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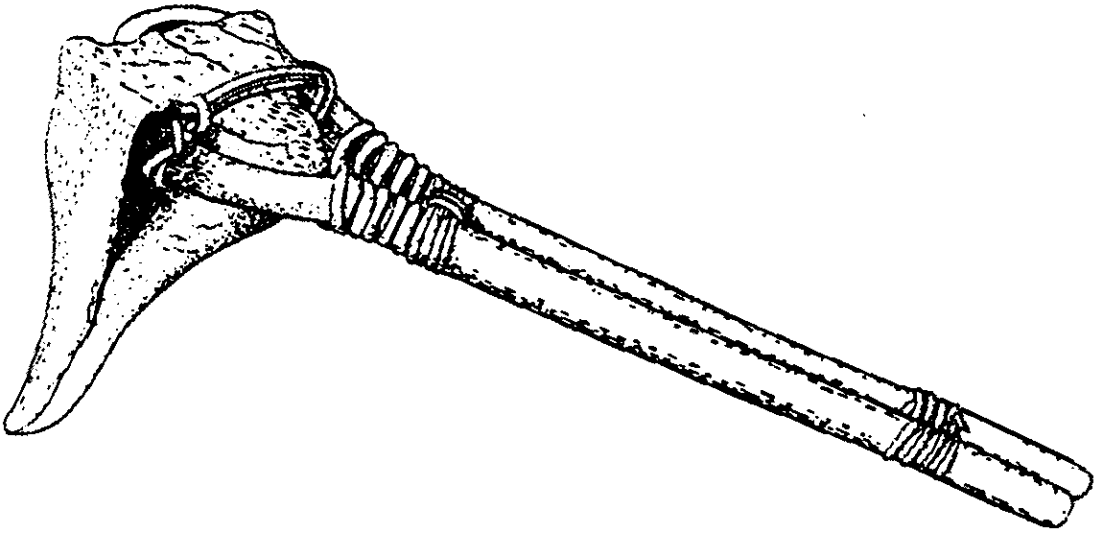

Conch Shell Tools: Double-Hafted Hoe/Pick

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Acknowledgement

The Houston Archeological Society gratefully acknowledges the long-time, dedicated service of Journal Editor Richard L. Gregg, who is resigning from the editorship as of this issue. Dick Gregg has been a capable, conscientious, and knowledgeable editor of this publication for many years, and it will be a challenge to fill his shoes. We wish Dick all the best in his future archeological endeavors.

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A Discussion of a Few Shell Tool Types With an Emphasis on Shell Celts

Jesse Todd
MA Consulting

Conch shells were used to make tools in areas poor in native chert such as the middle coast of south Texas (Mokry 1980:56). Hammand (1977:170), in his discussion of the Maya, states that the thick lip portion of *Strombus costatus* shell provided a blank from which a variety of tools were made, including celts, scoops, chisels, awls, and gouges. Reiger (1979:137) states that *Strombus gigas* implements are relatively rare on the Gulf Coast, but *Busycon contrarium* tools are found in fairly large numbers on both east and west sides of the Gulf Coast. Implements made from conch shell include adzes, celts, hoes/picks, hammers, gouges, awls and chisels, and anchors/net weights (Gilliland 1975; Hester 1980:123; Larson 1980; Swanton 1946:252). Some of the conch shell tools are discussed below in this short paper. Modifications, both human and natural, to conch shells are listed in Figure 1.

Adze

Reiger (1981:51) quoted the dictionary definition for an adze, which is "an axe-like tool for trimming and smoothing wood, etc., with a curved blade at right angles to the handle." He believes that adzes made from *Busycon* sp. were used on the west coast, while Strombus adzes were used on the east coast. Mokry (1980:51), based on his examination of adzes from the Texas coast, stated that adzes are either triangular or roughly square, and the edge is unifacially ground at the concave face. Laxson (1964:216) states that a shell adze found in the Tequesta sub-area of Florida is oval- or wedge-shaped, and the blade is similar to a right triangle when viewed from the side. Shell adzes that have a petaloid shape appear to have been a result of angular fracture and not intentional shaping. Also, it is possible that the triangular adzes were smaller than the square ones. Adzes may have been used for woodworking and hide processing, and as a scraper or knife.

There are two possible ways that adzes were hafted, as seen in Figure 2. The larger adze might have been hand held while the smaller one was hafted (Mokry 1980:56). Laxson (1964:217) mentions that out of over six hundred shell tools analyzed from the Tequesta subarea, only one indicated that it had been hafted. To create an adze, the outer whorl of the shell must be removed so there is a uniform thickness. The whorl probably was removed by using a hammerstone or conch hammers. The body whorl was struck along a predetermined line which was along the long axis of the shell. The blank was then refined by percussion until the desired shape nearly was achieved. The cutting edge was ground at a right angle to the long axis. The edge was then ground, possibly using a sandstone abrader, as was the adze, until the desired shape was achieved (Mokry 1980:53).

Hoe/Pick

Cushing (1896:368) describes digging instruments, shell hoes, made from *Busycon* sp. that were deeply worn at the backs and that had excessive wear on the edges. He added that the tool was hafted by clamping a curved stick over the hinge and over the point of the apex (umbo) precisely as shown in an early woodcut by LeMoine of Indians planting corn.

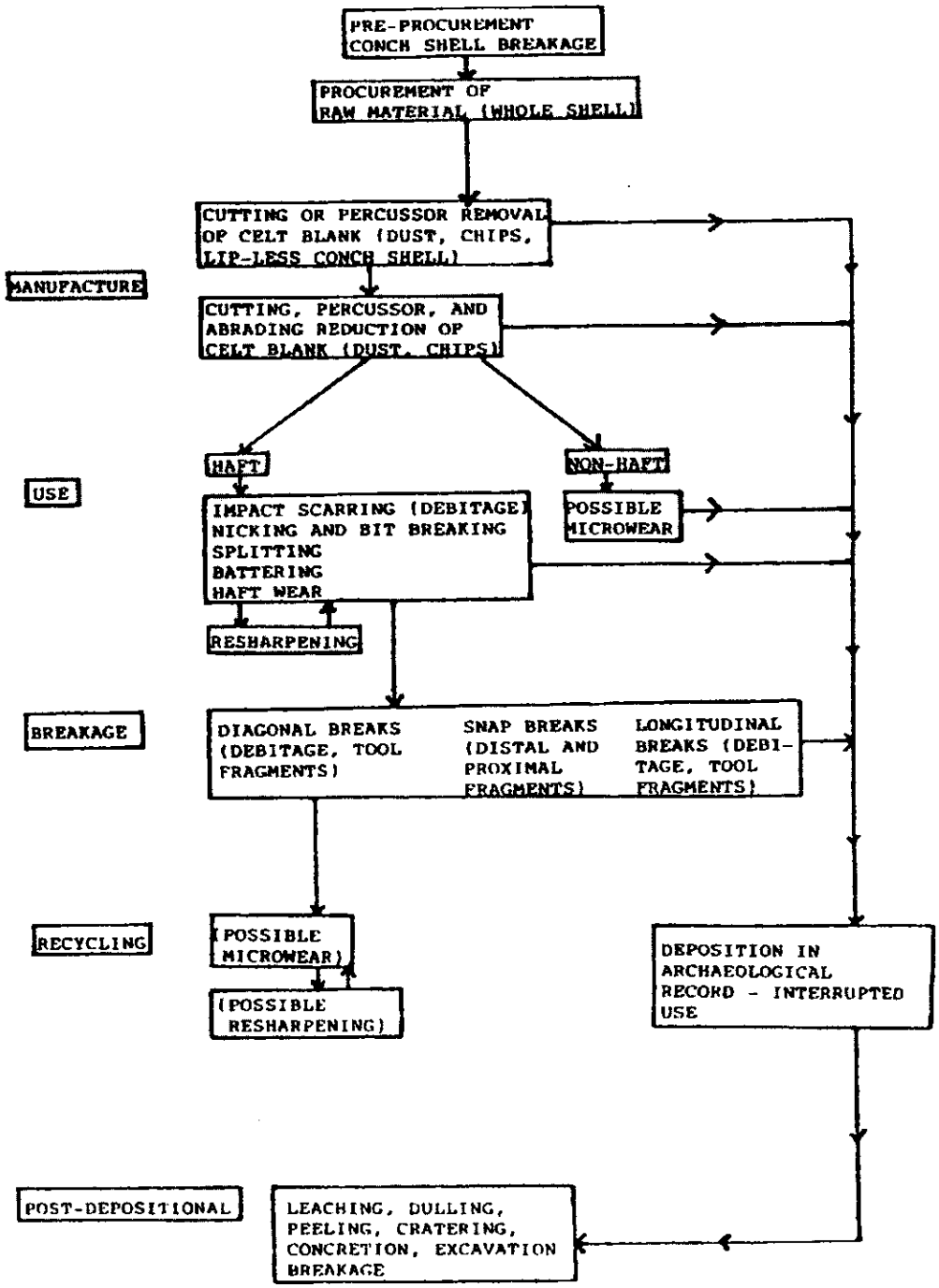

Figure 1. Modification, both Human and Natural, to a Conch Shell During Use and Afterward (Masson 1988:331).

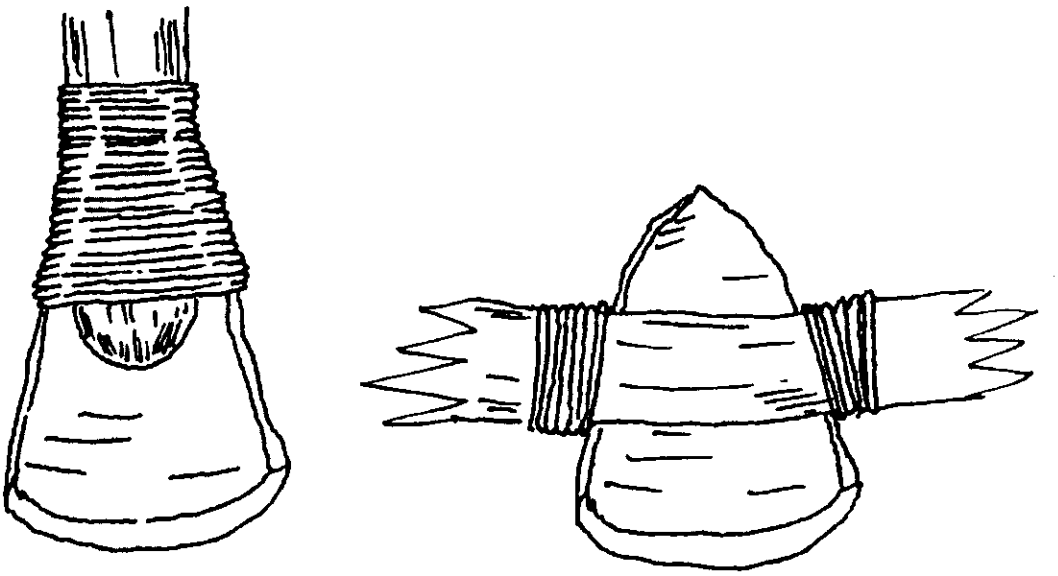

Figure 2. Hafting Methods for Conch Shell Adzes (Mokry 1980:57).

Moore (1920:14) quotes Willoughby's description of the shell hoes from Sandfly and a site near the eastern coast of Florida:

> The shell implements you sent for examination fall naturally into two groups: those with a single hafting perforation (Figure 3a), and those with double perforations for hafting (Figure 3b). All of these holes, whether single or double, are in the outer whorl of the spiral body above the shoulder. . . Some of the hafting perforations are quite symmetrical with smooth edges, others are more roughly fashioned. The smoother edges, however, seem to be the result of superior workmanship [rather] than wear. . . It will be noticed that nearly all of the smaller implements come within the first group, and have but one perforation for the handle, while in the second group two perforations are required to insure proper rigidity of the heavier tool.

Not only are *Busycon contrarium* used for hoes/picks but so were *Pleuroploca gigantea*. Reiger (1979:137) believes that the hole in the shell was made by pecking rather than drilling, at least initially, based upon an uncompleted *B. contrarium* pick recovered by Reiger from Chokoloskee Island, Florida.

Celt

Eaton (1974:202) defines a celt as "an axe without perforations or groovings for hafting." Eaton further states that the celt is probably one of the oldest and most versatile tools used by

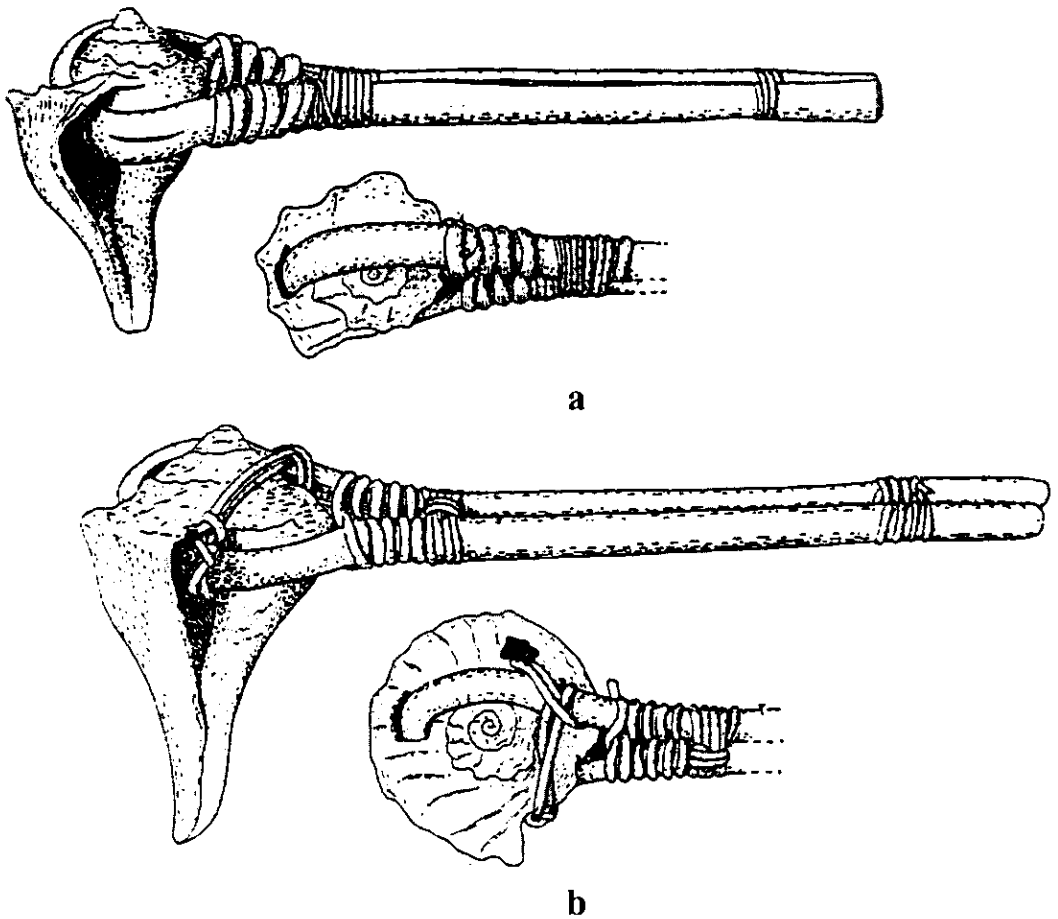

Figure 3. Hafting Methods for Shell Hoes/Picks. **a.** single hafting perforation, **b**. double hafting perforation (Moore 1912:15).

humans. Masson (1988:315), however, states that there have been a few grooved celts found. He adds that celts are bifacially ground, while adzes are unifacially ground. Shells used for making celts are *Strombus costatus*, *S.* gigas and *Busycon contrarium* (Masson 1988:314-315). Both Eaton (1974:197) and Masson (1988:314-315) state that *S. gigas* was the shell of choice but *S. costatus* was used where *S. gigas* was absent. Tools from *S. gigas* were reworked as much as possible where the shell was imported. It is believed by Masson (1988:322) that the major use of celts was for woodworking, but Eaton (1974:202) states that celts were probably used in chipping, chopping, and cleaving, and may have functioned as an adze, knife, scraper, and other tools as well. Carr and Reiger (1980:73), based upon their analyses of celt caches in southeastern Florida, believe that the caches represented grave offerings for males since they would be the ones to have the strength to use the celts during woodworking tasks such as constructing canoes.

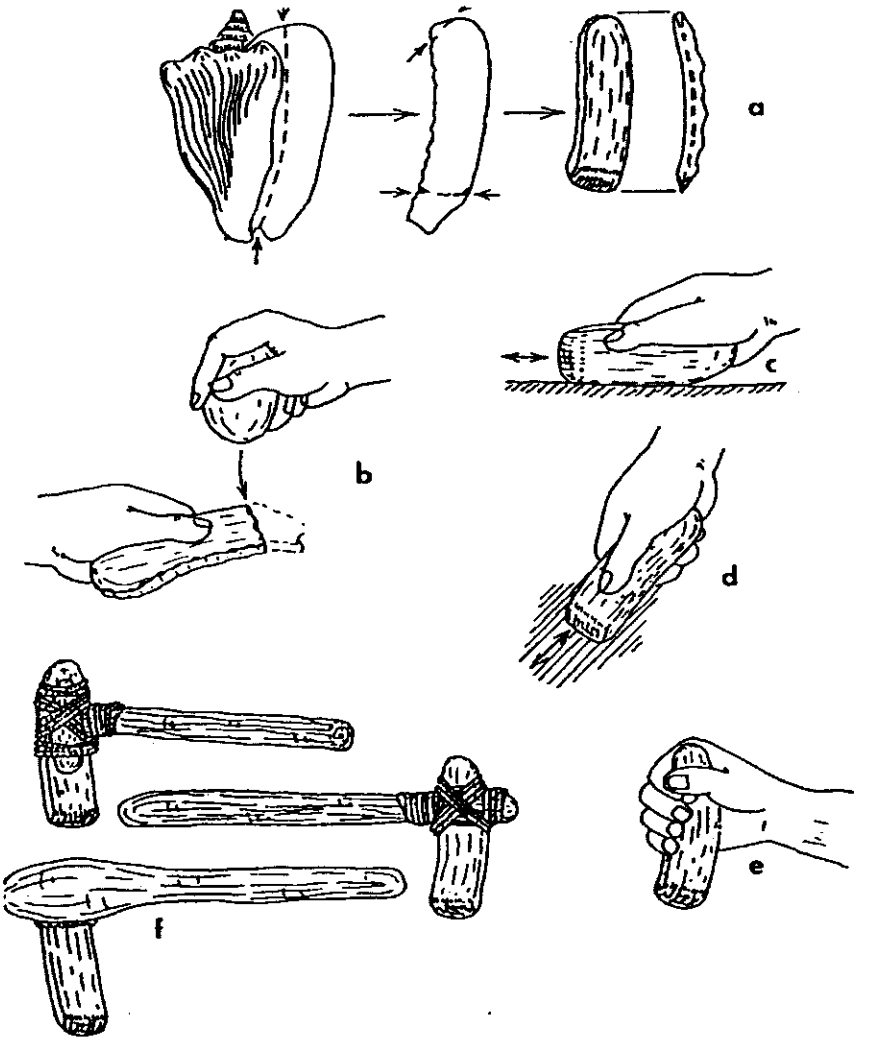

Figure 4. Steps Followed in Creating a Celt (Eaton 1974:203).
a. removal of shell lip and subsequent forming of tool; **b.** roughing out the tool with a hammerstone; **c.** & **d.** grinding the tool; **e.** celt used as a hand tool; **f.** possible hafting methods.

Eaton (1974:202-203) describes making a shell celt from *S. costatus*. The continuing modification of the adze, as well as the natural impacts after the celt has been thrown away, are shown in Figure 4. Eaton removed the lip of the shell by striking the back of the shell with a fist-sized stone. Masson (1988:320) suggests that slamming the shell down on a rock or against each other, or the use of columella hammers also would have worked. After the lip was removed, the tool was roughly shaped by pecking away at it with the hammerstone in a fashion similar to percussion flaking. Next, the celt was ground to give it its shape and edge. Eaton stated that, after experimentation, he was able to control the breakage fairly well. The breakage of the celt during use is illustrated in Figure 5.

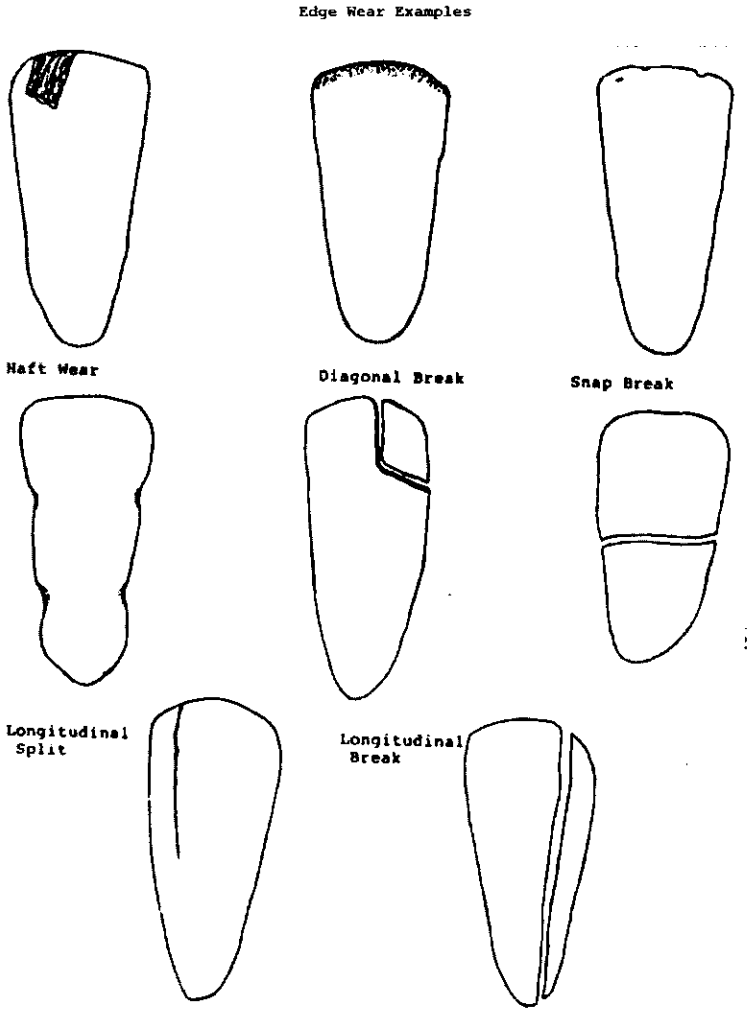

Figure 5. Ways that a Conch Shell Celt Might be Broken or Worn During Use (Masson 1988:326).

Anchors/Net Weights

Cushing (1897:40) described finding two wood canoes, and not far from these canoes was what he referred to as an "ingenuous" anchor:

> It [the anchor] consisted of a bunch of large triton-shells roughly pierced and lashed together with tightly twisted cords of bark and fibre so that the long spike-like ends stood out radiatingly, like the points of a star. They had all been packed full of sand and cement, so as to render them, thus bunched, sufficiently heavy to hold a good-sized boat.

Neyland and Worthington (1962:3) discuss the presence of large gastropods (*Pleuroploca gigantea*) found at the Hall's Lake Number 1 site in Brazoria County, Texas. Their belief was that the shells were net weights, but stated that further work must be done, although the shells are recognized as net weights in the central Texas coastal area.

Comments

No doubt, conch shell tools were used when lithic material was unavailable. It appears that only two species, *Strombus gigas* and *S. costatus*, were favored for making celts, but *Busycon* sp. were also used. Shell hoes/picks were made exclusively from *Busycon* sp. and *Pleuroploca gigantea* which also apparently was preferred for making net weights or anchors due to its weight. *Strombus* sp. and *Busycon* sp. apparently were used for making adzes. This paper has presented some uses of conch shells. This is by no means a comprehensive study. Conch shell columella have been used for tools, but people are experimenting with creating the tools, and I eagerly await the results of their experiments.

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The Dowdy Ferry Site: A Multi-Component Archaic Campsite In Southeastern Dallas County, Texas

Wilson W. Crook III

Introduction

The Archaic Horizon within the Upper Trinity River watershed was originally defined by Crook and Harris in 1952. While two sites were primarily used to characterize the Early to Middle Archaic Carrollton Focus (Wheeler - 41DL30, Lake Dallas - 41DN6), and another two sites to define the Late Archaic Elam Focus (Wood Pit - 41DL55, Milton - 41DL230), Crook and Harris' research included observations from a large number of additional Archaic sites in the region (see Crook and Harris, 1952, Figure 1). Although some of these locations have been cited in later publications (Crook and Harris, 1954; 1955; Prikryl, 1990; Crook and Hughston, 2007), many of the sites have never been recorded and/or never had a separate site description published. One of these locations is the Dowdy Ferry site (41DL332) in southeastern Dallas County.

Description

The Dowdy Ferry site lies in the southeastern corner of Dallas County, Texas. It is located approximately 15 km (9 miles) west of Seagoville, Texas, on the north side of the main branch of the Trinity River within the first (T-1) terrace (Figure 1). This location is at 32°40'22" North Latitude, 96°40'56" West Longitude, or Zone 14 718346E/3618385N of the Universal Transverse Mercator grid. The site is approximately 700 meters from the present river channel and was originally exposed due to the actions of a commercial gravel operation. The pit has since been partially filled and reclaimed. Dowdy Ferry Road runs adjacent to the gravel pit and is the origin of the site's name. The primary datum of the site is at an elevation of 115 meters (380 feet) above sea level. Both the site's location and the name are on file at the Texas Archeological Research Laboratory.

Dowdy Ferry lies within the Blackland Prairie physiographic province, a narrow north-south zone bounded by the Eastern Cross Timbers to the west and the Post Oak Belt to the east. Soils of the Blackland Prairie are for the most part black, organic-rich, calcareous clays of the Houston Black-Heiden, Ferris-Heiden and Trinity-Frio soil groups (Coffee, Hill and Ressel, 1980). These soils are characterized by a low permeability, which effectively inhibits the growth of trees except along major waterways. Active alluvial deposition by the Trinity River and its major tributaries has created a series of river terraces, which are composed variously of sandy loams, clays, and gravels. The result is an alternating terrain of open prairie dissected by serpentine riparian woodlands.

Vegetation of the Blackland Prairie consists of a number of grasses, the most common of which is little bluestream, although big bluestream, switch grass, Texas wintergrass, Indiangrass, silver bluestream, and others have been reported (Gould, 1969). The riparian belts lining the streams and rivers typically contain hackberry, oak, cottonwood, black willow, pecan, and elm. Underbrush is predominantly peppervine, trumpet creeper, greenbriar, hawthorne, honeysuckle, grapevine, and various berry-bearing vines.

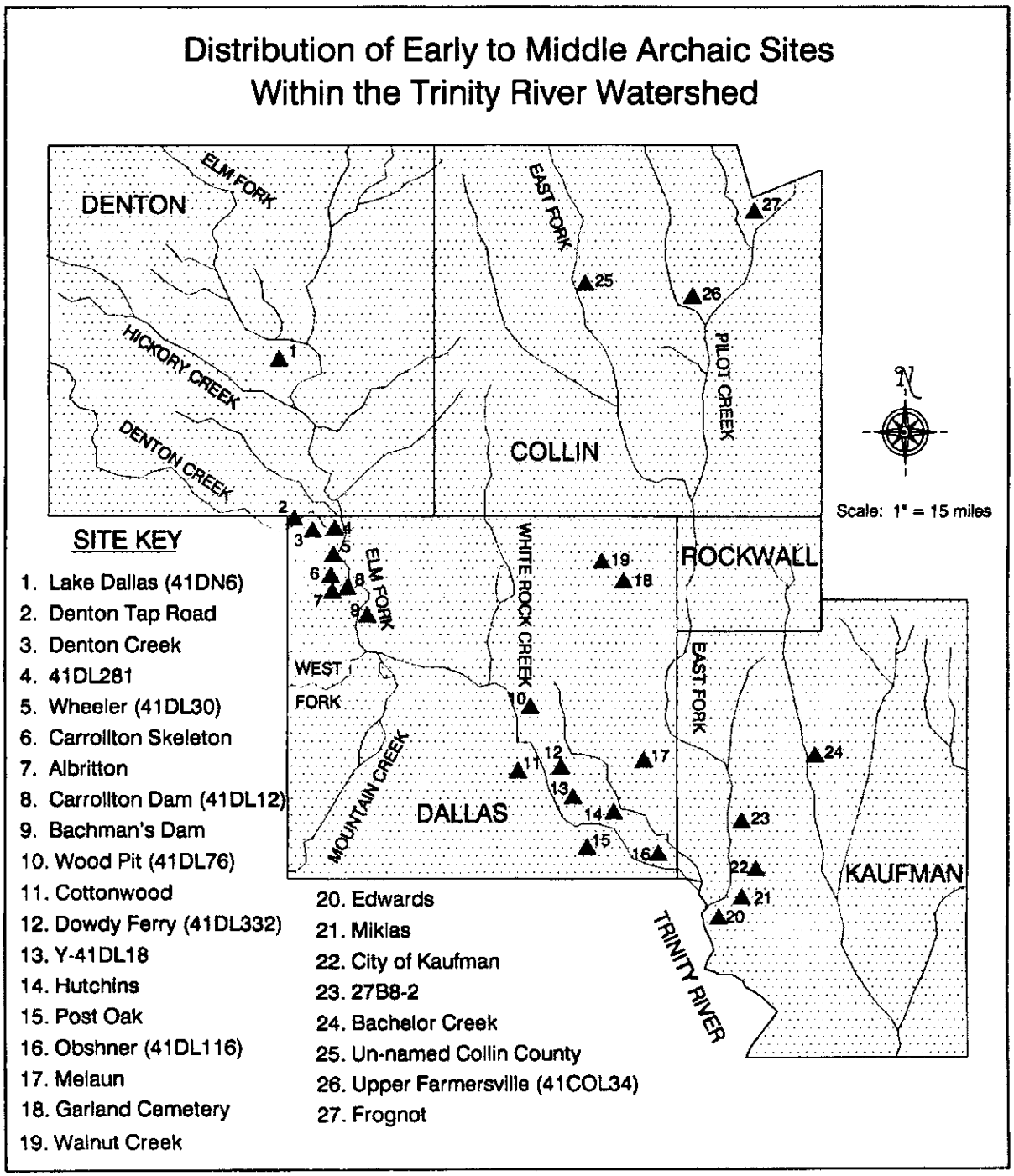

Figure 1. Distribution of Early to Middle Archaic Sites within the Trinity River Watershed

The seeds of the dominant grasses present in the Blackland Prairie are typically small and were probably not a significant food source. Despite this, a substantial amount of food resources would have been available to the inhabitants of the Dowdy Ferry site, especially along the river bottoms and in the riparian woodlands. In 35 years of working the terrace system of the Upper Trinity River watershed, the writer has observed acorns, pecans, hackberries, "mustang" grapes, and various wild berries collectively called "dewberries" when he was a boy. In addition, the bottomlands support a varied fauna including whitetail deer, rabbit (cottontail and jackrabbit), raccoon, opossum, squirrel, and skunk. The rivers also produce various species of fish, turtles, frogs, mussels, and snails. Wild turkey and beaver were also present within the living memory of both the writer's late father and that of R. K. Harris. In fact, R. K. Harris remembered his father having described the general Trinity River bottoms as being "a hunter's paradise" as late as the turn of the last century (R. K. Harris, personal communication, 1973).

There is some disagreement regarding the presence of bison and antelope in the Blackland Prairie between 8,000 BP and the beginning of the Late Prehistoric (Dillehay, 1974; Lynott, 1979). Bison and antelope bones have been found in Late Prehistoric sites along both the Elm Fork and the East Fork of the Trinity, and paleo buffalo wallows can be seen today on the golf course of the Dallas Country Club. However, the acidic soils that characterize the terrace formations of the Trinity generally prevent the preservation of bone, making identification of their presence during the Archaic uncertain. Moreover, as postulated by Dickens and Wiederhold (2003), longer distance hunting forays probably led to preparation of meat at the kill site, which would reduce the number of bones present in the campsite.

It is unknown if the Archaic inhabitants of the Trinity extensively exploited the local acorn mast crop. Lynott (1977) has stated his belief that the local acorns have such a high tannic acid content as to be virtually inedible. The writer has personally tried without much success to process and roast local acorns into an edible crop. Therefore Lynott may be correct in his assertion that acorns did not play a major role in the local inhabitants' diet. However, even if not part of human diet, the presence of abundant acorns would have played a significant role in sustaining many of the species of animals hunted by man, including deer, squirrel, raccoon, and turkey.

Geology

As mentioned above, the Dowdy Ferry site is located on the north side of the Trinity River within the first (T-1/Union Terminal) terrace. Several commercial gravel operations resulted in the formation of a large L-shaped pit, which, at one time, uncovered as much as 12 Ha (30 acres). This extensive excavation clearly exposed the stratigraphy of the first terrace in detail. An idealized terrace cross-section is shown in Figure 2. As noted above, much of the original pit has been filled in and the land reclaimed, although similar exposures can be seen in gravel operations in the area.

The stratigraphy of the Upper Trinity River alluvial terraces was originally described by Shuler (1935) and Pattillo (1940), and subsequently correlated by Taggart (1953), Crook and Harris (1957), Slaughter, et al. (1962), Willimon (1970), and Ferring (1986). Each of these investigators unfortunately has used a slightly different terminology in their geologic descriptions. The writer has done extensive archeological work along the main channel of the Trinity in southeast Dallas, Kaufman and Ellis Counties. In addition, the terraces exposed along the Elm Fork in northwest Dallas and southern Denton Counties have also been studied, albeit

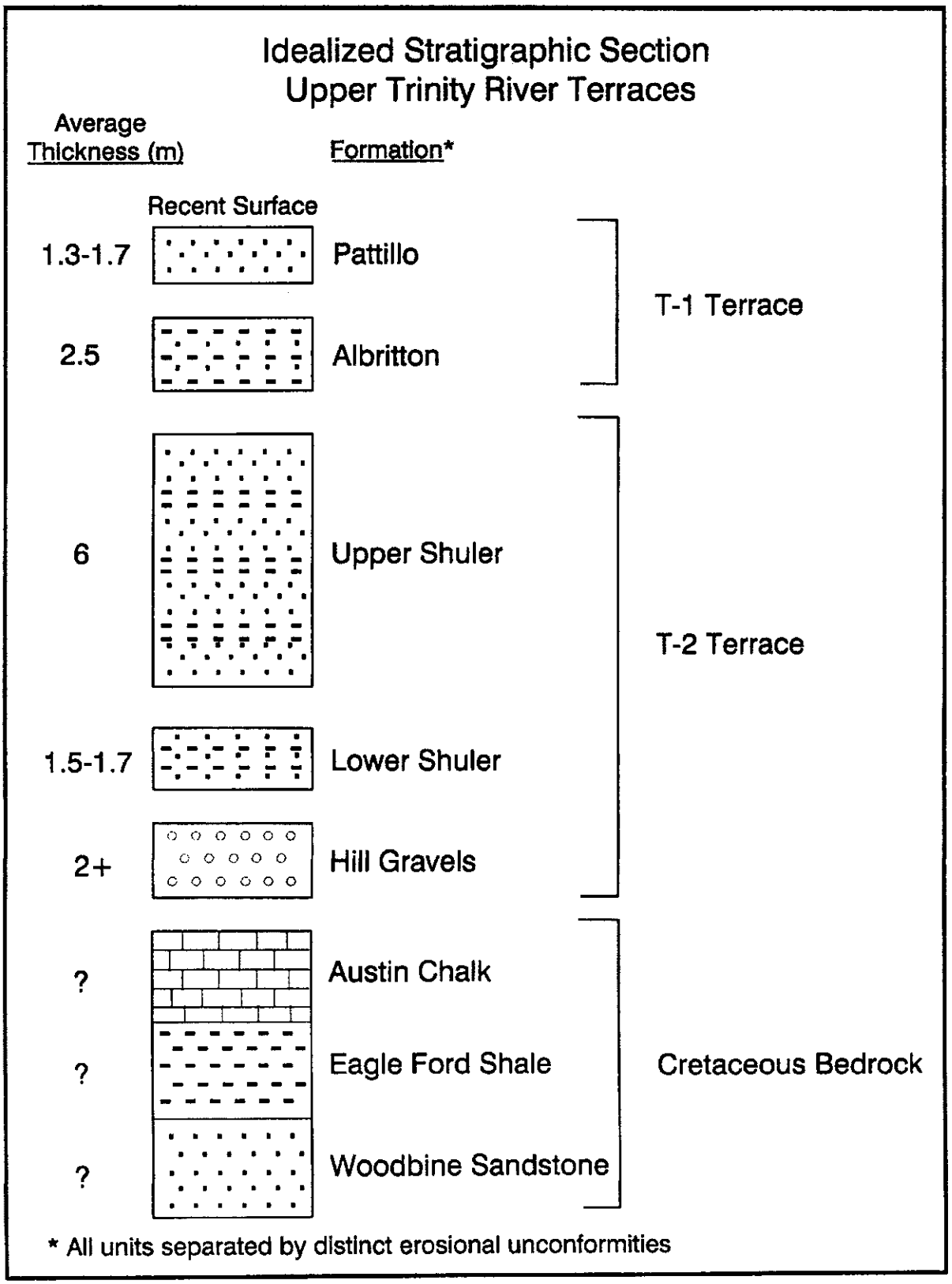

Figure 2. Idealized Stratigraphic Section of the Upper Trinity River Terraces

not as extensively. While none of the proposed sequences is an ideal model for the entire Upper Trinity River watershed, the series as proposed in Slaughter et al (1962) best fits both geologic convention and the writer's personal observations in the vicinity of the Dowdy Ferry, Post Oak, Milton, Wood Pit, and Pemberton Hill sites (see Figure 1). Therefore the Slaughter et al terminology has been adopted for use here.

The upper 5-10 cm of the terrace is composed of a fine-grain, carbon-rich black topsoil known locally as the Carter alluvium. Underlying the Carter is the gray, sandy loam of the Pattillo Formation. Along the Trinity system, the Pattillo varies widely in thickness but is typically 1.5 meters or more in thickness. However, at the Dowdy Ferry site, the Pattillo rarely exceeds 35-40 cm, indicating a period of extensive channel cutting by the Trinity in the area. Artifacts of both the Middle and Late Archaic occur in the Pattillo at the site, with Late Archaic material (Elam Focus) concentrated in the upper Pattillo near the Pattillo-Carter contact.

Early Archaic artifacts are found at the base of the Pattillo and into the underlying Albritton Formation. The Albritton consists of a yellow-red, iron-rich sandy clay. The unit changes color somewhat along the Trinity watershed, varying from a yellow-red in the vicinity of the Dowdy Ferry site to a deeper red-brown in the area of Carrollton Dam in northwest Dallas County. Thickness is also variable, the average being approximately 2.5 meters. Late Paleoindian material, often in association with Early Archaic artifacts, is restricted to sections of the Albritton well below the Pattillo contact.

Contrary to the supposition put forward by Prikryl (1990), the Pattillo and Albritton Formations appear to be fluvial and not pedogenic in origin, at least in the area of the Dowdy Ferry site. Faint bedding plains were observed in both formations, notably in fresh exposures along the southeast and southern walls of the original gravel pit. In addition, the Albritton and Pattillo occur not only in the T-1 terrace, but also as thin veneers draped over the older Shuler Formation in many exposures of the T-2 (Pemberton Hill) terrace along the main branch of the Trinity in southeast Dallas County. If the formations were pedogenic in origin, then they should also be present over the entire region, including the higher terraces (T-3 to T-5). Instead, they are only present along the main Trinity channel as distinct terrace depositional material.

The upper surface of the Albritton Formation is separated from the overlying Pattillo by a major erosional unconformity. The Albritton is unlike any other component in the Trinity River terrace system, its yellow-red sandy clay representing a totally different erosional source from either the overlying Pattillo or the underlying Shuler Formation. Such a change in chemical character is likely to represent a significant amount of time - both before and after deposition. Several small specimens of gastropods were recovered from a small clay lens in the Albritton. One of these species, *Stenotrema leai*, is indicative of fresh water alluvial deposition in an environment which is considerably more hydric than in the region today (Crook, 2004). This potentially could correspond to a short change in the general post-Pleistocene environment of glacial melt and sea level rise. This last minor phase of continental glaciation is known as the Cochrane readvance and has been generally dated to a period between 6,500-9,000 BP. A pre-6,000 BP date for the Albritton fits with the one radiocarbon date for the region of 6,000 years BP for the base of the Pattillo (Crook, 1959).

Underlying the Albritton is a thick section of Wisconsin Age sands known as the Shuler Formation. These sands are typically medium-grained, finely laminated (often with alternating white and yellow bands), and contain locally abundant Pleistocene faunal remains. Although well exposed as a result of gravel pit activity, no evidence of human occupation was found below the middle part of the Albritton at the Dowdy Ferry site.

The Hill gravels underlie the Shuler Formation and constitute the bottom of the pit, their material comprising the source for the commercial gravel operations.

Artifact Assemblage

While cultural material was found throughout the large area that was originally exposed by commercial gravel operations, the heaviest concentration was in the southeastern and southern parts of the site. A total of 289 tools have been recovered, representing an occupation from Late Paleoindian/Early Archaic to Late Archaic. Many of the sites ascribed to the Carrollton and Elam Foci by Crook and Harris (1952) are multi-component sites with cultural material ranging from Late Paleoindian to Late Prehistoric. In this regard, the Dowdy Ferry site is a bit unusual in that no arrow points or ceramics have ever been reported from the site. Moreover, the artifact assemblage is strongly weighted to the Early to Middle Archaic, with only a relatively minor Late Archaic component.

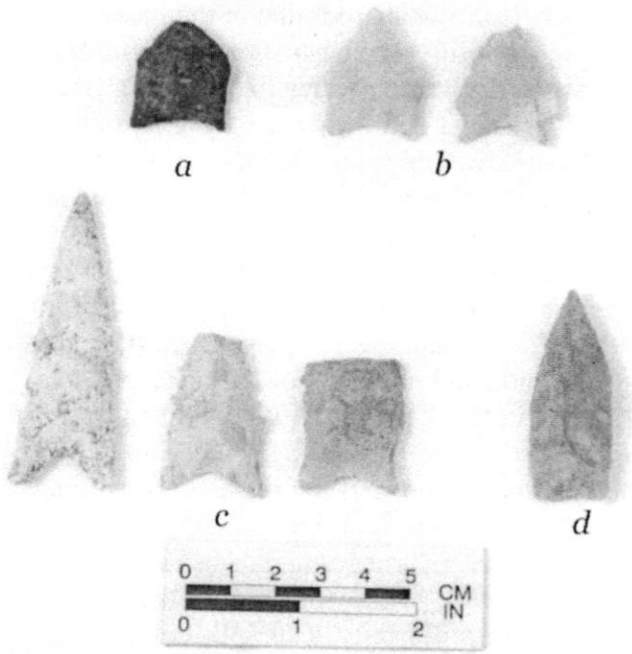

Figure 3. Late Paleoindian Dart Points from Dowdy Ferry Site, Dallas County, Texas. **a.** Pelican, **b.** San Patrice, **c.** Dalton, **d.** "Texas Angostura"

Chipped stone artifacts are made from four basic materials: chert, quartzite, petrified wood, and quartz. All can be found locally in the eroded remnants of the ancient T-5 terrace, some 150 vertical feet above the present stream grade. These cobble fields, known as the "Uvalde Gravels," are composed of as much as 80% quartzite, with some chert (10-15%) and a small amount of petrified wood and quartz (Crook, 1987). The closest exposure to the Dowdy Ferry site is in the fields around the Buckner Orphan Home, some 8 km (5 miles) to the north.

Local quartzite is relatively fine-grained and comes in a wide variety of colors including gray (the most common), white, yellow, red, green, and purple (rare). Heat-treating appears to have been used to help improve controlled fracture by reducing the material's tensile strength. Heat-treated quartzite usually shows some reddish to pink coloration and a waxy luster (Purdy and Brooks, 1971).

Chert from the local T-5 cobble fields is typically a slate-gray color. However, chert artifacts from the Dowdy Ferry site reflect a wide variety of colors including cream, light gray, dark brown ("root beer"), dark blue-gray, and black. Thus a significant percentage of this material must have been imported, probably up the Trinity and Brazos Rivers from Central Texas. Evidence of heat treating of chert is also present.

Primary reduction of both chert and quartzite cobbles appears to have occurred elsewhere and not at the Dowdy Ferry site. This is evidenced by the relatively low percentage of flakes found at the site that contained outside cortex material. Patterson (1981) has shown experimentally that in sites where primary cobble reduction has taken place, as much as 54% of all flakes contain some cortex material.

Projectile points are the most abundant tool, with some 164 having been recovered. A number of different types have been recognized, as one would expect in a large multi-component site. Twenty can be attributed to the Late Paleoindian period including Angostura (2), Dalton (8), San Patrice (6), and Pelican (1) (Figure 3). Three additional fragments clearly belong to un-

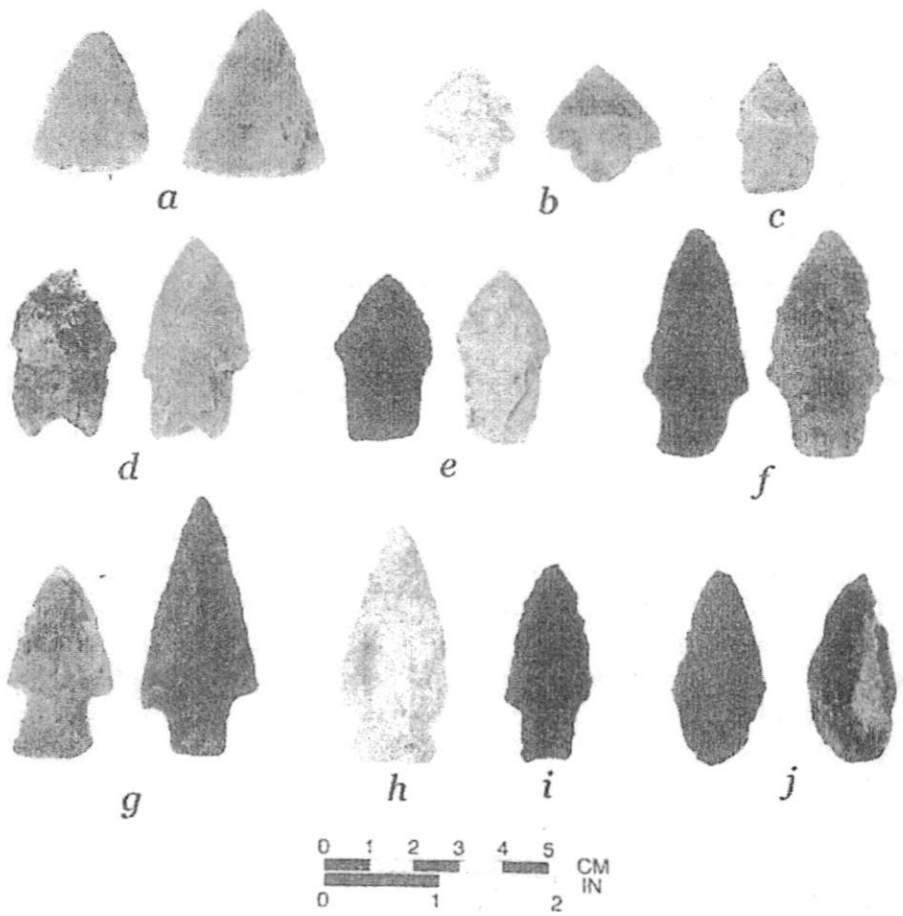

Figure 4. Archaic Dart Points from Dowdy Ferry Site, Dallas County, Texas. **a.** Early Triangular, **b.** Carrollton, **c.** Dallas, **d.** Gower, **e.** Wells, **f.** Morrill, **g.** Bulverde, **h.** Trinity, **i.** Yarbrough, **j.** "Wheeler Leaf"

fluted lanceolate points but could not be specifically typed. All 20 display extensive basal grinding. Paleoindian dart points were found both displaced in the pit and in situ in the pit walls. Where in context, they were exclusively in the Albritton Formation, usually well below the Albritton-Pattillo contact.

A total of 38 points can be attributed to the Early Archaic, including Andice (1), Big Sandy (2), Bulverde (5), Cossatot (3), Early Triangular (4), Gower (10), Morrill (8), and Wells (5). Chert is the predominant material used in the manufacture of these points (89%). Two-thirds also show extensive basal grinding. In general, these points are longer than those from the Middle and Late Archaic. Length ranges from 34 to 65 mm, with an average of 50 mm. Early Archaic dart points are found both in the upper 50 cm of the Albritton, at the Albritton-Pattillo contact, and in the lower 20 cm of the Pattillo. Representative examples are shown in Figure 4.

Another 29 dart points were found that can be generally attributed to the Middle Archaic. Identified types include Carrollton (6), Dallas (5), Dawson (3), Trinity (7), Yarbrough (1), and what Crook (1952) termed "Wheeler Leaf" (7). The latter are relatively small, slender leaf-shaped bifaces which may be projectile points, knives, or preforms. Chert remains the material of choice, although over one-third of the points are made from local quartzite. Basal or side-notch grinding is present in most of the Carrollton and Trinity specimens. Unfortunately, many of these points were not found in context. However, those that were in situ in the pit wall ranged from the middle to base of the Pattillo. Thus there appears to be some overlap between the Early to Middle Archaic, and/or some points which have been ascribed to the Middle Archaic (Carrollton and Trinity in particular) may extend farther back in time.

Only 10 points were found which appear to be from the Late Archaic period, including Elam (2), Gary (6), Kent (1), and Marcos (1). In general, these points are smaller (average length 39 mm) and are mostly constructed of quartzite. Basal grinding of any form is totally absent. The few found in context were in the uppermost part of the Pattillo, near the Pattillo-Carter contact.

A complete list of all point types recovered and their composition is shown in Figure 5. This includes the 67 points which, due to being incomplete, were unable to be definitively typed.

In addition to projectile points, 105 other chipped stone tools were recovered. Unlike the dart points, compositional material is a near 50-50 mix between chert and quartzite, with a few tools made from petrified wood and quartz. Two types of biface/knives were observed: ovoid/leaf-shaped (21 specimens) and square-based (10 specimens). Although both types are found stratigraphically throughout the site, the square-based bifaces are more predominant in the Albritton and basal Pattillo.

Biface and uniface scrapers are present in almost equal numbers. At least six distinct types, including plano-convex, oval, "turtleback," concavo-convex, thumbnail, and flake sidescraper have been recognized. Larger bifacial scrapers are constructed from either chert or quartzite; smaller flake side scrapers are predominantly made of chert.

Dowdy Ferry Site Projectile Point Typology and Composition

Projectile Points	Chert	Quartzite	Petrified Wood	Quartz	Total
- Angostura	2	-	-	-	2
- Dalton	7	1	-	-	8
- San Patrice	4	2	-	-	6
- Pelican	1	-	-	-	1
- Other	3	-	-	-	3
- Andice	1	-	-	-	1
- Big Sandy	2	-	-	-	2
- Bulverde	3	2	-	-	5
- Cossatot	3	-	-	-	3
- Early Triangular	4	-	-	-	4
- Gower	10	-	-	-	10
- Morrill	6	2	-	-	8
- Wells	5	-	-	-	5
- Carrollton	3	3	-	-	6
- Dallas	4	1	-	-	5
- Dawson	2	1	-	-	3
- Trinity	4	3	-	-	7
- "Wheeler Leaf"	5	2	-	-	7
- Yarbrough	-	1	-	-	1
- Elam	1	1	-	-	2
- Gary	1	5	-	-	6
- Kent	1	-	-	-	1
- Marcos	1	-	-	-	1
- Unidentified	51	14	2	-	67
TOTAL	**124**	**38**	**2**	**-**	**164**

Note: Projectile points showing signs of heat treatment = 67/164 (41%)

Figure 5. Dowdy Ferry Site Projectile Point Typology and Composition

Four Clear Fork type gouges were recovered. All are of unifacial construction, made from fine-grain quartzite, and show extensive wear on the distal bit face. Other chipped stone tools include gravers (11) and drills/perforators (5). Gravers are typically constructed from large, oval flakes and contain multiple spurs. Two types of drills/perforators are present including intentionally designed tools and resharpened projectile points.

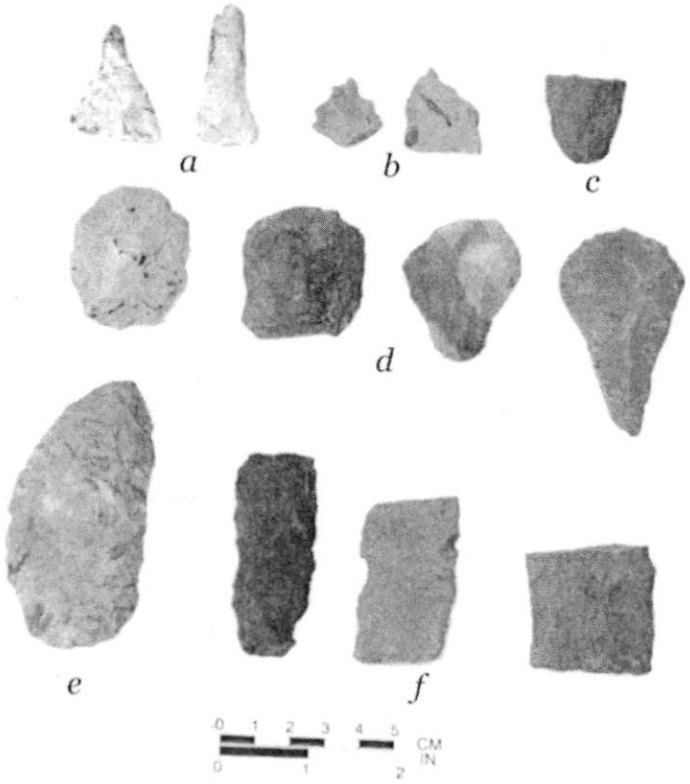

Figure 6. Non-Projectile Point Artifacts from Dowdy Ferry Site, Dallas County, Texas. **a.** Drill/Perforator, **b.** Graver, **c**. Clear Fork Gouge, **d.** Scrapers of various types, **e.** Leaf-shaped Biface, **f.** Square-based Biface.

Five oval-shaped quartzite hammerstones were recovered, all of which show extensive use on multiple surfaces. One such stone also had well-worn depressions on both sides and may have also served as a "nutting stone." Two quartzite cobble choppers were recovered, both of which were in direct association with a burial. One large flat quartzite cobble showed distinct evidence of having been used as a grinding stone. A single Carrollton double-bitted axe, another diagnostic feature of the Carrollton Focus as described by Crook and Harris (1954), was recovered from the Dowdy Ferry site. Although these axes are more commonly constructed from quartzite in the Upper Trinity watershed, the Dowdy Ferry specimen was made from a hard silicified sandstone. Figure 6 shows some of the chipped stone tools from the site, and their complete listing by type and composition is presented in Figure 7.

In addition to the above described chipped stone artifacts, a number of fired clay balls were recovered. Described as "clay blobs" by Crook and Harris (1952), they are a common component of Early to Middle Archaic sites in the Upper Trinity watershed. Patterson (1986, 1989) has recorded a number of Late Paleoindian to Archaic sites in southeast Texas which have extensive collections of these fired clay balls. He has postulated that they were either used for seasonal specialized food processing and/or for heat treating siliceous lithic material. Hudgins (1993) has demonstrated experimentally that clay balls retain heat significantly longer than wood coals and can be effectively used to roast plant food materials or meat without the need for ceramics.

Faunal Material

Since the acidic nature of the Albritton Formation, and to a lesser degree the Pattillo, creates a poor environment for the preservation of bone and shell, patterns of faunal exploitation along the Upper Trinity are not well documented. Where present, bone and shell material is often very small and fragmented, either due to original processing or the subsequent action of commercial quarrying. Therefore, a complete look at the fauna exploited by the inhabitants of the Dowdy Ferry site is impossible. The most commonly preserved bone is carapace of turtle. Other identified bone material includes deer, raccoon (?), fish, and bird (turkey). Fresh water mussel shells and both terrestrial and aquatic snail shells are occasionally present. No evidence for large plains mammals (bison) was found.

Human Remains

As discussed above, carbon material including bone is rarely preserved in Trinity watershed sites. As a result, the Archaic Horizon of the Upper Trinity River is poorly dated. In 1973, the writer and Mark D. Hughston discovered part of a burial freshly exposed in the southeastern pit wall of the Dowdy Ferry site (Crook and Hughston, 2007, beginning on page 27 of this publication). Careful excavation revealed the partial remains of a human skull and a humerus within the Albritton Formation, 20 cm below the contact with the overlying Pattillo. The bone material was in part encased in a thick (2-4 cm) lens of reddish-pink clay, which had apparently aided in its preservation. Additional skull material plus the majority of a single femur were found below on the pit floor. Because of the highly fragmented nature of the burial, it was impossible to determine the orientation of the body, although the location of the humerus adjacent to the skull, coupled with the right temporal bone being in situ with most of the occipital and parietal bone loose on the pit floor, is consistent with a flexed, eastward facing position. A single quartzite cobble chopper was found in direct association with the portion of the skull in place in the pit wall, and a second chopper was with the skull material on the pit floor.

Observation at the time of excavation was unable to determine conclusively if the burial was in situ or was intrusive. Due to lack of available funds, the material was not dated at the time but carefully stored against contamination. In the fall of 2003, 200-300 grams of both humerus and cranial material were submitted for radiocarbon dating using Accelerator Mass Spectrometry (AMS) technology. Both samples yielded identical dates of 1,240 +/- 40 Years BP (C13 corrected), or A.D. 710. Based on this date, it was concluded that the feature was a Late Archaic intrusive burial, and the clay lens most probably had been part of the original burial pit lining material.

Other Features

Other than the burial described above, no other features were recognized at the site. While burned rock middens have been reported from Late Archaic sites in the region (Lorrain and Lorrain, 2001), they are not common. This may be due, in part, to the fact that many of the Archaic sites along the Trinity have been discovered due to commercial gravel operations, which by their very nature destroys subtle features such as hearths and middens. Mussel shells, while

present in local Archaic sites, do not occur in sufficient numbers to create a substantial midden, although Crook & Harris (1952) reported one such feature at the Wood Pit, some 6 km north-west of the site.

Dowdy Ferry Site Non-Projectile Point Artifact Assemblage

Artifact Type	Chert	Quartzite	Petrified Wood	Quartz	Total
Biface/Knife					**31**
- ovoid/leaf	13	7	-	1	
- square based	8	2	-	-	
Biface Scrapers					**31**
- plano-convex	5	7	1	-	
- oval side	-	4	-	-	
- turtleback	4	3	-	-	
- concavo-convex	2	5	-	-	
Uniface Scrapers					**26**
- end	1	1	-	-	
- flake side	16	7	1	-	
Clear Fork Gouge	-	3	-	1	**4**
Graver	4	7	-	-	**11**
Drill	3	2	-	-	**5**
Hammerstone	-	5	-	-	**5**
Nutting Stone	-	1	-	-	**1**
Chopper	-	2	-	-	**2**
Mano	-	1	-	-	**1**
Carrollton Axe	-	-	-	1*	**1**
TOTAL	**56**	**57**	**2**	**3**	**118**

* Carrollton axe is made of silicified ferruginous sandstone
Note: Non-projectile point artifacts showing signs of heat treatment = 38/118 (32%)

Figure 7. Dowdy Ferry Site Non-Projectile Point Artifact Assemblage

Cultural Affiliation

The material present at the Dowdy Ferry site is generally consistent with the description of the Upper Trinity River Archaic as originally put forward by Crook and Harris (1952) and as subsequently re-proposed by Prikryl (1990). While the majority of the artifacts found at the site were disturbed by the actions of commercial gravel operations and subsequent erosion, a significant number were recovered in situ so as to provide a solid stratigraphic context for the site. Within the artifact-bearing horizons (Albritton and Pattillo Formations), some bioturbation has undoubtedly occurred, but not on a scale as to invalidate the stratigraphic observations made herein. This is especially true in that they confirm, for the most part, the chronological artifact sequences found by other researchers in the Trinity River watershed and elsewhere in Texas.

A Late Paleoindian horizon is present within the mid-to-upper parts of the Albritton Formation. Characteristic artifacts include well-made dart points, which are predominantly San Patrice, Dalton, and "Texas Angostura" in typology. All are characteristic of the Late Paleoindian period of the Eastern Woodlands as described by Johnson (1989). While forming the deepest artifact-bearing horizon at the Dowdy Ferry site, it is unclear if they represent a distinct culture or one admixed with the Early Archaic, as typical Early Archaic materials are also found in the upper 50 cm of the Albritton Formation. Crook and Harris (1954) noted that their main Trinity Archaic sites contained a consistent 5-10% of distinctly Late Paleoindian material which, based on an in situ find of a Scottsbluff point at the Obshner site (20 km southeast of Dowdy Ferry), they believed was contemporaneous with the Early Archaic. This study confirms that conclusion, and in fact, Late Paleoindian types make up as much as 12% of the site's projectile point component.

Prikryl (1990) proposed that the Early Archaic for the Upper Trinity River watershed was characterized by what he termed "early split stemmed points," which would presumably include Gower points. While split-stemmed points are clearly present in most every Early Archaic horizon along the Upper Trinity, they are not as abundant as other straight and rounded stemmed points such as Big Sandy, Bulverde, Cossatot, Morrill, and Wells. Early Triangular points, often beveled in the same fashion as Dalton points, appear to be more common than originally reported by Crook & Harris (1952). The above point types occur both within the upper Albritton, at the Albritton-Pattillo contact, and into the basal section of the Pattillo. Large leaf-shaped bifaces as well as thin, well-made square-based bifaces occur with both Late-Paleoindian and Early Archaic dart points. Unifacial flake side scrapers seem more common to this zone, as are worked flake gravers and drills/perforators made from reworked projectile points.

Chert, much of which is imported from Central Texas, is overwhelmingly the preferred material (88%) for projectile points and over 50% of the other utilitarian tools in the Early Archaic. Projectile points are 15% longer on average than those in the overlying Middle Archaic. In addition, extensive basal grinding is quite common, occurring in nearly two-thirds of all specimens. It should be noted that all three of these characteristics were listed by Crook and Harris (1954) in their update on the focus traits of the Trinity Archaic (chert comprised 62% of Carrollton Focus dart points versus <50% in the Elam Focus; Carrollton point assemblages averaged 47 mm in length versus <40 mm for Elam Focus points; basal grinding present in about 20% of Carrollton points whereas it is virtually absent in Elam assemblages).

The Middle Archaic in the Upper Trinity watershed as defined by Prikryl (1990) is characterized by the presence of Carrollton, Wells, and large basal notched points (Andice/Calf Creek). Crook and Harris (1952, 1954) noted that the Early to Middle Archaic was characte-

rized by a diagnostic association of Carrollton-Dallas-Trinity points plus lesser amounts of basal notched (Andice), Bulverde, and crude leaf-shaped points which they called Wheeler Leaf.

Analysis of the Dowdy Ferry assemblage shows the Middle Archaic interval to contain primarily Carrollton, Dallas, Dawson, Trinity, and Wheeler Leaf points. These latter are so narrow as to appear to be intentionally made, narrow leaf-shaped points as opposed to preforms for some other tool. Many so-called Dallas points have close affinities with Dawson points, and the two types may very well be largely interchangeable. Middle Archaic artifacts occur from near the base of the Pattillo upwards to the mid-Pattillo. There is some clear overlap in sequence with the end of the Early Archaic. In fact, Patterson (1996) lists the presence of Carrollton and Trinity points as a diagnostic feature of the Early Archaic for southeast Texas, including the lower Trinity River.

Chert is still the preferred construction material; however, over one-third of the points in the Middle Archaic are constructed of local quartzite. Basal grinding is present but largely confined to stems of Carrollton and the side notches of Trinity points. Average point length is only 44 mm as compared to the 50+ mm for Early Archaic dart points. A similar biface and scraper assemblage is found in the Middle Archaic, although most artifacts are made from quartzite and there is a greater emphasis on bifacial as opposed to unifacial tools. The exception to this is the Clear Fork gouge, which is almost always unifacial in the Upper Trinity watershed.

The Late Archaic is poorly represented at the Dowdy Ferry site. Only 10 dart points can be attributed to this period. These include six Gary points, a type which varies widely in length over time and may actually originate in the Middle Archaic. In general, all Late Archaic tools are constructed of local quartzite and display no basal grinding. Late Archaic artifacts found in situ are invariably in the upper Pattillo, very near the Pattillo-Carter alluvium contact.

Prikryl (1990) proposed dates of 3,000-6,000 BP for the Middle Archaic of the Upper Trinity; 6,000-8,500 BP for the Early Archaic and Late Paleoindian, and >8,500 BP for pure Paleoindian occupation. The stratigraphic data from the Dowdy Ferry site strongly supports these conclusions. Based on the date obtained at the nearby Wood Pit (Crook, 1959), the base of the Pattillo would seem to be about 6,000 BP. Middle Archaic material (Carrollton, Trinity, Dallas, Dawson, Wheeler Leaf), with a few exceptions, is generally found at or slightly above this horizon. Early Archaic artifacts (Bulverde, Big Sandy, Cossatot, Early Triangular, Gower, Morrill and Wells) are, for the most part, found at the Albritton-Pattillo contact or below. Late Paleoindian points (Dalton, San Patrice, Texas Angostura) occur with Early Archaic material as deep as 50 cm into the Albritton. If the Albritton Formation does indeed represent a late, post-Pleistocene return to glacial conditions ("the Cochrane readvance") as proposed above, then it could easily represent the 3,500+ year period required by Prikryl's model for the Early Archaic/Late Paleoindian period.

There is apparently a small hiatus between the end of the Middle Archaic (mid Pattillo) and the beginning of the Late Archaic (upper Pattillo), at least at Dowdy Ferry. Prikryl (1990) placed a tentative date of B.C. 1,500 to A.D. 750 (3,500-1250 BP) for the Late Archaic. The evidence from Dowdy Ferry is not only consistent with this proposal but provides strong support for the terminal date through the radiocarbon date of A.D. 710 obtained from the preceramic burial described above.

In conclusion, because a large component of the Dowdy Ferry material was collected in stratigraphic context, many of the observations contained herein can serve as valid data points to augment the current model of the prehistory for the region. In this regard, this work would suggest only minor modifications to the projectile point sequence proposed by Prikryl (1990).

Clearly, the most common Late Paleoindian points are Dalton, San Patrice, Angostura, and to a lesser extent, Scottsbluff and Plainview. The writer would suggest replacing the listing of Golondrina with Scottsbluff as well as indicate that Dalton, San Patrice and Angostura extend into the earliest part of the Archaic.

While early split-stemmed points (Gower) are found in most Archaic sites along the Upper Trinity, they are by no means the sole Early Archaic dart point component. It is therefore suggested that Prikryl's model be modified to include Andice, Big Sandy, Bulverde, Cossatot, Early Triangular, Morrill, and Wells points.

The Middle Archaic should retain the presence of Carrollton points but should be augmented by Trinity (with basal notch grinding), Dallas/Dawson, and Wheeler Leaf. The Late Middle Archaic through the Late Archaic should also include Yarbrough and Gary points. Ellis, Edgewood, Elam, Kent, and Godley should define the Late Archaic period to A.D. 750 when the first arrow points appear in the region.

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A Terminal Archaic Intrusive Burial from the Dowdy Ferry Site, Dallas County, Texas

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Introduction

In May, 1973, while exploring the walls of the commercial gravel pit containing the Dowdy Ferry Archaic site (41DL332) in southeastern Dallas County, the writers discovered freshly broken bone fragments protruding from the yellow-red sandy clay of the T-1 Trinity River terrace Albritton Formation. As commercial operations threatened to destroy the discovery, coupled with the fact that bone preservation is extremely rare within the Albritton Formation, a salvage excavation was immediately undertaken. Subsequent work revealed the bone fragments to be part of a human skull, a humerus and a femur which had been at least partially encased in a lens of thick red clay, thus enhancing its preservation. Two cobble choppers were found in association with the remains.

The burial was located within the Albritton Formation, 20 cm below the contact with the overlying Pattillo Formation. Due to the acidic nature of both the Albritton and Pattillo Formations, datable carbonaceous material is rarely preserved. As a consequence, the Archaic Horizon of the Upper Trinity River is poorly dated. The only age date for the Archaic sites present along the Trinity in northern Kaufman, Dallas and southern Denton Counties comes from the lower Pattillo Formation, approximately 20 cm above the Albritton contact. Archaic material extends across this contact and well into the Albritton Formation. Thus, while careful excavation could not positively ascertain that the skeletal material was in situ as opposed to intrusive, the discovery of human remains from the Dowdy Ferry site offered the possibility of obtaining an early age date for the Archaic Horizon in northeast Texas.

Efforts to gain funding for obtaining an age date at the time of the discovery were unsuccessful owing to a combination of the presence of the one age date for the area, the lack of professional interest in the local Archaic, and the difficulty, in the 1970s, of obtaining age dates for a relatively small amount of bone. This being the case, the material was carefully preserved for potential future study. In 2003, the writers submitted a portion of the preserved material for Accelerator Mass Spectrometry (AMS) age dating. The results are the subject of this report.

Dowdy Ferry Site

The Dowdy Ferry site (41DL332) lies in the southeastern corner of Dallas County, Texas. It is located approximately 15 km (9 miles) west of Seagoville, Texas, on the north bank of the main branch of the Trinity River (please reference previous article, Figure 1, Station 12, on page 10 of this publication). The site was recognized by Crook and Harris (1952) as containing a component of the Early to Middle Archaic Carrollton Focus, with a minor overlying assemblage of Late Archaic Elam Focus material. Within the Upper Trinity River watershed, most sites are multi-component occupations containing material from Paleoindian to Archaic to Late Prehistoric, often in stratigraphic sequence if undisturbed. In this regard, Dowdy Ferry is a bit un-

usual in having only Paleo-indian and Archaic material (and mostly Early to Middle Archaic). No ceramics or arrow points, which characterize the Late Prehistoric throughout the Upper Trinity River watershed, have ever been reported from the site.

The artifact assemblage from the site is characteristic of the Early to Late Archaic as generally described by Crook and Harris (1952; 1954). It includes a high percentage of large dart points as well as hammerstones, choppers, plano-convex side scrapers, uniface Clear Fork gouges, ovoid to leaf-shaped bifaces, gravers, drills, and fire-burned red clay "blobs." As is characteristic of most Early Archaic sites in the region, a small but consistent percentage of Late Paleoindian dart points (predominantly Angostura, Dalton, and San Patrice) occur in direct association with the earliest Archaic material.

The human skull, humerus, and femur were found in the southwest part of the site eroding out of the pit wall. The bones were well within the Albritton Formation, 20 cm below the Albritton-Pattillo contact. Fresh breaks on both the skull and humerus were evident, undoubtedly the result of recent commercial activity in the pit. An exhaustive search of the pit floor and nearby spoil dumps revealed a highly fragmented portion of the occiput of the skull and two pieces of the left femur.

Careful excavation back into the pit wall failed to determine if the skeletal material was an in situ or intrusive burial. Most of the remaining part of the skull (mainly the right temporal bone) appeared to be encased in a thick (2-4 cm) clay lens which had apparently protected it from destruction by groundwater until exposed by commercial gravel operations. This clay material was notably different from the typical sandy yellow-red clay of the Albritton in that it consisted of a pure, pinkish-red clay. In fact, the homogeneous (non-sandy) nature of the clay lens is unique in the writers' 30+ years' experience of studying Archaic sites within the Upper Trinity River watershed. Its presence around the remains and nowhere else in the site appears to indicate that it is the result of intentional human construction, possibly as a lining of part or all of the burial pit. X-ray powder diffraction analysis of the material showed the clay to be composed of almost pure montmorillonite. While montmorillonite is a common component in the soils of northeast Texas, we know of no pure source in the immediate area.

Geology

The Dowdy Ferry site is located on the north side of the Trinity River within the first (T-1) terrace. The site is approximately 700 meters from the present river channel. Commercial gravel operations have exposed the stratigraphy of the first terrace in detail. An idealized terrace cross-section is shown on page 12 (Figure 2) of this publication.

The sequence of the upper Trinity River alluvial terraces has been partially described by Shuler (1935) and Pattillo (1940), and correlated by Taggart (1953), Crook and Harris (1957), Slaughter, et al. (1962), Willimon (1970) and, most recently, Ferring (1986). Each of these researchers unfortunately has used a slightly different terminology in their geologic descriptions. The writers have done extensive archeological work along the main channel of the Trinity in southeast Dallas, Kaufman, and Ellis Counties. The Trinity terraces along the Elm Fork in northwest Dallas County and southern Denton County have also been studied, albeit not as extensively. While none of the proposed sequences is an ideal model for the entire upper Trinity watershed, the series proposed in Slaughter et al (1962) best fits both geologic convention and the authors' personal observations. Therefore the Slaughter et al terminology has been adopted for use here.

The upper 5-10 cm of the terrace is composed of a fine-grain, carbon rich black topsoil known locally as the Carter alluvium. Underlying the Carter is the gray, clay-rich sand of the Pattillo Formation. Along the Trinity system, the thickness of the Pattillo varies widely but is typically 1.5 meters or more. However, at the Dowdy Ferry site, the Pattillo rarely exceeds 35-40 cm, indicating a period of extensive channel cutting by the Trinity in the area. Artifacts of both the Early to Middle Archaic (Carrollton Focus) and Late Archaic (Elam Focus) occur in the Pattillo at the site, with Late Archaic material concentrated in the upper Pattillo near the Pattillo-Carter contact.

Early to Middle Archaic artifacts are found toward the base of the Pattillo and extend into the underlying Albritton Formation. The Albritton consists of a yellow-red, iron-rich sandy clay. Thickness of the Albritton is variable, the average being approximately 2.5 meters.

Underlying the Albritton is a thick section of Wisconsin Age Shuler sands. These sands are typically medium-grained and finely laminated (often with alternating white and yellow bands), and contain abundant Pleistocene faunal remains. Although a complete terrace section was exposed as a result of pit activity, no evidence of human occupation was found below the Albritton at the Dowdy Ferry site.

The Hill gravels underlie the Shuler Formation and constitute the bottom of the pit, their material comprising the source for the commercial gravel operations.

Reconstruction of the Skeletal Remains

The Dowdy Ferry skeleton had largely been crushed, either through the actions of commercial mining or weight of the overlying sediment over time. Over 160 fragments were recovered,

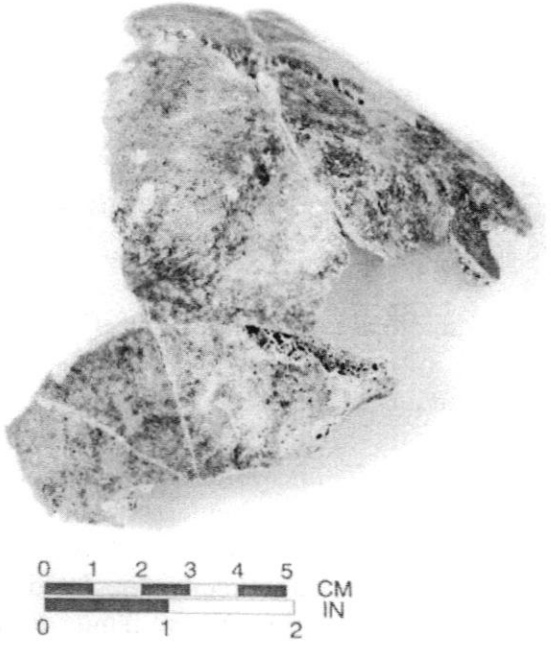

Figure 1. Skull showing Right Temporal Bone and Part of the Right Zygomatic Process

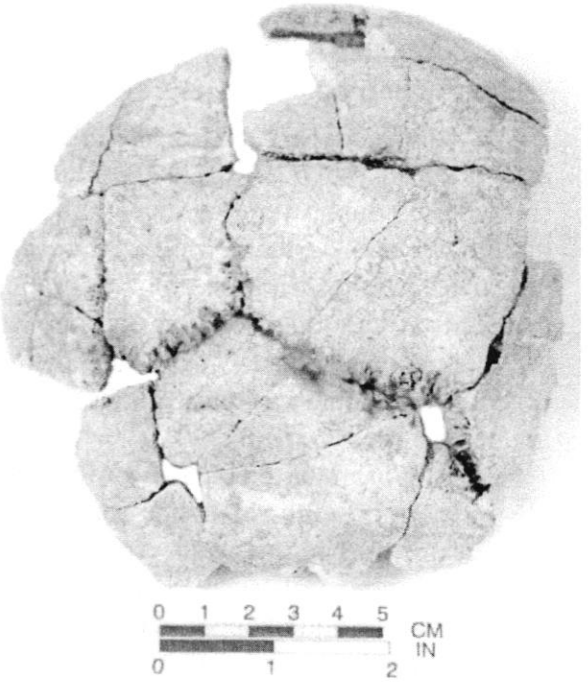

Figure 2. Skull Showing Occipital Bone, Lambdoid Suture, and Part of the Left and Right Parietal Bones

of which about 30% could be used in a reconstruction. The part of the skull recovered in place from the pit wall comprises the right temporal bone, the squamosal suture, part of the forward right parietal bone, and a portion of the right zygomatic process. The above could be reconstructed into a single 17 x 10 cm piece from 14 individual fragments (Figure 1, this article). A number of additional smaller pieces from apparently the right occipital protuberance and parts of the right greater and lesser wings of the sphenoid and part of the medial plate were also recovered but could not be reconstructed to the larger fragment. The forward part of the skull, including both the mandible and maxillae, was not recovered.

In addition, 15 cm of the diaphysis of a humerus bone was recovered in place from the pit wall. A number of small fragments (about 40), also apparently from the humerus, were found but could not be reconstructed.

Skull fragments collected from the pit floor represented most of the occipital bone, the lambdoid suture, and part of the left and right parietal bones to the rear of the squamosal and coronal sutures (Figure 2). These pieces are from a part of the skull behind the pieces recovered from within the pit wall and could not be connected.

A total of 27 cm from the left femur was also recovered from the pit floor beneath the burial (Figure 3). While missing both the lateral and medial epicondyle from the distal end, as well as the greater and lesser trochanter from the head of the femur, its total length could be reasonably approximated to 38-40 cm. Using a traditional forensic method where the length of the femur measured in centimeters is multiplied by 2.6 and then added to 65, this yields an estimated height for the individual in the general range of 5'4" to 5'7". Given the sizes of known skeletons from the period, it is therefore assumed that the Dowdy Ferry individual was most likely male, although without any of the pelvic structure this cannot be positively confirmed.

Figure 3. Partially Reconstructed Left Femur

So little of the original skeletal material was left in place in the pit wall that it was impossible to determine if the body had been flexed, although the position of the humerus was adjacent to the skull fragments, which would be consistent with the body in a head down, flexed position. A large quartzite flake chopper was found within the clay lens and directly associated with the skull. A second chopper was found on the pit floor near skull fragments and femur (Figure 4). Although direct association with the burial cannot be proved, it appears probable.

Enough contiguous pieces of bone were present to give a rough picture of what the Dowdy Ferry individual must have looked like. The skull shows that the individual was long-headed with relative flat sides and a prominent central ridge ("keel vaulted"). The skull is very uneven

in thickness, ranging from a maximum of 16 mm to as little as 5 mm. No sign of injury is evident, and the undulating nature of the cranium must be viewed as natural.

It is significant to note that these rough physical observations from the Dowdy Ferry individual are almost identical to those made by Crook (1952) from an Archaic skullcap found in the mid-Pattillo of the Wheeler site (41DL30) and by Albritton and Pattillo (1940) from a partial skeleton recovered from the upper part of the Albritton Formation near Carrollton Dam (41DL12). This description is notably different from the skulls of the Late Prehistoric occupation for the region, which tend to have a rounder, less slab-sided appearance.

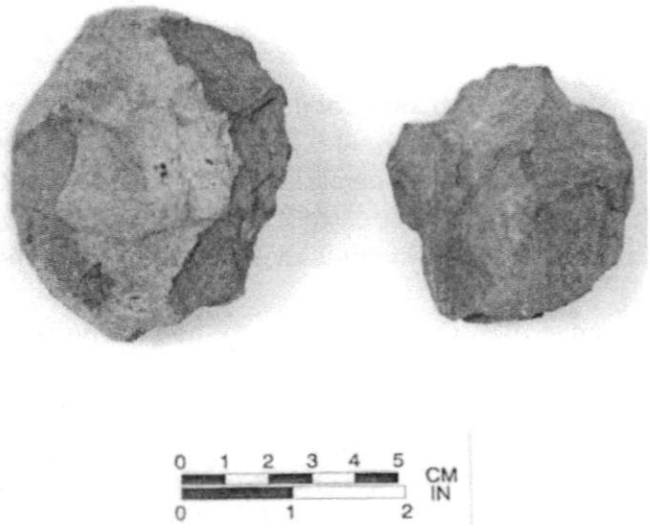

Figure 4. Quartzite Flake Scrapers Associated with Burial

Radiocarbon Age Dating

The burial material was originally preserved in both foil and glass to protect it from contamination with younger carbon. The humerus fragments were stored separately from the skull. In the fall of 2003, 200-300 grams of bone material from both the humerus and the skull (right occipital protuberance) were submitted to Geochron Laboratories (Sample Numbers GX-3-5-4 ["Dowdy Ferry 1"] and GX-30505 ["Dowdy Ferry 2"]) for radiocarbon age dating using Accelerator Mass Spectrometry (AMS) technology. The bone samples were cleaned by repeated washing in distilled water under ultrasound in order to remove all foreign material. The samples were then crushed to fragments of about 1 mm in size and reacted with concentrated hydrochloric acid, under vacuum, to dissolve apatite and other minerals. The insoluble residue remaining after apatite dissolution was filtered and washed. The residue was then boiled for 8 hours in slightly acidic distilled water (pH 3-4) to solubilize any collagen present. The broth was filtered through fiber-glass and evaporated to dryness to recover collagen. Contaminants were removed by the filter. The recovered bone collagen was combusted, and carbon dioxide was recovered for analysis.

AMS analysis based on repeated runs gave a consistent date for both samples of 1,240 +/- 40 years BP (C13 corrected). The age was referenced to the year A.D. 1950, thus yielding a date for the Dowdy Ferry burial of A.D. 710 (+/- 40 years).

Conclusions/Cultural Affiliation

Crook (1959) reported a single radiocarbon date of 6,000 years BP from the base of the Pattillo Formation just above the Pattillo-Albritton contact. While this date was obtained on mussel shell material, it was considered reliable since the shells came from a small clay lens that had protected them from groundwater contamination. Moreover, great care was taken by the testing lab to take only material from the middle of the shell. The results were also replicated (W. W. Crook Jr., personal communication, 1988). A similar date was produced on both shell and car-

bon material at the Gore Pit in southern Oklahoma (Hammatt, 1976), an archeological look-alike for the cultural material found in the basal Pattillo of the Upper Trinity watershed. Therefore, had the Dowdy Ferry burial been in situ, it should have produced a date greater than 6,000 years BP.

The date of A.D. 710 (1,240 BP) clearly indicates the burial was intrusive into the Albritton, probably stemming from the Late Archaic occupation near the top of the Pattillo. Thus, the pure pinkish-red clay found encasing some of the bones may have been original burial pit lining material. The presence of the quartzite cobble choppers as probable grave offerings coupled with the absence of ceramic material or arrow points at the site is also consistent with a Terminal Archaic age.

Similar age dates have been obtained for the Late Archaic period in the Trinity River watershed both to the north and to the south of the Dowdy Ferry site. In Cooke County, Prikryl (1987) obtained an age of A.D. 200 (1810 +/- 90 BP) for a non-ceramic Archaic burial near Ray Roberts Reservoir. Martin and Bruseth (1988) obtained similar dates (2,057 BP +/- 239, 1,914 BP +/- 203) at Bird Point Island south of Dallas in their non-ceramic, pre-arrow point Terminal Archaic zone.

Lynott (1977) obtained nine dates in the range of A.D. 900-1590 from the pottery-bearing horizon at the Sister Grove site in Collin County. Other age dates obtained at Hogge Bridge, Upper Rockwall, and other clearly Late Prehistoric sites in the area fit well into this later range. Martin and Bruseth (1988) found the earliest evidence for the introduction of arrow points at Bird Point Island was in their Zone 2 which they dated at A.D. 750 (1,250 +/- BP).

Based on the above evidence, Prikryl (1990) proposed a date for the Late Archaic in the Upper Trinity River watershed of B.C. 1500 - A.D. 750. The age of the Dowdy Ferry burial, coupled with the complete absence of any pottery or arrow points at the site, fits within this scope and thus represents a Terminal Archaic occupation for the region.

Acknowledgements

The authors would like recognize the late Wilson W. Crook, Jr., who dropped all his work on a moment's notice to come out to the Dowdy Ferry site to assist with the excavation as well as confirm many of our field observations. We would also like to thank the medical staff at Northeast Hospital in Houston for their assistance on both the identification of the human remains and a methodology to approximate height based on a reconstructed femur. Special thanks are given to George H. Davis and Annie Davis for photographing the reconstructed skeletal remains.

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Artifact Collections from the Coastal Prairie Of Eastern Wharton County, Texas

L. W. Patterson and J. D. Hudgins

Introduction

This article gives details of two collections of prehistoric artifacts from the coastal prairie of eastern Wharton County, Texas. The two collections were made by a single person, who does not want his name or find locations to be given to the public.

Collection A consists of artifacts found on the surface along West Bernard River. Collection B consists of artifacts found on the surface along the Middle Bernard River. These areas have been cultivated for several years.

Collection A has a time range from the latter part of the Early Paleoindian period (9000-8000 BC) through the Late Prehistoric period (AD 600-1500). Collection B has a time range from the Middle Archaic (3000-1500 BC) through the Late Prehistoric period. These collections are additional evidence of the long occupation sequence in Southeast Texas by nomadic hunter-gatherers.

Collection A

Projectile Points

A summary of projectile points in Collection A is given in Table 1, and some of the specimens are illustrated in Figures 1 to 6. The earliest point is a Midland point. The Midland point is often considered to be an unfluted Folsom point with a time range of about 9000-8000 BC (Turner and Hester 1993:155). Midland points are rare in Southeast Texas (Patterson 1997a), being a type of the Southern Plains (Central Texas). Late Paleoindian (8000-5000 BC) points in this collection are San Patrice, Plainview, Scottsbluff, Early Corner-Notched, and Angostura. San Patrice and Plainview points are from the early part of the Late Paleoindian period at about 8000-7000 BC (Patterson 1997b,c). The Scottsbluff point is from about the middle of the Late Paleoindian period (Patterson 1997b; Turner and Hester 1993:183). Early Corner-Notched and Angostura points are from the latter part of the Late Paleoindian period. All of these Late Paleoindian point types are fairly common in Southeast Texas, except for Scottsbluff, which is not common in Southeast Texas (Patterson 1997b) but is more common in Northeast Texas (Story 1990: Figure 29).

Early Archaic (5000-3000 BC) points in Collection A are Early Triangular (Turner and Hester 1993:108), Bell, Trinity, and Early Stemmed (Patterson 1998c). Early Stemmed points in Southeast Texas have straight stems and smoothed stem edges, unlike the notched Early Stemmed points discussed by Turner and Hester (1993:106). Trinity points probably span the Early and Middle Archaic periods in Southeast Texas (Patterson 1996:Table 4).

Middle Archaic (3000-1500 BC) points in this collection include Bulverde (Patterson 1998b), Pedernales, Gary, and Kent. Gary and Kent points are found from the Middle Archaic period through the Late Prehistoric period (AD 600-1500) in Southeast Texas (Patterson 1999a), and become smaller in later time. The Pedernales point is found in both the Middle and Late Archaic (1500 BC-AD 100) periods in Southeast Texas (Patterson 1998a).

Projectile points in Collection A from the Late Archaic and Early Ceramic (AD 100-600) periods include Castroville, Marcos, Palmillas, Darl, Fairland, Ensor, and Ellis (Patterson 1996: Table 4). This collection also has 17 dart point performs and an unclassified dart point.

Bifacial arrow points in Collection A from the Late Prehistoric period (AD 600-1500) include Perdiz, Scallorn, and unclassified fragments. A Cuney point could be from the Historic Indian period (AD 1500-1800). Cuney points were found at the Shanklin historic Indian site in Wharton County (Hudgins 1982, 1984). Perdiz and Scallorn arrow points are from the Late Prehistoric period, with a few found in the Historic Indian period (Patterson 1999b).

Ceramics

Collection A contains many Goose Creek sandy paste sherds, and a few Bone-Tempered and Rockport sherds. Goose Creek pottery was made in both the Early Ceramic (AD 100-600) and Late Prehistoric (AD 600-1500) time periods. Bone-Tempered pottery is only from the Late Prehistoric period, as shown by excavations such as at site 41FB297 in Fort Bend County (Patterson 2005). The few Rockport sherds in this collection have interior asphalt coating. Rockport pottery is associated with the central Texas coast. This pottery type is not common in Southeast Texas, except for the large collection of Rockport potsherds from the Shanklin site in Wharton County (Hudgins 1982, 1984).

Stone Tools

Collection A has two bifacial gouges, shown in Figure 7, similar to specimens from site 41WH2 (Patterson and Hudgins 1997) in Wharton County. Bifacial gouges were probably used for woodworking, and are not common in Southeast Texas.

Other stone tools in this collection include perforators, scrapers and utilized flakes. The unmodified utilized flake was the dominant stone tool type in Southeast Texas during all prehistoric periods.

Lithic Manufacturing

Collection A has thousands of chert flakes, but only a few cores made from chert cobbles. This reflects the common pattern in this region of doing primary reduction of chert cobbles at lithic sources, and then transporting flake blanks to campsites for production of finished artifacts. The closest source of large chert cobbles to the West Bernard River is the Colorado River basin at a distance of about 23 miles (37 km). Small chert cobbles were available in the Brazos River basin at a distance of about 30 miles (48 km). Some of the chert flakes in this collection have evidence of heat treatment in the form of waxy luster, reddish coloration, and potlid surface scars. Heat treatment was done to reduce tensile strength to facilitate flintknapping, especially bifacial reduction to make projectile points.

Collection B

Projectile Points

Collection B consists entirely of projectile points, as summarized in Table 2, with illustrations in Figures 8 and 9. This collection has Bulverde points from the Middle Archaic period (3000-1500 BC), Ensor and Ellis points from the Late Archaic (1500 BC-AD 100) and Early Ceramic (AD 100-600) periods, and Scallorn and Perdiz points from the Late Prehistoric period (AD

600-1500). There are also Gary and Kent points with a long time range, as noted above, from the Middle Archaic to the Late Prehistoric. This collection also has two dart point preforms and one unclassified dart point.

Summary

The two collections described here have artifact types that are typical of those found at prehistoric sites in the western part of inland Southeast Texas. These collections give additional data on the prehistoric occupation sequence of this region. Projectile point types found in the western part of Southeast Texas are a mixture of point types from the Southern Plains (Central Texas) and the Southeast Woodlands. There are many sites in Southeast Texas with long occupation sequences, such as site 41WH19 in Wharton County (Patterson et al 1987). A nomadic hunter-gatherer lifestyle was practiced in Southeast Texas during all prehistoric time periods. Changes in projectile point styles do not indicate changes in lifestyles. Introduction of pottery and the bow and arrow did not change the basic lifestyle, but did contribute to the hunter-gatherer economy. Data from excavations and surface collections are both important for understanding the archeology of a region. Sytheses for the archeology of Southeast Texas have been published which utilize data from excavations and surface collections (Patterson 1995, 1996).

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Table 1. Collection A Projectile Points

Scottsbluff	1	Gary	3
San Patrice	1	Palmillas	1
Plainview	2	Kent	6
Midland	1	Darl	1
Angostura	1	Fairland	1
Early Corner-Notched	1	Ensor	11
Early Triangular	4	Ellis	1
Bell	2	dart point preforms	17
Early Stemmed	2	unclassified dart pt.	1
Trinity	1	Cuney	1
Bulverde	6	Perdiz	4
Pedernales	1	Scallorn	3
Castroville	1	Arrow point\fragments	2
Marcos	1		

Table 2. Collection B Projectile Points

Bulverde	4
Ensor	1
Ellis	3
Kent	1
Gary	1
Scallorn	1
Perdiz	1
Dart point performs	2
Unclassified dart point	1

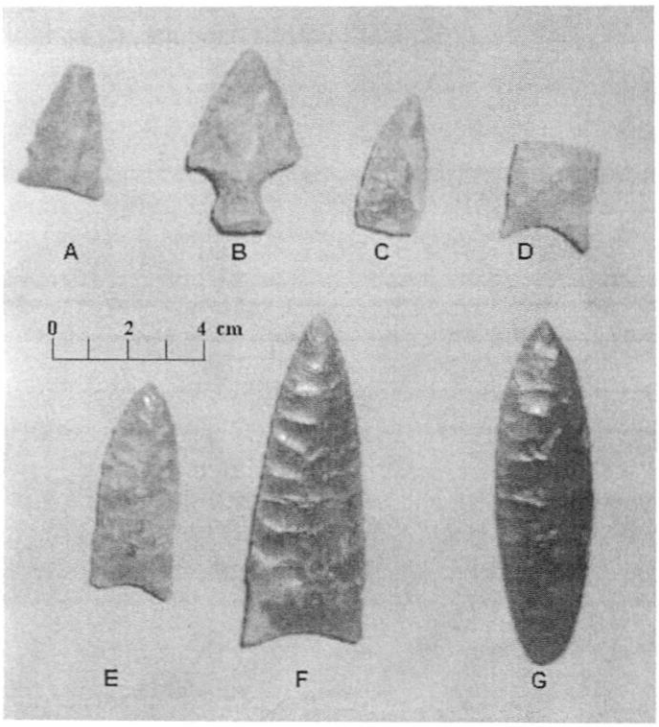

Figure 1. Paleoindian Points, Collection A

A. San Patrice, **B.** Early Corner-Notched, **C.** Midland, **D, E.** Plainview, **F.** Scottsbluff, **G.** Angostura

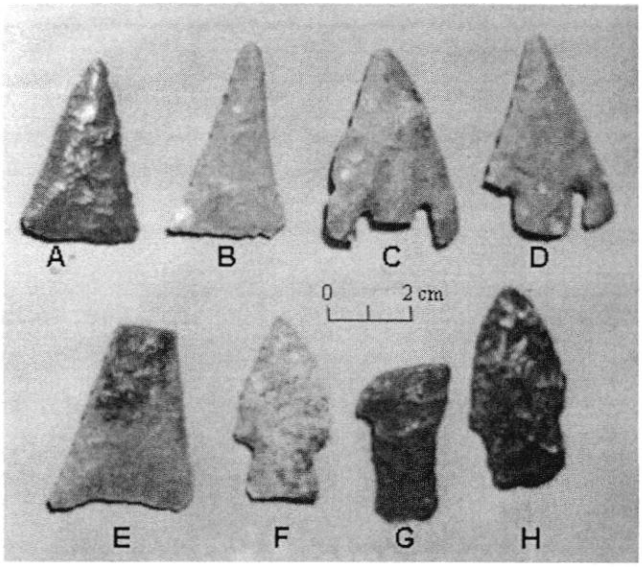

Figure 2. Early Archaic Points, Collection A

A, B, E. Early Triangular, **C, D.** Bell, **F.** Trinity, **G, H.** Early Stemmed

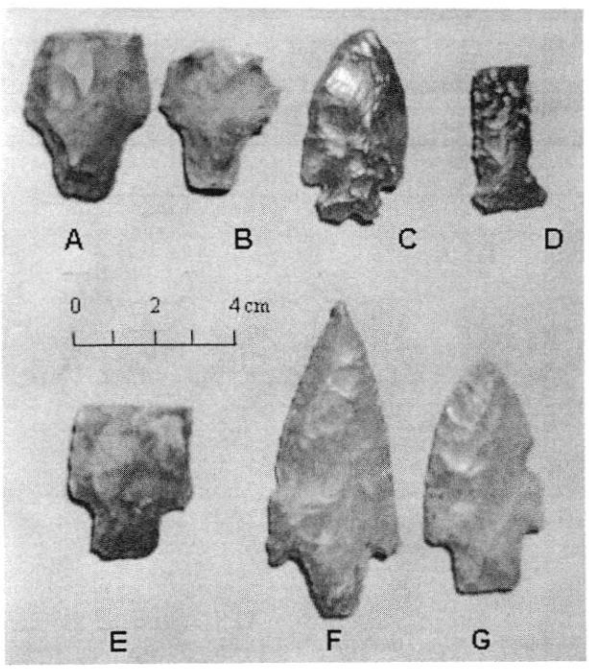

Figure 3. Middle-Late Archaic Points, Collection A

A, B. Gary, **C.** Pedernales, **D.** Palmillas, **E, F, G.** Bulverde

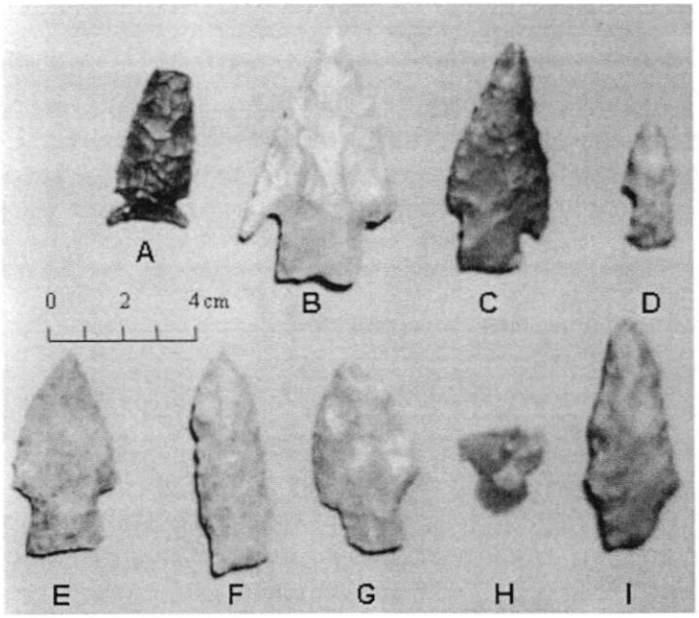

Figure 4. Late Archaic Points, Collection A

A. Fairland, **B.** Castroville, **C**. Marcos, **D**. Darl, **E.** Ellis, **F-I**. Kent

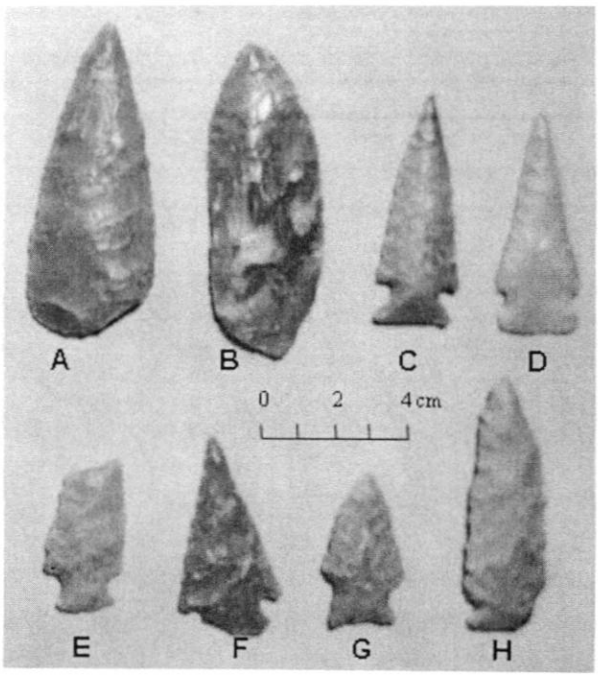

Figure 5. Preforms and Ensor Points, Collection A

A, B. Dart point performs, **C-H.** Ensor points

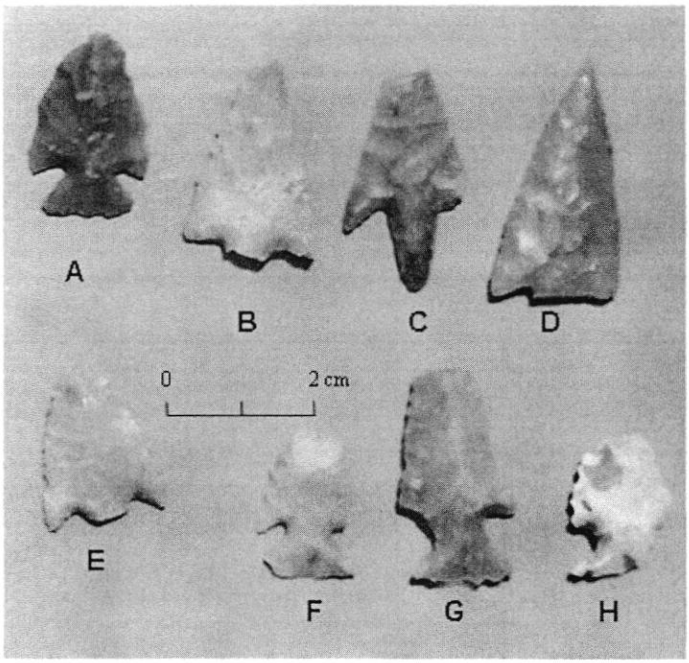

Figure 6. Arrow Points, Collection A

A. Cuney, **B-E.** Perdiz, **F-H.** Scallorn

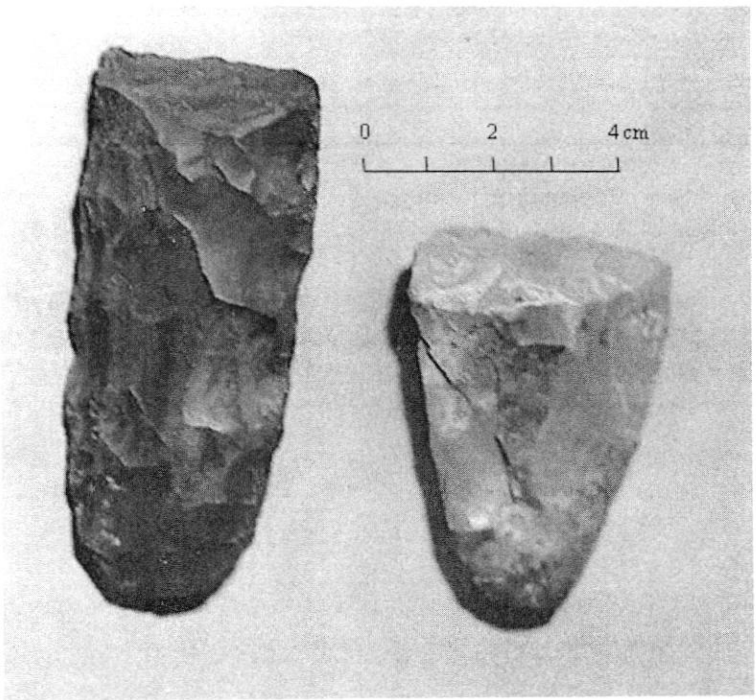

Figure 7. Bifacial Gouges, Collection A

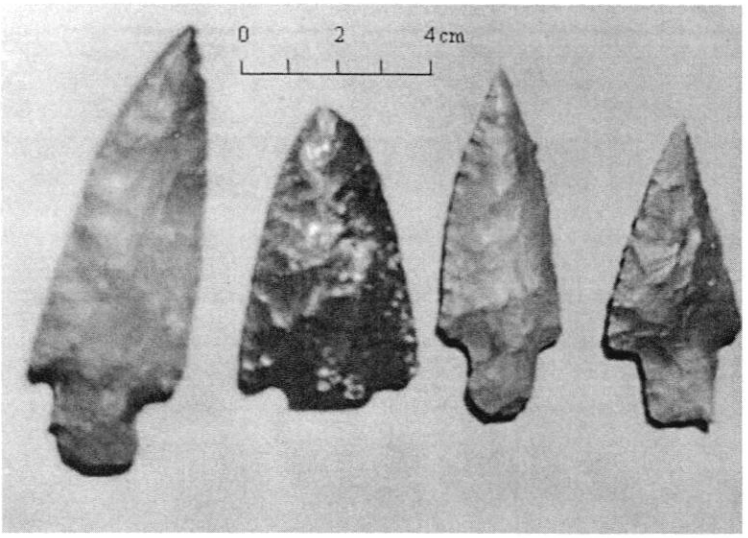

Figure 8. Bulverde Points, Collection B

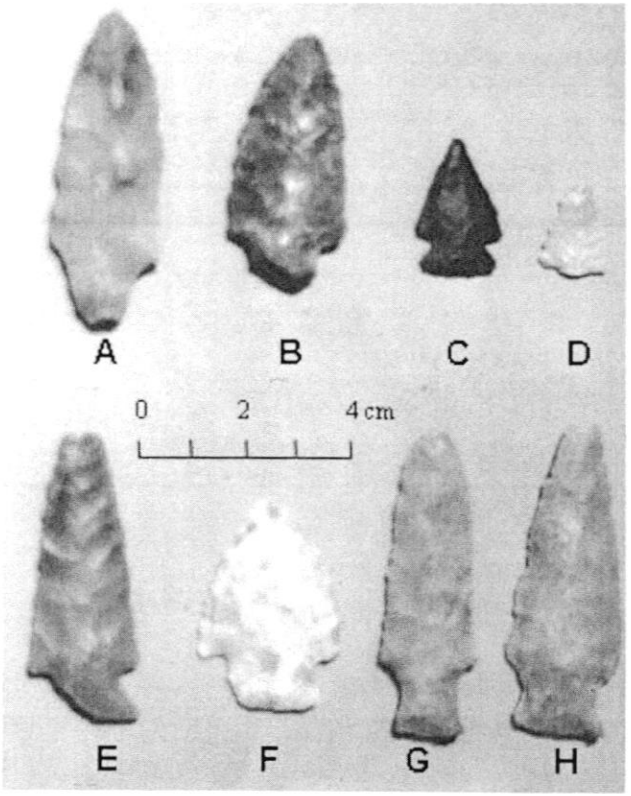

Figure 9. Projectile Points, Collection B