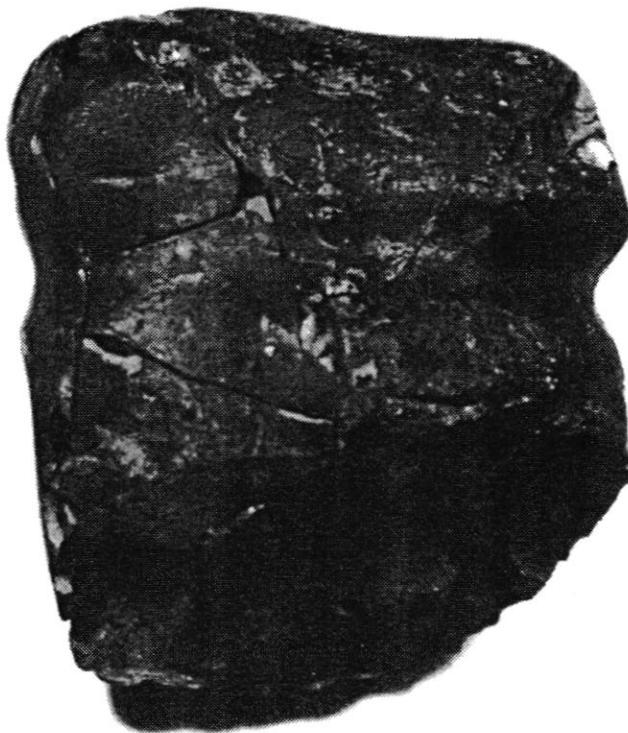




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Axe from Nacogdoches

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Vertebrates of Site 41WH36

W. L. McClure

Introduction

Site 41WH36 is an aboriginal site in Wharton County, Texas, about 1/4 mile from the present San Bernard River, adjacent to a former channel of the river, and at the ecotone between the grassland prairie to the north and extensive woodlands to the south. The woodlands extend from the San Bernard River to the Colorado River. The soil is a clay-loam and has a high organic content (Joe Hudgins, personal communication). Hudgins excavated four 1/4-meter test pits in 1989, and the details of excavation and analysis of artifacts are reported in the Houston Archeological Society Journal Number 94. In spite of some disturbance by armadillo activity, the artifacts indicate satisfactory separation of strata for the Late Archaic, the Early Ceramic, and the Late Prehistoric time periods (Patterson and Hudgins 1989).

Soils from the limited excavations were passed through 1/4-inch mesh screens, with about 20% being passed through 1/16-inch mesh.

The vertebrate remains that were retained on those screens are reported here.

Methods

The vertebrate remains were identified by direct comparison with remains of known animals that are in the comparative collections of the Houston Archeological Society and the author.

Results

A few fragments of freshwater clam shells, two land snails, and four burned claws of crawfish were recovered.

The vertebrate remains included nearly 2500 bones and bone fragments with a total weight of approximately 1.5 kilograms. Since only one cubic meter of soil was excavated, this was a much higher recovery rate for faunal material than for other sites along the San Bernard River. For example, site 41WH50 which is nearby yielded nearly 1000 bones weighing 0.75 kg from about 11 cubic meters of excavation (McClure 1991).

Condition of the bones is fair. More than half had been burned and all had a dark stain that resisted gentle washing efforts. Only the smaller, more compact bones were entire.

Fish scales and bones total 359 including 6 varieties. Amphibian bones total 8 and include 2 frogs and a toad. Reptile bones total 447 and include alligator, 5 kinds of turtles, and 7 snakes. Bird bones total 15 with at least 4 varieties. Mammal bones total 211 including 12 varieties.

In addition to the bone tool previously reported (Patterson and Hudgins, p. 17), three pieces of bone were recovered which had been polished by being rubbed against some abrasive substance. From Pit B between 20 and 30 cm, one such object has a length of 24.5 mm but both ends were broken away. It is a hollow bone with one end oval (4.14 by 3.65 mm) and round (3.85 mm diameter) at the midpoint. From Pit B between 70 and 80 cm, another piece is one-fourth of a round bone which is not hollow. Both ends were snapped away and the present length is 18.8 mm. The radius of the original object is 2.8 mm. From Pit D between 30 and 40 cm, a piece of bone that tapers toward a point has the tip missing and the other end broken away. Present length is 11.15 mm with the tip oval (2.75 by 1.6 mm) and the other end plano-convex with rounded sides (6.0 by 2.8 mm).

Species list

<i>Atractosteus spatula</i>	alligator gar
<i>Amia calva</i>	bowfin
<i>Aplodinotus grunniens</i>	freshwater drum
<i>Ictalurus punctatus</i>	channel catfish
<i>Lepomis</i> sp.	sunfish
<i>Micropterus salmoides</i>	largemouth bass
<i>Bufo</i> sp.	toad
<i>Rana catesbeiana</i>	bullfrog
<i>Rana sphenoccephala</i>	leopard frog
<i>Alligator mississippiensis</i>	alligator
<i>Sternotherus odoratus</i>	stinkpot
<i>Kinosternon flavescens</i>	yellow mud turtle
<i>Kinosternon subrubrum</i>	Mississippi mud turtle
<i>Terrapene carolina</i>	three-toed box turtle
<i>Trachemys scripta</i>	slider
<i>Elaphe</i> sp.	rat snake
<i>Farancia abacura</i>	mud snake
<i>Lampropeltis</i> sp.	kingsnake
<i>Masticophis flagellum</i>	coachwhip
<i>Nerodia</i> sp.	water snake
<i>Crotalus atrox</i>	diamondback rattlesnake
<i>Agkistrodon piscivorus</i>	cottonmouth
<i>Anas clypeata</i>	shoveler
<i>Anas</i> cf. <i>platyrhynchos</i>	mallard
<i>Anas</i> cf. <i>strepera</i>	gadwall
<i>Buteo</i> cf. <i>jamaicensis</i>	red-tailed hawk
<i>Didelphis virginiana</i>	opossum
<i>Sylvilagus aquaticus</i>	swamp rabbit
<i>Sylvilagus floridanus</i>	cottontail
<i>Geomys attwateri</i>	Attwater's pocket gopher
<i>Sciurus carolinensis</i>	gray squirrel
<i>Sigmodon hispidus</i>	hispid cotton rat
<i>Castor canadensis</i>	beaver
Rodentia	mouse
<i>Procyon lotor</i>	raccoon
<i>Canis latrans</i>	coyote
<i>Odocoileus virginianus</i>	white-tailed deer
<i>Bos taurus</i> or <i>Bison bison</i>	cow or bison

Species accounts

Fishes:

Gar scales and bones were recovered in all pits from the surface to the bottom of the pits. The elements include 2 parasphenoids and 2 dentaries that are of the alligator gar (*Atractosteus spatula*) as well as 15 head bone fragments, 20 vertebrae, and 178 scales which could be from alligator gar or other varieties of gar (*Lepisosteus* sp.).

Bowfin (*Amia calva*) bones were recovered from three pits between 20 and 100 cm. The elements include 2 head bone fragments, 2 dentaries, 2 maxillas, 1 premaxilla, 1 tooth, and 13 vertebrae.

Bones of freshwater drum (*Aplodinotus grunniens*) were found in three pits from 10 to 90 cm. These include 2 otoliths, 3 pterygiophores, an anal spine, and 2 ultimate vertebrae.

Channel catfish (*Ictalurus punctatus*) bones were recovered from all pits at depths of 20 to 90 cm. The elements include 1 dentary, 4 angular-articulars, 1 preopercular, 5 cleithra, 1 dorsal spine, and 5 pectoral spines. It is possible that some of these bones are of other species of the genus.

Largemouth bass (*Micropterus salmoides*) bones were recovered in two pits between 40 and 80 cm. The bones are a premaxilla and an ultimate vertebra.

Sunfish (*Lepomis* sp.) bones were recovered in three pits at depths of 30 to 70 cm. Bones include 3 cleithra, 2 dorsal spines, and 1 pelvic spine.

A total of 90 fish bones were not identified. Most are vertebrae that could be of the above species other than gar and bowfin.

Amphibians:

Bullfrog (*Rana catesbeiana*) bones were in two pits between 30 and 80 cm. This includes a maxilla and 3 vertebrae.

Leopard frog (*Rana sphenoccephala*) bones were in the same levels of the same two pits as the bullfrog and included an ulna, an ilium, and a tibio-fibula.

A bone, the humerus, of a toad (*Bufo* sp.) came from below 80 cm in one of the same pits.

Reptiles:

The only bone of alligator (*Alligator mississippiensis*) from the site is a phalanx. It was in the bottom stratum of a pit.

Four varieties of turtles were in the assemblage at all levels and from all pits. There were 9 bones of the stinkpot (*Sternotherus odoratus*). There were 15 bones of mud turtles, of which at least one each is of Mississippi mud turtle (*Kinosternon subrubrum*) and yellow mud turtle (*Kinosternon flavescens*). The most numerous turtle is the box turtle (*Terrapene* sp.) with 103 bones. There were 8 bones of the slider (*Trachemys scripta*). Unidentified bones of turtles total 235 and they are probably all from the above species. These bones are the various parts of carapace and plastron with 3 being appendicular elements.

Seven varieties of snakes are included. They are from all pits at 20 to 90 cm. There are 11 vertebrae of rat snake (*Elaphe* sp.), 2 of mud snake (*Farancia abacura*), 4 of kingsnake (*Lampropeltis* sp.), 7 of coachwhip (*Masticophis flagellum*), 7 of water snake (*Nerodia* sp.), 9 of diamondback rattlesnake (*Crotalus atrox*), and 15 of cottonmouth (*Agkistrodon piscivorus*). In addition there is a mandible of a large rattlesnake. Another 31 snake vertebrae were too fragmented to assign to a known variety.

Birds:

At least four kinds of birds are in the assemblage. A coracoid of a shoveler (*Anas clypeata*) was in one pit below 50 cm. Four mallard (*Anas* cf. *platyrhynchos*) bones are a coracoid, an ulna, a tarsometatarsus, and a phalanx, and were in two pits from the surface to 60 cm. Two gadwall (*Anas* cf. *strepera*) bones are both coracoids from below 30 cm in two pits. A coracoid of a red-tailed hawk (*Buteo* cf. *jamaicensis*) was below 70 cm. Seven bones that could not be assigned to a particular bird are coracoid, 2 carpometacarpi, synsacrum, tibiotarsus, tarsometatarsus, and phalanx. They were in all pits from 10 to 60 cm.

Mammals:

Bones of the opossum (*Didelphis virginiana*) were recovered from all pits at depths of 20 to 80 cm. The particular bones that were included are maxilla, 2 molar teeth, canine tooth, atlas, and innominate.

The swamp rabbit (*Sylvilagus aquaticus*) and the cottontail (*Sylvilagus floridanus*) are both included in the assemblage and were in all pits at depths of surface to bottom of excavation. Swamp rabbit bones are mandible, 2 cheek teeth, scapula, humerus, 2 radii, innominate, femur, 2 calcanei, 2 astragali, 5 metatarsals, and 1 phalanx. Cottontail bones are mandible, humerus, 3 ulnae, radius, innominate, tibia, and phalanx.

The five kinds of rodents in the assemblage are Attwater's pocket gopher (*Geomys attwateri*), gray squirrel (*Sciurus carolinensis*), hispid cotton rat (*Sigmodon hispidus*), beaver (*Castor canadensis*), and a mouse. The only bones of the pocket gopher are a scapula and a cheek tooth from a depth of below 40 cm in two pits. The gray squirrel bones are both humeri from below 40 and 70 cm in two pits. The distinctive toe bone of a beaver, the only indication of its presence, came from below 70 cm. Likewise, the only bone of the mouse is a mandible from below 50 cm. Nearly 100 bones of the cotton rat came from all pits and from all levels. The elements that were recovered are 15 maxillae, 30 mandibles, 12 isolated teeth, 1 vertebra, 2 humeri, 1 radius, 9 innominates, 14 femora, 11 tibiae, and 2 metatarsals.

The two kinds of placental carnivores in the assemblage are raccoon (*Procyon lotor*) and coyote (*Canis latrans*). The bones of both came from between 20 and 90 cm in two pits. The raccoon bones are a maxilla, a mandible, 2 isolated molars, and a metatarsal. The coyote bones are 2 isolated teeth and a patella.

Two artiodactyls are in the collection. Either a bison (*Bison bison*) or a domestic cow (*Bos taurus*) is represented by 2 teeth in one pit between 10 and 40 cm. Bones of white-tailed deer (*Odocoileus virginianus*) were in all pits and at all levels that had bone. The elements include pre-maxilla, antler fragment, 13 teeth, 2 petrous bones, humerus, radius, ulna, innominate, 3 vertebrae, metacarpal, 3 metatarsals, 5 metapodial condyles, 2 scaphoids, 2 calcanei, 3 trapezoid magnums, 2 centroquartals, 2 tarsals, 2 unciforms, lunar, astragalus, 4 sesamoids, and 12 phalanges.

More than 1400 fragments of bones were unidentified.

Discussion

Remains of fish, turtles, snakes, small mammals, and deer were found at all time periods in the deposit. Large bovid and opossum bones were absent during the Late Archaic. Frogs, hawk, pocket gophers, squirrels, and beaver were present only during the Early Ceramic times. Alligator and toad bones were only in the Late Archaic. The ducks were present during the Early Ceramic and Late Prehistoric periods.

The ducks and hawk are migratory animals and are in the area in large numbers from the middle of September until the middle of May each year.

Conclusions

The dominant food resource during the entire time of occupation was deer, with turtles apparently being an important and consistent part of the diet. Other vertebrates were added as lesser components.

Occupation of the site was at least a part of the time from mid-September to mid-May.

The density of bone in this deposit is significantly greater than in other Wharton County sites; this suggests that this site may have been more intensively occupied than the others.

References cited

McClure, W. L.

1991 The Seeds and Vertebrates of Site 41WH50. Houston Archeological Society Journal 100:27-30

Patterson, L. W., and J. D. Hudgins

1989 Prehistoric Site 41WH36, Wharton Co., Texas. Houston Archeological Society Journal 94:16-19

Excavations at Site 41FB35, Fort Bend Co., Texas

L. W. Patterson and J. D. Hudgins

Introduction

This paper describes the results of excavations at prehistoric site 41FB35 in Fort Bend County, Texas. This work is part of a program by the Houston Archeological Society to survey the western part of Southeast Texas, especially along creeks and rivers where most prehistoric sites occur. Site 41FB35 was discovered and recorded for state records by Joe Hudgins. Investigations at the site were made possible through the courtesy of the landowner, Mrs. John Melton.

Excavations at site 41FB35 were under the direction of the HAS Field Director, Sheldon Kindall. Individuals who participated in the field work included Karen Acker, Marshall Black, Richey Ebersole, Joe Hudgins, Sheldon Kindall, Shirley Lackey, Mike Marshall, Ray McCausland, Bernard Naman, Tom Nuckols, Lee Patterson, Andy Porter, JoAnne Pegler, Stan Perkins, Wynn Righton, Gary Ryman, Jerry Sadler, Gina Short, Bob Shelby, Dudgeon Walker, and Gina Williamson. Laboratory processing of artifacts was supervised by Melissa May.

Site 41FB35 is a stratified site that appears to have had a series of short-time occupations, starting in the Late Archaic time period, and continuing at least into the Early Ceramic period after A.D. 100 (Aten 1983). The occupations were by Indians with a nomadic hunter-gatherer lifeway. Subsistence activities at this site included hunting, gathering of freshwater shellfish, and perhaps gathering of floral food materials.

This site was originally reported on the basis of finding a dart point preform and some small pieces of shell on the surface. Excavations were conducted to obtain more details on the nature of the site.

Excavation details and site setting

A layout of the excavations is shown in Figure 1. Test pits were designated A to G. Pit A was not excavated and Pit B was excavated to a depth of 25 cm where culturally sterile soil was encountered. Pits C to G were excavated to various depths until culturally sterile soil was found. All excavation pits were one-meter squares. All soil was put through 1/4-inch mesh screens. Excavations were done in arbitrary 5-cm levels. The soil was brown sandy loam with little indication of distinctive natural stratigraphy from geological processes.

Site 41FB35 is located on the south bank of the San Bernard River, on the first high terrace. The main test pits C to G were on gently sloping land, with a greater slope at Pit B, nearer to the river. Some naturally deposited caliche was recovered in the excavations, as shown in Table 1. Caliche may give an indication of climatic conditions at the time of site occupation, although it is not clear how to make this type of interpretation. There is no general agreement among geologists on how caliche was formed in Southeast Texas.

This site is in an area along a river bank that was probably prairie at the time of occupation. The general area is a mixture of woodlands and coastal prairie. A variety of natural faunal and floral food resources would have been available to prehistoric Indians. Only remains of faunal food materials have been preserved at this site.

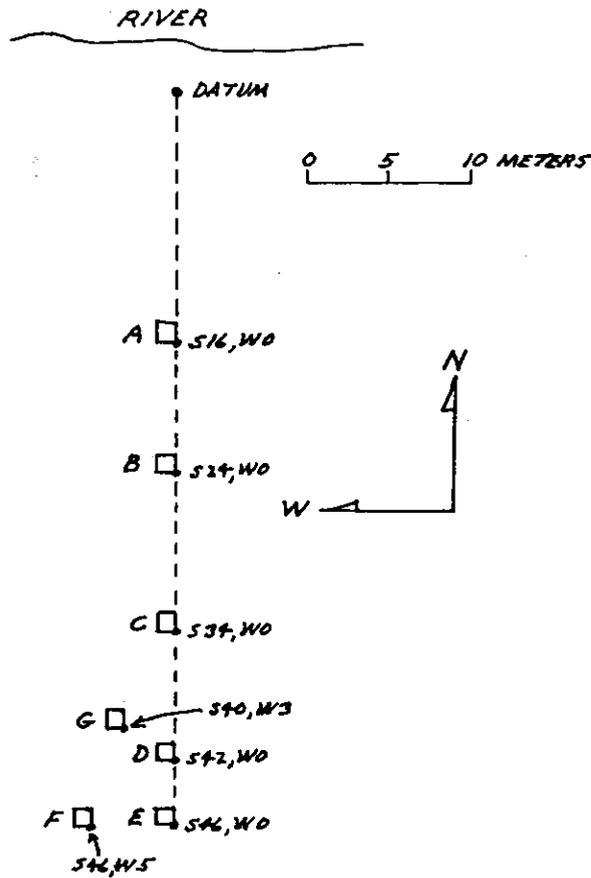


Figure 1. Excavation layout

Ceramics and site chronology

A total of 8 Goose Creek sandy paste potsherds were recovered, all from Pit D. A Goose Creek Plain sherd was found at the 90-95 cm level, 3 Goose Creek Plain and 2 Goose Creek Incised sherds were found at the 95-100 cm level, and 2 Goose Creek Plain sherds were found at the 100-105 cm level. The two Goose Creek Incised sherds from the 95-100 cm level and the two Goose Creek Plain sherds from the 100-105 cm level may all be from the same pot, as judged by color. The two incised sherds are rim sherds, shown in Figure 2. Both specimens have rim notching, and the rim edges are flat. The rim edges are as thick as the other parts of the sherds, with no taper as is common on pottery rims.

A radiocarbon date of 3030 ± 90 years B.P. (1080 B.C.) (I-16,965) has been obtained for a shell sample from the 95-100 cm level of Pit D. This date is more than 1000 years too early for the occurrence of pottery, but sherds were found with the shell at this sample location. There were no problems in the laboratory with dating of this shell sample. Acid washes were used by Teledyne Isotopes to remove 42% of the outer shell layers to eliminate any surface contamination. The most likely explanation of this situation is that the radiocarbon date is good, with occupation starting in the Late Archaic time period (1500 B.C.-A.D. 100), and with pottery displaced downward to

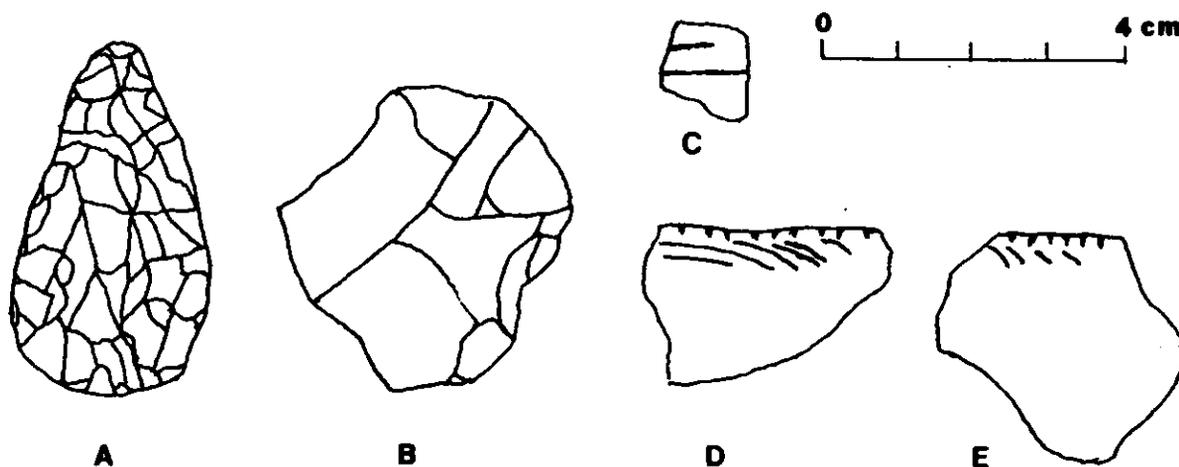
this excavation level. Site 41FB42 (HAS field notes) is an example in this general area where downward displacement of pottery obviously occurred due to the activities of burrowing animals. It is therefore judged that occupation of this site started in the Late Archaic period, and continued into the Early Ceramic period (A.D. 100-600), and perhaps even into the Late Prehistoric period (A.D. 600-1500).

Since the small pottery sample for this site was found only in a cluster at the lowest levels of Pit D, it is not possible to further clarify the chronological sequence of this site. Diagnostic artifacts generally do not occur with high frequency at freshwater shell midden sites in this area.

Lithic artifacts

A dart point preform (Figure 2A) was found on the site surface, and an early stage dart point preform (Figure 2B) was found in Pit D at the 65-70 cm level. The specimens are not time-diagnostic, since dart points were used during all prehistoric time periods in this region. A small number of chert flakes were found, with only a few recovered at any excavation level, as shown in Table 2. A total of 34 flakes were found, with only 12 over 15 mm square in size. Some flakes were of heat treated cherts. The small number of flakes indicates only limited lithic manufacturing activities were done at this site. Perhaps the two dart point preform specimens were made at other locations.

Some miscellaneous stone materials were recovered that may or may not be natural to this location. Chert pebbles with diameters of about 25 mm were found in Pit D (95-100 cm), in Pit G (110-115 cm), and in Pit C (65-70 cm). Hematite specimens were found in Pit C (65-70, 75-80, 80-85 cm), in Pit D (75-80 cm), and in Pit G (120-125 cm).



A - dart point preform, B - early stage dart point preform, C - incised bone, D and E - incised sherds

Figure 2. Site 41FB35 artifacts

Faunal remains

One of the subsistence activities at site 41FB35 was gathering of freshwater mussels from the nearby river. A summary of mussel shell recovered is given in Table 3. Most of the shell was found in Pits D to G, farthest from the river on more level land. High concentrations of shell occur at different levels in different test pits, probably indicating several different site occupation events. Freshwater shellfish were a convenient but not major dietary item. The meat of freshwater shellfish does not have high calorific value (Parmalee and Klippel 1974). There was a small proportion of burnt shell in some shell samples, which may indicate use of heat for meat extraction. Shell samples will be given to Raymond Neck for further analysis.

Shellfish apparently did not occur uniformly along the San Bernard River during various prehistoric time periods. Some other sites along this river with significant concentrations of shellfish remains include Late Prehistoric site 41FB43 (Patterson and Hudgins 1989), Early Archaic site 41FB37 (Patterson and Hudgins 1987a, Patterson 1988), and Middle Archaic site 41FB34 (Patterson and Hudgins 1986, Patterson 1989). Many sites represent shellfish gathering only during a single archeological time period, perhaps for only a few hundred years or less. Site 41FB32 (Patterson and Hudgins 1987b) is another freshwater shell midden site in this area that may have had a somewhat longer occupation sequence, based on several different types of projectile points. However, this site may have been occupied only during the Middle Archaic, with Indians simply using several types of projectile points within the same time period. Site 41FB35 seems to have had a longer occupation sequence than many of the shell midden sites along the San Bernard River.

Bone preservation is generally good at sites such as 41FB35, where high soil pH is maintained from shell materials composed of carbonates. A summary of bone recovered is given in Table 4. The modest amount of bone recovered is another indication that there were several short-time occupation events. Bill McClure will make a detailed analysis of the bone materials. Deer and turtle are the most obvious animals represented. Small amounts of burnt bone were recovered, with rather random distribution in the excavations. One piece of incised bone was found in Pit C at the 70-75 cm level, as shown in Figure 2C.

Miscellaneous materials

Some pellets of animal dung were found in Pit F at levels between 50 and 60 cm. Judging by the well-preserved condition of this material, it is probably from a modern animal burrow. A few burnt clayballs were found, including 4 from Pit D (90-95 cm), 3 from Pit D (110-115 cm), and 2 from Pit E (40-45 cm). Four small pieces of red ochre were found in Pit F at the 50-55 cm level. Red ochre was sometimes used as a pigment for pottery and body decoration, and in burial rituals.

Summary

Site 41FB35 is another example of a prehistoric site in the western part of Southeast Texas that has evidence of freshwater shellfish utilization. This site appears to have had a series of short-time occupations for gathering of shellfish and for hunting activities. The occupations start in the Late Archaic period, and continue into the Early Ceramic period, and perhaps even into the Late Prehistoric period. The small amounts of lithic and ceramic artifacts found at this site are typical of the limited quantities of these types of artifacts that generally occur at freshwater shell midden sites. Excavating a limited number of test pits, such as was done at this site, is a fairly efficient method of increasing the regional archeological data base.

Table 1. Weight of Caliche Samples, in grams

level, cm	pit			
	D	E	F	G
0-5	1	tr	tr	
5-10	tr			
10-15	tr		tr	
15-20	5		2	
20-25		1		
25-30	tr			
30-35	tr			
35-40				
40-45	2	3		
45-50	2	2		
50-55			13	
55-60	1		8	
60-65	4		7	
65-70	2		21	
70-75			30	
75-80				
80-85	3			
85-90				1
90-95	17			tr
95-100				tr
100-105	14			
105-110	45			tr
110-115	60			
115-120				1

tr = trace, under 1 gram

Table 2. Count of Chert Flakes

level, cm	pit						total
	B	C	D	E	F	G	
0-5							0
5-10	1	1					2
10-15	1			1			2
15-20	2						2
20-25				1			1
25-30		1					1
30-35		3			1		4
35-40							0
40-45		1					2
45-50			1				0
50-55		2					2
55-60					1		2
60-65		4	1				4
65-70		2					3
70-75		1	1				1
75-80							1
80-85		4	1				4
85-90							0
90-95							0
95-100							0
100-105			1			1	2
105-110			1				1
110-115							0
115-120							0
total	4	19	6	2	2	1	34

Table 3. Weight of Shell Samples, in grams

level, cm	pit				
	C	D	E	F	G
0-5	1	3	4	20	
5-10	1	3	2	18	
10-15		5	6	12	
15-20	1	3	46	23	
20-25		7	145		
25-30		20	511		
30-35		20	738		
35-40		14	966		
40-45		9	384		
45-50		45	124		
50-55				924	
55-60		50		1335	
60-65	1	115		989	
65-70		60		526	
70-75	1			322	
75-80		398			
80-85	3	880			
85-90					4
90-95		2613			2
95-100		910			30
100-105		966			13
105-110		937			15
110-115		90			36
115-120					84
120-125					138

Table 4. Weight of Bone Samples, in grams

level, cm	pit				
	C	D	E	F	G
0-5		1			
5-10		1			
10-15		1			
15-20	1				
20-25		1			
25-30	1	2	3		
30-35			2		
35-40		2	4		
40-45	1	1	3		
45-50		3	2		
50-55	2				42
55-60		2			26
60-65	2	2			11
65-70	4	3			2
70-75	2				2
75-80	1	23			
80-85	1	22			
85-90					
90-95		37			1
95-100		23			19
100-105		28			2
105-110		34			2
110-115		24			7
115-120					2
120-125					13

References cited

Aten, L. E.

1983 Indians of the Upper Texas Coast. Academic Press

Patterson, L. W.

1988 Radiocarbon Dates from 41FB37, Fort Bend Co., Texas. *Houston Archeological Society Journal* 91:20-21

1989 Early Dates for the Pedernales Point. *La Tierra* 16(1):28-30

Patterson, L. W., and J. D. Hudgins

1986 Test Excavations at Site 41FB34, Fort Bend Co., Texas. *Houston Archeological Society Journal* 85:1-7

1987a Test Excavations at Site 41FB37, Fort Bend Co., Texas. *Houston Archeological Society Journal* 88:1-8

1987b Test Excavations at Site 41FB32, Fort Bend Co., Texas. *Houston Archeological Society Journal* 87:12-19

1989 A Late Prehistoric Site (41FB43), Fort Bend Co., Texas. *Houston Archeological Society Journal* 93:25-26

Parmalee, P. W., and W. Klippel

1974 Freshwater Mussels as a Prehistoric Food Resource. *American Antiquity* 39(3):421-434

The Lost Lake Ruin – The End of a Mystery

Tom Nuckols

In early 1966, my family and I moved to Channelview (see Figure 1). My uncle and his family lived a short distance away. Uncle John enjoyed telling stories about the legends and history of the area. One of the places he talked about was an island located between Old River and Lost Lake that he referred to as "The Island."

This island was partially visible from our front yard because our house sat on land approximately 30 feet above the San Jacinto River basin. According to Uncle John, the remains of Lorenzo De Zavalla's home could be found on the island. Uncle John took his Boy Scout Troop to the island on a digging expedition. They supposedly found the wine cellar, and each scout took home several old bottles as souvenirs. One of Uncle John's stories (tall tales) involved his neighbor, who supposedly dug up an Indian skeleton on the island and kept it in a cardboard box in a closet.

As a kid, I was fascinated with these stories. I had to get to that island. However, we did not own a boat and no one would lend a boat to three young boys (my two younger brothers and me). I had to be content with viewing the island from our front yard, or from the local park called "River Terrace Park." From the park, the island appeared to have a high bank. Along the beach we could see the skeletal trunks of long-dead cypress trees. We could also see pine trees scattered over the rest of the island.

Finally, a boat! For Christmas 1967, my parents gave us an aluminum flat-bottomed row boat. We now had transportation to the island. That Christmas morning, after all the presents had been opened, and breakfast eaten, my brothers and I loaded the boat onto the back of Dad's '65 Ford pickup truck. Dad drove us to the park, and from there we launched the boat. Once in the water, we headed straight for the island. We spotted an old pier at the eastern end where we docked the boat and began to explore.

What a disappointment! The island appeared to be nothing more than a dike with mud flats behind it. (A few years later, I learned that the island had been significantly altered and was used to hold dredging spoil from the Houston Ship Channel.) We found no forest, ruins, or anything that resembled an Indian cemetery. We walked around for a while observing all the household trash and discards from the marine industry that had washed up on the beach. The pine trees seen from the mainland were sparse and spindly and the brush consisted of brambles and weeds. We returned home very discouraged.

A few days later, we decided to attempt another exploration of the island. I was not ready to give up! Dad had driven the truck to work so we had no way of getting the boat to the park to launch it. We carried the boat to the house across the street and asked the owner if we could launch the boat at the beach in his back yard.

Back on the island, we began a more thorough search. On the eastern end, we noticed a smaller island isolated from the larger one by mud flats. It appeared to be about the size of a Little League baseball field with a thick covering of brush, and its brushy horizontal outline was slightly convex, indicating a higher center elevation.

We went back to the boat and carried it across the island to Lost Lake. The lake turned out to be only a few inches deep with a bottom of gooey mud. We pushed more than rowed the boat to the smaller island. As we approached, we noticed that the island was made up entirely of clam shell. At the time, I thought that the shell must have piled up that way by some natural force such as wave action. I knew that clams did not live in solid colonies like oysters. Little did I know that this accumulation of shell was a prehistoric man-made phenomenon called a "midden." We beached the boat, jumped ashore, and headed for the center of the island, threading our way through the

thick brush.

Ruins! In the middle of the island! Thick walls made out of the very shell they sat on. The walls were from four to five feet high, with mortar on the outer surfaces. Other than a few right angles, we could not make out any particular plan. Probably only half of the original foundation remained. Some of the walls had "melted" because there were linear rows of shell a few inches high here and there. Vandals had knocked a two-foot hole in one wall remnant. In some places shallow depressions had been scooped out of the shell and used as hearths for camp fires. We thought that maybe duck hunters camped here. During duck hunting season we often heard gunshots coming from this area. Someone had stacked driftwood boards against one wall in what appeared to be a two-sided makeshift shelter.

We explored every inch of the ruins in hopes of finding artifacts. None were found. Little did I realize that we were literally walking on artifacts; but they were of prehistoric nature and associated with the midden. We did notice that the island was covered with driftwood and modern garbage. At its highest point, the island was only a few feet above Lost Lake. We assumed it flooded during high tides or storms.

Satisfied that we had explored every inch of the island we headed for home to tell everyone of our adventure. I discussed the ruins with my classmates and learned that most of them had visited the island at one time or another. They rejected an association with De Zavalla. To them it had to be a fort and nothing else. They did not know whose fort it had been, but Spanish, French, and even pirates were mentioned.

My brothers and I often returned to the little island to visit the ruins. Sometimes we took friends or relatives there. One time I took my seventh grade teacher to the island because he had an interest in history.

From a junior high Texas history class, I learned that De Zavalla's home had actually been located directly across the Houston Ship Channel from the San Jacinto Battlefield, on a peninsula between Old River and Carpenters Bayou. After the Battle of San Jacinto, wounded Texas and Mexican soldiers were taken to De Zavalla's home for medical treatment. When I visited the site where De Zavalla's home had been, an historical marker erected by the State confirmed what I learned in class. The historical marker, however, was sitting on the edge of a short bluff, and it appeared ready to fall off into the ship channel at any moment. Upstream a short distance away was the De Zavalla cemetery. It was at the base of the bluff and under several inches of water. Another historical marker indicated that the remains and the headstones had been moved to the cemetery at the San Jacinto Battleground.

I never asked my Uncle why he thought the ruins on the island were those of De Zavalla's home. It was a story that he probably heard as a child. He grew up in the area and his dad owned a store in Lynchburg.

In a Baytown bookstore, I bought a book called *Treasures of Galveston Bay*. The author attributes the ruins to the pirate Jean Lafitte, and states:

The vicinities of Goose Creek and Cedar Bayou were known to be some of Lafitte's favorite haunts, and the mouth of the San Jacinto River was used as a careening place for repairing and watering his ships.

There were no shipyards available in those days; so in order to repair the bottom of a ship's hull, it had to be taken to quiet waters where it could be beached close to shore. The crew would then fasten lines to the tops of the masts, and stretch them to a gang of men on shore, who would heave slowly on them. The leverage thus applied would "careen" or lay the ship over on its side. The bottom would then be accessible above the water and ready to be repaired or cleaned.

Close to the San Jacinto River careening place was an old river channel, where speedboat races are now held. In the southeastern part of this body of water, the pirates supposedly sank a brass cannon filled with gold. Nearby, on the north shore of Lost Lake, ruins of fortress walls and cannon emplacements can still be found – mute evidence of the pirate domain. (Lewis 1966, p.21)

For a while, I accepted this story. The more I thought about it, the more problems I discovered with it.

Lafitte was in the area in the early 1800s, but only for a short time. Not long enough, in my opinion, to construct elaborate fortifications. Besides, a fort with gun emplacements usually implies a continuous staff of men. I did not think Lafitte had the manpower or resources to erect and maintain satellite defenses away from his headquarters on Galveston Island near the mouth of Galveston Bay. If he controlled the mouth of the bay, any enemy ship that tried to enter could be dealt with immediately. As large as the Galveston Bay complex is, there would be numerous places to “careen” a ship and remain hidden.

I eventually dismissed the Lafitte connection to the ruins, and was right back where I started: trying to identify the ruins.

In 1974, I joined the Houston Archeological Society, and began to learn about indigenous cultures and artifacts associated with them. I returned to the island to examine the site’s historic and prehistoric components. I hoped that my new found archaeological knowledge might help me to identify the ruins. It did not, but I noticed that there were pot sherds and pieces of bone sticking out of the walls. The builders of the structure had used these materials along with the clam shell from the midden as construction materials.

I visited the site for the last time in 1976. Pot hunters or treasure hunters had dug holes within the walls and exposed a smooth mortared floor underneath the loose clam shell. Once they had reached the floor, they knocked holes through it and dug into the midden underneath. It appeared that they did not get very far. They had reached the water table and the holes had filled with water.

In the early 1980s, while visiting my parents, I could hear the sounds of machinery coming from the island. I walked across the street to get a better view and observed a fleet of heavy earth-moving equipment at work. It appeared that the island was being reinforced to hold more dredge spoil. This activity went on for several weeks. I thought that this was the beginning of the end for the little island.

About this same time, I heard rumors that some members of the Houston Archeological Society were investigating the site. Pieces of transfer print ceramics had been found. The maker’s mark could be seen on some of the pieces. I heard that the Army Corps of Engineers (who were doing the island modifications) had been contacted in hopes of saving the site.

When I received the August 1991 issue of the HAS Journal, I was surprised to find an article about the ruins by Marshall Black (1991). I’m embarrassed to say that I never thought to document the site the way Marshall did.

In that same issue, the next article by Jean Epperson (1991) identified the ruins as Sydnora, the home and place of business of John Barrett Sydnor. Finally, the mystery was solved, and I called my brothers to tell them the news.

My wife and I visited the restored Battleship Texas last summer. From one of the upper decks, I tried to see the little island. A mud dike had been built around the Lost Lake complex. The little island was gone.

References cited

Black, Marshall W.

1991 The Lost Lake Ruin - A Memoir. Houston Archeological Society Journal 100:8-10

Epperson, Jean L.

1991 Sydnora, The Ruin At Lost Lake. Houston Archeological Society Journal 100:11-13

Lewis, Carroll

1966 Treasures of Galveston Bay. Texian Press

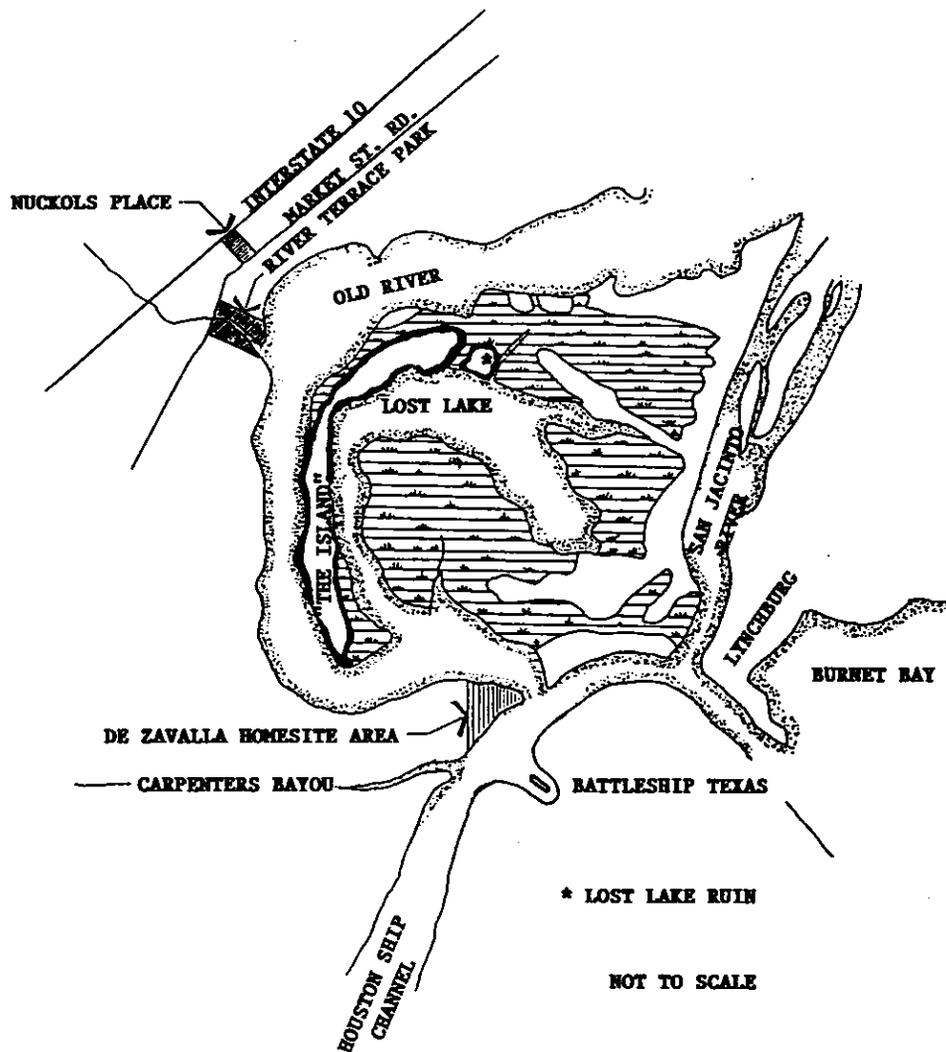


Figure 1. Map of the Lost Lake area

The Tucker Collection: Prehistoric Sites in Nacogdoches, Texas

Leland W. Patterson

Introduction

This paper describes a group of prehistoric artifacts that were collected some time ago by David K. Tucker. The collection is from the surfaces of several prehistoric sites in the northeast section of the city of Nacogdoches, Nacogdoches County, in East-Central Texas. Mr. Tucker gave this collection to William McClure for suitable analysis and curation, and the collection was in turn passed on to the author for analysis. The collection will be curated at Stephen F. Austin University in Nacogdoches. While artifacts in the collection are not site-specific, the geographic context is specific to the northeast section of the City of Nacogdoches.

Materials in this collection indicate a series of occupations at various sites from the Middle Archaic period about 2000 B.C. through the Late Prehistoric period to A.D. 1500. Many of the pottery types were manufactured and used by Caddo Indians. Nacogdoches is near the southern boundary of the geographic area where significant Caddo occupations occurred. Sites before A.D. 800 in this area represent occupations by nomadic hunter-gatherers. Sites after A.D. 800 in this area are mainly those of Caddo Indians, who had a more sedentary lifeway and some use of agriculture (Story 1990:256).

Analytical work for this paper was aided by comments on Caddo pottery types in this collection by James Corbin of Stephen F. Austin University, and by refitting of a broken stone axe by William McClure.

Projectile points

A summary of projectile points in the Tucker collection is given in Table 1, with some specimens illustrated in Figure 1. There are 15 dart points, 1 arrow point, 2 dart point stems, and 7 dart point preforms and fragments. Three Bulverde-like dart points represent the Middle Archaic period. Prewitt (1981) gives a time range of 2050-1450 B.C. for the Bulverde point in Central Texas, and Story (1990:Figure 30) places this point type about this same time in East-Central Texas. Kent and Gary dart points in this collection could represent several time periods, including Middle Archaic, Late Archaic, Early Ceramic, and Late Prehistoric (Patterson 1979). Kent and Gary were manufactured over a long time period in East Texas, from about 2000 B.C. or earlier until about A.D. 1500. One of the Kent point specimens has been retouched on the blade end for possible use as a scraper. Darl and Ensor-like dart points in this collection possibly represent the Late Archaic (1500 B.C.-A.D. 100) or Early Ceramic (A.D. 100-600) time periods, using the chronology of adjacent Southeast Texas (Patterson 1992). The Late Prehistoric period (A.D. 600-1500) is represented by an Alba arrow point in this collection.

All of the projectile points in this collection are typical of types used in East-Central Texas and adjacent regions. The predominance of petrified wood for projectile point manufacture reflects local raw material availability.

General lithics

A summary of 127 lithic flakes in the Tucker collection is shown in Table 2, representing lithic manufacturing at the various sites represented. The chert flakes include 5.7% primary flakes (covered with cortex), 8.6% secondary flakes (some remaining cortex), and 85.7% interior flakes (no

remaining cortex). The low percentage of chert flakes with remaining cortex indicates that much of the chert raw material was brought to the sites as flakes or trimmed raw material pieces. Only 25% of the projectile point specimens in Table 1 are made of chert, and 40% of the lithic flakes in Table 2 are chert. This is a fairly good match between materials of finished points and by-product flakes. Seven pieces of chert (9.5%) and 67 pieces of petrified wood (90.5%) were found, with petrified wood being over-represented compared to the proportion of projectile points made of this material. This might represent a higher frequency of success in making projectile points from chert, since petrified wood is generally a more difficult material to work. Petrified wood pieces had a wide size range, with lengths from 15 mm to 80 mm. Three chert pieces were cobble fragments with some remaining cortex. The collection of general lithic materials may be biased, because collecting was not done by an experienced individual.

Other lithic specimens included 3 unifacial flake graters, 1 unifacial scraper, 1 small bifacial drill, and 1 small miscellaneous biface.

Ground stone artifacts

The Tucker collection includes several ground stone artifacts made of hard sandstone, including 4 nutting stones, 1 mano, and 1 metate. Nutting stones have small concave areas, about 20 to 30 mm in diameter, presumably used as an anvil for nut cracking. The mano and metate may have been used to process vegetable materials or inorganic pigments for decorative uses.

A full-grooved ground stone axe made of an iron mineral was found by Mr. Tucker. It is not apparent why a stone axe would have been made of such a low-strength material. This specimen was broken by rough moving over the years, and it has been refitted by William McClure as shown in Figure 2. It could not have been used to chop wood because of its fragile nature. Perhaps this specimen was used as a battle axe or for some other ceremonial function. The working bit of this stone axe is not centered between the two faces, but instead is located at the edge of the longest axe face. The bit is ground smooth and has an angle of 65 degrees. The bit was formed by flaking toward the shortest axe face. It is not apparent whether the flake scars represent resharpening or the original bit configuration. A ground stone axe would be more suited to artifact assemblages in Northeast Texas (Story 1990:Figure 32) than to the location of the Tucker collection in East-Central Texas. Manufacturing of a ground stone axe requires a large amount of labor. Iron minerals may occur naturally in this area, since four small pieces of iron minerals are included in this collection.

Ceramics

This collection includes a large number of potsherds, as summarized in Table 3. Some of the decorated sherds are illustrated in Figure 3. All of the decorated sherds seem to be Caddo Indian types, made after about A.D. 800 (Story 1990:256). Many of the undecorated sherds may have also been made by Caddo Indians, especially the bone-tempered specimens. Pottery started earlier than the Caddo culture, however, and pre-Caddo occupations at various sites represented by this collection are probably indicated by some of the bone-tempered and sandy paste plain sherds. Sandy paste pottery (Goose Creek) starts about A.D. 100 in adjacent Southeast Texas (Aten 1983), and possibly about A.D. 500 in East-Central Texas (Story 1990:247). Story (1990:246) states that bone-tempered pottery may be as early as 100 B.C. at some sites in East Texas, but the starting date for this pottery type is not well established for East-Central Texas.

James E. Corbin of Stephen F. Austin University has reviewed photographs of incised and engraved sherds in the Tucker collection. He comments that all of the decorated sherds are typical of the range of ceramics found at the Washington Square site in Nacogdoches. Corbin has identified

two ceramic types in the Tucker collection from the Washington Square period (Late Early Caddo-Middle Caddo, A.D. 1200-1350). These types are Washington Square Paneled (Figure 3A, similar to Poynor Engraved), and an incised-punctate ware (Figure 3B) similar to the Crockett type, but which only occurs as cylindrical jars. There are 4 Washington Square Paneled specimens that are engraved, black, and hard-fired.

The Caddo Indians produced a wide variety of decorated pottery types. Because of the wide variety and the similarities of design elements in different pottery types, it is difficult to definitely classify all types of Caddo pottery when analyzing only potsherds with no whole vessels available. The wide variety of Caddo pottery types has been illustrated by Suhm and Jelks (1962), including even a miscellaneous Caddo pottery category. Rather than use doubtful type names for ceramic specimens in the Tucker collection, most descriptions of pottery decoration patterns in Table 3 and Figure 3 are given without any final classification.

Some of the sherds with parallel lines might be related to Davis Incised (Suhm and Jelks 1962:35). Some of the crosshatched patterns might be related to Dunkin Incised (Suhm and Jelks 1962:37) and Maydelle Incised (Suhm and Jelks 1963:103).

Most of the decorated Caddo pottery has sandy paste. Six sherds have bone temper, and all of these specimens have decorations of straight lines. Five sherds with parallel incised lines have coarse clay-grit temper, which is typical of Davis Incised.

Southern limits of Caddo influence

This paper is concerned with artifacts from sites in Nacogdoches, Texas, which is a location noted for occupations by Caddo Indians. Significant Caddo influences extend only about 60 miles south of this location, to the northern counties of Southeast Texas. This southern limit of Caddo influence can be seen by the distribution of Caddo pottery in Southeast Texas, as shown in Table 4, derived from the data base for inland Southeast Texas (Patterson 1989). Polk County has the most Caddo pottery in Southeast Texas, but none of the sites listed in any of the counties have large amounts of Caddo pottery.

It is not clear why Caddo influence stops sharply in the northern part of Southeast Texas, about 60 miles south of Nacogdoches. Perhaps the Caddo did not like the environment of Southeast Texas, or perhaps other Indians already occupying Southeast Texas discouraged Caddo movements to the south. This southern limit of Caddo influence applies to the historic period after A.D. 1500 (Story 1990:Figure 47), as well as to the Late Prehistoric period.

Summary

This paper has described a collection of artifacts from some sites within the northeast section of Nacogdoches, Texas. The artifacts represent an occupation sequence from the Middle Archaic through the Late Prehistoric time periods. Prior to about A.D. 800, Indians in this geographic area practiced a generalized hunting and gathering lifeway. After this, Caddo Indians practiced a more sedentary lifeway that included agriculture as well as hunting and gathering. Even though specific sites are not identified for artifacts in the Tucker collection, the geographic area involved is small enough so that these data are useful for future archeological research.

References cited

Aten, L. E.

1983 Indians of the Upper Texas Coast. Academic Press

Patterson, L. W.

1989 A Data Base for Inland Southeast Texas Archeology. Houston Archeological Society, Report No. 6

1992 Dart Point Chronologies of Southeast Texas. Houston Archeological Society Journal 101:1-5

Prewitt, E. R.

1981 Cultural Chronology in Central Texas. Bulletin of the Texas Archeological Society 52:65-89

Story, D. A.

1990 Cultural History of the Native Americans. In: Story et al., The Archeology and Bioarcheology of the Gulf Coastal Plain, Vol. 1, Arkansas Archeological Survey Research Series No. 38

Suhm, D. A., and E. B. Jelks

1962 Handbook of Texas Archeology Type Descriptions. Texas Archeological Society, Special Publication No. 1

Table 1. Summary of Projectile Points

type	no.	material
Alba	1	chert
Darl	2	chert
Ensor-like	1	heat damaged chert
Bulverde-like	3	1 chert, 1 quartzite, 1 petrified wood
Kent	3	petrified wood
Kent-like	2	1 petrified wood, 1 chert
Gary	3	petrified wood
Gary-like	1	petrified wood
dart point preforms	3	petrified wood
preform fragments	4	3 petrified wood, 2 chert
dart point stems	2	1 petrified wood, 1 chert
total specimens	25	

Table 2. Summary of Lithic Flakes

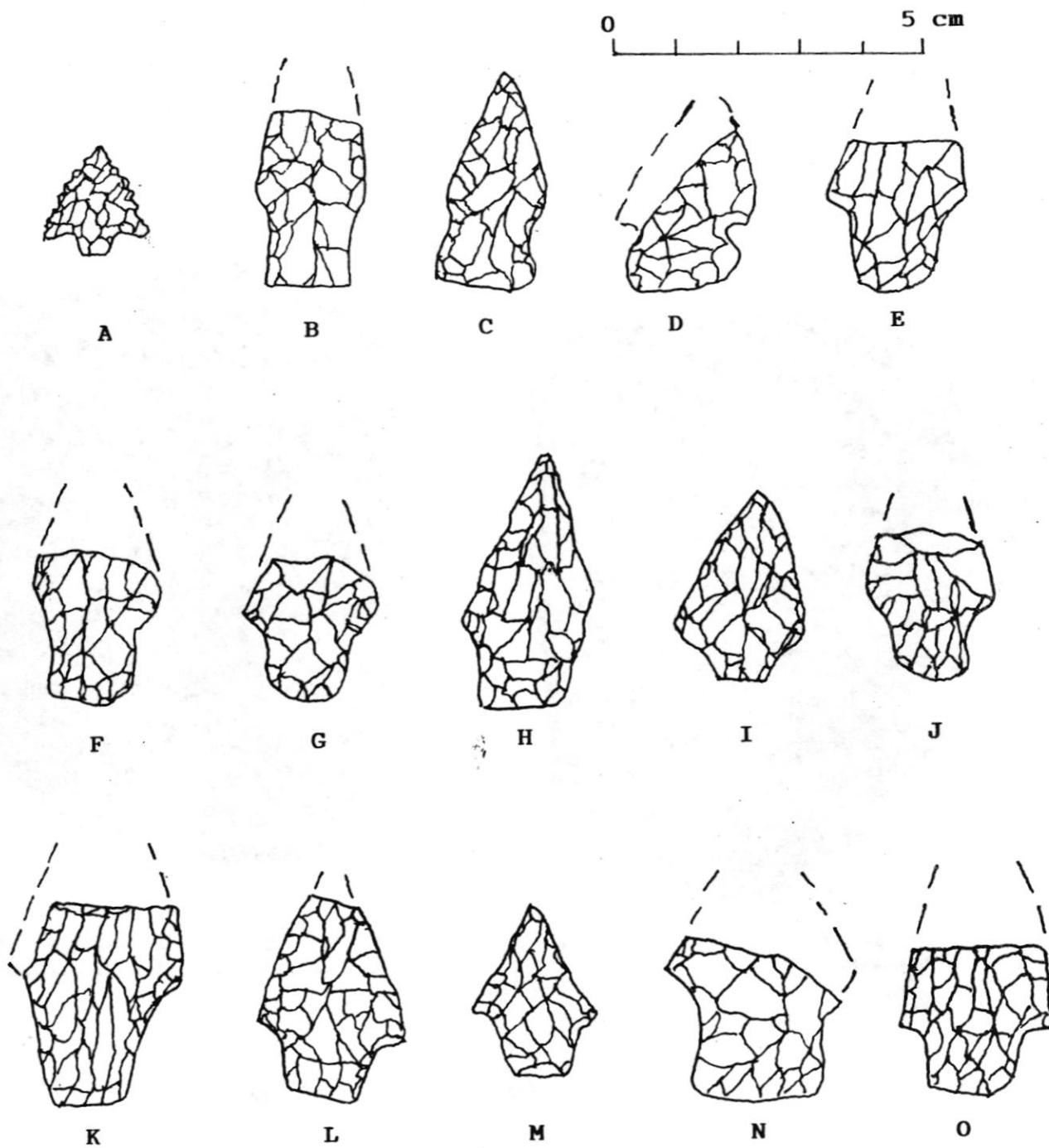
size range, mm square	material	
	petrified wood	chert
under 15	29	16
15-20	29	22
20-25	13	9
25-30	4	4
30-35	1	0
total	76	51

Table 3. Summary of Potsherds

pattern	no. of sherds	
	body	rim
punctated		
brushed and punctated	1	0
punctated with curved lines	2	0
finger nail punctated	4	0
finger nail punctated with straight line	0	1
large punctations	3	1
punctated with straight line	3	0
small punctations	9	1
curved lines	7	0
straight lines		
parallel	18	1
parallel at right angles	2	0
crosshatched	5	1
single line	19	1
miscellaneous	13	0
brushed		
sandy paste	29	0
bone tempered	7	0
engraved		
Washington Square Papeled	1	3
sandy paste plain (Goose Creek)	374	2
bone tempered plain	59	0

Table 4. Caddo Pottery in Southeast Texas

site	county	number of Caddo sherds
41HR616	Harris	2
41MQ5	Montgomery	2
41MQ6	Montgomery	13
41MQ118	Montgomery	2
41PK8	Polk	38
41PK69	Polk	23
41PK88	Polk	137
41PK89	Polk	15
41SJ16	San Jacinto	9
41SJ19	San Jacinto	7
41WA55	Walker	1
41WA100	Walker	1
41WH19	Wharton	1



A - Alba; B,C - Darl; D - Ensor-like; E,F,G - Kent; H,J - Kent-like;
I - Gary-like; K,L,M - Gary; N,O - Bulverde-like

Figure 1. Projectile points

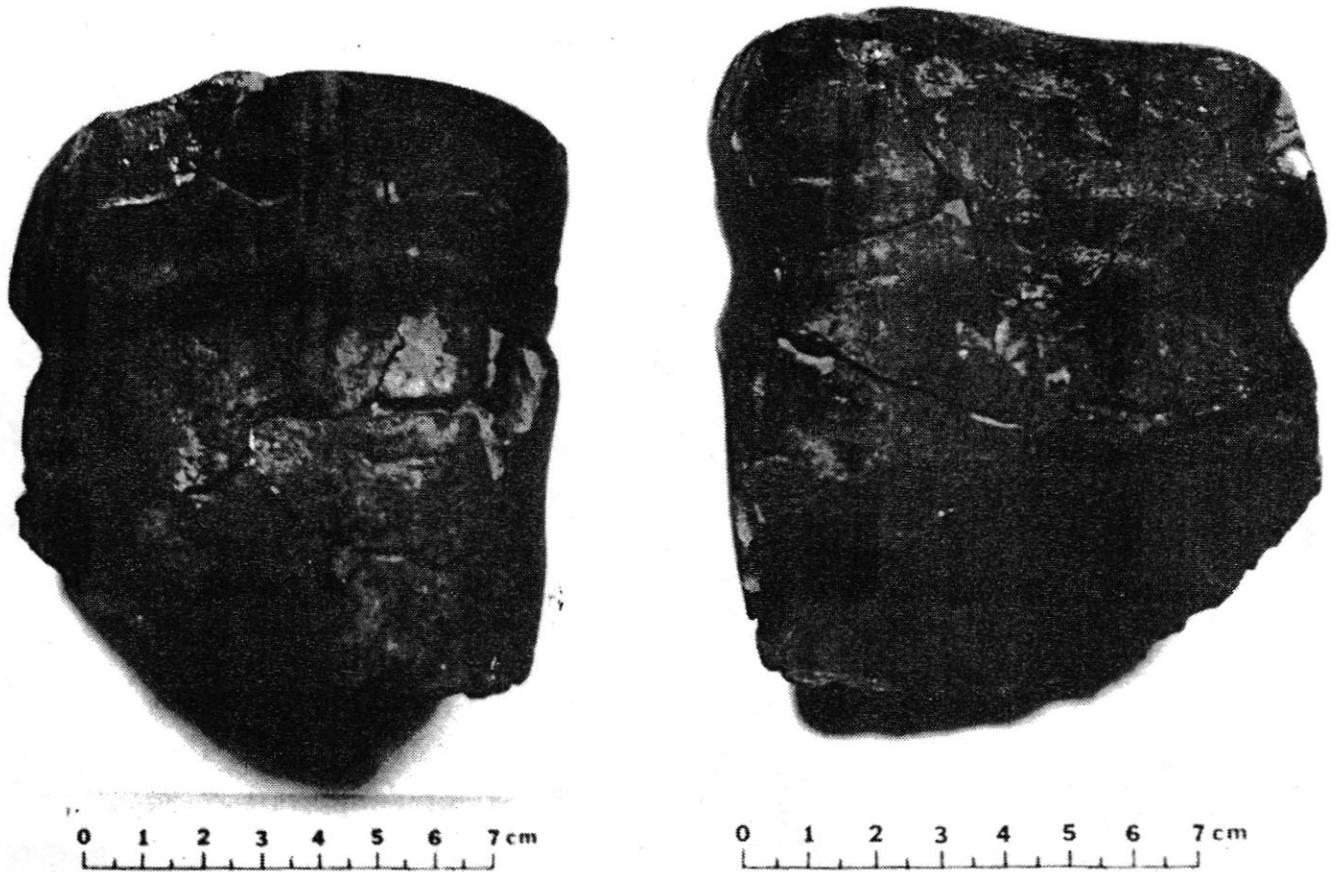
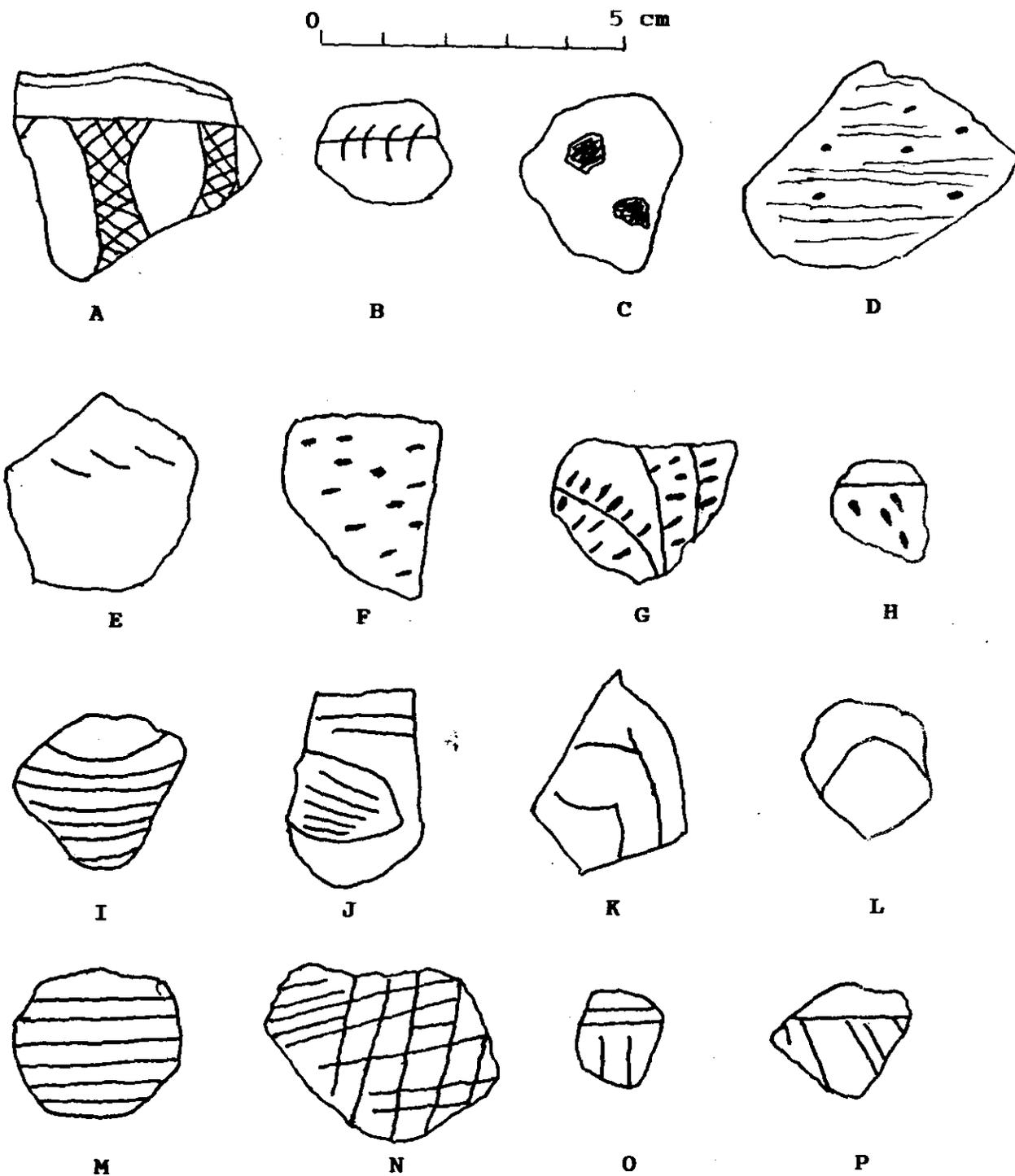


Figure 2. Ground stone axe, two views



A - Washington Square Paneled, B to H - punctated patterns,
I to L - curved line patterns, M to P - straight line patterns

Figure 3. Pottery decoration patterns

Book Review

The Indians of Texas in 1830, by Jean Louis Berlandier. Edited and Introduced by John C Ewers. Translated by Patricia Reading Leclerq. Smithsonian Institution Press, Washington, D.C. 209 pp., 39 figures, and 20 plates. 1969.

This is an unusual book and might have been lost to the general public except that Lieutenant (later General) Darius Nash Couch on leave from the U.S. Army in Brownsville, Texas, managed to purchase the entire Berlandier collection from Berlandier's widow in Matamoros, Mexico, in 1853. The collection (39 boxes) included scientific specimens, maps, drawings, and manuscripts, much of which ended up at the Smithsonian.

There were more than 40 different Indian tribes in Texas at the time of Berlandier's study, a number of these tribes having migrated to Texas not long before the study. These migrations were encouraged by the Mexican Government to provide a buffer between the Mexican Empire and the ever encroaching Americans. The Native Americans were enticed to move into the area because of a promise of land that they could call their own. This special set of circumstances offered Berlandier, a Swiss-trained botanist, a rare opportunity to study Native Americans in a habitat of their own selection.

Berlandier, hired by the Mexican Government to study the flora and fauna of Texas, carefully recorded what he learned of the native tribes — their origins, relationships, languages, beliefs, attitudes, dwellings, clothing, eating habits, education of children, women's activities, hunting techniques, war tactics, and burial customs — as well as his own personal experiences.

Of particular interest are Berlandier's comments on the wild fruit available as food at that time. This fruit, in large variation and abundant supply, was so prized by the native tribes that most of the tribes had a special ceremony at the beginning of the fruit harvest. This ceremony is described by Berlandier as a true religious experience.

Complementing the text are full page color reproductions of water color paintings representing 16 Texas tribes. These unusual works done under Berlandier's supervision document the diversity of tribal dress and also portray the extent to which European costumes and customs had influenced certain tribes. Also portrayed are a number of artifacts from Berlandier's rather extensive collection.

The reader must acknowledge the diligent work of Patricia Leclerq who translated from the original French not only the thoughts of the scientist but the charm of his style. Also to be noted is the excellent editing work of John C. Ewers, Senior Ethnologist with the Smithsonian, and author in his own right. His ample footnotes throughout the book serve to confirm and support many statements and observations that today might sound strange or bizarre. In addition, the footnotes contain many references for further research.

Of interest to anthropologists is Berlandier's description of the sex (also social) life of the Comanche. One of the customs of the Comanche was to acquire white children, both boys and girls. These were sometimes children who had been lost or perhaps acquired in a raid. In most cases when the children were old enough to make a choice, they decided to stay with the Comanche. Berlandier gives his own opinion as to the reason for this phenomenon.

Of interest to archeologists is the recounting of migrations of the various tribes. These migrations were over surprisingly large distances in some cases, and sometimes in relatively short periods of time. Such migrations give rise to the speculation that these habits were inherited from their ancestors and likely occurred with some frequency in ancient times.

James D. Wells

References cited

Aten, L. E.

- 1981 Determining Seasonality of *Rangia cuneata* from Gulf Coast Shell Middens. Bulletin of the Texas Archeological Society 52:179-200

Carlson, D. L.

- 1987 *Rangia Cuneata* as a Seasonal Indicator for Coastal Archeological Sites in Texas. Bulletin of the Texas Archeological Society 58:201-214

Gardner, K. M.

- 1991 Seasonality of Fish Otoliths from 41GV10 and 41GV53. In: National Register Testing at the Spanish Moss Site (41GV10 & 41GV53), by M. A. Howard et al., pp. 101-104. Reports of Investigations No. 77, Prewitt and Associates, Inc., Austin

Howard, M. A., G. L. Bailey, C. B. Bousman, K. M. Gardner, and R. C. Fields

- 1991 National Register Testing at the Spanish Moss Site (41GV10 & 41GV53), Galveston County, Texas. Reports of Investigations No. 77, Prewitt and Associates, Inc., Austin

Patterson, L. W., C. R. Ebersole, and S. M. Kindall

- 1991 *Rangia* Shellfish Utilization: Experimental Studies. Houston Archeological Society Journal 101:26-29

Prewitt, E. R.

- 1987 Observations on Seasonality of Selected Fish Remains from 41AS16. In: The Swan Lake Site (41AS16) on Copano Bay, Aransas County, Texas: Settlement, Subsistence and Sea Level, by E. R. Prewitt and J. G. Paine. Bulletin of the Texas Archeological Society 58:147-174

Rickliss, R. A.

- 1990 A Historical Cultural Ecology of the Karankawan Indians of the Central Texas Coast. Unpublished Ph.D. dissertation, Department of Geography, University of Texas at Austin

Smith, H. A.

- 1983 Determination of Seasonality in Archaeological Sites Through Examination of Fish Otoliths: A Case Study. Journal of Field Archaeology 10(4):498-500

Story, D. A.

- 1990 Cultural History of the Native Americans. In: The Archeology and Bioarcheology of the Gulf Coastal Plain, Volume 1, by D. A. Story et al. Arkansas Archeological Survey, Research Series No. 38, pp. 163-366

Weinstein, R. A., and J. P. Whelan, Jr.

- 1987 Archaeological Testing at Three Sites in the Wallisville Lake Project Area, Trinity River Delta, Chambers County, Texas. Coastal Environments, Inc., Baton Rouge

