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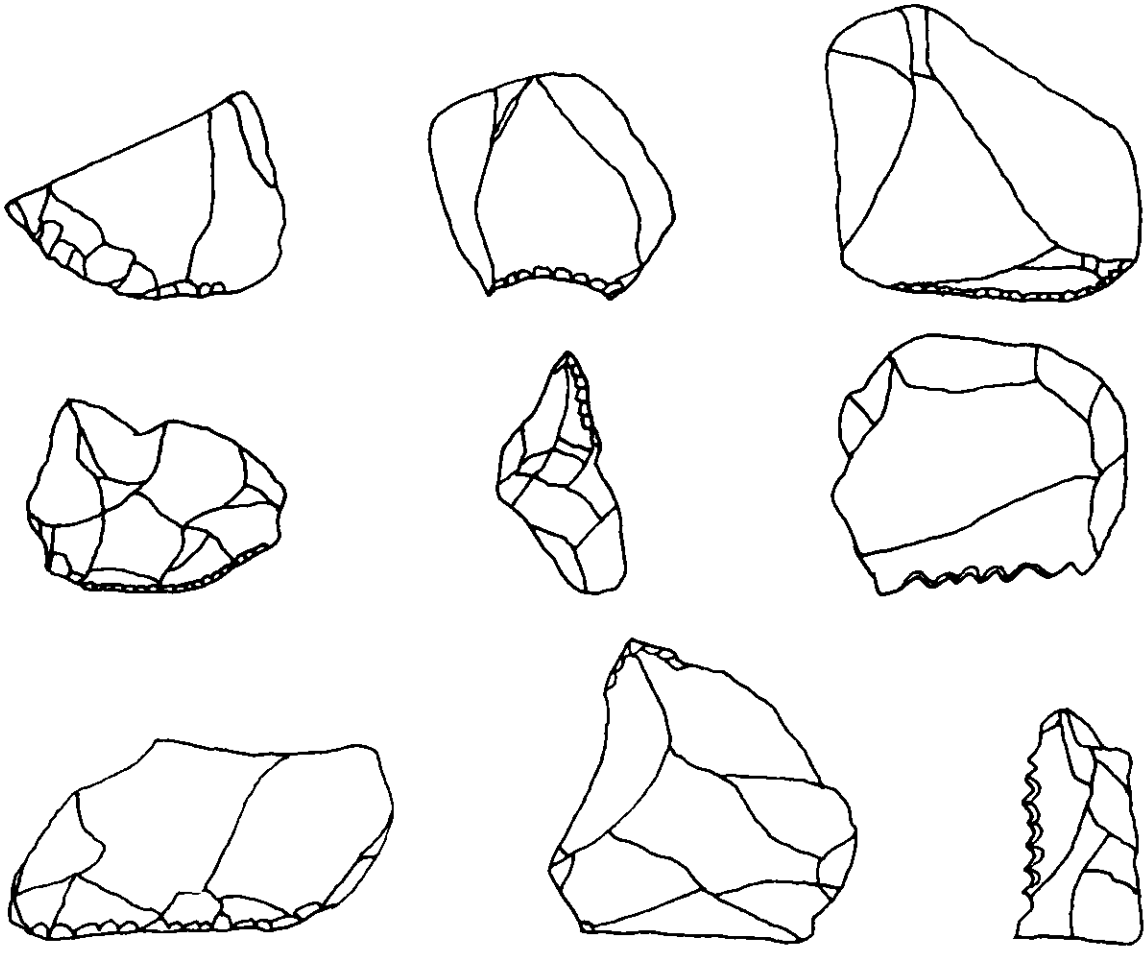

Lithic Tools

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Contents

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Excavations at the Marik Site, 41WH38, Wharton Co., Texas

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Introduction

This paper describes the results of excavations by the Houston Archeological Society at prehistoric site 41WH38 in Wharton County, Texas. This site was recorded for state records by Joe Hudgins. Work at this site was possible through the courtesy of the landowners, Gene and Pati Marik.

Work at site 41WH38 was supervised by HAS Field Director Joe Hudgins. Sheldon Kindall directed mapping and site records. Melissa May directed laboratory processing of artifacts. Persons who participated in the field work included Karen Acker, Melissa Brown, Bill Csanyi, Richey Ebersole, Cheryl Faber, Dick Gregg, Joe Hudgins, Bill Just, Sheldon Kindall, Ray McCausland, Don McReynolds, Bev Mendenhall, Bernard Naman, Allen Oravetz, Lee Patterson, Lenore Psencik, Gary Ryman, Steve Sebesta, Bob Shelby, Jeanette Siciliano, Randy Spalinger, Dudgeon Walker, and Muriel Walker.

This is a multi-component site with occupations in the Late Paleo-Indian (8000-5000 B.C.) and Early Ceramic (A.D. 100-600) time periods. Therefore, this site was occupied during two widely separated time periods. There is a possibility the site was also occupied in the intermediate Archaic period, but diagnostic artifacts for the Archaic period have not yet been found. Site 41WH38 is a campsite of nomadic Indians who practiced a hunting and gathering lifeway. The types of artifacts found here are typical for this type of site in inland Southeast Texas.

One day's work at this site also served as field instruction for the HAS "mini" field school, conducted by Sheldon Kindall.

Site setting and geology

Site 41WH38 is located on a high terrace above the Middle Bernard River near the town of East Bernard. The general area is a mixture of woodlands and coastal prairie. This location would have been a productive area for floral and faunal food resources, especially because there is a variety of ecological zones in the area. The soil is too acidic to allow good preservation of faunal remains, and floral remains are seldom preserved at sites in this region.

This site is located on a stable landform, with depths of only 30 to 55 cm of Holocene deposits above culturally sterile Pleistocene clay, based on various excavation pits, as shown in Table 1. Artifacts from different time periods are often mixed at sites on stable landforms, because of slow buildup of soil. At this site, there has been even more stratigraphic disturbance from modern plowing and trash dumping. As shown in Tables 1 and 2, modern materials were found as deep as 10 to 35 cm in various excavation pits. Table 2 gives a tabulation of modern materials that were found in the excavations. Disturbance by gophers could also be present. The most noticeable displacement of artifacts is four potsherds at depths that contain Late Paleo-Indian projectile points. Small potsherds, less than 20 mm square, could easily be displaced, especially because modern disturbance is so deep at this site, and the total excavation depth is shallow. Data from these excavations indicate that larger objects such as dart points are not as easily displaced as small objects.

There is little apparent natural stratigraphic change in the sandy soil at this site, and excavations were therefore done by 5 cm arbitrary levels. The soil is somewhat lighter in color near the clay,

and there are no sudden color changes in the sandy soil above the clay level. The soil type in the excavated levels is classified as sandy loam.

Excavation details

Excavations were done for 21 one-meter square pits, in levels of 5 cm. All soil was put through 1/4-inch (6-mm) mesh screen. An excavation layout is shown in Figure 1. Pit P, near the terrace edge, was shallow and did not yield many artifacts. Most significant artifacts came from pits located at least 10 meters from the terrace edge. The highest artifact yields came from the cluster of Pits G,H,I,J,L,M,N,O,U in an area of 4 by 5 meters. This limited area also has most of the pits with the deepest excavation levels. Excavation results show that the site is over 25 meters in diameter, but the maximum site area was not determined.

There appears to be a trend toward the west for thinner Holocene deposits above the Pleistocene clay layer, as shown by Pits R,S,T, which all have depths of 35 cm or less. There may be more soil erosion on the western part of the site, where fewer artifacts were recovered.

Ceramics

A total of six small potsherds were recovered at 41WH38, as shown in Table 3. One Goose Creek Plain sandy paste sherd was found in the 0-5 cm excavation level of Pit T. The other five sherds were O'Neal Plain, variety Conway, found at levels of 25 to 45 cm. This pottery type has coarse sand temper. Aten (1983: Figure 14.1) places this pottery type in the Early Ceramic period (A.D. 100-600) in the Galveston Bay area. The exact starting time of ceramics in the western part of inland Southeast Texas has not yet been determined. O'Neal Plain pottery from the Early Ceramic period is consistent with Ensor points (Figure 2A,B) found at this site, since Ensor points are found in the Late Archaic and Early Ceramic periods in Southeast Texas (Patterson 1991). The use of pottery does not appear to have been too important at this site.

It might be significant that the only Goose Creek Plain sherd was found at a shallower level than the O'Neal Plain sherds. Also, all of the O'Neal Plain sherds were in the cluster of pits with the highest artifact yields, but the Goose Creek sherd was located in Pit T, the pit farthest from the main cluster of pits.

Projectile points

Nine diagnostic dart points and three nondiagnostic dart point fragments were found during the excavations, as shown in Table 4. The diagnostic dart points are illustrated in Figure 2, and the nondiagnostic point fragments are shown in Figure 3. There is also an Angostura-like dart point blade fragment shown in Figure 3. Although there has been stratigraphic disturbance, dart point types are clustered stratigraphically, with later dart point types near the surface, and earlier types below 30 cm. Two Ensor points were found in the 0-5 cm excavation level. These specimens could be from the Late Archaic (1500 B.C.-A.D. 100) or Early Ceramic (A.D. 100-600) periods (Patterson 1991). With the presence of pottery and the shallow stratigraphic placement, it seems most likely that the Ensor points are from the Early Ceramic period.

Three Early Side-Notched points were found below 30 cm. These specimens resemble Ensor points, but have well-ground basal edges that are an attribute of Early Notched points from the Late Paleo-Indian period (8000-5000 B.C.). These specimens are similar to specimens from other sites of the Late Paleo-Indian period. One Early Side-Notched specimen from this site (Figure 2G) is similar to Early Side-Notched points found with San Patrice points at the Pearce site in Louisiana

(Webb et al. 1971: Figure 6). This specimen is also similar to a specimen from the Yarbrough site in Northeast Texas that Johnson (1961: Figure 7I) has called Edgewood, variety Dixon. Two of the Early Side-Notched specimens from 41WH38 are similar to specimens found at 41WH19 (Patterson et al. 1987: Figure 9) from the Late Paleo-Indian period.

Two Early Corner-Notched points with ground basal edges were found at 41WH38. One specimen (Figure 2H) found at the 30-35 cm excavation level resembles a Yarbrough point, but is also similar to Early Corner-Notched points at 41WH19 (Patterson et al. 1987: Figure 9) from the Late Paleo-Indian period. The other Early Corner-Notched specimen (Figure 2I) was found at the 15-20 cm excavation level of Pit H, but could easily have been displaced from a lower level, because there was modern disturbance in Pit H at least down to 30 cm (Table 2).

A small Early Stemmed point was found at the 30-35 cm excavation level. This specimen is similar to an Early Stemmed point from 41WH19 (Patterson et al. 1987: Figure 7G). Early Stemmed points occur in both the Late Paleo-Indian and Early Archaic (5000-3000 B.C.) periods (Patterson 1991). The specimen from 41WH38 may be from the Late Paleo-Indian period because it was in the same excavation level as some Late Paleo-Indian point types.

A specimen that appears to be an unfinished Angostura point was found at the 30-35 cm excavation level. Angostura points are from the Late Paleo-Indian period. An Angostura-like blade fragment with a missing basal end was found at the 35-40 cm excavation level.

In summary, two Ensor points were found that are judged to be from the Early Ceramic period. Three Early Side-Notched points, two Early Corner-Notched points, and an unfinished Angostura point are from the Late Paleo-Indian period. An Early Stemmed point is also judged to be from the Late Paleo-Indian period at this site. There may have been a long time interval in the Archaic period when this site was not used.

A possible unifacial arrow point (Figure 3A), made as a marginally retouched prismatic blade, was found at the 15-20 cm excavation level. The stratigraphic placement is consistent with unifacial arrow points found in the Early Ceramic period at other sites (Patterson and Hudgins 1992: Figure 2; Patterson 1992: Table 1). As an alternate explanation, this specimen may have been intended for use as a perforator, although there is no edge wear pattern present consistent with this function.

General lithics

Site 41WH38 is fairly near to good lithic resources in the form of large chert cobbles. The nearest lithic source is the Eagle Lake Area, about 15 miles to the west of this site.

A few formal unifacial stone tools were found during the excavations, including 3 gravers, 4 scrapers, a perforator, and a denticulate. A bifacial perforator was also found in Pit U at 25-30 cm. These specimens are illustrated in Figure 4, and unifacial tools are summarized in Table 5. In this region, the utilized flake was the dominant tool type. Some flakes from this site have cutting and scraping types of edge wear.

Aside from chert flakes, manufacture of dart points at 41WH38 is indicated by the presence of bifacial preforms. Preforms found here are listed in Table 6, and some are illustrated in Figure 3. A large biface edge spall found in Pit M at the 25-30 cm excavation level also indicates dart point manufacture.

A total of 1633 flakes were recovered during the excavations, which indicate lithic manufacturing activities. Flake size distributions for each level are given in Table 7. It may be seen that there are higher percentages of flakes over 20 mm square in excavation levels deeper than 30 cm compared to excavation levels shallower than 30 cm. This may reflect the change from the lower level occupations during the Late Paleo-Indian period to the upper level occupations during the Early Ceramic period. The flake size distributions of the 30-35 cm and 35-40 cm levels at 41WH38 are similar

to the Stratum 4 flake size distribution of site 41WH19 (Patterson et al. 1987: Table 11) from the Paleo-Indian period.

The percent of flakes over 20 mm square increases even more below the 40 cm excavation level at site 41WH38. This might be explained by an increase in primary reduction of chert cobbles at the site or by use of larger flakes for tools and projectile point manufacture. The latter explanation seems to fit better with the remaining cortex on flakes, shown in Table 8. There is a decrease in the percent of primary flakes (completely covered with cortex) from the 30-40 cm levels to the 40-55 cm levels. This would indicate that there was not an increase in primary reduction of chert cobbles at levels below 40 cm. The remaining cortex on flakes from a chert cobble flaking experiment (Patterson 1981) is also shown in Table 8 for comparison. The very high percentage of flakes over 20 mm square in excavation levels below 40 cm is not usual for sites in Southeast Texas. Another explanation for this high proportion of large-size flakes could be that this represents a lithic work area in the central part of the site where large-size flakes were stored for tool and dart point manufacture. This explanation may be supported by the very low percentage of flakes under 15 mm square, compared to levels above 40 cm, showing a low amount of final-stage reduction for finishing of projectile points. The remaining cortex on flakes from the 30-40 cm levels of 41WH38 is similar to the second stage experimental results which simulate use of flake blanks at a campsite, with the flake blanks produced at a remote lithic source. Remaining cortex on flakes from the 0-30 cm levels is lower than second stage experimental results, which may indicate trimming of flake blanks at the lithic source before transport to the campsite.

Aside from the presence of preforms, bifacial reduction at a site can be shown by flake size distribution. Bifacial reduction generally gives a flake size distribution that is a straight line on a semi-log plot of percent of flakes versus flake size (Patterson 1990). Semi-log plots of flake size distributions are fairly linear for excavation levels 0-5 cm, 5-10 cm, 10-15 cm, 15-20 cm, 30-35 cm, 35-40 cm, and 45-50 cm. As an example, the plot for the 10-15 cm level is given in Figure 5. Semi-log plots of flake size distribution are not linear for excavation levels 20-25 cm, 25-30 cm, and 40-45 cm. This may indicate more primary reduction of chert cobbles at these levels, or stratigraphic mixing.

Reduction of some chert cobbles at this site is shown by the presence of cores, listed in Table 9. The distance of a site from a lithic source may influence the number of chert cobbles brought to a site in addition to flake blanks. In the case of 41WH38, there is only a moderate distance to a lithic source. The production of flake blanks at the lithic source is an efficient lithic procurement method. This procedure allows for testing of material and minimizes weight and volume for transport to a remote campsite. The small number of thick chert pieces other than cores found at 41WH38 (Table 9) is another indication that primary lithic reduction at this site was done at a fairly low level, compared to a higher level of reduction of flake blanks.

Another indication of lithic manufacturing activity at this site is the presence of quartzite hammerstones and hammerstone fragments, as listed in Table 9. Heat treatment of chert is indicated at this site by specimens with waxy luster, reddish coloration, and potlid surface fracture scars. A sandstone abrader found in Pit G at the 35-40 cm excavation level may have been used for edge preparation in biface manufacture.

Possible archeological feature

In the 40-50 cm excavation levels of Pit O, a total of 67 iron concretions were found, having diameters of 20 to 35 mm. Perhaps this represents a collection of this type of material for use in cooking, in the manner that fired clayballs were used at other sites, such as 41WH19 (Patterson et al. 1987).

Faunal remains

As noted in the Introduction, preservation of faunal remains was not good at this site. One of the authors (McClure) analyzed faunal remains from fine-screen processing of soil from Pit O and a few possible faunal remains from the 1/4-inch (6-mm) screens. There were only a fish vertebrae, a gar scale, and two enamel fragments from deer teeth.

Summary

This paper has presented the results of excavations at prehistoric site 41WH38. Data obtained by this work indicate site occupation during the Late Paleo-Indian and Early Ceramic periods. Occupations during the intermediate Archaic time period are possible, perhaps in the 10-30 cm levels, but no diagnostic artifacts were found to confirm this. In any event, it is unusual for a site in this region to have a large time gap in the occupation sequence.

Artifact types found at 41WH38 are typical of types found at sites of inland Southeast Texas. Apparently, the use of pottery was not very important at this site, possibly because of high mobility of hunter-gatherer groups. The amount of artifacts found here indicates that this was not an intensely used site. Occupations may have been by small groups for short time periods, on a seasonal basis. Available types of data are not sufficient to allow determination of seasonal mobility-settlement patterns for nomadic hunter-gatherers of this region.

Data from site 41WH38 contributes to the regional archeological data base, especially for the Late Paleo-Indian period.

Acknowledgement:

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Table 1. Site Excavation Depths

pit	depth, cm: deepest excavation level	depth, cm: deepest modern material
A	35	25
B	40	15
C	40	20
D	40	10
E	40	5
F	40	15
G	55	20
H	50	30
I	45	20
J	50	20
K	45	10
L	50	30
M	45	20
N	45	20
O	50	20
P	30	10
Q	45	20
R	30	15
S	35	
T	30	30
U	45	35

Table 2. Modern Materials from Excavations

pit	level, cm	material type
A	20-25	plastic
B	10-15	iron ring, 45 mm diameter
C	15-20	plastic
D	5-10	2 plastic, aluminum can
E	0-5	2 can tabs, 3 plastic, 2 barb wire
F	0-5	lead, 2 glass, 5 plastic
F	5-10	metal, guitar pick, glass, plastic
F	10-15	2 asphalt roofing, shotgun shell, iron staple

Table 2. (Continued)

pit	level, cm	material type
G	0-5	glass, iron
G	5-10	can tab, glass, metal
G	10-15	2 glass, 2 iron, plastic
G	15-20	paint glob, glass
H	5-10	plastic
H	10-15	aluminum can
H	20-25	plastic
H	25-30	plastic
I	0-5	metal
I	5-10	4 plastic, glass
I	10-15	can tab, glass
I	15-20	glass
J	5-10	3 metal
J	15-20	rifle shell, plastic
J	20-25	plastic
K	0-5	nail, glass, can tab
K	5-10	can tab, plastic, iron, asphalt roofing
L	10-15	iron, plastic, glass
L	15-20	glass
L	20-25	plastic, can tab, shotgun shell
L	25-30	can tab
M	0-5	glass
M	15-20	metal
N	5-10	2 glass
N	10-15	lead bullet, asphalt roofing
N	15-20	lead bullet, glass
O	5-10	metal
O	10-15	can tab
O	15-20	modern finished wood
P	0-5	bullet
P	5-10	tire part, 2 glass, 12 slate
Q	0-5	15 metal
Q	5-10	12 metal
Q	15-20	3 metal
R	10-15	glass
T	5-10	plastic
T	25-30	metal
U	5-10	plastic
U	10-15	2 glass, plastic
U	30-35	plastic, very small piece

Table 3. 41WH38 Ceramics

no. of sherds	pit	level, cm	type
1	T	0-5	Goose Creek Plain
1	J	25-30	O'Neal Plain, var. Conway
1	O	30-35	O'Neal Plain, var. Conway
2	I	35-40	O'Neal Plain, var. Conway
1	J	40-45	O'Neal Plain, var. Conway

Table 4. Projectile Points

pit	level	type	dimensions, mm			fig.
			L	W	T	
U	0-5	Ensor	38.2	24.0	6.2	2A
J	0-5	Ensor	35.9	19.3	8.4	2B
H	15-20	Early Corner-Notched			7.2	2I
H	30-35	Early Side-Notched	54.8	21.5	9.5	2D
M	30-35	Early Corner-Notched	46.7	22.5	8.3	2H
O	30-35	Early Stemmed	26.2	17.1	6.2	2F
O	30-35	unfinished Angostura	83.0	25.8	9.5	2E
M	35-40	Early Side-Notched	51.2	24.2	7.5	2C
G	45-50	Early Side-Notched	32.0	19.6	5.9	2G
E	15-20	dart pt. blade frag.			6.1	3D
I	30-35	dart pt. blade frag.		28.9	7.8	3B
H	35-40	Angostura-like blade		20.0	10.3	3E
L	40-45	dart pt. blade frag.		29.8	8.6	3C
R	15-20	unifacial arrow point	22.1	12.0	2.7	3A

Table 5. Unifacial Tools

pit	level, cm	type	fig.
H	20-25	graver	4F
N	20-25	scraper	4J
O	25-30	perforator	4H
K	25-30	graver	4E
O	30-35	denticulate	4I
G	40-45	graver	4D
G	40-45	scraper	4B
L	40-45	scraper	4C
U	40-45	scraper	4A

Table 6. Dart Point Preforms

pit	level, cm	condition	stage	fig.
O	0-5	fragment	advanced	3J
O	10-15	fragment	advanced	3K
J	10-15	fragment	early	
I	20-25	fragment	advanced	3H
G	25-30	fragment	advanced	3I
F	20-25	fragment	advanced	3G
D	30-35	whole	early	3F
D	35-40	fragment	early	
M	35-40	whole	early	
J	35-40	fragment	advanced	
N	40-45	whole	thinning reject	
Q	40-45	fragment	early	
N	40-45	fragment	early	

Table 7. Flake Size Distributions

flake size, mm sq.	percent of flakes by excavation level					
	0-5	5-10	10-15	15-20	20-25	25-30
under 15	61.3	58.2	62.1	64.1	69.9	64.7
15-20	22.7	24.0	22.6	24.0	16.3	15.8
20-25	10.7	9.2	8.5	8.3	6.5	10.2
25-30	5.3	4.1	4.0	2.8	3.7	5.1
30-35		2.0	1.2	0.4	2.8	3.3
35-40		2.0	1.6	0.4	0.4	0.9
40-50		0.5			0.4	
	100.0	100.0	100.0	100.0	100.0	100.0
% over 20 mm	16.0	17.8	15.3	11.9	13.8	19.5
no. of flakes	75	196	248	217	246	215

flake size, mm sq.	percent of flakes by excavation level				
	30-35	35-40	40-45	45-50	50-55
under 15	53.0	50.8	31.8	33.3	
15-20	17.4	22.2	20.9	19.0	11.1
20-25	12.1	12.7	16.4	16.8	22.2
25-30	7.4	7.9	8.2	14.3	44.5
30-35	3.4	2.4	12.8	9.5	11.1
35-40	2.0	4.0	4.5	7.1	11.1
40-50	4.7		4.5		
50-60					
60-70			0.9		
	100.0	100.0	100.0	100.0	100.0
% over 20 mm	29.6	27.0	47.3	47.7	88.9
no. of flakes	149	126	110	42	9

Table 8. Cortex on Flakes
(flakes over 20 mm square)

flake type	excavation level, cm 0-30 %	30-40 %	below 40 %	experimental 2nd stage %	1st stage % used	1st stage % total
primary	6.1	7.2	4.9	7.1	15.7	13.3
secondary	23.8	32.8	46.1	33.6	51.2	40.3
interior	70.1	60.0	49.0	59.3	33.1	46.4

Table 9. Miscellaneous Lithic Artifacts

pit	level, cm	item
C	25-30	core, 50 mm diameter
G	50-55	3 cores, 50, 50, 60 mm diameters
H	45-50	core, 40 mm diameter
I	30-35	core, 30 mm diameter
J	30-35	core, 60 mm diameter
J	40-45	core, 50 mm diameter
J	45-50	thick chert piece
M	5-10	core, 35 mm diameter
M	15-20	core, 60 mm diameter
M	25-30	biface edge spall
M	25-30	core, 35 mm diameter
M	30-35	core, 50 mm diameter
M	35-40	core, 60 mm diameter
M	40-45	core, 40 mm diameter
N	5-10	core, 50 mm diameter
O	0-5	thick chert piece
O	25-30	3 thick chert pieces
O	40-45	core, 60 mm diameter
O	40-45	2 thick chert pieces
O	45-50	core, 70 mm diameter
P	20-25	2 thick chert pieces
Q	30-35	core, 30 mm diameter
U	30-35	thick chert piece
U	30-35	core, 50 mm diameter
U	40-45	thick chert piece
G	35-40	sandstone abrader
G	40-45	whole chert cobble, 50 mm diam.
G	50-55	whole chert cobble, 40 mm diam.
E	25-30	hammerstone fragment
G	50-55	hammerstone fragment
H	40-45	hammerstone fragment
I	25-30	hammerstone fragment
I	35-40	2 small hammerstones, 35 mm diameters
N	30-35	hammerstone fragment
O	45-50	hammerstone fragment

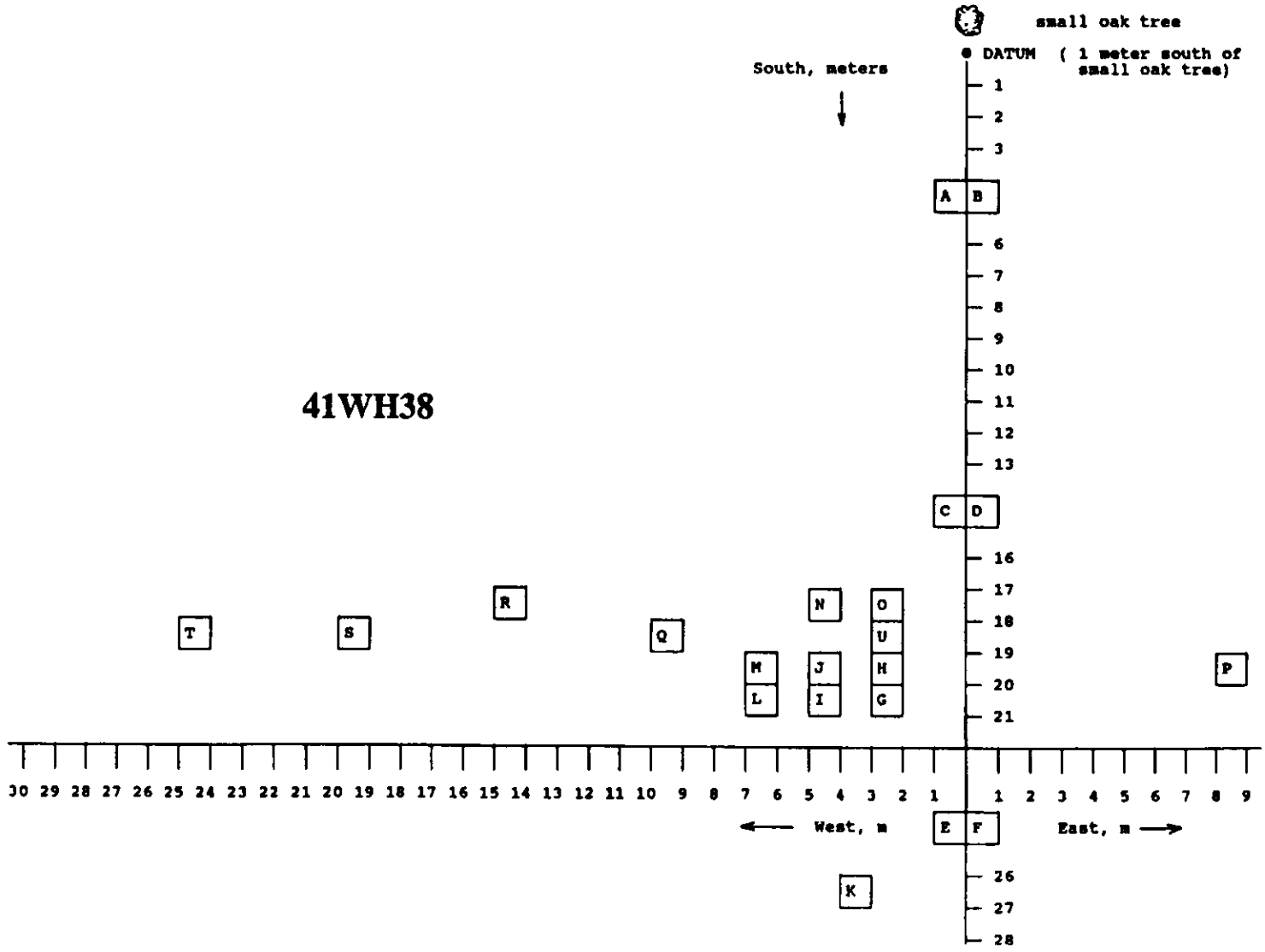
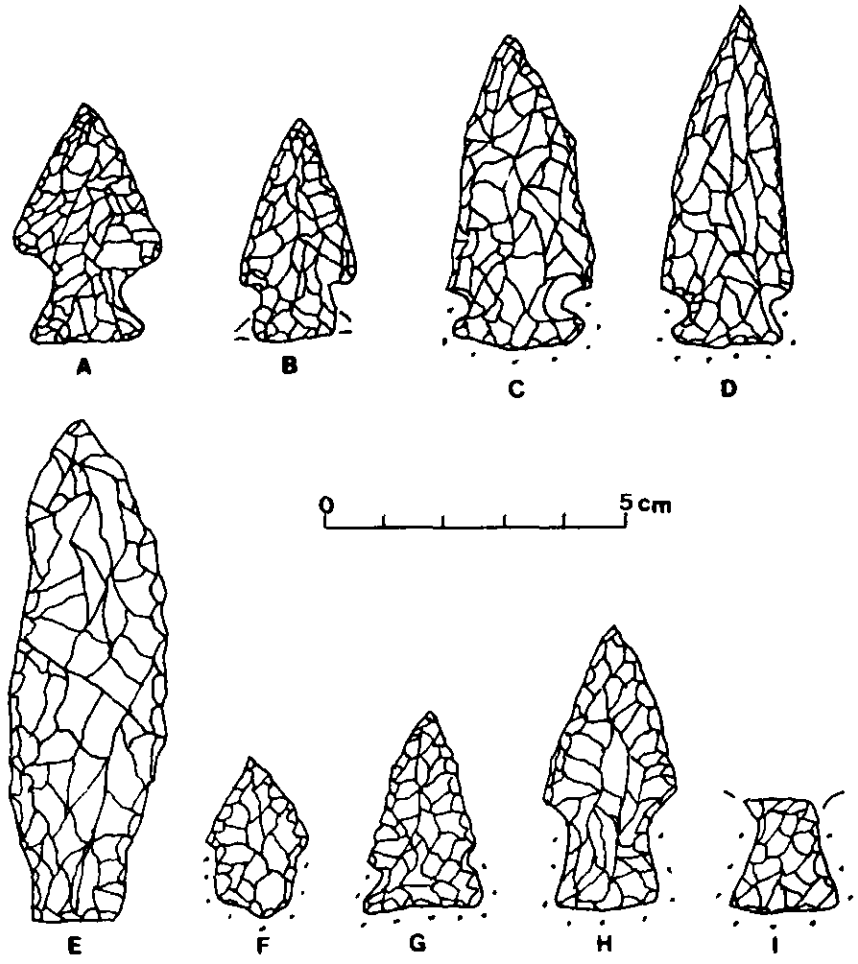
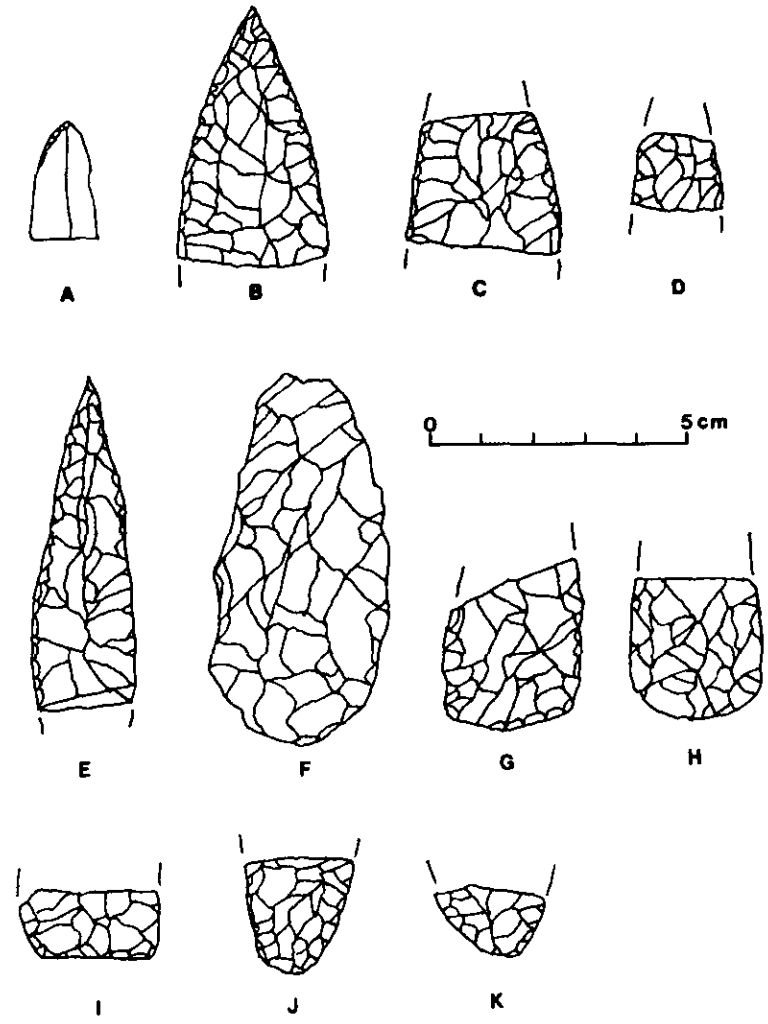


Figure 1. Excavation Layout



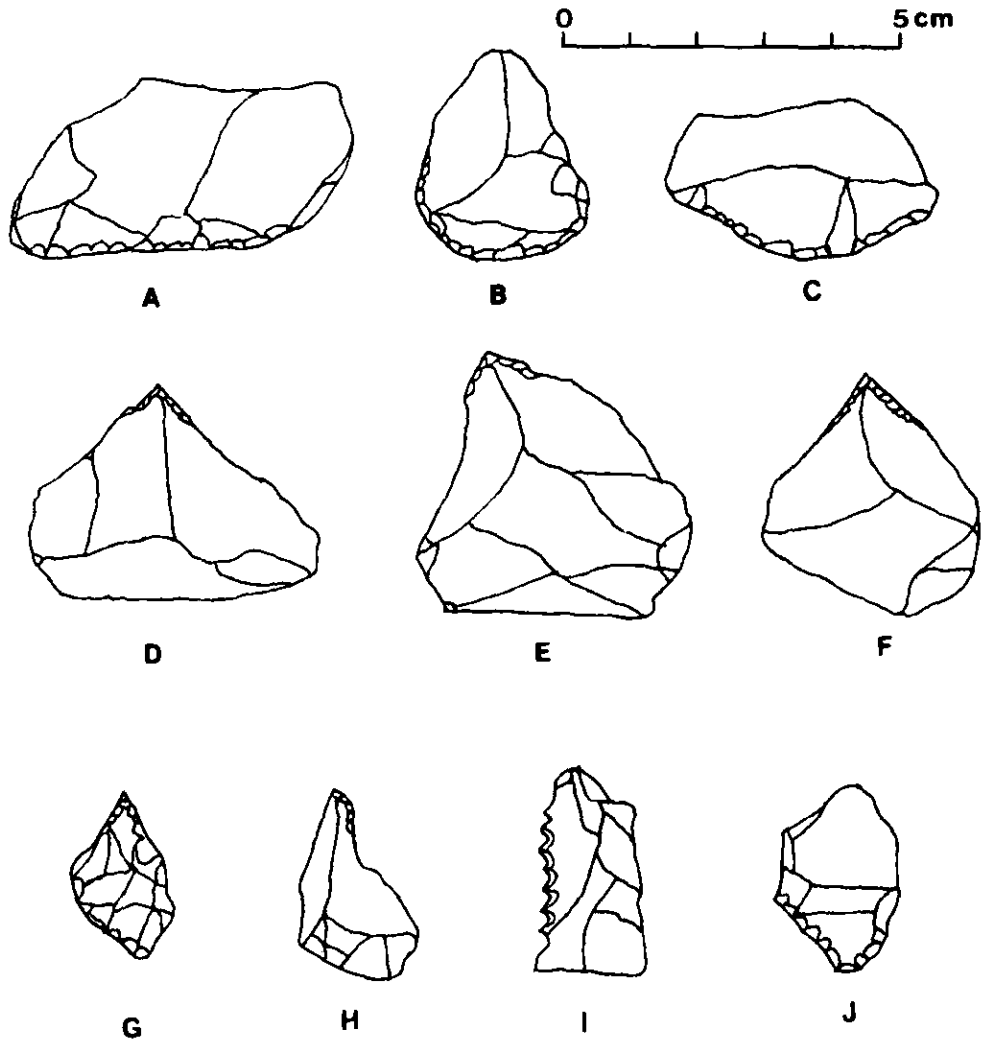
A,B – Ensor; C,D,G – Early Side-Notched; E – unfinished Angostura; F – Early Stemmed; H,I – Early Corner-Notched; dots show ground edges

Figure 2. Dart Points



A – unifacial arrow point; B,C,D – dart point fragments; E – Angostura-like blade; F to K – preforms

Figure 3. Projectile Points and Preforms



A,B,C,J - scrapers; D,E,F - gravers; G - bifacial perforator;
H - unifacial perforator; I - denticulate

Figure 4. Lithic Tools

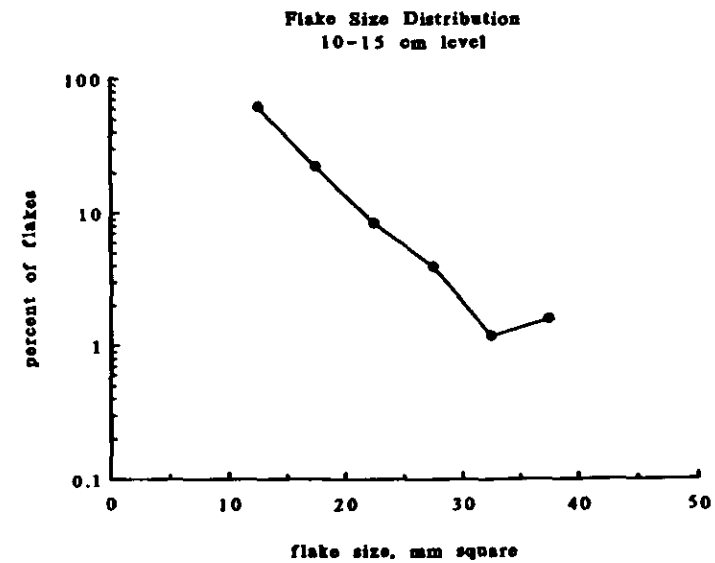


Figure 5. Flake Size Distribution, 10-15 cm level

Gar Scale Arrow Points

Leland W. Patterson

The shape of a large gar scale is similar to the shape of an arrow point, especially because a gar scale has a "stemmed" section. Gar scales are tough enough to be suitable for use as arrow points, as demonstrated experimentally by Agogino and Shelley (1988). There has been little data published, however, on the use of gar scales as arrow points by Indians of Texas. Because gar scales are organic material, they are not preserved in the archeological record as well as stone arrow points. It is fairly common to recover gar scales at archeological sites in Southeast Texas (Patterson 1989a, 1989b), but specimens are generally diamond-shaped objects that are too small for use as arrow points. A gar scale arrow point was illustrated by Patterson and Hudgins (1991: Figure 3K) for site 41FB198 in Fort Bend County on the edge of the Brazos River floodplain, as shown in Figure 1A.

Baker (1991) made a search of the literature for use of gar scales as projectile points, but he found no definitive example of use of gar scales as projectile points at specific archeological sites. There were only references noting the possibility of use of gar scales for arrow points, such as Jelks (1962:93). Baker (1991:44) noted that the Texas coastal margin would be a likely location for the use of gar scale arrow points as a substitute for stone points in a lithic-poor area. This proposal seems reasonable, but a question remains of why there is a scarcity of references to gar scale points at sites on the Texas coastal margin. Conditions for the preservation of gar scales are good at coastal shell midden sites. It may be noted that the gar scale arrow point from site 41FB198 mentioned above is from an area where lithic resources are available.

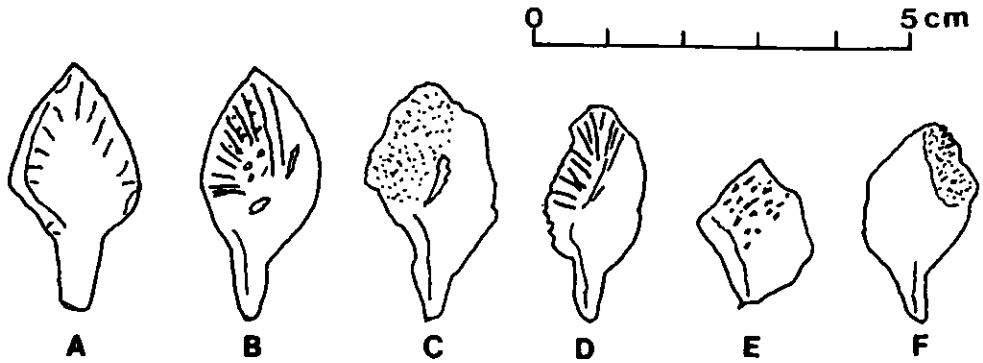
Nash and Rogers (1992: Figure 8b) illustrate a modified gar scale arrow point from site 41CH273 in Chambers County on the upper Texas coastal margin, in a lithic-poor area. Davis (1991:218) and Perino (1985:143) discuss gar scale arrow points, but neither author gives references to examples from specific archeological sites. Morse and Morse (1983: Figure 10.8) have illustrated a gar scale arrow point from the Zebree site of the Early Mississippian period (A.D. 700-1000) in eastern Arkansas.

There are ethnographic references to Indians using gar scale arrow points in the Southeastern United States. Cherokee arrows were pointed with "scales of a particular fish" which was probably gar (Swanton 1946:573). The Florida Creeks pointed their arrows with the scales of the "great brown spotted gar" (Swanton 1946:575). Swanton (1946:575) also thinks that some ethnographic references to fish bone arrow points may actually refer to gar scales.

I have obtained some large gar scales for experimental manufacture of arrow points. Gar scales cannot be chipped by pressure flaking as is done to make stone arrow points. Instead, gar scale edges must be abraded to obtain a finished projectile point shape. Shaping of a gar scale to make an arrow point is not difficult, because a large gar scale is already roughly the shape of a stemmed arrow point. Only a few minutes work is required to produce an arrow point from a gar scale, using a stone abrader. An experimental arrow point made from a gar scale is shown in Figure 1B. This specimen is similar to the gar scale arrow point from site 41FB198, shown in Figure 1A. A modern grinding stone was used for this experiment, but Indians could have used sandstone or quartzite abrading tools with equal results. Gar scales are difficult to cut. It is therefore much easier to shape a gar scale arrow point with an abrading tool. Some unworked gar scales are also illustrated in Figure 1.

The experimental gar scale arrow point shown in Figure 1B weighs 1.1 grams, has a length of 32.9 mm, a width of 15.6 mm, a thickness of 3.5 mm, and a stem width of 3.9 mm. These measurements are well within the usual metric attribute values for stone arrow points in Southeast

Texas. Stone arrow points in this region usually weigh less than 2.3 grams, have thicknesses less than 5 mm, and stem widths under 9 mm (Patterson 1985).



A – point from 41FB198; B – experimental point; C to F – unworked gar scales

Figure 1. Gar Scale Arrow Points and Unworked Scales

The main differences between an unworked gar scale and one that has been shaped into an arrow point are that the arrow point has smoothed symmetrical edges and a more definitive pointed tip. Baker (1991:47) has noted that asphalt on a gar scale might indicate hafting of the specimen for projectile point use. William McClure (personal communication 1994) has notes on a gar scale with asphalt from Late Prehistoric site 41HR422 on the upper Texas coastal margin. However, this specimen is not available for study.

It is hoped that this article will encourage more publication on gar scale arrow points. There are likely to be specimens of this type in collections from along the Texas coast where large gar are available, especially in lithic-poor areas, as Baker (1991:44) has proposed.

Acknowledgement Appreciation is expressed to Barry W. Baker and Ellen Sue Turner for furnishing some useful information for this article.

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41HR184, A Long Occupation Sequence, Harris Co., Texas

Leland W. Patterson

Introduction

This paper describes a surface collection made at prehistoric site 41HR184 in western Harris County, Texas. The site has been severely disturbed by pothunters and pipeline construction. Site 41HR184 has an occupation sequence from the Paleo-Indian through the Late Prehistoric time periods, in a time interval of perhaps as long as 10,000 years. No artifact types were found that would indicate an Historic Indian component.

The site is in a wooded area on the bank of an inactive stream. The site is over 30 meters in diameter. This is a campsite that was seasonally occupied by nomadic hunter-gatherers. The artifact types from site 41HR184 are similar to types from other sites in Harris County that have long occupation sequences, such as 41HR315 (Patterson 1980) and 41HR182 (Patterson 1985, 1990a). The fairly large collection of artifacts from this site again demonstrates the contribution that surface collections can make to the regional archeological data base.

Prismatic blade technology and unifacial arrow points, in the form of marginally retouched flakes, from site 41HR184 will be discussed in a separate paper.

Projectile points

A portion of the Early Paleo-Indian period may be represented at this site by a possible Midland point. A fragment of a lanceolate-shaped point, shown in Figure 1A, has a thickness of 3.9 mm and very good workmanship. The basal edges are not ground as is characteristic of the Midland point type (Turner and Hester 1993:155), but this thin point specimen may have been broken during manufacture before the final stage of basal edge grinding. The time period for the Midland point is the same as for Folsom (11,000-10,000 B.P.), and the two point types seem to be technologically related (Amick, Hofman, and Rose 1989).

The Late Paleo-Indian period (10,000-7000 B.P.) is represented at site 41HR184 by Angostura and Early Notched dart points, shown in Figure 1. In Southeast Texas, Early Notched points occur throughout the Late Paleo-Indian period (Patterson et al. 1987), and Angostura points occur in the later portion of this time period (Patterson et al. 1993, 1994).

Projectile points from the Early Archaic period (7000-5000 B.P.) found at this site include Carrollton, Wells, and Early Stemmed (Figure 1). The Middle Archaic period (5000-3500 B.P.) is represented at this site by a Williams point (Figure 2A) and perhaps by Pedernales points (Figure 2B), although the Pedernales point also occurs in the Late Archaic (3500-1900 B.P.) in this region (Patterson 1991a). Some of the Gary (Figure 2) and Kent (Figures 3,4) points found at this site could be from the Middle Archaic period, but Gary and Kent points also occur in later time periods, through the Late Prehistoric.

Aside from Gary and Kent points, the Late Archaic (3500-1900 B.P.) and the Early Ceramic (1900-1400 B.P.) periods are represented at 41HR184 by Ellis (Figure 3), Ensor (Figure 2), Yarbrough (Figure 2), and Palmillas (Figure 2) dart points (Patterson 1991a). A Morhiss point (Figure 3) from the Late Archaic (Turner and Hester 1993:158) at this site is not a common point type in Southeast Texas.

Bifacial arrow points found at this site are from the Late Prehistoric period (1400-500 B.P.), including Perdiz, Alba, and an unclassified type (Figure 4). There are also a significant number of unifacial arrow points, in the form of marginally retouched flakes, some of which may occur before

the Late Prehistoric period (Patterson 1982, 1992). As noted in the Introduction, unifacial arrow points from this site will be discussed in a separate paper.

A summary of projectile points and point fragments found at this site is given in Table 1. Dimensions and materials of diagnostic point specimens are given in Table 2.

Ceramics

Pottery started in the Galveston Bay area about A.D. 100 (Aten 1983:297). Goose Creek sandy paste pottery occurs in the Early Ceramic (1900-1400 B.P.), the Late Prehistoric (1400-500 B.P.), and the Historic Indian (after 500 B.P.) periods, so this pottery type is not very time-diagnostic. There were 183 Goose Creek Plain and 7 Goose Creek Incised sherds found here. The Goose Creek Plain sherds include 3 rim sherds and 2 sherds with lace holes for vessel repair. Lace holes indicate that some pottery was probably used for storage where a water-tight vessel was not needed. Goose Creek Incised sherds found at this site include 2 sherds with single lines on external surfaces, 3 sherds with single lines on interior surfaces, 1 sherd with two parallel lines on the internal surface, and 1 sherd with two crossed lines on the internal surface. It is unusual to find more sherds with internal incising than with external incising.

O'Neal Plain, variety Conway pottery has coarse sand temper, and occurs only in the Early Ceramic period (Aten 1983:Figure 14.1). There were 18 sherds of this pottery type found at 41HR184. Bone-tempered pottery was also found at this site; it could be from the Early Ceramic, Late Prehistoric, or Historic Indian periods (Aten 1983:Figure 14.1; Patterson 1980; Patterson and Hudgins 1989). Like Goose Creek Pottery, bone-tempered pottery is not very time-diagnostic. Bone-tempered pottery from this site includes 17 plain sherds and 1 incised sherd with four parallel lines on the exterior surface.

Goose Creek sherds varied from 3 to 11 mm in thickness, with an average of 7 mm. The thicknesses of O'Neal Plain sherds varied from 5 to 9 mm, with an average of 6 mm. Bone-tempered sherds had thicknesses of 5 to 8 mm, with an average of 6 mm.

General lithics

Most of the lithic tools and debitage from site 41HR184 are made of chert, which is found as cobbles in alluvial deposits along the Brazos and Colorado Rivers west of this site. Some chert is also found at Caney Creek and the San Jacinto River, north of this site. Some petrified wood also occurs at these lithic sources. The Colorado River is about 50 miles from site 41HR184, and is the main source of large chert cobbles for this region. Chert cobbles well over 100 mm in diameter can be found in the Colorado River basin. This is likely the area that was used to obtain flake blanks for use in manufacturing large dart points. The other three lithic sources mentioned above are all about 25 miles from site 41HR184, and have only small chert cobbles, generally well under 60 mm in diameter. Small chert cobbles could have been used for producing flake blanks suitable for making small dart points (mostly under 45 mm in length).

The amount of lithic manufacturing activity at sites of inland Southeast Texas does not seem to be related to the distances from lithic sources. Campsite distances of 25 to 50 miles from chert sources do not seem to have affected the level of lithic manufacturing activity at the campsite. Lithic procurement can be embedded in seasonal subsistence rounds, as described by Binford (1979). Instead, lithic procurement for sites in Southeast Texas was done by special trips to lithic sources. There are sites throughout the region with large amounts of lithic manufacturing, regardless of the distances from lithic sources.

As with most sites in this region, site 41HR184 has few formal unifacial lithic tools, compared to the quantity of utilized flakes. Five formal unifacial scrapers were found (Figure 6), but 94 utilized flakes were found that had scraper-type edge wear (Tringham et al. 1974). Other formal unifacial tool types found include 47 perforators, 38 gravers, 11 denticulates, and 7 notched tools. Examples of unifacial tool types are shown in Figures 6 and 7. Some of the perforators are pointed flakes with minimal retouch used to form the working bit.

Several utilized flakes were observed with cutting-type edge wear as shown by Tringham et al. (1974). A complete study of all flakes for cutting-type edge wear was not done, however, because cutting-type edge wear is often difficult to detect. When soft materials such as meat are being cut, a fully diagnostic edge wear pattern is slow to develop (Patterson 1984). There are probably many flakes in this collection that were used for cutting, but for which a diagnostic edge wear pattern did not develop.

Only a few bifacial tools were found. Two bifacial choppers are shown in Figure 5. Three bifacial drills and a bifacial knife fragment are shown in Figure 7.

The manufacture of bifacial projectile points at this site is shown by preforms and many bifacial thinning flakes. Dart point preforms recovered include 1 early stage preform, 6 early stage preform fragments, 38 miscellaneous preform fragments, and 4 finished preforms (Figure 5).

Approximately 14,000 lithic flakes were collected, mainly of chert. A sample of 2330 flakes was used to obtain flake size distribution and remaining cortex on flakes. Flake size distribution is given in Table 3, and is shown in Figure 8 as a semi-log plot. If bifacial reduction were the only lithic reduction type, this plot would give a straight line (Patterson 1990c). The semi-log plot in Figure 8 is not a straight line, however. This indicates other lithic manufacturing in addition to making bifacial tools and points. Apparently flake blanks were brought to the site for the manufacturing of projectile points, but small chert cobbles were also brought to the site for making other types of stone tools. This conclusion is supported by the recovery of 55 amorphous cores made from chert cobbles, including 25 with diameters of 45-60 mm, 27 with diameters of 20-40 mm, and 3 with diameters of 70-80 mm. Since the plot in Figure 8 is very roughly linear, it is further concluded that production of bifacial projectile points was the major lithic manufacturing activity at this site. Chert cobbles were brought to the site only occasionally for other types of lithic manufacturing. This conclusion is supported by the large number of flakes as compared to the modest number of chert cores.

For flakes over 15 mm square in size, there were 7.9% primary flakes (covered with cortex), 37.6% secondary flakes (partially covered with cortex), and 54.5% interior flakes (no remaining cortex). This is similar to results from the second stage of a chert cobble flaking experiment (Patterson 1981:32) that simulated manufacture of projectile points and a few other tools from flake blanks. This further supports the above conclusion that flake blanks were brought to this site more often than chert cobbles.

Other items at site 41HR184 that indicate lithic manufacturing activities include 35 quartzite hammerstones with diameters of 30-80 mm, 15 quartzite hammerstone fragments, 1 limestone hammerstone with a diameter of 50 mm, 1 miscellaneous bifacial core, 35 thick chert pieces, 3 thick petrified wood pieces, and 7 pieces of sandstone that may have been used as abraders for preform edge preparation.

Small prismatic blades were manufactured at this site, as shown by many small prismatic blades and some polyhedral blade cores. As noted in the Introduction, this subject will be discussed for site 41HR184 in a separate paper.

Ten flakes of exotic chert, probably from the Edwards Plateau, were found that had some remaining limestone cortex. Limestone cortex is common on Edwards Plateau chert, but does not occur on local cherts in Southeast Texas. Also, a Pedernales point (Figure 2B) and an Ellis point

(Figure 3B) appear to be made from Edwards Plateau cherts. Exotic chert specimens are found only occasionally at sites in Southeast Texas.

Heat treatment of chert was done extensively for materials from site 41HR184. Many flakes have indications of heat treatment in the form of waxy luster, reddish coloration, and small potlid surface fractures.

Miscellaneous artifacts

Two chert flakes with small natural holes may have been used as pendants (Figure 7E,F). The holes may have some wear from fiber strings. Four pieces of asphalt were recovered, which were probably used as an adhesive for projectile point hafting.

A sandstone mano-metate grinding tool set was found. The mano has a diameter of 45 mm, and is 15 mm thick. The metate has a 100 mm diameter, is 30 mm thick, and has a concave depression 35 mm in diameter. Thirteen highly polished pebbles with diameters of 20-35 mm were found, which may have been used as pottery finishing tools. Six pieces of red ocher were recovered, which may have been used in powdered form for body decoration.

Fired clayballs

Fired clayballs are found at some sites in Southeast Texas (Patterson 1989a). This artifact type was probably used for roasting. Hudgins (1993) has roasted meat on hot clayballs, and has found that clayballs retain heat longer than hot wood coals. There were 572 clayballs found at site 41HR184 with a total weight of 6820 grams. The clayballs have diameters of 15-70 mm, and an average weight of 11.9 grams. A few caliche pieces were found with the clayballs. Natural caliche pieces seem to have been used for the same function as clayballs.

Vertebrate remains

W. L. McClure (personal communication 1994) examined the vertebrate remains that were recovered. He reports that fewer than 200 bone fragments were included. Of these, one is a mandible of a hispid cotton rat (*Sigmodon hispidus*) that appears to be recent. All the remaining bones had been burned and are considered to be contemporary with the artifacts. All were also badly fragmented, perhaps due to recent pedestrian or vehicular traffic across the site. There are 40 fragments of turtle shell, of which a few are of box turtle (*Terrapene* sp.); all could be from that species. The remainder of the bones are 140 fragments that are probably from deer (*Odocoileus* sp.).

Summary

Site 41HR184 is a large prehistoric site in inland western Harris county, with a long occupation sequence from the Paleo-Indian through the Late Prehistoric time periods. A significant number of sites with long occupation sequences have now been reported for inland Southeast Texas (Patterson 1989b, 1990). The reuse of sites over long time periods indicates stable settlement patterns and a restricted degree of mobility of nomadic hunter-gatherers (Patterson 1991b). Some of the important characteristics of site 41HR184 include a high level of lithic manufacturing, the use of fired clayballs, and perhaps less intensive site use during the Late Prehistoric period.

The artifact types at this site are typical for sites in the central area of inland Southeast Texas. Projectile point types are a mixture of types from traditions of the Southern Plains (Central Texas)

and the Southeast Woodlands. The hunter-gatherer lifeway was practiced successfully in Southeast Texas for over 10,000 years, with only gradual changes in technology and artifact types. Data from surface collections at prehistoric sites form a large portion of the archeological data base for Southeast Texas.

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Table 1. Summary of Projectile Points

type	number
Midland ?	1
Angostura	3
Carrollton	1
Wells stems	3
Early Corner-Notched stems	3
Early Stemmed	1
Early Stemmed stems	3
Pedernales	1
Pedernales stems	2
Williams	1
Gary	3
Gary stem	1
Kent	19
Ensor	3
Ellis	6
Morhiss	1
Palmillas	1
Palmillas stem	1
Yarbrough	2
Perdiz	3
Alba	1
unclassified arrow point	1
misc. expanding stems	12
misc. straight stems	13
misc. contracting stems	7
dart point tips	18
dart point blade frags.	9
misc. dart point frags.	5

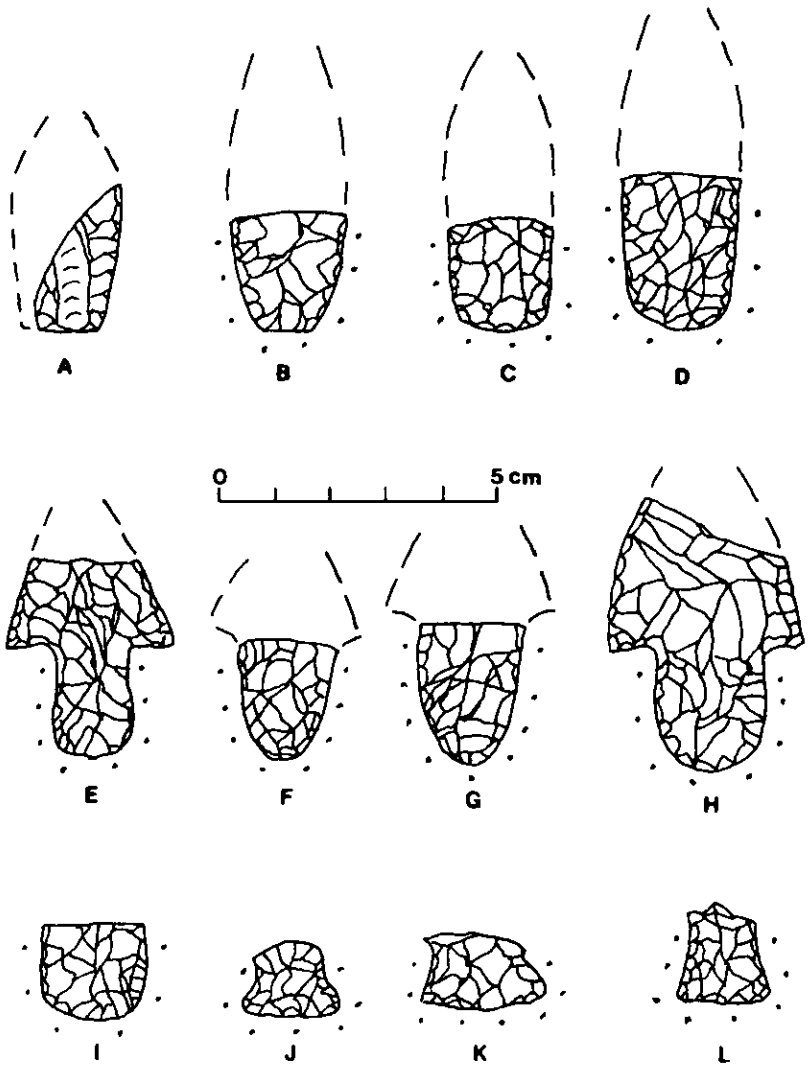
Table 3. Flake Size Distribution

flake size, mm square	no. of flakes	%
under 15	800	34.3
15-20	747	32.1
20-25	451	19.4
25-30	178	7.6
30-35	123	5.3
35-40	23	1.0
40-50	8	0.3
	2330	100.0

Table 2. Projectile Point Details

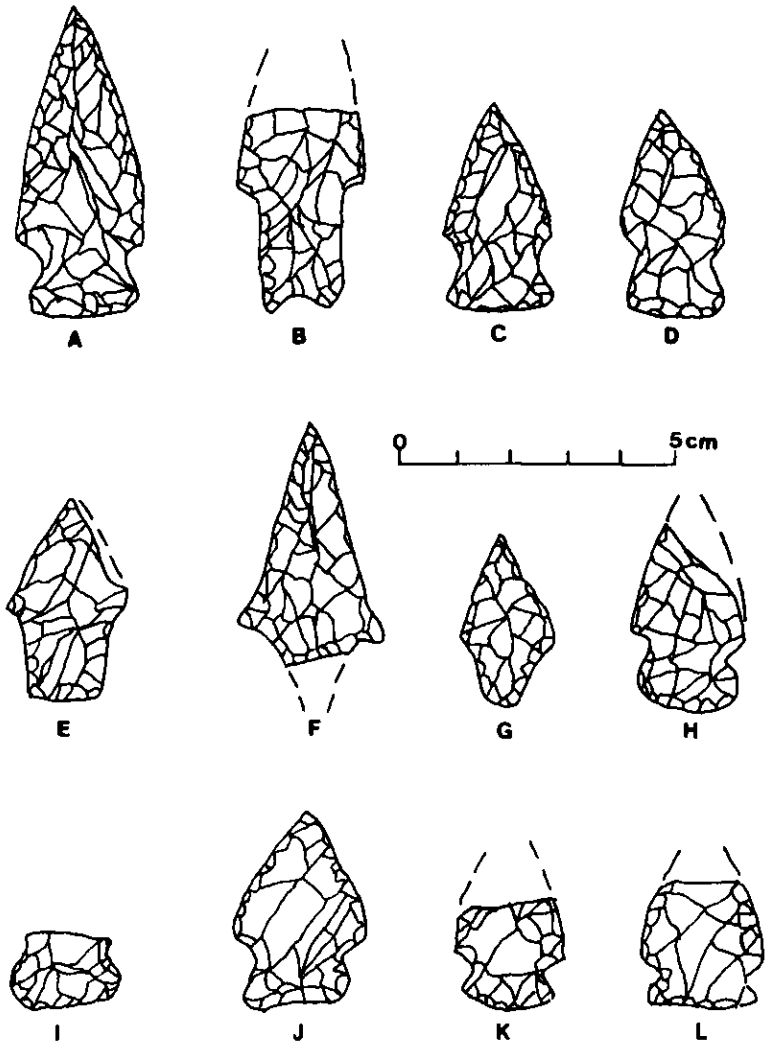
type	dimensions, mm L	W	T	Fig.	material
Midland ?			3.9	1A	chert
Angostura			5.1	1B	chert
Angostura			7.2	1C	chert
Angostura		21.3	7.0	1D	chert
Carrollton		29.8	8.2	1E	chert
Wells stem			6.5	1F	chert
Wells stem			6.7	1G	chert
Early Stemmed		34.4	8.4	1H	chert
Early Stemmed stem			7.6	1I	chert
Early Notched stem			6.7	1J	chert
Early Notched stem			6.2	1K	chert
Early Notched stem			5.9	1L	chert
Wells stem			7.8		chert
Early Stemmed stem			6.6		chert
Early Stemmed stem			5.9		chert
Williams	53.8	22.6	10.8	2A	pet. wood
Pedernales		23.3	6.6	2B	exotic chert
Pedernales stem					chert
Pedernales stem					chert
Yarbrough	34.9	18.6	6.4	2C	chert
Yarbrough	35.3	19.3	9.4	2D	chert
Gary	35.5	21.7	9.2	2E	pet. wood
Gary		25.9	5.9	2F	chert
Gary	31.0	16.8	7.0	2G	chert
Gary stem					chert
Palmillas		21.0	9.0	2H	chert
Palmillas stem			6.1	2I	chert
Ensor	34.7	23.8	6.2	2J	chert
Ensor		19.1	A	2K	chert
Ensor		21.7	A	2L	chert
Ellis	32.8	24.5	7.9	3A	chert
Ellis	32.5	23.6	7.0	3B	exotic chert
Ellis			5.9	3C	chert
Ellis		18.0	5.4	3D	chert
Ellis	32.9	17.0	4.6	3E	chert
Ellis		18.7	6.0	3F	chert
Kent		17.4	6.0	3G	chert
Kent	33.9	16.4	6.0	3H	pet. wood
Morhiss		25.6	6.3	3I	chert
Kent	55.3	20.4	9.3	3J	chert
Kent	48.6	15.4	10.0	3K	chert
Kent	44.2	17.3	7.6	3L	chert
Kent		19.3	8.6	4A	chert
Kent		16.1	7.0	4B	chert
Kent		20.7	6.8	4C	chert
Kent		24.6	5.5	4D	chert
Kent	34.5	16.4	5.5	4E	chert
Kent	35.1	17.5	6.0	4F	chert
Kent	28.9	20.5	6.1	4G	chert
unclass. arrow point		15.6	3.2	4H	chert
Perdiz		21.4	3.7	4I	chert
Perdiz			2.2	4J	chert
Perdiz	35.2	18.5	2.8	4K	chert
Alba		15.3	3.5	4L	chert
Kent	41.7	20.0	9.0		chert
Kent		20.3	6.1		chert
Kent		15.5	9.4		chert
Kent		25.0	8.7		chert
Kent			8.0		chert
Kent		20.2	6.0		chert
Kent		23.6	8.3		pet. wood

A – thermal damage reduced thickness



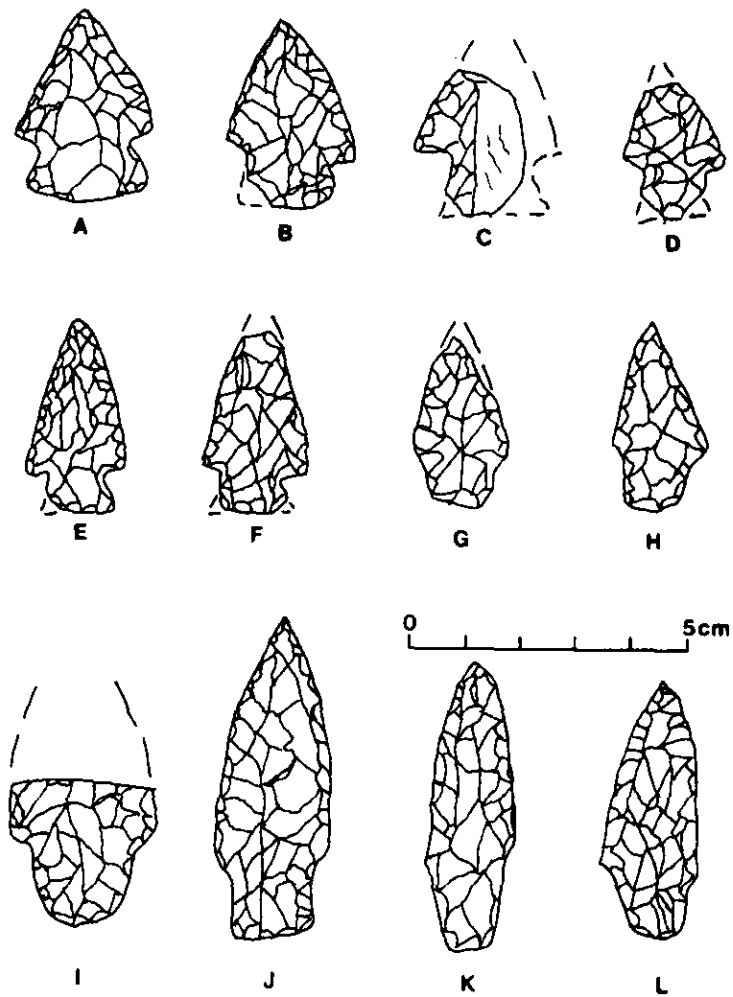
A - Midland?; B,C,D - Angostura; E - Carrollton; F,G - Wells; H,I - Early Stemmed; J,K,L - Early Notched; dots show ground edges

Figure 1. Early Projectile Points



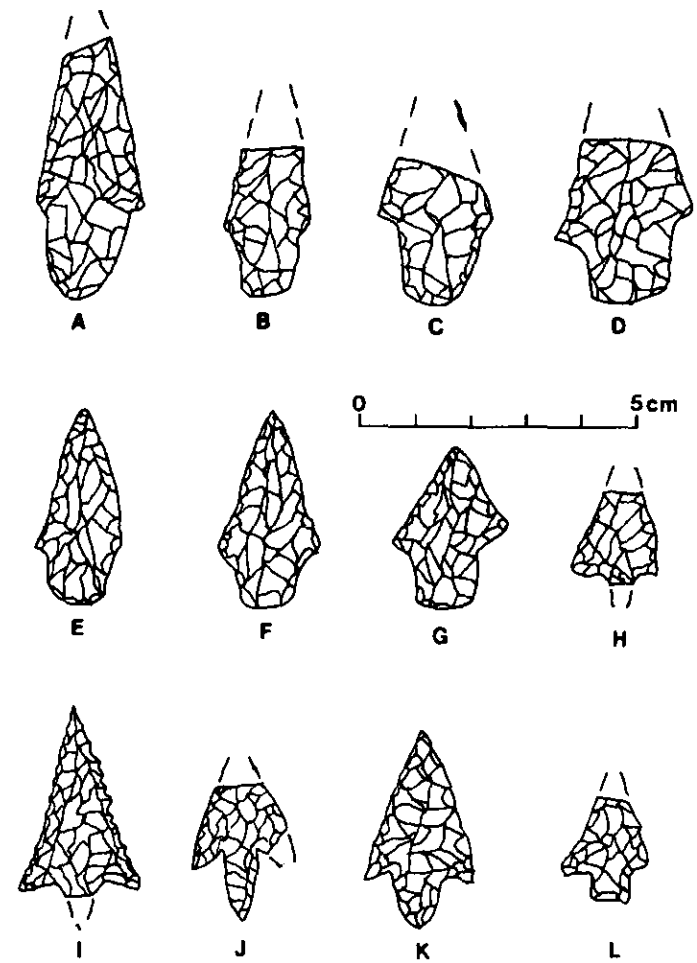
A - Williams; B - Pedernales; C,D - Yarbrough; E,F,G - Gary; H,I - Palmillas; J,K,L - Ensor

Figure 2. Projectile Points



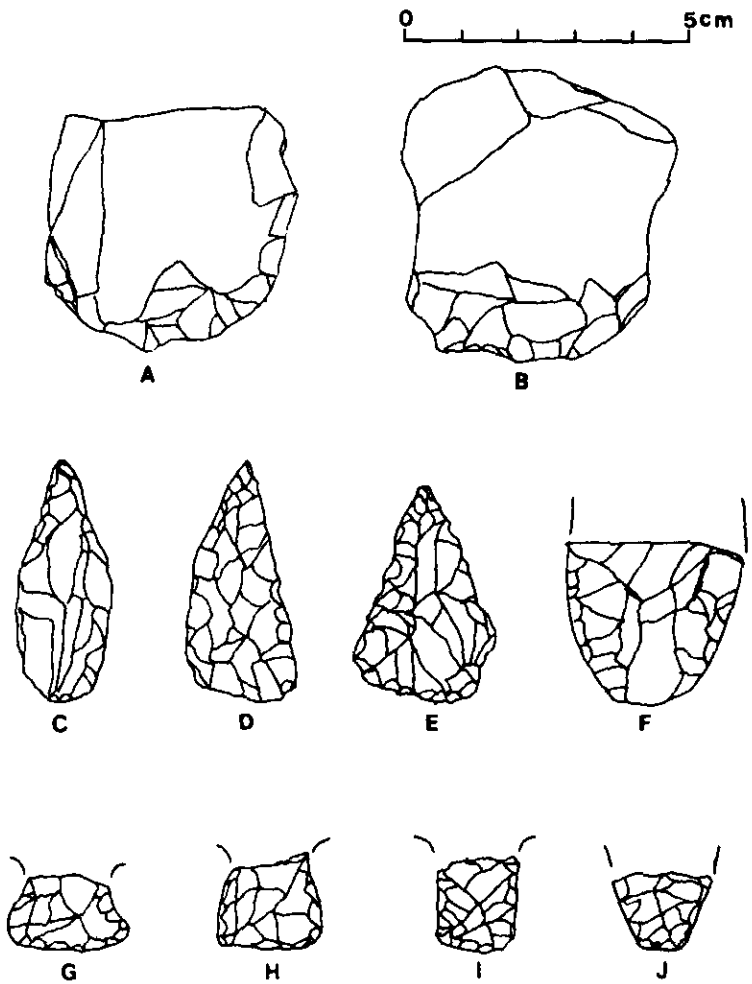
A to F – Ellis; G,H,J,K,L – Kent; I – Morhiss

Figure 3. Projectile Points



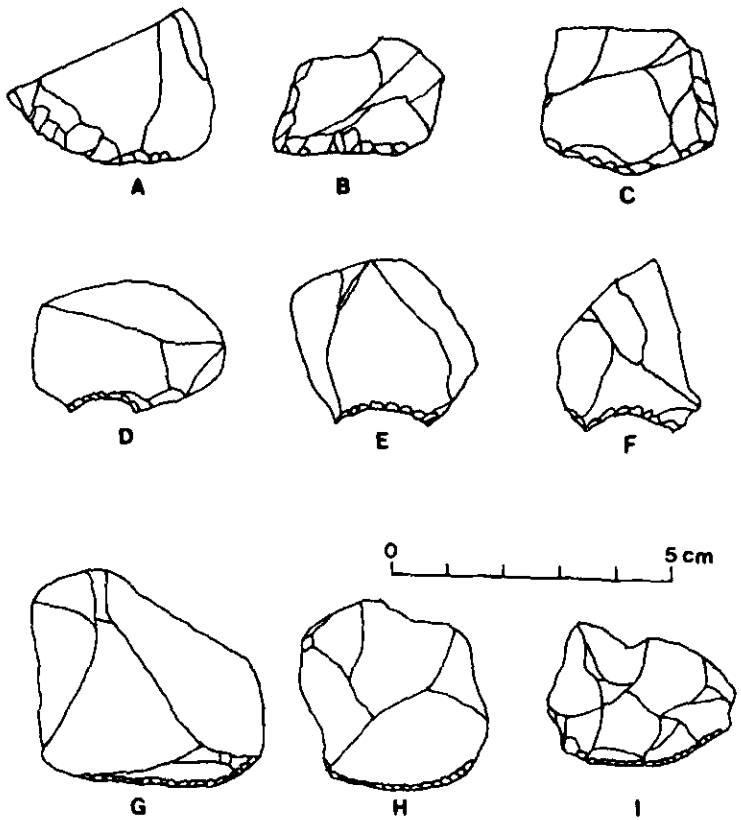
A to G – Kent; H – unclassified arrow point; I,J,K – Perdiz; L – Alba

Figure 4. Projectile Points



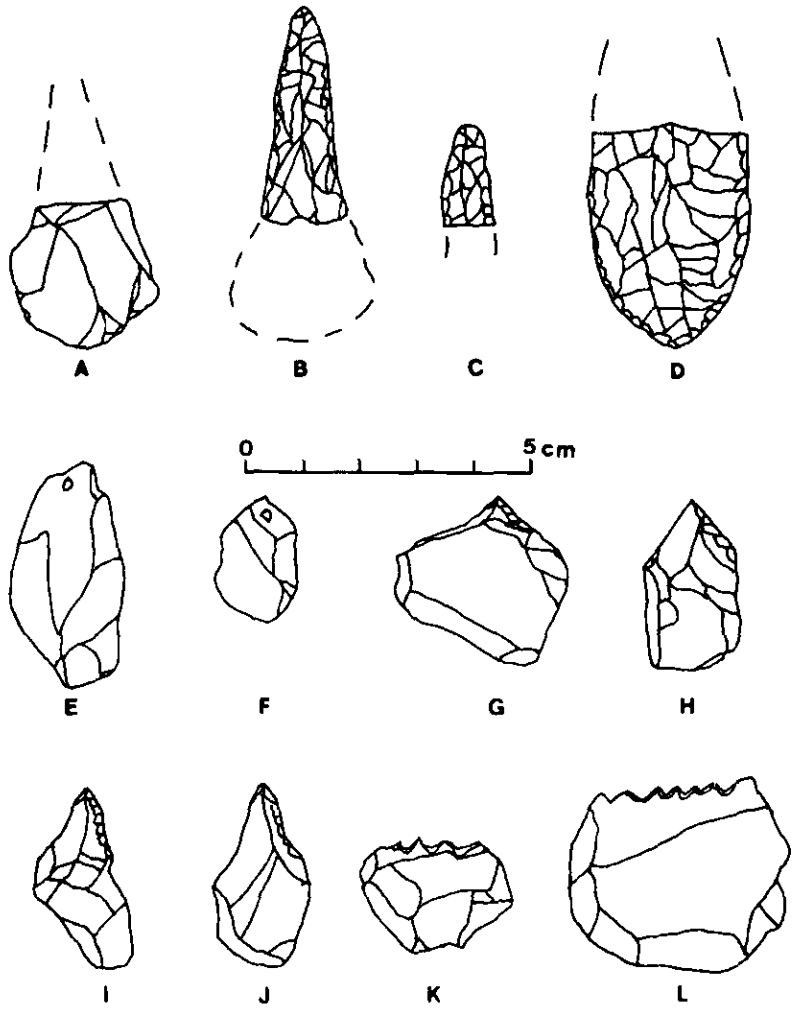
A,B - bifacial choppers; C to F - dart point preforms; G,H - expanding stems; I - straight stem; J - contacting stem

Figure 5. Lithic Artifacts



A,B,C - scrapers; D,E,F - notched tools; G,H,I - utilized flakes with scraper-type edge wear

Figure 6. Lithic Artifacts



A,B,C – bifacial drills; D – bifacial knife; E,F – possible stone pendants; G,H – gravers; I,J – unifacial perforators; K,L – denticulates

Figure 7. Lithic Artifacts

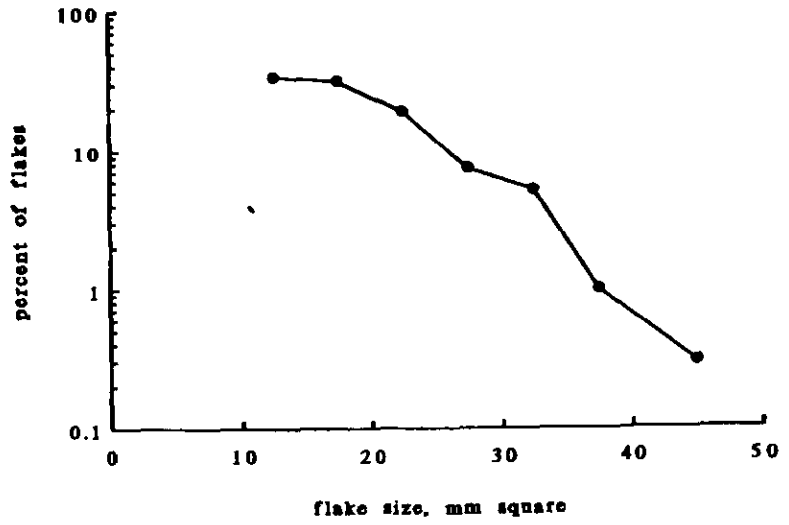


Figure 8. Flake Size Distribution