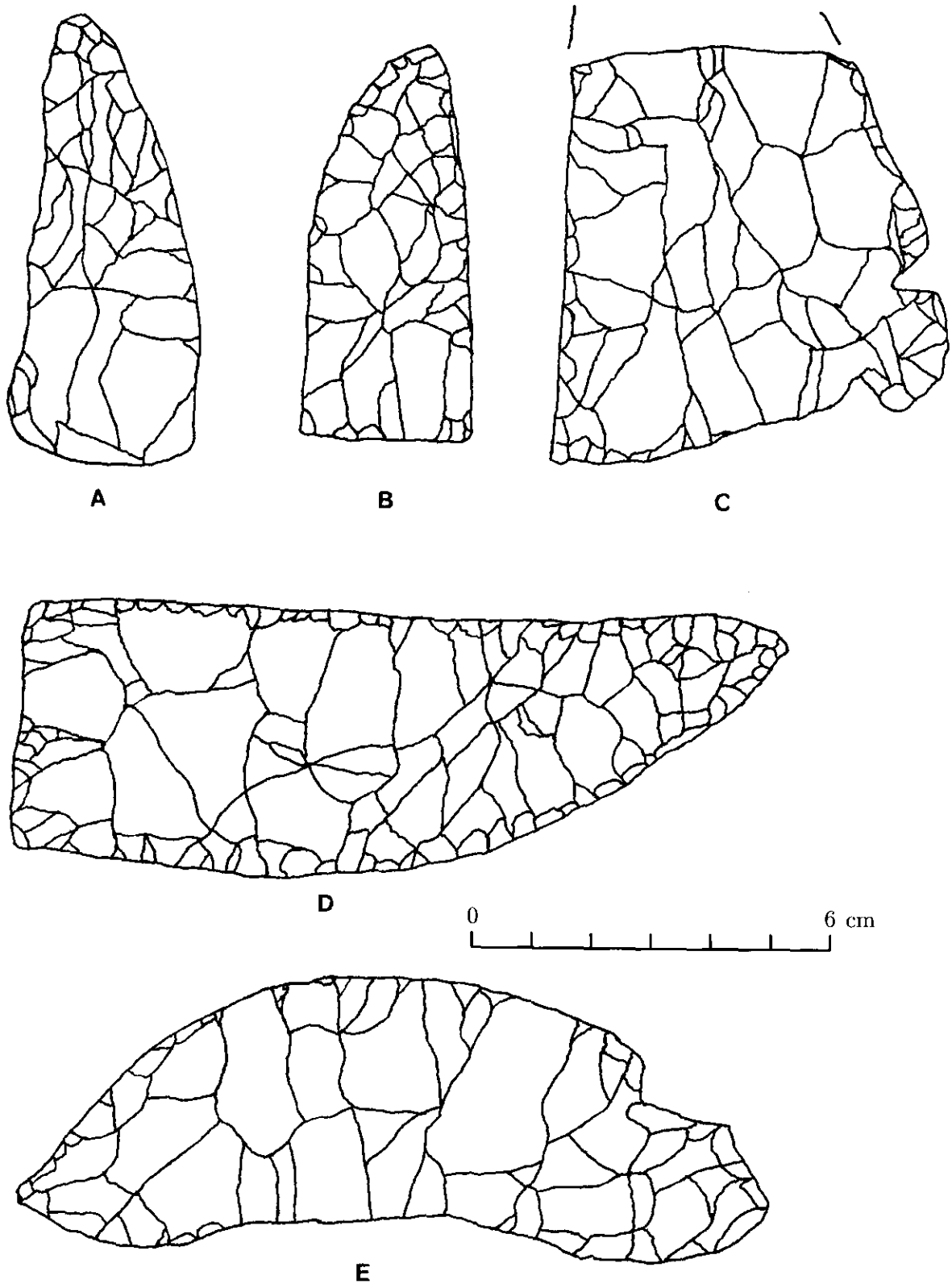
Summary

Bifacial stone knives are not numerous in Southeast Texas. Asymmetrical bifacial knives have been found mainly in the western half of Southeast Texas from the Late Prehistoric period. This type of artifact represents influences from Central Texas during a time of increased presence of bison.

Table 1. Bifacial Knives, Inland Southeast Texas

county	site	knives	reference
Fort Bend	41FB13	1	Walley 1955: Plate 39K
Fort Bend	41FB42	5	Patterson et al. 1993
Fort Bend	41FB129	1	Duke 1986: Fig. 1J
Fort Bend	41FB198	1	Patterson and Hudgins 1991: Fig. 4I
Fort Bend	41FB225	1	Patterson, McClure, et al. 1996
Grimes	41GM166	1	Rogers 1995
Grimes	41GM201	1	Rogers 1993
Harris	41HR5	A	Wheat 1953: Table 6
Harris	41HR7	A	Wheat 1953: Table 6
Harris	41HR73	2	Duke 1971
Harris	41HR89	1	McClure 1976
Harris	41HR248	1	Patterson 1976b: Fig. 1F
Harris	41HR641	1	Patterson 1990: Fig. 4Q
Liberty	41LB2	3	Aten 1967
Montgomery	41MQ4	2	Shafer 1968:65
Montgomery	41MQ5	2	Shafer 1968:65
Montgomery	41MQ6	2	Shafer 1968:65
Polk	41PK88	15	McClurkan 1968:91, Forms I,II
Waller	41WL27	1	Patterson et al. 2005
Wharton	41WH19	3	Patterson et al. 1987

A – asymmetrical knives mixed with symmetrical preforms



A – 41HR248; B,C,D – 41WH19; E – 41FB225

Figure 1 Bifacial Knives

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