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## CONFLICT, MIGRATION, AND COALESCEENCE:
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I never imagined in 1991 when I began to compile and edit what became the 1992 Bulletin of the Texas Archeological Society, thanks to the invitation of Jimmy L. Mitchell, that I would still be serving as the Publications Editor these many years later for this wonderful journal. As it has turned out, I have had a hand in compiling and editing Volumes 62/1991 to Volume 72/2001 (the present volume) of the Bulletin of the Texas Archeological Society. Needless to say, it has been a distinct pleasure to work on these volumes with the Associate Editors (Nancy G. Reese and Linda W. Ellis), the many authors, the dedicated peer reviewers, the Texas Archeological Society Board of Directors, and the production and printing staff at Morgan Printing (Austin, Texas).

Because of the press of other commitments, and the recognition that the time is right for a new Publications Editor to step on board, Volume 72/2001 of the BTAS will be my last as Publications Editor. I want to thank everyone that has helped me along the way, and helped contribute to the production of some exceptional publications during my tenure as editor. I also want to thank the Board of Directors and the Executive Committee of the Texas Archeological Society for their financial and moral support of my efforts, and I hope they will be equally supportive of Myles A. Miller, the Editor-Elect, when he takes over for Volume 73/2002 of the Bulletin of the Texas Archeological Society.

While I cannot possibly thank everyone that has assisted me in Publications Editor duties, I would be remiss to not single out a few individuals that have provided special efforts over the years: Nancy G. Reese and Linda W. Ellis, as Associate Editors; Laura Beavers, for administrative matters; and for wise counsel: Joan Few; Thomas R. Hester; Tom Middlebrook; Myles Miller; Beth Ogden Davis; Dee Ann Story; Curtis Tunnell; Ross C. Fields; Nancy A. Kenmotsu; and Robert A. Ricklis. Finally, the staff of Morgan Printing, particularly Terry Sherrell and Mark Hillis, deserve much, if not all, of the credit for the formatting and production of the Bulletin of the Texas Archeological Society during my years as editor, and they have always been a joy to work with since 1991. I truly could not have successfully completed my tenure as Publications Editor without their able craftsmanship.

Timothy K. Perttula
August 2000
Archeologists working in Texas have long been dependent on the ethnohistorical research of T. N. Campbell and W. W. Newcomb, Jr. Moving beyond their pioneering efforts to better understand the people who lived in the state when the Europeans arrived or to relate the historical data to the archeological record by combing early written documents is not easy. Some efforts in this direction have, however, begun. Publications by Ricklis (1996) indicate that the Karankawa, native to coastal Texas, have often been misrepresented by a conventional wisdom that often depicts them as intractable and hostile. While Ricklis ably describes their early efforts to dislodge the newcomers from their lands, he uses both documentary and archeological evidence to show that their conflicts with the Spanish colonists eventually gave way to alliance and accommodation. Recently, Himmel (1998) has added to this understanding of the Karankawa, contrasting the Karankawa strategies with those of the Tonkawa. Similarly, Everett (1990) has summarized Cherokee attempts to seek accommodation during their occupation of East Texas, Kavanagh (1986, 1996) describes the Comanche use of goods to acquire and hold power, and Newcomb (1993) illustrates the variety of accommodations undertaken by the Natives of Central Texas.

The present set of articles seek to build on these works, focusing on conflict, migration, and coalescence—processes of change among historic Native Americans in Texas during the period between 1530 and 1878. The papers were first presented during a symposium at the 30th conference on Historical and Underwater Archaeology of the Society for Historical Archaeology, held in Corpus Christi, Texas, in January 1997. Each author focuses on how historic Native American groups dealt with the changes brought by European colonization in the region that they occupied. They collectively show that different strategies were employed by the groups as they sought to ensure their future during this time of change. Although two of the groups (Jumano and Atakapa) ultimately failed, their efforts offer us insights into the mechanisms employed by small-scale societies to maintain their culture in the face of change. Moreover, knowledge of the mechanisms they used has potential to enhance our interpretations of the archeological record.

Douglas K. Boyd discusses the Querechos and Teyas of the Southern Plains. Boyd, who draws from his archeological fieldwork in that region, describes the theoretical framework that has been used to link these peoples with the Tierra Blanca and Garza archeological complexes, respectively. Noting certain problems that derive from the uncritical use of that framework, he discusses at length the conflicts among these groups that resulted from Spanish settlement in New Mexico—conflicts that were, in part, concerned with Plains-Pueblo trade—and offers hypotheses for future research.

The Jumano, southern neighbors of the Querechos and Teyas, are the subject of the next article. Because the Jumano have been the subject of much study, Kenmotsu begins with a description of who they were and where they lived based on Spanish documentary evidence. This is followed by a detailed account of how they sought to stave off extinction by avoiding enemies and seeking friends. As one avenue closed, these resourceful people turned to other avenues to form alliances that aided them in surviving colonization. Both migration and coalescence played major roles in their history.

Moving east, papers by Mariah Wade and Roger Moore and Madeline Donachie are concerned with coastal tribes and how they sought to accommodate the newcomers. Wace, re-translating the original
narratives of Cabeza de Vaca, offers new views on the interactions of several coastal groups with whom the shipwrecked Spaniard was associated. Especially intriguing are her views on the social contexts of exchange, warfare, and social networks. Her explanations may offer insights into the reasons for certain signatures in the archaeological record and much food for thought about why that record is so scanty.

Moore and Donachie follow with a discussion of the small hunting and gathering groups who occupied the Texas coast from Galveston Bay to the mouth of the Sabine River, noting the stability of their cultures despite the gradual encroachment of their lands by a variety of European newcomers. Perhaps because of their low population levels, these groups were not perceived as a threat to the newcomers, allowing them to survive in small numbers into the present century, a fact that has rarely been recognized.

The final articles concern several of the more well known Indian groups in Texas, the Tonkawa, the Caddo, and the Tigua. Prikril’s paper on the Tonkawa picks up on Newcomb and Campbell’s (1982) archival discoveries about the late migration of the Tonkawa into Texas and provides a detailed review of Tonkawa alliances that formed in the early 19th century as other Indian tribes began to fragment. While it is now clear that the Tonkawa had nothing to do with the Toyah phase, as was once believed, the nature of their migration into Texas is instructive in terms of the Toyah phenomenon and its possible ethnic (albeit non-Tonkawa) integrity.

The Caddo of East Texas were one of the state’s most resilient peoples. First identified historically by the remnants of de Soto’s men (Kennotsu et al. 1993; Swanton 1985), they remained in their homelands until about 1840 by developing alliances that would foster tribal persistence. While they have been the subject of extensive study, Pertulla’s discussion neatly summarizes historic Caddoan relationships in terms of conflict, migration, and coalescence. His article underscores the complex nature of their relationships with the French, Spanish, and Anglo-Americans as well as with other Native peoples, and shows how both their own and other unique agendas affected their history. His summary discussion is followed by Derrick and Wilson’s epidemiological study of the effects of European settlement on Caddoan demographic patterns. Although historic documents have shown that European settlement resulted in a reduction of Native populations, this study of burial populations from numerous Caddoan archeological sites fails to confirm that epidemic diseases caused the reduction. Because they found Caddoan historic mortality patterns to mirror those of prehistoric times, Derrick and Wilson conclude with several possible explanations that merit future inquiry. Their article, along with Pertulla’s, should stimulate new avenues of research, both in the Caddoan area and adjacent regions.

At the other end of the state, Miller provides a summary of new archeological data on the Native Americans of El Paso prior to 1680. The years from 1450 to 1680 are the poorest known interval of the archeological sequence in that region. Miller brings together archeological and archival data to show that the region was not abandoned, as often believed, but rather was the home of the Manso and Suma, whose occupation left ephemeral traces while they survived Spanish encroachment.

It is hoped that readers will find, as we have, that these articles challenge our long-held beliefs about the Native peoples who occupied Texas at the time of, and subsequent to, European settlement and how each sought to survive the changes brought by Spanish and later Anglo-American encroachment using unique combinations of coalescence, migration, warfare, and other social mechanisms.

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Querechos and Teyes: Protohistoric Hunters and Gatherers in the Texas Panhandle-Plains, A.D. 1540-1700

Douglas K. Boyd

ABSTRACT

Theories regarding the ethnic affiliation of the Protohistoric inhabitants of the Texas Panhandle-Plains have relied heavily on the chronicles of Coronado's 1541-1542 entrada into that region. Of particular concern are the interpretations of where the expedition travelled and the identifications of the Native peoples whom the Spaniards called Querecho and Teya. The prevailing theory identifies Querechos as Apaches and Teyes as Caddoan peoples, linking these groups with the Tierra Blanca and Garza complexes, respectively. These two complexes are reviewed to highlight many interpretive problems with uncritical use of this ethnohistoric model. Ignoring the debate regarding linguistic affiliation, the Querecho-Teya model is extremely useful for testing regional archeological data and interpreting Native American responses to the conflicts created by Spanish colonization.

INTRODUCTION

Two main groups of hunter-gatherer peoples, recognized in the archeological record as the Tierra Blanca and Garza complexes, inhabited the Texas Panhandle-Plains between A.D. 1540 and 1700. These two groups are discussed in terms of their ethnic identity and intercultural relationships as interpreted based on ethnohistoric evidence. This paper summarizes the most commonly accepted model of ethnicity that relates to the Tierra Blanca and Garza complexes, and examines the strengths and weaknesses of the archeological evidence pertaining to this model.

Any theory regarding the ethnicity of Protohistoric inhabitants of the Southern Plains must rely heavily on the chronicles of Coronado's 1541-1542 entrada into what is now the Texas Panhandle-Plains, reconstructions of where the expedition went within the region, and identifications of the Native peoples encountered by the Spaniards. The Coronado narratives (e.g., Castaneda 1904; Hammond and Rey 1940; Winship 1896) are extremely important because the expedition encountered peoples called Querechos on the Llano Estacado and peoples called Teyes in the Caprock Canyonlands. Other important interpretive studies of the Coronado expedition documents, its route through Texas, or possible expedition campsites, are presented by Aiton (1939), Blackeslee (1994), Bolton (1949), Day (1940), Donoghue (1929), Holden (1944), Ivey et al. (1991), Kiser (1978), Rhodes (1992), Schroeder (1962), Wedel (1970), and Word (1994).

After Coronado's time, there is a tremendous gap in substantive ethnographic evidence relating to the Native peoples of the Panhandle-Plains. Few Europeans traversed this region during the late 16th and 17th centuries; between 1541 and 1601, only a handful of Spanish expeditions travelled into or near the Panhandle-Plains region. The most significant of these are the Rodriguez-Chamuscado expedition of 1581, the Espejo expedition of 1582-1583, the unauthorized Francisco Levy de Bonilla and Antonio Gutierrez de Humana expedition of 1593, and the Vicente de Zaldivar Mendoza expedition of 1598 (Chipman 1992; Hammond and Rey 1953, 1966). While these early accounts seem to confirm that Coronado's Querechos were the same people who were later called Vaqueros and Apaches, they provide relatively few meaningful details and say nothing about contact with Teya peoples.

As the Spaniards became settled into missions and towns in New Mexico during the 17th century, their interest in exploring the Plains region waned. There were few economic benefits involved in such pursuits; because Plains bison hunters came to trade at the mission pueblos, there was little need for the
Spaniards to venture onto the Plains. Thus, most of what is known about the Native inhabitants during the 17th century is based not on direct observations of the peoples in their homeland, but on indirect evidence supplied by Spanish accounts of the Plains Indians who came to trade.

**QUERECHOS AND TEYAS**

Most researchers (e.g., Baugh 1986, 1991, 1992; Habicht-Mauche 1987, 1988, 1992; Kelley 1986, 1990; Newcomb 1961; Spielmann 1982, ed. 1991; Wilcox 1981) generally agree that 16th and 17th century ethnohistoric accounts support the interpretation that the Llano Estacado and Caprock Escarpment were inhabited by two main groups of peoples who were first recognized by Coronado as Querechos and Teyas. Other groups may have occupied or crossed the region on occasion, but only two were consistently and continuously recognized by Spaniards as distinct, sizable populations of indigenous Plains people.

The Querechos are confidently identified as Athapaskan speakers who later became known as Apaches. They migrated southward into the Texas Panhandle area perhaps as early as A.D. 1300, but certainly by 1500. They inhabited and controlled much of this region throughout the protohistoric period, and they were identified by many names by different observers at different times. Compared with the ethnohistoric data on Plains Apache peoples, there is very little substantive information relating to the Teya.

The Querechos and Teyas were both recognized by contemporary observers as being semi-nomadic, tipi-dwelling bison hunters with basically similar lifestyles. There are some interesting cultural differences evident in the accounts, such as the fact that the Teyas had painted or tattooed bodies while the Querechos did not. However, the most important observation made by the Coronado expedition is that the Querechos were enemies of the Teyas. Subsequent accounts suggest that the hostile relationship between these two groups continued throughout the protohistoric period. The ethnic distinctiveness and longevity of the Querecho and Teya peoples seems to be strongly supported by the 17th and 18th century ethnohistoric evidence.

**THE QUERECHO-TEYA MODEL**

Switching from ethnohistoric accounts to the archeological record, some researchers have sug-

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**Figure 1.** Map of the Late Prehistoric II/Protohistoric cultural complexes and phases in the Texas Panhandle-Plains and surrounding areas. Sources: Bell (1984:Figures 14.1, 16.1, and 17.1), Brooks (1989:Figure 15), Johnson (1994:Figure 105), Mallouf (1992:Figure 13), and Stuart and Gauthier (1988:Map VII.7).
suggested that the Querechos and Teyas may correlate with the archeological remains of the Tierra Blanca and Garza complexes, respectively. This idea has been around for many years and is most completely and succinctly stated by Judith Habicht-Mauche (1992). Based on her work, these ideas may be put forth in the form of a model, hereafter referred to as the Querchco-Teya or Q-T model. In its simplest form, the model may be summarized as follows:

Ethnographic evidence suggests that the Querechos and Teyas were two distinct groups of Native hunter-gatherers who lived in the Texas Panhandle-Plains region between A.D. 1540 and 1700. Archeological evidence suggests that remains associated with the Tierra Blanca complex may represent Querechos, while the remains of the Garza complex may represent Teyas.

The primary strength of these connections lies in the fact that the Querchco-Tierra Blanca and Teya-Garza connections make sound geographic sense. The Tierra Blanca and Garza complexes (Figure 1) seem to be in the right place at the right time to correspond with ethnographic evidence placing the Querechos north of the Red River on the Llano Estacado and the Teyas in the barrancas or canyons to the southeast. There is considerable uncertainty as to the precise route of the Coronado expedition through northern Texas, but recent finds of numerous Coronado-period artifacts within a three mile long stretch of Blanco Canyon provide strong evidence that this site is one of the barrancas where Coronado camped among Teya villages in 1541 (Blakeslee 1994; Word 1994). This section is located midway between the Floydada Country Club site at the head of the canyon and the Montgomery site near the mouth of the canyon; both of these sites have yielded evidence of intensive occupation during the protohistoric period (Northern 1979; Word 1963, 1965, 1991). If this Crosby County site, which is in the heart of the Garza culture area (Figure 2), is confirmed as a Coronado campsite (most likely the First barranca), its location has many implications for determining Coronado’s route through Texas and identifying where he encountered Querechos and Teyas.

A second major strength of the Q-T model lies in the fact that both the Querechos and Teyas were involved in the Plains-Pueblo trade, and the Tierra

![Figure 2. Map of the Texas Panhandle-Plains showing Coronado's probable route based on recent finds of Coronado-period artifacts in Blanco Canyon.

Blanca and Garza complexes both show strong economic ties to the eastern pueblos. Tierra Blanca and Garza sites contain significant amounts of exotic material culture, such as decorated pottery, turquoise, and obsidian, that was obtained through trade with sedentary Puebloan peoples. The Q-T model is particularly important because the Protohistoric archeological record of the Panhandle-Plains cannot be adequately explained without some knowledge of the economic relationships between Plains and Puebloan peoples.

Linking these ethnohistoric groups with the archeologically recognized Tierra Blanca and Garza complexes is intuitively sound, and this simple ethnohistoric model has attracted many supporters, including this author. However, some of the specific interpretations that may be derived from this model are open to debate. The discussions below highlight the general utility of this model but note many interpretive problems that warrant more attention in future studies.

Although few researchers would disagree that the Querechos were Athapaskan-speaking Apaches, there is little agreement as to the ethnic identity or language of the Teyas. They have been variously interpreted as being Athapaskan-speaking Apaches, unidentified Caddoan speakers, or Lumanos who may have spoken Caddoan, Tanoan, or Uto-Aztecan (e.g., Bolton 1911;
Forbes 1959; Gunnerson 1956, 1974; Hammond and Rey 1940; Hickerson 1994; Hodge 1911; Kelley 1990; Kessell 1987; Newcomb 1961; Sauer 1934, 1971; Scholes and Mera 1940; Schroeder 1962; Thomas 1940; Wedel 1961). Within the Q-T model, the Garza complex is identified as probably representing Plains Caddoan peoples who were later recognized by Spaniards as Jumano (Habicht-Mauche 1992:256-257). The linguistic affiliation and precise ethnic identity of the Teyas, and whether or not they were Jumano, are debatable questions that probably never will be resolved to everyone's satisfaction. Moreover, it seems that ascribing ethnic or linguistic affiliation to the Teyas is an unnecessary distraction within the Q-T model. When trying to sort out the archeological evidence, it matters little what language the Teya spoke.

TIERRA BLANCA AND GARZA COMPLEXES

The Tierra Blanca and Garza complexes appear in the archeological record by ca. A.D. 1300. These peoples lived in the Panhandle-Plains at the time of European contact and throughout the protohistoric period. These archeological complexes represent peoples who underwent tremendous cultural changes within a few hundred years. Approximately two dozen investigated archeological sites have components attributed to the Garza complex, while only nine (perhaps 11) investigated sites have Tierra Blanca components (Figures 3 and 4 and Tables 1 and 2).

A recent regional synthesis by Boyd (1997) summarizes the archeological data relating to the Tierra Blanca and Garza complexes and interpretations of who these peoples were. These contemporary complexes probably represent two distinct groups of people who occupied different areas but had very similar lifestyles. They were very mobile peoples whose yearly movements were probably dictated in large part by the movements of the buffalo, which was clearly the focus of most of their subsistence activities. Their material culture represents a wide range of activities, but the most ubiquitous and functionally diagnostic specimens are a suite of artifacts (arrow points, beveled knives, and Plains-style end scrapers) representing tools used to kill and process bison. They utilized a variety of different locations (e.g., residential bases or base camps, short-duration hunting camps, bison kill sites, and rock shelters) for different reasons at different times of the year. Although they may be thought of as hunter-gatherers, it appears that they were so specialized in the procurement of bison that they cannot be considered simple foragers. Their material culture also commonly includes non-
local items that came from the Pueblo area to the west. These non-perishable artifacts (e.g., decorated pottery, turquoise, obsidian, and marine shell beads) represent items obtained in trade with Puebloan farmers, but they only hint at the true extent of the exchange. Archeological evidence (such as sherds of Spanish majolica, metal tools, gunflints, and lead balls) also indicates that the Tierra Blanca and Garza peoples began to obtain European items in the 1600s, probably through the Pueblo trade and/or by raiding Spanish settlements. Although archeological evidence is sketchy and circumstantial, it appears likely that the lifeways of these peoples changed dramatically as they acquired horses and became more mobile during the latter half of the 17th century. Archeological evidence of these complexes seems to dis-

appear by around 1700; these peoples were probably displaced by the southward migration of the more powerful and fully equestrian Comanches.

While much is known about these complexes, there are many problems related to recognizing and understanding these cultural manifestations and the peoples they represent (Boyd 1997). This is particularly true with respect to what the similarities and subtle differences between these complexes may mean, and how the other cultural complexes (representing other peoples?) around them fit into the picture (see Figure 1). Suffice it to say that there are serious limitations and misunderstandings of the current archeological data, and the evidence is not sufficient to adequately test any specific hypotheses that might be developed within the Q-T model. However, the Q-T model can be used to point us in some useful research directions.

Because the lifestyles of the Querechos and Teyes were similar, there should be considerable similarities between the Tierra Blanca and Garza complexes, which is indeed the case. Most documents tell us that Querechos and Teyes were bison hunters who lived for at least part of the year in tents, presumably tipis. Abundant evidence of bison hunting and the use of tipis (and/or other ephemeral structures) has been found for both the Tierra Blanca and Garza complexes (Boyd 1993; Spelmann 1982).

While the ethnohistoric records clearly show that the Querechos and Teyes were distinct groups, the evidence is less clear with respect to the cultural differences between the two peoples. This problem becomes critical when interpreting the archeological record.

Did Garza peoples practice farming? Some researchers believe that certain passages in the Coronado documents hint that the Teyes were farmers (e.g., Baugh 1982:206-207; Sauer 1971:145-146). These interpretations hinge primarily on
Table 1. Tierra Blanca Complex Sites.

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<td><strong>Residential Bases and Base Camps</strong></td>
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<td>1</td>
<td>Tierra Blanca (41DF3)</td>
<td>Holden 1931; Spielmann 1982, 1983</td>
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<tr>
<td>2</td>
<td>Blackburn (41RD20)</td>
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<td><strong>Bison Kills and Hunting Camps</strong></td>
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<td>3</td>
<td>Fifth Green (PPHM-A1363)</td>
<td>Kalokowski 1986</td>
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<td>4</td>
<td>Tule Mouth Sites (41B173, 81, 83)</td>
<td>Katz and Katz 1976</td>
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<td>5</td>
<td>Palisades (PPHM-A530)</td>
<td>Unpublished</td>
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<td>6</td>
<td>Cita Mouth (PPHM-A288)</td>
<td>Unpublished</td>
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<tr>
<td>7</td>
<td>Fatheree (41GY32)</td>
<td>Hughes et al. 1978</td>
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<tr>
<td>8</td>
<td>Water Crossing No. 2 (PPHM-A148)</td>
<td>Unpublished</td>
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<tr>
<td><strong>Rockshelter (with Burial)</strong></td>
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<tr>
<td>9</td>
<td>Canyon City Club Cave (PPHM-A251)</td>
<td>Hughes 1969</td>
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<tr>
<td><strong>Undefined Tierra Blanca-like Sites</strong></td>
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<td></td>
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<tr>
<td>10</td>
<td>Broken Jaw (41HF8)</td>
<td>Quigg et al. 1993</td>
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<tr>
<td>11</td>
<td>Unnamed Shelter (41HF86)</td>
<td>Quigg et al. 1993</td>
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translators of Castaneda’s account of the first meeting between Coronado and the Teya in the late spring or early summer of 1541. In a nutshell, the dispute centers on whether the 16th century Spaniards used the word *alixares* to specifically mean agricultural fields or only to imply in a general sense that the Teya peoples exploited patches of wild plants. A closer look at the primary historic documents is certainly needed, but interpretations of this critical phrase will always be controversial. If either the Querecho or Teya practiced farming, this should be manifest in the archeological record. However, there is no substantive archeological evidence indicating that any type of horticulture was practiced by Tierra Blanca or Garza peoples.

Since the Q-T model predicts that Tierra Blanca and Garza peoples were culturally distinctive, this should be manifest in other ways that would be detectible in the archeological record. Distinctive basal-notched Garza arrow points, and their close morphological cousins known as Lott points, are commonly found in Garza complex sites but not in Tierra Blanca sites (Figure 5). It has been hypothesized that the Lott point was the prototype for the Garza point (Runkles and Dorchester 1987:108), but the archeological data are simply not precise enough to determine how these points are related. There is tentative evidence that Lott points actually predate Garza points by a century or more (Boyd 1997:Table 101), but their relationships are uncertain. Do Garza and Lott points represent variants of a point style used by the same peoples at different times, or do they represent two different styles used by different groups of people?

The Q-T model predicts that Tierra Blanca and Garza peoples remained separate and distinct groups for at least one and a half centuries, and this should be manifest in the archeological record. Garza points are common throughout the upper Colorado and Brazos river drainages, but the rather sudden decline in point frequency north of this area suggests that Garza peoples, for whatever reasons, did not venture northward into the Red River drainage or beyond. Based on this evidence, a cultural boundary between the Tierra Blanca and Garza complexes has been hypothesized (Boyd 1997:646; Hughes 1991:36).

The Q-T model suggests that Tierra Blanca and Garza peoples were hostile toward each other
prior to and during the centuries following European contact. If this is true, archeological evidence of violence might be expected. The most definitive evidence for violence should appear in human burials associated with these cultures; however, the sample of burials definitely or tentatively affiliated with Tierra Blanca or Garza complexes is limited to three (Boyd 1997:Tables 85 and 89), and two of these were dug by pothunters. Thus, the absence of evidence of violence may simply reflect this sampling problem.

Besides burial evidence, Baugh (1986:174-176) has suggested that a 50 foot diameter circular ridge at the Bridwell site represents a fortification and is indicative of inter-cultural warfare. He equates this Garza complex feature with palisade wall trenches found at two fortified protohistoric Wheeler phase sites (Duncan and Edwards I) in western Oklahoma. However, this idea has not been universally accepted. Hughes (1991:36) thinks that this ridge represents nothing more than wind-blown sediments trapped along a brush fence enclosing a campsite. Unfortunately, no portions of the Bridwell site ridge were properly excavated, and the feature is now largely destroyed due to pothunting.

Obviously, the archeological evidence for conflict between Tierra Blanca and Garza peoples is equivocal. Rather than assuming that these two groups of people were enemies, future archeological work should concentrate on defining the similarities and differences between the Tierra Blanca and Garza complexes and testing hypotheses of cultural identity and inter-cultural conflict.

Besides their relationships with each other, Tierra Blanca and Garza peoples certainly would have interacted with many other peoples. Evidence for violence is well represented in the Late Prehistoric and protohistoric cultures in the surrounding areas, and inter-societal warfare may have played a significant role in the lives of Tierra Blanca and Garza peoples. The similarities and differences between various Southern Plains protohistoric archeological manifestations have not been adequately studied and are poorly understood. This evidence is critical in terms of recognizing different relationships between different peoples. Some researchers think, for example, that the Garza complex is merely a western extension of the Wheeler phase out of western Oklahoma (Baugh 1986). This author and many other researchers disagree with this idea.

Figure 5. Map of Garza and Lott arrow point distributions in the Texas Panhandle-Plains.

Particularly interesting is the fact that Garza complex occupations are found alongside Toyah phase occupations in west central Texas, and Garza and Perdiz points are found together across much of the southern Llano Estacado (Boyd 1997:Table 82). Johnson (1994:241-287) suggests that the southern Llano Estacado and the northern part of west central Texas was a “shared area” that was simultaneously occupied by several cultures (Figure 6). The relationship between the contemporaneous Garza and Toyah peoples is far from clear, but archeological evidence may eventually shed light on who was occupying the “shared area” and what their relationships were.

Still other problems remain to be addressed regarding the geographic extent of the Tierra Blanca and Garza complexes and their relationships with cultural groups in surrounding areas. Many sites in northeastern New Mexico are attributed to Apachian peoples (Gunnerson 1969, 1987:108-110; Gunnerson and Gunnerson 1971; Winter 1988), but no comparisons have been made between these and the Tierra Blanca sites of the Texas Panhandle. If the Dismal River complex is indeed an Apachian manifestation in the Central Plains (e.g., Gunnerson and Gunnerson 1971; Opler 1971; Wedel 1986:134-151), its relationship to its southerly cousin, Tierra Blanca, warrants some attention. As with the Tierra Blanca complex, however, Wedel (1986:150) notes that there is an “extremely limited body of information...concerning the Dismal River
Table 2. Garza Complex Sites.

<table>
<thead>
<tr>
<th>Key to Figure 4</th>
<th>Site Name (Number)</th>
<th>References</th>
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<tbody>
<tr>
<td><strong>Residential Bases and Base Camps</strong></td>
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<tr>
<td>1</td>
<td>Longhorn (41KT53)</td>
<td>Boyd et al. 1993, Boyd 1997</td>
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<td>2</td>
<td>Headstream (41KT51)</td>
<td>Boyd et al. 1993, Boyd 1997</td>
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<td>3</td>
<td>Slaton Dump (41LU6)</td>
<td>Riggs 1968; Brown 1972; Booker and Campbell 1978</td>
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<td>4</td>
<td>Pete Creek (SMU-X41CB1)</td>
<td>Parsons 1967</td>
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<tr>
<td>5</td>
<td>Bridwell (41CV27)</td>
<td>Parker 1982, 1990</td>
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<td>6</td>
<td>Montgomery (41FL17)</td>
<td>Word 1965; Northern 1979</td>
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<td>7</td>
<td>Floydada Country Club (41FL1)</td>
<td>Skinner 1975; Word 1963, 1991</td>
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<td>8</td>
<td>Yellow House Ruins</td>
<td>Unpublished, see Boyd 1997</td>
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<td>9</td>
<td>Greene Springs</td>
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<td>10</td>
<td>Davis Hackberry Spring (41ST87)</td>
<td>Riemenschneider 1996</td>
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<tr>
<td><strong>Bison Kills and Hunting Camps</strong></td>
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<td>11</td>
<td>Garza (SPAS-41GA40)</td>
<td>Runkles 1964</td>
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<td>12</td>
<td>Lott (41GR56)</td>
<td>Runkles and Dorchester 1987</td>
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<td>13</td>
<td>Lubbock Lake (41LU1)</td>
<td>Green 1962; Johnson et al. 1977; Johnson 1987</td>
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<td>14</td>
<td>Canyon Lakes (41LU26/35)</td>
<td>Bandy et al. 1980</td>
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<td>15</td>
<td>Johnson Creek (TTC 17-6)</td>
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<td>16</td>
<td>Red Mud Creek (SMU-X41DK2)</td>
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<tr>
<td>17</td>
<td>Unnamed (41LY42)</td>
<td>Hart 1976</td>
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<td>18</td>
<td>Hogue (41TY2)</td>
<td>Pope 1991</td>
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<td>19</td>
<td>Mitchell Lake (41MT41)</td>
<td>Alvey 1978</td>
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<td>20</td>
<td>Elm Creek (41CN95)</td>
<td>Treece et al. 1993</td>
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<td>21</td>
<td>Unnamed (41CN78)</td>
<td>Lintz et al. 1993</td>
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<td>22</td>
<td>Garnsey Springs sites (LA8399/18400)</td>
<td>Parry and Speth 1984; Speth and Parry 1978, 1980; Speth 1983</td>
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<td><strong>Rockshelters</strong></td>
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<td>23</td>
<td>Blue Mountain Rockshelter</td>
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<td>24</td>
<td>Red Bluff Shelter (SMU-X41CX8)</td>
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<td>25</td>
<td>Boren Shelters 1 and 2 (41GR546/41GR559)</td>
<td>Boyd et al. 1994, Boyd 1997</td>
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<td>Reed Shelter (41GR54)</td>
<td>Riggs 1966</td>
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<td>Garza County Cave (SPAS-GR269)</td>
<td>Harper and Shedd 1969</td>
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<td><strong>Burials</strong></td>
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<td>28</td>
<td>Garza Burial (SPAS-41MT40)</td>
<td>Gates and Hart 1977</td>
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<tr>
<td>29</td>
<td>Garza-U-Ranch Burial</td>
<td>Unpublished, see Boyd 1997</td>
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archeological complex and its probable variations through time and space.” The southwestern geographic limit of the Garza complex is at least equally confused by the presence of Garza-like arrow points across Trans-Pecos Texas and northern Mexico. While true Garza points are found as far west as the Van Horn and La Junta areas of Trans-Pecos Texas (Hedrick 1989; Mallouf 1992), at least three different arrow point styles found in this same area are similar. Points called Soto (Phelps 1987:21), Cienegas (Taylor 1966:84), and an unnamed type of the Bravo Valley aspect (Kelley 1986:88-89) are small, triangular, basal-notched arrow points that are thought to be contemporaneous with Garza. Much work remains to be done to sort out these type distinctions and determine their chronologies and relationships.

PLAINS-PUEBLO EXCHANGE

Evidence for interaction and exchange between the Plains bison hunters and Puebloan agriculturalists is extensive and has been the focus of much archeological attention. To date, most studies have tried to identify sources or source areas of imported items in the archeological record and have used ethnohistoric documents to identify perishable trade items and define the nature of the exchange systems (e.g., Spielmann 1982, 1983, 1991). Ethnographic records indicate that the exchange was mutualistic and that complementary resources were traded. These economic systems primarily involved Plains hunters exchanging bison hides and meat for agricultural products of the Puebloan farmers. Although ethnohistoric records document the fact that this trade occurred, they leave us wondering why it occurred. Researchers have proposed various theories on why the interaction began and then intensified through time.

Some people think that the “corn for meat” scenario (Spielmann 1991 [ed.]:10) evolved because the Plains and Pueblo Indians became so specialized in the harvesting and control of complementary foodstuffs that the societies became dependent upon the exchange system in order to meet nutritional needs (Speth 1991; Spielmann 1983). Others (e.g., Baugh 1982, 1984, 1991) acknowledge that the trade involved the exchange of complementary staple resources, but suggest that Pueblo and Plains peoples participated in a “Southern Plains macroeconomy” that was driven primarily by their desires to maintain social and economic ties. It seems logical that social factors were far more important to the development and maintenance of the exchange systems than were dietary needs. Why would Southern Plains bison hunters “need” corn or any other crops for dietary reasons since they lived for much of each year in a rich canyonland environment where a variety of wild plant foods were abundant and easily obtained. Plains-Pueblo interaction is an important research topic, and the debate about its character will undoubtedly continue in years to come.

Archeological data is an important component for understanding the ecological, economic, and social factors behind Plains-Pueblo interactions. Distinctive decorated Puebloan ceramics are often identifiable to specific manufacturing sources and are the key to defining relationships between various Southern Plains peoples and various pueblos. Ethnographic evidence indicates that individual pueblos, or Puebloan areas, acted autonomously in their economic relationships with specific Plains peoples and that these relationships changed through
time. These social factors are probably reflected in the archeological record, but the current archeological data are inadequate for defining these relationships. More detailed studies of Puebloan pottery on the Southern Plains are sorely needed.

There are significant differences in the chronology and sources represented by various types of decorated ceramics found in protohistoric sites in the Panhandle-Plains, as the following examples illustrate. Occupations at two Tierra Blanca complex sites (Tierra Blanca and Blackburn) and at one Garza complex site (Bridwell) have produced ceramic assemblages dominated by intermediate glaze wares manufactured in the Galisteo Basin (Parker 1982:54-56; Spielmann 1982:318-325). These Glaze C and D ceramics presumably date to the late 15th or early 16th centuries. In contrast, the mid-16th to 17th century occupations at two Garza complex sites, Longhorn and Headstream, are dominated by late glaze wares such as Glazes V and VI made at Pecos Pueblo and Glazes E and F made in the Salinas area pueblos (Boyd et al. 1993:83, 207). No intermediate glaze period sherds or sherds of Galisteo-made wares were recovered from these sites. These differences may reflect chronological changes in Plains-Pueblo economic systems, or they may denote relationships between specific Plains groups and individual pueblos or Puebloan areas. Most likely, both factors are partly responsible for different types and sources of Puebloan ceramics found at protohistoric sites. The archeological evidence in the Southern Plains seems to indicate that pueblos in the Galisteo Basin were the scene of most Plains trading activity up until the mid- to late 1500s, while Pecos Pueblo and various Salinas pueblos became the dominant economic centers after this time. The possible trade connections between Tierra Blanca peoples and the Galisteo Basin and Garza peoples and Pecos/Salinas pueblos are tantalizing and warrant more attention.

Further complicating archeological interpretations, it is likely that there were not just two groups of Plains peoples (i.e., the Querechos and Teyas) involved, but numerous individual bands that were autonomous in their trade alliances with various pueblos. If this is true, the frequency of occurrence and source areas for imported Puebloan items should vary on a micro-scale within the Tierra Blanca and Garza complexes. Recognizing meaningful differences in material culture assemblages at this scale will require much more precise material culture and chronological data than are available for most Tierra Blanca and Garza complex sites. Better and more comprehensive archeological samples and material culture studies, aimed primarily at defining the point of origin for all exotic items, will be needed.

"BIG EVENTS" IN THE SOUTHERN PLAINS

Hofman (1989:99) notes four "big events...dramatically and irreversibly influenced the native cultures..." of the Southern Plains during the protohistoric period. These big events are summarized as follows:

1. the development and continuity of Plains-Pueblo exchange systems;

2. Euro-American involvement in Plains-Pueblo interaction and development of "trade fair" economies;

3. the introduction of horses; and

4. the introduction of European diseases.

Understanding these big events is particularly important with respect to the Tierra Blanca and Garza complexes.

One big event that started prior to contact but continued throughout the protohistoric period was the development of "relationship[s] between hunters-traders and sedentary horticultural groups" (Hofman 1989:99). As mentioned above, Plains-Pueblo interaction is a research topic that has been the focus of many archeological and ethnographic studies in recent years. There is a wealth of literature relating to this general topic (e.g., Spielmann 1991 [ed.]), and much of the archeological evidence relates directly to the Tierra Blanca and Garza complexes.

A second big event was "the involvement of both hunting societies and horticulturalists in the Anglo-American economic sphere through trading." Hofman (1989:99) suggests that trade fairs developed in response to European involvement and increased intensity of the Plains-Pueblo trade. He states that the "locations of 'trade fairs' provide archeological opportunity and the potential for considerable 'confusion' in attempts to sort archeological assemblages by ethnic groups." The role of trade fairs and European involvement in the Plains-Pueblo trade has not been adequately defined,
especially as it relates to archeological remains of protohistoric Plains peoples. Previous researchers have focused primarily on the Puebloan artifacts in Tierra Blanca and Garza complex campsites. A few items of European manufacture have been found in Tierra Blanca sites (e.g., a metal awl found at the Fifth Green site), while a wider range of European manufactured or introduced items have been found at some Garza complex sites (e.g., Spanish majolica, a lead ball, and a cow bone at the Longhorn site). It is not certain whether these items were obtained through direct trade with Europeans or indirectly through Puebloan peoples at mission pueblos. In addition, it appears that annual trade fairs were held at predetermined locations on the Southern Plains as well as at mission pueblos. Garza complex sites that produced a wide range of exotic artifacts, like Bridwell and Montgomery, have been interpreted as major trading centers on the eastern periphery of the Garza people’s territory.

The third big event was the “introduction of the horse with its subsequent impact on mobility, trade, economy, and overall lifeways” (Hofman 1989:99). Except for the realization that Garza peoples may have eaten a horse or two at the Lubbock Lake site (Johnson 1987:139-140), Southern Plains archeologists seldom acknowledge the presence of horses among protohistoric peoples. It is likely that Tierra Blanca and Garza peoples rode more horses than they ate between 1600 and 1700, but recognizing evidence of the transition from a pedestrian to an equestrian lifestyle will be difficult. Based largely on circumstantial evidence, Boyd (1993:234-235) proposed that the most intensive occupations at the Longhorn site were during the latter half of the 17th century by Garza peoples who had horses.

The fourth big event was the “introduction of European diseases and the demographic impacts brought about by rapid population reduction” (Hofman 1989:99). The impact of European diseases has been largely ignored by archeologists because it is so difficult to detect in the archeological record. Not only is the sample of protohistoric burials very small, it is not likely to be increased anytime in the near future given the current political climate and the Native American Graves Protection and Repatriation Act. This is rather unfortunate, because evidence contained in human burials is perhaps the only way to reconstruct the extent to which European diseases may have impacted Native populations for which few ethnographic observations exist.

Except for Plains-Pueblo exchange, the importance of these big events has been overlooked with respect to interpreting the protohistoric archeology of the Southern Plains. This is certainly understandable given the inherent limitations in archeological data, but future investigations of the Tierra Blanca and Garza complexes should explicitly acknowledge these impacts. It probably would be productive to reinvestigate many of the primary ethnohistoric documents from new perspectives: specifically to redefine the role of European involvement in the Plains-Pueblo trade, identify evidence of the adoption and use of horses among Plains nomads, and identify evidence of sudden declines in Plains populations that might be due to European diseases.

**SUMMARY AND CONCLUSIONS**

Understanding the protohistoric period in the Southern Plains is particularly challenging because of the complexity and scope of the cultural changes that occurred in the two centuries following European contact. Unraveling this story will require careful use of the ethnohistoric documents and archeological data. That the Querechos and Teyes were distinct groups who participated in the Plains-Pueblo trade seems to be well documented in the ethnographic record. From this stems the logical proposition that the archeological complex called Tierra Blanca represents peoples called Querechos and the complex called Garza represents peoples called Teyes. This interpretation seems to mesh well with the current but limited archeological data, and the Q-T model is rather appealing in many ways. However, we should never assume that this model is true or use it as the framework within which protohistoric archeological data must be interpreted. Rather, the Q-T model should be used to formulate hypotheses that may be tested using protohistoric archeological data.

Two of the most important hypotheses derived from the Q-T model are: (1) the Querechos and Teyes were separate peoples who were longtime enemies; and (2) the Querechos and Teyes were Plains bison hunters who were heavily involved in the Plains-Pueblo trade, but they interacted with different Pueblo groups and their economic relationships probably changed through
time. If these ideas are correct, the archeological implications are tremendous.

The ethnographic record provides the basic foundation for understanding the protohistoric period in the Southern Plains, and the documents relating to the Coronado expedition are particularly important. However, ethnographic records will never answer all of our research questions for a variety of reasons. Three of the main problems limiting the utility of the ethnographic records pertaining to protohistoric hunter-gatherers in the Southern Plains are: (1) primary accounts of Native peoples in the region are too few and far between; (2) the details provided by these accounts are extremely sketchy and interpreting their precise meaning will always be controversial; and (3) while many interesting primary documents may still lie undiscovered in dusty archives, it is unrealistic to expect that new discoveries of old documents will suddenly clarify everything and provide answers to all of our research questions. Ultimately, it is the archeological record, not the ethnographic record, that is likely to provide the details necessary to address our most important research questions relating to protohistoric hunters and gatherers in the Texas Panhandle Plains. Kenmotsu (1994:61-64) discusses some of the problems inherent in using ethnographic documents with regard to Native cultures (e.g., Jumanos) in the La Junta region of Trans-Pecos Texas and northern Mexico, and many of these same cautionary notes apply to ethnographic evidence relating to Querechos, Teyas, and other related groups.

The Q-T model provides a useful framework for formulating hypotheses that predict subsistence and settlement patterns and define the relationships between these bison-hunting and trading societies. Testing such hypotheses will ultimately involve using a great deal of archeological data pertaining to the Tierra Blanca and Garza complexes. Unfortunately, the quality and quantity of archeological data currently available for these complexes are problematic. While many sites have been attributed to these complexes, the combined archeological data are not particularly robust and can only be used to address the most general research questions. Archeologists must look at the existing evidence cautiously and be critical of our methods and research designs when we are seeking new archeological evidence.

As originally proposed, the Q-T model attaches too much ethnic or linguistic baggage to the Tierra Blanca and Garza complexes. When using this model for archeological purposes, it is important to recognize that the Querecho and Teya were different social groups, but it simply does not matter what languages these people spoke or whom they were related to. Rather than being burdened by the ethnic and linguistic affiliations which can probably never be proven, a more productive avenue of research is to formulate hypotheses of group identity and solidarity and test them using archeological data. While ethnologists and linguists are concerned with these identifications, archeologists studying the Tierra Blanca and Garza complexes should not be particularly concerned with whether these peoples were Apaches or Jumanos or whether they spoke Athapaskan, Caddoan, or Tanoan languages. Researchers who are not biased by assumptions of ethnicity are likely to be more objective when analyzing and interpreting archeological evidence. The indiscriminate identification of miscellaneous plainware sherds as “Apache pottery” simply because they were found in the Texas Panhandle Plains is an example of an inappropriate use of ethnicity that only serves to confuse matters.

Another problem is that because the Q-T model is based on such a limited amount of ethnographic evidence, it is overly simplistic and can never accurately reflect the complex cultural interactions of the Southern Plains protohistoric period. There are many interpretive problems for the Tierra Blanca and Garza complexes that seem to contradict the simplistic Q-T model. The diversity of Late Prehistoric and protohistoric archeological phases/complexes immediately around the Texas Panhandle Plains is especially bewildering, and the relationships between the various groups that they may represent are still unclear. Acknowledging these problems, archeologists should always be aware that the Q-T model probably misrepresents and oversimplifies the cultural diversity across a vast region.

One final problem worth noting is that it is easy to get caught up in the minutia and ignore the bigger picture. It is appropriate to think in terms of “big events” that influenced Native peoples after European contact, but archeologists should not study them in isolation. Big events certainly had a tremendous impact on the Native peoples of the Southern Plains, but they all occurred simultaneously and are interrelated. While archeologists have looked closely at Plains-Pueblo exchange as it relates to the Tierra Blanca and Garza complexes, little attention has been paid to the impacts that
other major events, especially the introduction of horses and European disease, had on these people. Despite these types of interpretive problems, the Querecho-Teya model is an important tool for understanding the protohistoric archeological data in the Texas Panhandle-Plains. The model is very appealing because the Querecho-Tierra Blanca and Teya-Garza connections make intuitive sense chronologically and geographically, and it recognizes the pivotal roles of bison hunting and Pueblo trade within these societies. Finding substantive archeological evidence to support or contradict these connections and interpreting the complex social interactions of the protohistoric period should be primary research goals. Perhaps future research will ultimately reveal how these Native peoples adapted, whether through conflict, migration, coalescence, and/or other strategies, to the tremendous changes brought on by European contact.

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Seeking Friends, Avoiding Enemies: the Jumano Response to Spanish Colonization, A.D. 1580-1750

Nancy Adele Kenmotsu

ABSTRACT

Many Native American groups living in Texas at the time of European contact have been understudied or mistakenly assumed to be subsets of other tribes. Reconsideration of these groups has the potential to reveal a complex network of interactions among the multitude of small-scale societies that the Spanish encountered in the 16th century. The complexity of the network has implications for interpreting the archeological record. In this study, Spanish documents are used to indicate that between 1580 and 1750, the Jumans of west central Texas responded to the challenge of European colonization through alliances that promoted their persistence as a viable group. The alliances centered on who was, or could be, their friend and who was, or would be, their enemy.

INTRODUCTION

When the Spanish established the provinces of Nueva Vizcaya (modern Chihuahua), New Mexico, and Texas in the 16th and 17th centuries, they identified by name scores of Native groups that they called "nations." The term nation was not used to convey socio-political status, but to denote recognizable bands, each of whom was distinguishable from other bands (Griffen 1969:v). In northern Nueva Vizcaya, southern New Mexico, and west central and West Texas, most nations were hunters and gatherers; many did not survive colonization (Griffen 1969, 1979; Salinas 1987; Kenmotsu 1994; Levine 1995). The reasons they failed to survive are several. The Masames were slaughtered by their enemies, the Tobosos, around 1652 (AGI 1654). The Nonojes, greatly reduced in number after a series of rebellions against the Spanish, coalesced with the Tobosos (AHP 1677C; Griffen 1969:141). Others succumbed to European diseases (Griffen 1969:83-84), and yet others were resettled by the Spanish south of Nueva Vizcaya (Griffen 1979). Spanish documents testify to a rich, complex network of relations and alliances between nations and between these nations and the Spanish.

Unfortunately, many of these nations have been archeologically invisible, understudied, and/or subsumed under other, larger nations (see discussions of archeological invisibility in Trigger [1985] and Schmidt and Patterson [1995]). For many, their demise occurred prior to the 18th century, and the only legacy of their existence and their efforts to persist are in hand-written Spanish documents and in the archeological remains of their camps. However, these documents have rarely been utilized by archeologists, perhaps because the richness of the data or how it might relate to the study of the archeological record is not recognized (see Boyd, this volume, for another view). Access to the documents, housed at archives in Mexico and Spain, with some copies at major universities in Arizona, New Mexico, and Texas, further limits their use by archeologists. Ethnohistorians, too, have contributed to the understudy of these nations by utilizing a subset of the documentary evidence (Hickerson 1994), and/or subsuming a large number of nations under a single name (Forbes 1959). Furthermore, only recently have ethnohistorians moved beyond that discipline’s early focus on acculturation (Trigger 1985, 1986). These factors, added to the plethora of names, extinctions, and movements of groups, create a confusion that archeologists, faced with limitations of time and funding, find difficult to overcome, and archeological interpretations remain embedded in discussions of the hard evidence (sherds, points, lithic tools, etc.) at hand. As a consequence, few archeologists working in regions of...
New Spain in Texas have associated their data with the Chisos, Salineros, Cibolos, Hapes, or other nations who occupied these lands at, and presumably before, European contact.

The present study seeks to address some of these concerns by looking at the documentary evidence for one nation, the Jumanos, during the period 1580 to 1750. It will depart from earlier studies of the Jumanos that have attributed their movements to trade (Hickerson 1994) or subsumed them as a subset of other nations (cf. Hodge 1910a, 1910b; Scholes and Mera 1940; Forbes 1959, 1980). This study takes the perspective that the Jumanos were a distinct nation, and that their movements reflect efforts to persist as a unique group. It focuses on the concept of homeland that was employed by the Jumanos to maintain their viability. While the Jumanos ultimately failed, Spanish documents will be used to suggest that for approximately 200 years, this hunting and gathering nation survived by seeking powerful alliances with multiple friends and avoiding enemies. Finally, this perspective of the Jumanos is compared to the archeological evidence. Because the archeological data are meager, a series of expectations are offered that can be used to test the validity of the conclusions presented here.

Since the study relies heavily on documentary sources, inherent problems with these sources must be acknowledged: (1) the Spanish were not trained observers, and their documents are an incomplete recording of what they saw or heard (Galloway 1991:455; Swagerty 1991:474; Naylor and Poltzer 1986:12); (2) the authors of the documents had personal agendas, and may or may not have reported details accurately (Galloway 1991:454); (3) the earliest documents were written at a time when few Natives could speak Spanish, and fewer Spaniards could speak Native languages; (4) simply reading these documents is a task that must overcome handwriting legibility, water-staining, and other effects of time (Kenmotsu 1994:62); and, (5) since few orthographic or grammatical rules existed to guide scribes in the 16th through the 18th centuries, hundreds of abbreviations of common words add a layer of difficulty to transcription and translation (Barnes et al. 1981:19). Despite these cautions, Spanish documents provide valuable information that can assist in the analysis and interpretation of the archeological and ethnographical record (Trigger 1985:30; Rogers and Wilson 1993:viii).

WHO WERE THE JUMANOS AND WHERE DID THEY LIVE?

Because the Jumanos have been the subject of many studies that disagree about who these people were and where they lived (cf. Hodge 1910a; Bolton 1911; Scholes and Mera 1940; Kelley 1986; Hickerson 1994), it is necessary to briefly review those studies. In part, the disagreement stems from the fact that the number of Spanish documents that deal with the Jumanos are few, and, although first named in the 1582-1583 Espejo expedition (Hammond and Rey 1929; Espejo 1871a, 1871b, 1871c), not until the 17th century were they discussed in any detail (Thomas 1982; Ayer 1965; AGN 1689-1778). Another reason for the confusion is that the documents relating to the Jumanos seem to contradict each other. The Jumanos (also Humanos, Xumanos, Xamanas, Chomanos, or Chumanos) were first described (Hammond and Rey 1929:124-125) living in small rancherias along the Pecos River in modern Texas (Figure 1). Bison were part of their subsistence and the hides of these animals were utilized for clothing, tents, and trade (Hammond and Rey 1966:124). Several 17th century documents (cf. AGN 1683a, 1683b, 1689-1778; AGN 1693; Ayer 1965:157-169; Massanet 1957; Paredes 1962; Thomas 1982) also placed the Jumano homeland between the Pecos and Concho rivers of Texas. Those documents describe them as hunters and gatherers, subsisting on bison and “the meals that the land will give them [because] they do not sow” (SFG 1691).

In contrast to those descriptions, three pueblos, located in east central New Mexico near several large, important salines, were called by the name “Humanas pueblos” in 1598 (Bolton 1916:225). The structural remnants of these pueblos have been identified (Ivey 1991:13-20). Las Humanas (also called Cueloce, Cataco, or Queloze by the Spanish) is today known as Gran Quivira. Tabira (Pataco or Patozey) is Pueblo Blanco. The third, Genobey, is the archeological site of Pueblo Pardo. While these pueblos were of interest to the Spanish, Las Humanas did not receive a mission until 1629; even then, it was only sporadically used until the construction of a larger church began in 1661 (Ivey 1991:185). By 1672, the Humanas pueblos were abandoned (Ivey 1991:198). Given their presence on the fringes of Spanish New Mexico and the limited attention that the Spanish could afford them,
the documents related to the Humanas pueblos and their occupants are not as detailed as the descriptions of, for example, Pecos Pueblo (Kessell 1979).

With these documentary inconsistencies, reconciliation of the Jumanos as hunters and gatherers, sedentary Puebloans, or both, have troubled scholars (see Bolton [1911] for an early summary of the problem). Adolph Bandelier (1890) believed that the Jumanos were bison hunters on the Southern Plains at the time of the 16th century Spanish entradas, but formerly occupied the Humanas pueblos as well as the villages at La Junta de los Rios (the confluence of the Conchos River of Mexico with the Rio Grande). As relatives of those sedentary groups, the Jumanos continued to maintain relations with them until around 1700, the approximate date when Bandelier believed that they “disappeared” from the historical record. Hodge (1910a, 1910b), relying on several documents from Spanish archives, linked the Jumanos to La Junta de los Rios but concluded that, by 1600, they had migrated to the Humanas pueblos, later moving to the Southern Plains, then to Central Texas, and, finally north to join the Wichita. Their homeland, the Rio de las noezes (River of the Nuts), was, in his opinion, the Arkansas River. Sauer (1934), in a broad survey of cultural and linguistic ties among Native groups north of Mexico City, linked the Jumanos to both the La Junta villages and the Southern Plains, but felt that they were culturally and linguistically affiliated with the Sumas east of El Paso. Forbes (1957, 1959, 1980) also linked the Jumanos to La Junta and the Sumas. Focusing on documents from Spain, he concluded (Forbes 1959:116, 138) that all nations northeast of Casas Grandes were closely related Athabaskan speakers; in other words, they were Apaches. More recently, Ivey (1991) opined that the Jumanos were the occupants of the Humanas pueblos, and the nomadic visitors to their villages were the Apaches, while Hickerson (1994:24, 35, 105, 215) believed that the Jumanos were the Teyes of the Southern Plains, the Tompiros of New Mexico, the Sumas near El Paso, and the Otomoacoas and Abriaches of La Junta de los Rios. Each of these studies employed a subset of the documentary evidence.

Other studies of the Jumanos did not share this flaw. Bolton’s (1911) brief, but succinct, rejection of Hodge concluded that the Rio de las noezes is not the Arkansas, but rather “one of the upper branches of the Colorado [River], in west-central Texas” (Bolton 1911:71). Decades later, the “Jumano problem,” as Bolton called it, was revisited by Scholes and Mera (1940). Using archival and archeological data, they convincingly argued that the word Jumano indicated people who painted or tattooed (rayado) their bodies, and that, at the same time, it was used as the name of a particular nation that occupied lands along the Pecos River of Texas. Thus, the eastern pueblos were called “Humanas” for two reasons. First, some residents of Genobey, Cataaco, and Pataoctey had stripes on their noses (AGI 1601). Since residents of other pueblos were not rayado (AGI 1602), facial markings of the people of the Humanas pueblos distinguished them from other Puebloans, and resulted in
their being called Humanos. Second, writing in 1634, Benavides (Scholes and Mera 1940:280) stated that the pueblos were called “Xumanas because this nation often comes to it to barter and trade.” The Pueblos of Humanas, then, were tied to the Jumanos in the same way that the residents of Pecos pueblo were tied to the Apaches (Kessell 1979:123). The preponderance of Alibates chert recovered during Kidder’s (1932:30-36) excavations at Pecos substantiate that pueblo’s ties to the east, and archeological data from the Humanas pueblos evidence similar contacts with the Southern Plains, albeit in smaller quantities (Hayes 1981:11, 198).

Finally, the seminal work of J. Charles Kelley (1986:9) clearly distinguished the Jumanos as a unique nation and attempted to close the gap between the archeological and ethnographic data: “There did exist a specific Indian group known to the Spaniards and the French, to other Indian groups, and probably among themselves as well, as Jumanos.” Unfortunately, while written in 1947, his work was unavailable until 1986 and modern archeological sequences do not fully correlate with his work. Kelley (1986:143) gives the following description of this nation:

Such fragmentary data as we possess regarding Jumano culture and behavior point conclusively to a Plains orientation: an economy based on bison hunting, raiding, and trading; nomadic existence both with and without the aid of the horse; the use of the tipi and apparently Plains-style skin clothing; the Plains stone complex, which includes the snub-nosed scraper, double-pointed stone knife and graver; and various other items and characteristics. In spite of their close association with the Patarabueyes, I am unable to identify traits of Southwestern origin in their culture; the same applied to Mexico, and, with the possible exception of style of hair dress, to the Southeast as well.

The Jumanos, then, were a distinct nation, originally residing between the Pecos and Concho rivers of Texas. Their travels, however, took them long distances and much of the archival data related to the Jumanos was generated when they were found in places far from their homelands (see Figure 1). Their presence in far-flung places here is viewed from the perspective of persistence. This type of persistence has been described by Sheridan and Parezo (1996:xxiv): “[Native Americans] have defined and redefined themselves in response to changing natural and human environments...[and] have continually incorporated new symbols, ceremonies, and material items into their cultures as they have interacted with one another and the European newcomers.” Incorporation of the new and redefinition of the old in such circumstances is balanced by retention of something that “remind[s] people of their identity and distinguish[es] them from others” (Sheridan and Parezo 1996:xxvii). As they point out, an oft recurring symbol is the group’s homeland, even when it is no longer accessible to them.

The view taken here also rests upon the perspective that a “realistic view of egalitarian societies must take into account that these societies may comprise networks of more or less articulated, interdependent systems” (Spiekmann 1986:279, emphasis in original). Studies indicate that social networks operate in times of peace as well as times of stress and serve to reduce environmental, social, economic, and technological risk and increase the group’s potential to survive (cf. Bamard 1992:40; Cashdan 1979:7, 17; Ford 1972; Keenomitsu 1994; Schortman and Urban 1992; Spielmann 1982, 1986, 1991; Trigger 1985; Wilmsen 1989; Wilson and Rogers 1993).

THE JUMANOS, AN EXAMPLE OF PERSISTENCE

The documentary data indicate that the Jumanos defined and redefined themselves in response to the changes in their world, at times embracing new ceremonies and symbols. They further indicate that their presence in the Humanas pueblos, at La Junta, and elsewhere reflects a network of carefully cultivated alliances that provided them the means to redefine themselves. In other words, their alliances, considered in other studies to represent their cultural and linguistic affiliation with different nations, instead represented a mechanism to maintain and/or seek friendships and to avoid enemies for the better part of 200 years (Table 1). At the same time, documentary evidence indicates that the Jumanos’ ties to their homeland constituted the glue that held them together as a group until approximately 1750. Viewed in this way, the actions of the Jumanos evidence their efforts to survive, and to persist.
Table 1. Places Where the Spanish Encountered the Jumanos, 1580-1750.

1. Pecos River near Toyah Creek (Espino 1871a, 1871b; Hammond and Rey 1929)
2. Humanas Pueblos (Ayer 1965:57-58; Scholes and Mera 1940; Thomas 1982; Vetancurt 1871)
3. La Junta de los Rios (AGN 1683a, 1683b, 1689-1788; Hammond and Rey 1929)
4. El Paso (Vetancurt 1871; AGN 1683a, 1683b, 1689-1788)
5. Isleta (Vetancurt 1871; Ayer 1965:57-58)
7. Rio de los noeezes (Rio Concho), 1654 (Thomas 1982; Vetancurt 1871)
8.Sacatool, 1674 (SFG 1674)
9. Dacate, 1675 (SFG 1675)
10. Rio Sabinas 1689, 1691 (SFG 1691; Leon 1909:322)
11. Pecos River, 1683 (AGN 1683a, 1683b, AGI 1689-1788)
12. Rio Concho, 1683 (AGN 1683a, 1683b, AGI 1689-1788)
13. Rio Salado (Pecos River), 1689 (Massanet 1957)
14. Tejas Villages (Caddo), 1688 (AGI 1688)
15. Rio Sabinas, 1690 (De Leon 1909)
16. Guadalupe River, 1691 (Massanet 1957:360)
17. Four days north of La Junta (AGI 1693)
18. North of Colorado River, 1691 (Massanet 1957:363)
19. Mission San Bernardo (SFG 1706)

PERIOD I: 1583-1628

In this first period, the Jumanos were visited only once, although they were sporadically referenced in documents dating from the late 16th and early 17th centuries. The Jumanos and their homelands were first visited in 1583 when the Espino expedition to New Mexico returned to Mexico along the Pecos drainage. The expedition’s progress down the Pecos can be followed in the expedition’s diary that gives the leagues traveled each day (Hammond and Rey 1929:119-132). For days, the men saw no Natives, and encountered little game to eat, something that “greatly troubled” them (Hammond and Rey 1929:122). Then, in the vicinity of the Toyah Creek confluence with the Pecos (see discussion of the route in Kelley [1937]), three Jumanos came across the expedition and led the Spanish to their camps. From the diary, we learn that dispersed Jumano camps were situated along the Pecos, its tributaries, and adjacent to active springs at the bases of mountains. They cordially greeted the Spanish and shared with them catfish, sardines, and other fish, roasted and raw calabashes, and prickly pears. Most evenings were filled with music and dancing. While brief, these descriptions indicate a contented people. They also emphasize that the Jumanos had no fear of the newcomers.

While their lack of fearfulness may reflect their distance from colonized regions, other documentary data suggest that the Jumanos were able and willing to defend themselves. In 1599, Apaches on the Southern Plains requested Spanish aid “against the Xumanos, as they call a tribe of Indians who are painted after the manner of the Chichimecos” (Bolton 1916:225). The descriptions also indicate that the Jumanos were familiar with the confluence of the Pecos and the Rio Grande, and La Junta; their ability to guide the Spanish to the latter indicates that some or all had traveled to those regions in the past.

In this early period, then, the documents attest to a network of alliances between the Jumanos and three other nations. The nature of those networks was variable. The closest of the three was, as noted above, the Jumano alliance with three Pueblos of east central New Mexico (Oñate 1871a:266, 1871b:306). The fact that the occupants of the pueblo marked their faces may imply one or more of the following social mechanisms: (1) they admired this physical adornment of their friends; (2) they intermarried with them; or (3) they sought to put their allies at ease. This relationship apparently mirrored similar relationships between other Plains nomads and eastern pueblos such as the one Oñate
described when he encountered Plains nomads returning “from trading with the Picuries and Taos, populous pueblos of this New Mexico, where they sell meat, hides, tallow, suet, and salt in exchange for cotton blankets, pottery, maize, and some small green stones” (Bolton 1916:227). At times, these plains/pueblo relationships engendered competition among the Plains nomads (see Coronado 1870:263). The Jumanos, as noted above, were enemies of the Apaches in 1599 (Kessell 1979:21).

The Jumanos had at least one other friendly relationship during this first period, but one that was well removed physically from the Humanas pueblos. This was their friendship with the Patarabueyes of La Junta de los Ríos. The Jumanos’ guide service to La Junta indicates a long-standing, friendly alliance with the Patarabueyes. Yet, in contrast to their close alliance with the Pueblos, documentary data indicates that this relationship was different. The distinctiveness of this alliance is first noted in the greeting they received in La Junta, which was warm, but polite. Goods were exchanged but the documents do not express the conviviality encountered in the rancherías of the Jumanos. While this may simply reflect the Spaniards lagging interest in their expectations and their interest in returning to Spanish settlements to the south, other documentary data suggest that the Jumanos were not as close to these Natives. Scores of documents from the Archivo del Hidalgo del Parral, written between 1583 and 1682, contain data related to La Junta, but none mention the Jumanos (Kenmotsu 1994). Instead, the Jumanos relationship with the Patarabueyes during this early period seems to have been more distant, with less frequent visits, and designed to maintain sporadic contact.

The third relationship documented in these early descriptions was their efforts to initiate a long-term alliance with the Spanish themselves. Clearly, the Jumanos knew of the Spanish prior to their arrival on the Pecos. Slavers had been to La Junta (Hammond and Rey 1929), and Coronado (1870:260-270) had visited both New Mexico and the Southern Plains. Yet, when the Spanish arrived in their homelands, the Jumanos received them in a cordial, friendly manner, not as fearful strangers. While that relationship remained dormant for some time, it appears to have been positive and would affect Jumano/Spanish relationships in subsequent periods.

PERIOD II: 1629-1654

From 1583 to 1628, documentary evidence of the Jumanos is confined to a few secondary references. Then, in 1629 Benavides (Ayer 1965:157-180) wrote of the “miraculous conversion of the Xumana nation,” a nation living “112 leagues” from the Humanas pueblos. The conversion described by Benavides was undertaken in 1629 by Fray Juan de Salas, who journeyed to the Jumanos after repeated requests for a mission in their homeland (Ayer 1965:157; BN 1631). In 1632, Salas again visited their camps, leaving a priest among them for six months (Thomas 1982:466). In 1650, soldiers, led by Captain Diego del Castillo, traveled 200 leagues southeast of Santa Fe and spent six months in the Jumano homeland on the rio de las Nueces (Thomas 1982:57). During the latter, pearls were discovered and the Spaniards explored a large part of what appears to have been Central Texas, reaching, but not entering, the Tejas (Caddo) lands. This was followed by another military expedition in 1654, in part to acquaint the Spanish with nations located north of the Jumanos (i.e., Cuitoas, Aijados, and Escanjaques).

The documents describing these visits are brief, secondhand summaries written for military and religious officials. Yet, taken together, they illustrate a growing alliance between the Jumanos and the Spanish; alliances among the Jumanos and other nations residing nearby; a growing Jumano concern for maintaining their hold on their lands; and the redefinition of Jumano ceremonial and religious life.

Evidence of the growing alliance between the Spanish newcomers and the Jumanos is abundant in this period. Both Benavides and Posada, who had the benefit of reading the original documents, indicated that the Jumanos had traveled in peace to the Humana and Tompipo pueblos; in turn, the priests’ journey to the Jumano homelands was peaceful. During Salas’ first visit, messengers from surrounding nations arrived (Ayer 1965:162), again suggesting a peaceful situation. In 1650, the Spanish “stayed [on the Rio de las Nueces] for six months because the [Jumanos] Indians exhibited such affection for them,” and, in 1654, the Spanish fought at the side of the Jumanos against the Cuitoas (Paredes 1962:467-468).

The documents state that other nations were allied with the Jumanos during this period as well, including the Humanas pueblos (Scholes and Mera
1940), and the “other nations who border on their land” (Ayer 1965:162). Only two of the latter nations were named (Iapies [Hapes] and Xabatoas), but it is presumed that others were present since Benavides stated that 80,000 souls were baptized. Moreover, the Jumanos had an alliance with the Aíxaos. This nation sent ambassadors to meet the Spanish in the Jumanos rancheras (Ayer 1965:165), and were still friendly with the Jumanos in 1650. By 1654, however, they were at odds with the Jumanos (Thomas 1982:27-29).

Although the documents indicate that the Jumanos peacefully interacted with these other nations and with the Spanish newcomers, they also imply a growing Jumano concern for their homelands. First, a severe, multi-year drought was in progress by 1629. Waterholes had dried up; the herds of buffalo “on which these nations sustain themselves” moved north, and the people were forced to travel away from their homelands to obtain food (Ayer 1965:161). Disease was also beginning to take its toll on the nations on and adjacent to the Southern Plains (Ayer 1965:162; Kessell 1979:163). Given these circumstances, the repeated pleas of the Jumanos for a mission strongly suggest that their purpose was to draw the Spanish, the powerful newcomers, to their homeland in an effort to preserve that homeland. It appears that the Jumanos had concluded that persistence in the face of these difficulties would benefit from an alliance with the Spanish.

Alignment with the Spanish to preserve their homeland may have been reinforced by the actions of the Spanish in the early years of colonization. Given their location, the Jumanos would have known that the Spanish were anxious to establish trade with plains nomads (John 1975:69-70). While the Spanish traded and bartered for hides and other goods, slaves to work the silver mines were an equally important commodity (AHP 1632, 1645A; John 1975:71; Jones 1988:85). Although Benavides (Ayer 1965) only mentions the Jumanos’ desire for conversion, it is possible that the Jumanos recognized that it would behoove them to befriend the Spanish rather than be their slaves. Spanish military activity in New Mexico also must have impressed the Jumanos. In 1600, the Humanas pueblos incurred the wrath of Oñate (Zaldivar 1871) and were swiftly punished (Scholes and Mera 1940:279). As allies of the Humanas pueblos, the Jumanos would have been well aware of this incident and thus wary of similar conflicts with the newcomers. Over the ensuing three decades, the Humanas pueblos were slowly “brought within the fold of the Church” and the Spanish military umbrella spread over them (Scholes and Mera 1940:279). To retain their ties with the Puebloans, it would have been in the Jumanos’ best interest to develop amicable relations with the Spanish.

Documents indicate that the Jumanos’ efforts to align themselves with the Spanish included efforts to redefine their ceremonial and religious activities. Familiar with the iconography of Catholicism by the time of Salas’ visit, the Jumanos apparently incorporated that iconography into their own belief systems and received the Spanish “in procession, with two crosses” (Ayer 1965:160). When the priests, in turn, took cut their crucifixes, “each person came to kiss them and venerate them as if these people were Christians of long standing.” They also kept their eyes on their feet, “something that we all admired.” At the same time, the Jumanos claimed to have been visited by “a woman like the one painted in the church [at the Tompiro mission] who spoke to each one of them in their own language saying that they should come to seek the priests to ask them to teach and baptize them [the Jumanos], and to not be lazy. This woman was dressed...as the woman in the painting but her face was not like [the one at the church]” (Ayer 1965:158). Finally, when the priests were on the Concho River with the Jumanos, a large cross was erected on a hill, and “thousands” were baptized and the sick cured.

These aspects of Jumano deportment impressed the priests as did their request to learn all aspects of Christianity. Combined, they suggest that the Jumanos, aware of the military potential of the newcomers and also aware that the newcomers’ religion was being adopted by their Puebloan allies, sought to incorporate several Christian symbols and ceremonies into their own beliefs. Whether these symbols were embraced as a belief system is not clear. However, we do know that the Jumanos realized that their world and their homelands were threatened. By extending their hands to the Spanish in friendship, maintaining alliances with old friends, and by adopting Spanish symbols and ceremonies, the Jumanos sought an alliance with a new nation, perhaps with the hope that the newcomers would help them in troubled times and afford them a de facto aura of protection against the Apaches.
THE THIRD PERIOD: 1655-1700

Any hope that the visits of the Spaniards would aid them was squashed in the years between 1655 and 1700. During the early part of the period, the Humanas pueblos were embroiled in a conflict among the Church, the governors of New Mexico, and the Apache (John 1975; Scholes and Mera 1940:280-283). Described in 1661 as “the most populous [pueblos]...in those provinces” (Hackett 1923-1937, Vol. 3:159), shortly thereafter these Pueblos struggled with Apache attacks (AGN 1663), harsh encomiendas, and severe drought (Scholes and Mera 1940:283). Archeological evidence indicates that at about the same time missionaries destroyed their kivas (Hayes 1981:9), likely as a means of crushing old, non-western religious values. By 1672, the Humanas pueblos were largely abandoned. Given the difficulties experienced by the Humanas pueblos, it is not surprising that no documents from 1655-1673 name the Jumanos of west central Texas. Then, in 1674, they were mentioned just north of the Rio Grande (SGF 1674). The next year, the Spanish encountered the Xoman (Jumano), on the Pecos River north of the Rio Grande (Portillo 1886:116-118). In 1682, a party of Jumanos traveled to El Paso via La Junta to again request a mission in their homelands (AGN 1683a, 1683b, 1689-1788; AHP 1685D). Later documents mention the Jumanos in south central Texas (Massanet 1957:257), in Coahuila (Leon 1909:322; SFG 1691), Central Texas (Massanet 1957:360; Salinas Varona 1968:287, 298; SFG 1692), La Junta (AGI 1693; AHP 1687A), and in their homelands (AGI 1693). These documents indicate that: (1) as the Jumano/Spanish alliance began to erode, alliances to the south and east were sought or enhanced; (2) their homelands continued to be a paramount concern; and (3) they again sought to incorporate symbols that would allow them to redefine themselves.

Jumano alliances stretching east and south appear to have built upon alliances forged in earlier times. Equally important, they included efforts to attract nations that were powerful or populous, including the Spanish. In the area directly south of their homelands, near the confluence of the Pecos with the Rio Grande, their efforts were directed toward building alliances with a broad consortium of hunting and gathering groups, some of whom were actively involved in hostile relations with the Spanish in Coahuila. Thus, in 1674, they were with the Boboles, Xico Cosses, Bauanes, Xupulames, Yoricas, Xianco Cadames, and Yergibas (SGF 1674), and in 1675 with the Teroodan, Teaname, and Geimamar (Portillo 1886:116-118). In 1670, those same nations were gathered north of Saltillo, plotting with others against the Spanish (AHP 1670A). Although the nations named in 1670 did not include Jumanos, one name, Chaamanas, is phonetically close to Choumanes, a variant of Jumanos, and may indicate that they, too, were among those plotting against the Spanish. Individually, each nation was small (Campbell 1988; Griffen 1969; Salinas 1990). Together, they would have been sizeable. While the rebellion never took place, the Jumanos’ alliances with several nations present at the gathering (i.e., Bacaranes, Yoricas, Mescalas, Hapes, Boboles, Xupulames [Cibolos], and Ervipames) endured (AGN 1691, 1692; Leon 1909:322; Massanet 1957:360; SFG 1691; SA 1700), and another alliance (with the Hapes) existed at least as early as 1630 (Ayer 1965:158).

To the southwest, on the other hand, the Jumanos focused on maintaining or renewing their alliance with the Spanish. Cleverly, their solicitations were flavored with promises to introduce the Spanish to many nations with the hint that an introduction from the Jumanos would ensure a peaceful reception. To accomplish their goal, they traveled to El Paso through La Junta, a region known to be coveted by the Spanish clergy for missionization (AGI 1689-1788), and one with which they had old ties (Hammond and Rey 1929). Their travel through La Junta suggests that they sought to strengthen ties with the Natives in that region, and, at the same time, to use that alliance to convince the Spanish of their goodwill. Once in El Paso, the Jumano leader, Juan Sabeata (AGN 1683a, 1683b), argued that if the Spanish would travel east with him to his homelands, he would introduce the Spanish to the people in La Junta (AGN 1683b). Sabeata also promised introductions to a host of other nations, and the powerful Tejas (Caddo) were held out by the Jumanos as a ripe plum for the Spanish. The Jumanos, Sabeata declared, knew the Caddo well, and the Caddo held them “with great affection.” He would recommend the Spanish to this powerful nation (AGN 1689-1788). That the Spanish, still reeling from the Pueblo Revolt, put together a military and religious entourage to travel back to his homelands suggests that he argued eloquently. Moreover, generally favorable impressions of the
Jumanos and the potential for settlement and missions in west central Texas were expressed by both the military leader of the expedition, Mendoza (AGN 1683a, 1683b), and Lopez (AGN 1689-1788), the religious leader, upon their return. At the end of the trip, the Jumano/Spanish alliance appeared well-grounded.

Spanish interest in the Jumanos, however, waned after discovery of French intruders on the Gulf Coast (AGI 1688; Hackett 1923-1937, Vol. 2:256-289). Interested in maintaining her hold on Texas, Spain shifted her focus to East Texas and the Gulf Coast (AGN 1691, 1692; de Leon 1909). Despite a redirected Spanish focus, there are indications that the Jumanos continued to pursue an alliance with them by undertaking a series of trips to and from the Caddoan region and the Gulf Coast. They brought news of “a dark skinned person with an arquebus living near the Caddo,” information on the slaughter of the French by the Natives, and other details of events in those far lands (AGI 1688). Their willingness to inform the Spanish about the French activities suggests a continued desire to align themselves to the Spanish.

The Jumanos did not, however, restrict their alliances to the Spanish between 1655-1700. Although the Jumanos used the Caddo as an enticement to encourage the Spanish to travel to their homelands, their descriptions of the Caddo indicate that, in fact, they did know the Caddo well. The Caddos’ agricultural economy (augmented by hunting bison on the plains), their hierarchical society, and their interaction with other nations were described in considerable detail by the Jumanos (AGN 1689-1788). Caddoan archeological and ethnohistorical data confirm the descriptions given by the Jumanos (Pertula, this volume). As well, Sabeata and his people described the general ecology of the East Texas woodlands where the Caddo resided, informing the Spanish that a Tigua Indian of New Mexico lived among the Caddo and could serve as translator (AGN 1682-1683). Testimony in 1688 (AGI 1688) and 1690 (Weddle 1987:257), and the writings of Cusánas (Gomez Canedo 1968:53), priest at Mission San Francisco de los Tejas in 1691, also verify their friendship with the Tejas and their interactions with that nation in trade fairs at certain seasons of each year. All descriptions indicate a close alliance.

The list of 16 nations (Table 2) traveling with Mendoza and the Jumanos in west central Texas, and the 44 nations (Table 3) that they awaited, also suggest that the Jumanos had extended their hand in friendship to other nations, some potentially powerful. While many names in the list are obscure, a few are recognizable. The Huicasiques (Huycasales), Bobidas, Injames, Humez, Bibis (Bibits), and Puchames were among the small nations east of the Jumanos’ homeland. In subsequent years, the Jumanos were often in the company of one or more of these nations. Others in the lists were the Yoyehis, Ascanis, and Isconis. Wichita groups (Newcomb and Campbell 1982:77) who, in the 17th century, were moving south into Texas (Newcomb 1993:33).

Otermín wrote that the Jumanos were close friends of the natives of the La Junta area, and his statements are verified by the testimony of the Jumano chief, Juan Sabeata (AGN 1683a). While awaiting the arrival of a new Governor, Sabeata and his people spent time in the Presidio Bolson, helping build a series of temporary chapels requested by Father Lopez (AGN 1689-1778). These reports demonstrate that the Jumanos maintained a relationship with the nations of the Presidio Bolson in the late 17th century, much as they had in the 1580s. Moreover, the Jumanos were accompanied by one or more other nations, some of whom were known to have old ties with the villages at La Junta (Kenmotsu 1994). These include the Cibolos (AGI 1688; Massanet 1957:360-361), Cholomes (Massanet 1957:359-360), Mescales (AHP 1670A; AGI 1692; de Leon 1909:322), and Salineros (AGN 1683b).

In the midst of these efforts to reach out to other nations as well as the Spanish, the need to retain their homelands surfaces again and again. In El Paso, the Jumanos were not simply asking the

<table>
<thead>
<tr>
<th>Jumanos</th>
<th>Suajos</th>
<th>Hinehis</th>
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<tbody>
<tr>
<td>Orolosos</td>
<td>Yolmes</td>
<td>Quitacas</td>
</tr>
<tr>
<td>Beitonijus</td>
<td>Cunquebacos</td>
<td>Siacuchas</td>
</tr>
<tr>
<td>Achubales</td>
<td>Quicuchabes</td>
<td>Hanacines</td>
</tr>
<tr>
<td>Jediondos</td>
<td>Los que asen Arcos Torenes</td>
<td>Cajalos</td>
</tr>
</tbody>
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Table 3. Nations Expected by the Jumanos on the Plains 1682-1683.

<table>
<thead>
<tr>
<th>Huicasique</th>
<th>Aielis</th>
<th>Aguidas</th>
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<tbody>
<tr>
<td>los Flechas</td>
<td>Chiquitas</td>
<td>Echantoces</td>
</tr>
<tr>
<td>Bobidas</td>
<td>Injames</td>
<td>Dijus</td>
</tr>
<tr>
<td>Colabrotes</td>
<td>Unogitas</td>
<td>Juanas</td>
</tr>
<tr>
<td>Yoyehis</td>
<td>Acanis</td>
<td>Humez</td>
</tr>
<tr>
<td>Bibis (Bibit)</td>
<td>Conchumuchas</td>
<td>Teandas</td>
</tr>
<tr>
<td>Hinsas</td>
<td>Pojues</td>
<td>Quisabas</td>
</tr>
<tr>
<td>Piaibunas</td>
<td>Papanes</td>
<td>Puchas</td>
</tr>
<tr>
<td>Puguahianes</td>
<td>Isconis</td>
<td>Tojumas</td>
</tr>
<tr>
<td>Pagaiames</td>
<td>Sabas</td>
<td>Bajuneros</td>
</tr>
<tr>
<td>Novraches</td>
<td>Pulchias</td>
<td>Los de Tobites</td>
</tr>
<tr>
<td>Puchames</td>
<td>Abau</td>
<td>Oranchos</td>
</tr>
<tr>
<td>people of the River</td>
<td>Anchimos</td>
<td></td>
</tr>
<tr>
<td>of the Tejas (Caddo)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Spanish to visit or make treaties with them. They wanted the Spanish to actually establish missions and settlements in west central Texas and, at the same time, “to defend them against their enemies, the Apaches” (AGN 1682a). Later, Sabeata stated that if the Spanish would help them with the Apaches, then Spanish trade on the plains could resume as it had in the past (AGN 1683b). The Jumano’s concern for their homelands was real. The Apaches plagued the Mendoza expedition (AGN 1683b), and a few years later Posada stated that “this nation [the Apaches]...is the owner and possessor of all the plains which they call Cibola” (Thomas 1982:41). He recommended construction of a presidio on the Rio de las Nueces, stating: “[It] will undoubtedly have the support of the Jumana nation...because it is their land which the Apache nation took away from them and whom they hold as enemies” (Thomas 1982:56).

Despite Posada’s statements that the Apaches had taken the homelands of the Jumanos, slightly later documents suggest that the Jumanos continued to maintain at least a toe-hold on those lands. In 1688, General Retana traveled four days northeast of La Junta to meet with the Indians that were to bring him word of the French on the Gulf Coast, and he was greeted by Juan Sabeata, “who was very glad to see the Spanish in his lands” (Hackett 1923-1937, Vol. 3:256, italics added). Four days travel northeast of La Junta would place the meeting in the vicinity of the Pecos River. When encountered along the eastern edge of the Edwards Plateau in 1691, the Jumanos stated that their saddles were acquired in a war with the Apaches (AGN 1691) and that their homeland was the “rio salado” or Pecos River. In sum, at least as late as 1691, the Jumanos were partially successful in maintaining their homelands.

Jumano incorporation of Spanish ceremonial and religious expressions continued during the 1655-1700 period. An oft-repeated refrain was the request for baptism (AGN 1683b; Gomez Canec 1968:243; SFG 1674; 1675). Other expressions of Christianity include touching the habit of Fray Juan de Larios (Portillo 1886; SFG 1675), and kissing the habit of Fray Nicolas Lopez (AGN 1683b), symbolically touching a form of clothing worn by few and, therefore, perhaps, powerful individuals. The Christian cross was another prominent symbol adopted by the Jumanos. A large cross of nine colors, likely the one erected during the Spanish visits of 1629 and 1654, had rotted and fallen down by the time the Jumanos homeland was visited in 1682-1683. Nonetheless, Mendoza and his party were told that many visitors to the Jumanos lands had stopped to see this important symbol (AGN 1683b). Even their enemies had fallen under its spell, and it was claimed that the power of this religious symbol had aided the Jumanos’ success in a raid on an enemy camp of 78 tents, and had later halted an Apache raid on their own camps when the raiders saw the cross. In 1691, the cross was again prominently displayed when the Jumanos were encountered along the eastern edge of the Edwards Plateau (AGN 1691). Led by Juan Sabeata, several nations paraded in front of the Spanish with a cross that they had “cared for for many years” (AGN 1691).

When Governor Otermin, a lame duck governor weary of the trauma of the Pueblo revolt and the starvation in El Paso, asked the Jumanos to withdraw from El Paso to await the arrival of his
replacement, the Jumanos returned to La Junta where they helped the villagers to erect hermitas (temporary chapels). These structures were erected to persuade the Spanish that the Jumanos were sincere in their desire to be missionized (AGN 1689-1788). That they were able to build the hermitas with no aid from the Spanish indicates the extent of their familiarity with the religion of the newcomers.

It should be noted that incorporation of Spanish religious expressions was not unique to the Jumanos. Indeed, it was encouraged by the Spanish themselves. Baptism, crosses, and other Christian symbols appear elsewhere as symbols to deter enemies. On their trip down the Rio Grande to La Junta, Mendoza and his party encountered several camps of Sumas: “they asked my favor and help against our common enemy, the Apaches...[who] would not let them stay in their homelands...I told them I would help them on my return trip, and in the crest of a hill I put a cross” (AGN 1683b). Just above La Junta, one hundred Julimes requested baptism (AGN 1683b). Jumano adoption of Spanish iconography, therefore, suggests the sincerity of their appeal for a long-term alliance.

In sum, during the years from 1655 to 1700, the Jumanos, blocked by the Apaches and the Pueblo Rebellion from their old alliances with the Tompiros and other Natives of New Mexico, sought closer alliances with the powerful Caddo of East Texas, some Wichita bands, a multitude of nations in Central and South Texas who were individually small but collectively numerous, and the villagers at La Junta. At the same time, they continued to seek the friendship of the Spanish. The period began with hope that the Spanish would extend their settlements and missions to the Jumanos’ homelands, affording them protection against encroachment from the Apaches. It ended with the realization that the colonization of their Pecos River homeland was less important to the Spanish than the French threat on the Gulf Coast.

THE FINAL PERIOD: 1700-1750

During the years 1700 to 1750, Jumano efforts to seek friends and avoid enemies underwent a dramatic shift. In the opening years of the 18th century, there is almost no documentary evidence of the Jumanos. Importantly, when they reappeared, they were no longer resisting the Apaches. Instead, the documents indicate that the Jumanos had allied with the Apaches, at least some of whom were now living in their homelands (AGI 1716). Moreover, in ensuing decades, they were fighting alongside their former enemies to protect those same homelands (BA 1729). Reasons for this dramatic reversal are not well described in the documents, but appear related to the abandonment of Spanish interests in settlement of their lands, the Spanish need for slaves, a reduction in bison and an increase in disease vectors, and the presence of a new enemy on the horizon: the Comanche.

Abandonment of interest in west central Texas was a pragmatic issue for the Spanish in the 18th century. With the intrusion of the French into the Gulf of Mexico at the end of the 17th century, Spain refocused attention on her competition with France for control of the Mississippi Valley and East Texas (Chipman 1992:86). Although Juan Sabeata’s statements to Mendoza and Lopez in 1683 indicated his desire to introduce the Spanish to the large and powerful Caddo nation (AGI 1689-1788), he was never afforded the opportunity. Instead, the Spanish traveled to East Texas and the “kingdom of the Caddo” without the Jumanos (Massanet 1957). At the same time, Spain was reconquering New Mexico, while Indian wars west of Parral and in Sonora were escalating (AHP1695A). These activities fully engaged the military in New Mexico and Nueva Vizcaya. Finally, new silver deposits, far richer than those at Parral, were found in Chihuahua in the early 18th century (Jones 1988:120). Subsequent military efforts in that region focused on protecting the deposits and the farming lands that fed the growing population. Another consequence of the silver strike was the renewed requirement for Indian slaves to work the mines. Given these interests, the promises of Mendoza and Lopez in 1683 to make inquiries about establishing missions, settlement, and presidios in the homelands of the Jumanos were discarded as lesser priorities.

With Spanish attention diverted elsewhere, the region occupied by the Jumanos was deeply affected by the reduction of bison, increases in disease, and the arrival of the Comanche. Bison herds had once been described as abundant along the Pecos (AGN 1683a, 1683b; Thomas 1982), but, in 1708, were “rarely seen” (AGI 1708). Measles and other diseases affected the nations north and northeast of La Junta (cf. AHP 1704A; AGI 1708, 1716; Ayer 1714; SFG 1706). While the Jumanos are not among the nations listed with these diseases, the
SUMMARY AND ARCHEOLOGICAL IMPLICATIONS

In summary, between 1580 and 1750, the Jumanos were one of many nations who had to accommodate the pressures created by the Spanish and Apache intrusion into their homelands. Their accommodations focused on maintaining harmony, surviving and persisting through alliances with friends while avoiding enemies. In the early years, brief glimpses of the Jumanos indicate a contented, secure nation living in the vicinity of the Pecos River (Hammond and Rey 1929), closely allied with the Humanas pueblos of east central New Mexico and friendly with the Patarabueyes of La Junta, but engaged in conflict with the Apaches, relative newcomers to the plains who competed with other nations for alliances with the New Mexican Pueblos. For a time, the Jumanos were successful. The Apache threat did not cease, however, and, the Jumanos knocked at the Spaniards’ door to seek protection of their homelands. Priests, missions, and settlements were requested (Ayer 1965; Thomas 1982; Vetancurt 1871) as the Jumanos began to redefine themselves, incorporating Christian symbols and expressions into their ceremonial activities. Through these efforts, the Jumanos successfully forged a strong alliance with the Spanish while maintaining a pre-existing alliance with the Humanas pueblos as well as the Hapes, Caddos, Axiados, and possibly with other nations as well.

The years 1655 to 1700 brought turmoil to the Jumanos’ world. Blocked by the Apaches and then by the Pueblo Rebellion from old friendships with the Tompios, Piros, and natives of other Pueblos, they began to seek closer ties of friendship with nations to the south and east as well as with Spaniards in El Paso and northern Coahuila. Documents indicate that the Jumanos continued to incorporate Christian symbolism into older traditions. While there may have been several reasons for the adoption of Christian symbols, such redefinition constituted, in part, an effort to persist in uncertain times. At times, their efforts cost them: General Retana told Sabeata that the Sisimbles “and other nations killed...Jumanos because they [the Jumanos] would not join with them against the Spanish” (AGI 1693).

Between 1700 and 1750, Jumano alliances shifted away from the Spanish. Buffalo were dwindling, and diseases affected many nations.
Additionally, the arrival of the Comanche increased the southward movement of the Apaches. In light of these factors, the Jumanos appear to have been forced to reconcile themselves with their former enemy, and the phrase “Apaches Jumanos” surfaced in selected documents, indicating that the Jumanos had joined their former enemy, yet again redefining themselves to persist. Extending their hand to the enemy was risky, but this was their only remaining accommodation and allowed them to retain their hold on their ancestral lands.

Since the documentary record informs us that Jumanos adjusted to the changes that occurred in their world through a series of alliances with other nations, these alliances, and the mechanisms used to forge them, lead to certain archeological expectations. To understand such expectations, the ethnohistorical record must be reconciled with the archeological record. The Jumanos’ homelands skirt the southern edges of the Southern and Rolling Plains (see Figure 1). Archeological sites dating from the Late Prehistoric and early Historic periods that have been identified in these areas are generally part of what is known as the Toyah complex or culture. When first defined by Kelley (1947, 1986), the Toyah culture was believed to include South, Central, and Trans-Pecos Texas, with possible extensions south of La Junta into northern Nueva Vizcaya. In a recent summary, Johnson (1994) has refined the broad geographic expanse of this culture, distinguishing sub-regions that contain “classic” Toyah traits from those dominated by Toyah material culture but with traits and artifactual styles borrowed from other regions nearby. Given these variations, Johnson (1994:242) maintains that Toyah material culture represents a “collage” of “culturally determined behaviors”:

By culture I mean more than inanimate tools...I also mean specific knowledge and habits, whether such knowledge was held universally or shared by only some Toyah societies...[and] includes specific preferences for certain foods and raw materials...; given ways of moving about the landscape to acquire and use those resources; a preferred social structure or way of living together in groups; and given means of making and using specific forms of tools, containers, shelters, etc.

The Toyah complex was a widespread cultural phenomenon (see Boyd, this volume, Johnson 1994:243 and Figure 105), dating between A.D. 1300 and 1650 (Johnson 1994:258). The Toyah folk are believed to have moved into these regions “in response to the reappearance of buffalo in those places after many centuries of absence,” bringing with them distinctive lithic tools and ceramics (Johnson 1994:271). Throughout its geographic distribution, the Toyah complex “appears full-blown as if sprung from the brow of Zeus” (Johnson 1994:277), strongly suggesting that it represents the migration of people rather than in situ development. Lithic assemblages at Toyah sites are dominated by Perdiz arrowpoints, informal knives and scrapers, and a variety of stone tools (end scrapers, perforators/drills, and points) fashioned from flakes, along with Harahay and Covington knives, and a blade technology. Ceramics from Toyah complex sites often exhibit vessel smoothing using a wide stick, beveled rims, application of a thin wash to vessel interiors, and frequent use of bone temper (Johnson 1994:269). Through careful examination of excavated Toyah complex sites and an analysis of the Buckhollow site, Johnson (1994) hypothesized other Toyah traits. These include the evidence that the Toyah folk did not restrict their diet to bison or even deer, but rather “gathered, killed, grew, and ate...what comestibles were locally available, and in what season of the year its people found themselves” (Johnson 1994:262). Groups generally consisted of small family or extended family households, and group mobility appears to have been limited. Limited mobility patterns may be the mechanism that created the regional variants of the Toyah culture complex that have been noted by Quigg (1997), Quigg and Peck (1995), Johnson (1994:265-279 and Figure 106), Creel (1990), and Treece et al. (1993).

The Jumano homeland is within the northwestern portion of the area dominated by the Toyah culture. While Johnson (1994:280) concludes that the Jumanos were too mobile to represent true Toyah folk, I believe that they should be counted among the Toyah for two reasons. First, the initial encounters with the Jumanos indicated that they resided contentedly just south of the Southern Plains, annually hunted buffalo on those plains, and were close friends of the residents of the Xumanas pueblos. While the Jumanos knew the Patarabueyes and other nations, the documents suggest limited contact with those nations and lead to the inference
that Jumano mobility at the time of European contact was relatively restricted. The presence of the Jumanos in distant regions after 1650 was an artifact of Spanish colonization and the Apache migration to the south, and represents the mechanism used by the Jumanos to survive, namely efforts to solicit closer friendships south, east, and southwest of their homelands.

Second, although much of the archeological evidence from the Jumanos' homeland is confined to surface collections (Rogers 1972; Walters and Rogers 1972), the material culture that has been reported (Creel 1990; Mallouf 1985:134; Quigg and Peck 1995; Treece et al. 1993) is consistent (i.e., Perdiz arrow points, formal and informal knives, scrapers, bone-tempered ceramics with a thin interior wash, etc.) with that recovered from sites in other regions occupied by Toyah folk. Moreover, it contrasts with the artifact assemblages recovered from contemporary sites on the Southern Plains (Boyd, this volume; Collins 1971:89; Habicht-Mauhe 1987; Spielmann 1982), La Junta (Cloud et al. 1994; Kelley 1986; Mallouf 1990), and El Paso (Miller 1988). Given these factors, I conclude that the Jumanos were one of the regional variants of the Toyah folk, and several archeological expectations follow.

The first, rather obvious, expectation is that exotic artifacts would be present in sites in the Jumano homelands dating between A.D. 1300 and 1650, a reflection of their interaction with other nations that is described in the documents. Certainly, this expectation can be verified. Many Toyah complex sites in the Jumanos' homelands contain exotic goods. Mallouf (1985:134), Walters and Rogers (1975), and others have noted the presence of Caddoan, Southwestern, and other types of sherds in Toyah complex sites. Similarly, lithic tools in Toyah assemblages from the area depicted in Figure 1 include pieces made of Tecovas jasper from the Texas Panhandle as well as other exotic cherts (Creel 1990:89).

Second, based on the documentary data, it would be expected that these non-local artifacts would not be from a single nation, a single region, or a single language group. The Jumanos' network of alliances included other nations (e.g., the Hapes, Ervipiames, and Jediondos) who occupied lands where Toyah complex sites are found, and were likely Toyah folk themselves. The Jumanos were also at home in the company of hunters and gatherers from lands located some distance from their own and outside the area occupied by the Toyah culture folk. The Cholomes occupied the region south and west of La Junta, and are believed to have spoken a Conchos dialect (Griffen 1979:31), while the Cantona were from the region of north central Coahuila (AHP 1670A; Campbell 1988:136; SFG 1674), and the Catique were from the region just north of modern Guerrero, Mexico (Campbell 1988:172-188). The Jumanos also maintained alliances with the sedentary villagers of the Humanas pueblos, the Caddo, and the Patarabueyes of La Junta, who spoke different languages and had cultural traditions distinct from their own. Such networks were commonplace among the nations residing in Texas, Nueva Vizcaya, and New Mexico (Kenmotsu 1994), and would have provided the opportunity for exotic artifacts to enter the archeological record either through exchange as a means of sealing bonds between families or as a reflection of the presence of members of other nations in Jumano rancherías. As noted above, individual Jumano sites do contain non-local material from a variety of other regions.

At the same time, the data lead to the expectation that younger Jumano sites should contain a preponderance of non-local artifacts from regions to the east, south, and southwest while non-local artifacts at older sites should be dominated by objects from the north and northwest of their homeland. The relationships of the Jumanos with the Caddo, the Patarabueyes, the Cholomes, and other distant nations became closer as the 17th century drew to a close, and the archeological assemblages from Jumano sites should evidence a concomitant increase in archeological evidence of contact with those nations. This expectation can only be partially evaluated. Few Jumano sites dating after 1630 have received excavations. Sites dating from A.D. 1300-1630, however, tend to conform with this expectation. Garza and Harrell projectile points, generally associated with archeological complexes on the Southern Plains, have been recovered in small numbers at the Rush (Quigg and Peck 1995:88) and O. H. Ivie Reservoir (Treece et al. 1993) sites as well as at 41TG91 (Creel 1990:89), and exotic cherts, where present, are typically from the Southern Plains (Creel 1990:89). Non-local ceramics have only been recovered from 41RN169 and 41TG91. These data suggest ties to the north and northwest for the period from A.D. 1300 to 1630. Nonetheless, the data are, at best, tentative and further excavation of later sites is sorely needed. As Creel (1990:143) summarizes:
A considerable variety of ceramics occurs at late sites in West Central Texas; generally, the larger the sherd collection from a site, the greater the variety of ceramics. Not infrequently, the more common locally made ceramics occur with sherds from vessels closely resembling various Caddoan wares from East Texas and with sherds from vessels of various Southwestern wares.

One final expectation that is derived from the documentary record is that while the Jumanos exchanged bison and bison hides, much of their exchange focused on non-material goods after 1620 (e.g., AGN 1682a, 1683b, 1689-1788; Portillo 1886:118). Exchange can be a form of foreign policy (Ford 1972:43), and for the Jumanos, exchange appears to have represented efforts to establish a network of friends. Thus, in exchange for the baptism of thousands, the Jumanos sought Spanish priests and settlement in their lands rather than material goods.

They also offered to act as goodwill ambassadors to the Caddo in exchange for Spanish military support. These types of intangible exchanges will be difficult to distinguish archeologically. However, the fact that non-local artifacts are not plentiful in any Jumano site may represent one aspect of the archeological evidence for this intangible exchange. All but three lithics at 41TG91 could have been manufactured from the raw material available in local gravel bars of the South Concho River, and the majority of the ceramics were locally-made (Creel 1990:89, 143). Low quantities of exotic materials were also present in Toyah culture sites at O. H. Ivie Reservoir (Trecee et al. 1993), the Rush site (Quigg 1997; Quigg and Peck 1995), and in surface finds at sites along the Pecos River (Mallouf 1985). Similarly, the quantities of trade goods from the Southern Plains and/or the region occupied by Toyah folk that have been recovered from the Humanas Pueblos (Hayes 1981), La Junta (Kelley 1986; Cloud et al. 1994), and the Caddoan area (Pertulla, this volume) are small.

These and other archeological expectations from the documentary record merit further study utilizing both the archeological and the documentary records, focusing on the multitude of nations in Texas at the time of European contact, and seeking to understand the mechanisms used by each nation to accommodate the changes wrought in their world by Spanish colonization. Those mechanisms are clues to their eventual survival or demise, and they are the keys to comprehending how societies in the past were able to persist. Employed separately, neither record is sufficient. Employed together, they offer the possibility of enhancing our understanding of the ways nations accommodated the newcomers.

NOTES

1. Some researchers (Forbes 1957, 1959; Griffen 1979:34; Sauer 1934:65ff) add Sumanas to this list of Jumano variants. I do not. With few exceptions, Spanish documents clearly distinguish the Sumas as a nation distinct from the Jumanos (cf. AGI 1678-1689).

2. Espejo (1871a:05-106, 1871b, 1871c) caused additional confusion by stating that the natives of La Junta de los Rios (modern Presidio, Texas, and Ojinaga, Mexico) were the Patarabuyeas, "who for another name are called Jumanos." However, Espejo did not write during the expedition nor were his recollections of the trip detailed or accurate. Moreover, the official diary of the expedition is quite detailed and does not support the conclusion that the villagers of La Junta were the same people as the Jumanos. Other documentary data support the distinction between the Patarabuyeas and the Jumanos. Scores of documents from the Archivo del Hidalgo del Parral written between 1583 and 1682 contain data related to La Junta (Kenmotsu 1994). During these 100 years, not one of the documents mentions the Jumanos. Based on these lines of evidence, the Jumanos were familiar with the Natives of La Junta in the 1580s, but were a distinct nation. Unfortunately, while Scholes and Mera (1940) and Kelley (1986) noted Espejo's error some time ago, it continues to be adopted by researchers (cf. Forbes 1959; Hickerson 1994) who use it to support their conclusion that the Patarabuyeas of La Junta were Jumanos.

3. The reader is reminded that none of the documents related to La Junta mention the Jumanos, even in passing (Kenmotsu 1994).

4. Kelley (1986) first hypothesized that the Jumanos were Toyah folk, but subsumed a multitude of other nations under the Jumanos, including the Patarabuyeas. Here, the Jumanos are restricted to the archeological sites shown on Figure 1.

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Cultural Fingerprints:  
The Native Americans of Texas, 1528-1687

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ABSTRACT

Before the arrival of the Europeans, the Native Americans in Texas had a sanctioned behavior baseline and traditional mechanisms to deal with divergence of interests. During the mid-16th and 17th centuries those mechanisms were reformulated to accommodate the cultural challenges created by the presence of Europeans and the continuous process of contact. The analysis of early historical documents provides evidence to map some of the elements of the local behavior baseline, and document the existence of mechanisms of avoidance, ritualization, and exchange, and their practice as means of dispute resolution.

INTRODUCTION

The cultural challenges created by the European conquest forced Native populations to refashion their behavior baseline and their traditional mechanisms of dispute resolution. Native American groups in the territory today understood as Texas dealt with the divergence of interests in several ways. This paper focuses on three specific mechanisms: avoidance, ritualization, and exchange. These mechanisms will be considered in their dual aspects as elements in the establishment of relationship networks, and as devices to incorporate new historical realities into a Native way of life. The mechanisms intercept each other at many points, provide some outlines for cultural fingerprinting and, in some cases, have implications for historical archeology.

SOCIAL ORGANIZATION: SIGNPOSTS

Social organization is the universe of all forms of association that exist, at any one moment, among members of a group. The definition of group is fluid, intrinsic to itself, and problematic for the ethnohistorian, particularly because the group that exists for the outside observer may have no social reality to the participants ascribed to it.

The organization of the social milieu is the means by which societies deal with changes in the social environment. Individuals are born into a set of relationships and establish others during their lives. Status is best defined as an individual’s “collection of rights and duties” (Linton 1936:113-114). A status is neither independent nor equivalent to the individual’s social category in the group, but a group’s ethnic identity can be regarded as a status (Barth 1969:17), in which case ethnic identity constrains “the kinds of roles an individual is allowed to play...and defines the permissible constellations of status” (Barth 1969:17). Role is defined as “the dynamic aspect of a status” (Goodenough 1971:310); that is, the enactment of the rights and duties that apply to a given status. Age, gender definition, status, and role change throughout an individual’s lifetime and modify and enlarge the individual’s network of relations by accumulating and discarding role sets and statuses. Statuses and roles are probably the most plastic media, within a social structure, to adapt to social change. The endless combinations of statuses and roles can result in considerable misunderstandings if groups do not possess a behavior baseline (i.e., a social compass) to guide their actions. Behavior baselines exist for all societies but they may be less visible in hunting and gathering societies.

It is often stated that descriptions of hunting and gathering groups sound alike. I propose that
such apparent similitude results from commonalities intrinsic to a behavioral baseline that make it possible for individuals to manage or avoid conflict situations. Gatherers and hunters make their living in an ecological environment where they can meet some “Other” at any time. Often that “Other” will be a competitor for the same ecological and social resources (e.g., Foster 1998:156-157, 162, 167, 181-182, 186). In such situations it is imperative to know what to expect and how to behave. In other words, in all “inter-ethnic relations [there is] a systematic set of rules governing inter-ethnic social encounters” (Barth 1969:16).

The existence and practice of behavioral common denominators among Native American societies can best be discerned and evaluated through the analysis of some of the earliest archival documents that depict contact situations between Europeans and Native Americans in Texas. The Relación of Álvar Núñez Cabeza de Vaca (1528-1536), the documentation pertaining to the Bosque-Larios Expedition (1673-1675), and Henri Joutel’s diary (1685-1687), provide the earliest and perhaps best glimpses of the practices of avoidance, ritualization, and exchange as elements of a behavioral baseline and as mechanisms for dispute resolution.

AVOIDANCE: MAKING ONESELF SCARCE

Avoidance comes in at least two flavors: (1) the proscription that certain kin have a duty to avoid other kin and (2) what I call avoidance by absence. Native Americans avoided others by being conspicuously absent. When Cabeza de Vaca was with the Dogune in south central Texas, the group was attacked by the Quevene. The Dogune hid in the woods and only returned when their enemies were gone (CV 66). On another occasion, when the Dorantes-Castillo group left Mal Hado Island (now Galveston Island, Figure 1) and reached the area near Matagorda Bay, they encountered a Native group foraging for blackberries. Upon seeing the Europeans the Native Americans immediately moved to another bay (CV 44). These examples illustrate a pattern of planned avoidance or invisibility that was clearly established before European contact. A gathering and hunting group’s pick-up-and-go policy favored this pattern. There are many references to Native Americans avoiding conflict by absence (Bolton 1916:171-172, 224, 296, 359; Foster 1995:39-40, 96, 101, 137). Native Americans who remained in their villages were exposed to kidnapping, slavery, forced labor, and the possibility of armed conflict. At the minimum, the local Native populations were compelled to share their knowledge and resources. Avoidance by absence effectively eliminated the potential for conflict and curtailed the acquisition of knowledge about Native groups by the Europeans.

Through time the avoidance strategies of Native Americans in Texas changed. Until the middle 16th century, crossing of the Rio Grande by Europeans was sporadic. The entradas of Rodríguez-Chamuscado (1581), Espejo-Lúxan (1582), and Caznño de Sosa (1590) found Native Americans willing to share resources and knowledge even though earlier slave raids fostered a climate of suspicion (Hammond and Rey 1966). However, in 1582 Espejo was attacked on the north side of the Rio Grande. Horses were wounded and killed but not stolen, and no European was killed. The attackers abandoned their ranchería and only returned after gifts were exchanged and peace talks held (Hammond and Rey 1966:160). By the end of the 16th century the pattern of avoidance by absence that existed prior to contact was being adjusted, and the adjustment reflected the frequency and nature of contact.

RITUALIZATION: FRIENDS AND FOE

Ritualization, as utilized here, refers to certain behaviors that were patterned in a ritual manner and were intended to deal with the divergence of interests. This ritualization of behavior is, in my opinion, an intrinsic part of all other rights and duties that constitute a sanctioned behavior baseline. I shall look at the elements of ritualization in the practices of hospitality and warfare.

Hospitality

When Cabeza de Vaca and his group came ashore on Galveston Island, Lope de Oviedo reconnoitered the island; upon encountering a Native encampment with no one in it, Oviedo took fish, a water jar (olla), and a dog. Three armed Native Americans pursued him, but remained at a distance from the Europeans. Soon some 100 warriors arrived but they too stopped at some distance. They waited and approached only
after beckoned to do so. The Europeans offered metal bells and beads to their hosts and the Native Americans each, in turn, gave an arrow and shaft (a flecha) to Cabeza de Vaca (CV 37-38).

There are two important aspects in this sequence of events that reappear over and over in descriptions of contact. First, an individual was not to enter another’s space without warning and permission. The delimitation of such space was and is culturally prescribed and its virtual boundaries were well-known to the members of the society. This basic principle probably applied everywhere with a multitude of variants of the knock-before-entering rule. Second, exchange, as reciprocity, will take place in situations where the rules of hospitality apply.

In 1979, when the ethnobotonist Mark Plotkin entered the village of the Maroons in Suriname, he stated: “At the edge of the settlement we found the chief’s hut. To announce our arrival, Fritz paused about six feet from the entrance and called out ‘Krock, krock, krock’—a verbal knock, as there was no door” (Plotkin 1994:68). After the visitors offered gifts to the chief and his acolytes, a dance was performed. Following these ceremonies, the chief granted Plotkin permission to live and work in the village and assigned him a hut for his use while in the village (Plotkin 1994:69).

Cabeza de Vaca observed another ritual of hospitality. This time the ritual was particular, at least, to the Han and the Capoque and was practiced when
male individuals of these two groups met people they knew, but whom they only saw from time to time. The individuals sat together and wept for about half an hour without exchanging words. When the weeping ritual ceased, the host arose and gave all he possessed to his guest, who received all he had been given, and soon after departed (CV 48).

This hospitality ritual pertained only to those one knew but with whom daily contact was not the rule; involved no spatial restriction; and required total giving by the host and total acceptance by the guest. Referring to the Andamanese and their weeping and gift-giving rituals, Radcliffe-Brown (Kuper 1977:78-80) observed that they weep “when two friends or relatives meet after having been for some time parted,” and that this performance was required to cancel out the separation that had been experienced by both parties. Radcliffe-Brown (1948:193-194) added that “[V]isitors to a camp would always take with them presents to be given to their hosts,” and that “[N]o one was free to refuse a present that was offered to him.”

The exchange of goods practiced by the Han and Capoque (see also the discussion below on the exchange between the Manos Prietas and the Yorica) as part of hospitality behavior, has obvious implications for the interpretation of archeological assemblages. The episodes related above demonstrate the distinctions between common baseline behavior and behaviors that applied to specific groups and their friends or kin.

In 1675, over a century after Cabeza de Vaca traversed southern Texas, when Lieutenant Fernando del Bosque and Fray Juan Larios visited the Teaname, Teimamar, Terocodame, and Xoman in the Texas Edwards Plateau (see Figure 1), these groups offered the Spaniards a young Spanish male “captive,” pelts, and animal fat. In this instance, the Native groups had been expecting the arrival of the Spaniards and had prepared the gift-giving ceremonies to honor their guests (Wade 1998:82-83). The gift of young captives was probably intended to mark special occasions or ratify peace agreements (see also Kenmotsu 1994:433). It should be noted that after the time of Cabeza de Vaca, seldom, if ever, did local Native individuals offer their weapons to Europeans in a socially significant context.

In 1685, Henri Joutel (Foster 1998) provided evidence on the practice of avoidance and the rules of hospitality and their variants. It is important to note that Joutel, almost from the beginning, had strict instructions not to fraternize with the Natives at Matagorda Bay. After the first encounter aboard the ship, the Europeans and Natives met near the coast. Both groups stopped at a distance, dropped their weapons, exchanged signs, and finally approached each other. They proceeded to La Salle’s camp where the Natives were invited to partake of food and drink. They were given knives and axes, but offered nothing in return (Foster 1998:88-90). Together they went to the Native Americans’ village where La Salle’s group was offered fresh meat and fish by the Native women (Foster 1998:90). In this episode, food was exchanged between both groups, but although the Europeans offered the Natives goods (knives and axes that could be interpreted as weapons by the Europeans but probably not by these Native Americans), the Natives did not reciprocate.

Relations between the Native Americans and La Salle’s group soon soured over the goods salvaged from the wreckage of the Aimable. Ownership of items that came ashore was at issue: for the Europeans, the wrecked goods belonged to them; for the Natives, wreckage was just another resource of the sea, and the rule of finders-keepers applied. Several incidents issued from this conflict over resources, and a state of war prevailed from then onward between the two groups (Foster 1998:100).

When La Salle and his group took their last trip to East Texas and the Caddo groups in 1687, they encountered several different groups of Native Americans before reaching their ultimate destination. Although there were variants in the hospitality practices of the various groups, such behavior baseline basics as the interdiction to enter another’s space without invitation, gift giving, and sharing of food were always observed by the peoples encountered. It is important to note, however, that there appear to be different levels of hospitality for individuals passing through, and for those expected as visitors (Foster 1998:157, 162-163, 167-169, 177-178, 181-184, 188, 191, 199, 204-209).

Warfare

In his work on the Australian hunter-gatherers, Radcliffe-Brown recognized three types of relationships that linked persons or groups: “the relationship of enmity and strife...the relationship of simple solidarity, and...the relationship of opposition which
is not at all the same thing as strife or enmity but is a combination of agreement and disagreement, of solidarity and difference" (Kuper 1977:66-67). This relationship of opposition links persons or groups through the convergence of interests and sentiments, but also through the divergence of interests and sentiments that may not lead, necessarily, to armed conflict (Kuper 1977:189).

I mentioned before the attack perpetrated by the Quevene on the Doguene when Cabeza de Vaca was among the latter. He said the Doguene were not warned of the impending attack. After it occurred, the Doguene returned to their camp, and picked up all the arrows the Quevene left behind. Then, surreptitiously, the Doguene followed the attackers and, before dawn, attacked the Quevene, forcing the latter to leave their houses and weapons. The attack of the Doguene on the Quevene was a replay of the earlier attack of the Quevene on the Doguene. After the latter attack, the women of the Quevene arrived and parleyed to obtain peace between the two groups (CV 66).

Cabeza de Vaca went on to make general comments about armed conflict among the groups in and around the Guadalupe River area. He noted that when warring parties faced each other they fought until they spent their arrows. Then each faction went its own way, without one group following another, even though one group might have had an advantage in numbers (CV 67).

Cabeza de Vaca described two types of ritualized armed conflict. The first happened when the Doguene were not expecting to be attacked, did not spend their arrows, sought refuge in the woods, got their attackers’ spent arrows, and replayed the attack. The second description refers to what I call contest exercises. The performance of these armed contests seems to have been tacitly agreed upon, limited to a given amount of arrows, meant partly as skill exercises, and embodied conflict resolution in the very practice of the contest. The first episode shows the resolution of disputes through ritualized armed conflict followed by reconciliation. The second episode indicates the existence of a relationship of opposition whereby armed contests provided “a social occasion in which...two groups of persons are opponents” (Kuper 1977:62). These disputes were, however, strictly between and among Native American groups.

Joutel’s information on warfare between Europeans and Native Americans provides parallels and contrasts. When armed Europeans entered the Natives camp to retrieve goods salvaged by the Natives from the Aimable the Native Americans abandoned camp (avoidance). Once the Europeans departed the Natives returned, only to find that the former had taken several other things, including two Native canoes (Foster 1998:93-94). The Native Americans tracked the Europeans, and during the night killed two and wounded others (Foster 1998:94). The canoe incident, plus the fact that La Salle had attacked a Native group taking two women and a female child as prisoners, were not inconsequential to the conflicts that ensued (Foster 1998:117).

The attacks Joutel reported while in the coastal area were all engagements between Europeans and Native Americans. There are several important points to note in the various warring incidents. First, in one of the incidents the Native Americans were said to have targeted Joutel specifically; second, they did not run at the sound of gunfire; and third, they picked up the arrows they had shot before departing (Foster 1998:106). Commenting on one of the attacks, Joutel said that the Natives realized that bullets reached further than arrows and stopped the engagement (Foster 1998:148). Soon after this confrontation a lone European male was found shot dead with arrows (Foster 1998:148). Faced with the challenge of new types of warfare and weaponry, Native Americans reassessed how to deal with conflict. Attacks by stealth became a regular practice. Loss of warriors by bullets, in full-fledged combat, was a risk that could not be afforded.

In the case of the French colony on the Texas coast, unlike the situation with Cabeza de Vaca, two very different and autonomous groups were competing for the same resources, and the Europeans constituted, in numbers and technology, a considerable threat. The Europeans competed with the local Native populations for water sources, salt, buffalo, deer, fish, and, from the Natives’ perspective, for the wreckage resources. Confronted by the challenge, Native Americans sought various means to reduce the advantages enjoyed by the Europeans. First, they probably manipulated the behavior of the local buffalo herds, because Joutel wondered if the dispersal of buffalo at certain times was caused by the Natives (Foster 1998:114, 116, 142). Second, after Joutel began to use the fresh water source of the Natives, the latter placed arrows and shafts around the border of the water hole. From then on the Europeans did
not fetch water without an armed escort (Foster 1998:106, 122). In 1721 the Apache used a very similar practice to inform the Marqués de Aguayo of their displeasure with the presence of the Spaniards (Aguayo 1721). The Apache stuck arrows in the ground in San Antonio: the arrows, which had red pieces of cloth attached to the shafts, were interpreted by other Natives as a declaration of war.

Historically recorded incidents such as these indicate that, for gatherers and hunters, territory may not have been bounded, but divisions of space were acknowledged not only in the context of hospitality, but also in resource distribution. On the other hand, these events show that armed conflict, especially with unequal means, would only be attempted by Native Americans when the dispute could not, or should not, be resolved by any other mechanism.

EXCHANGE

The third mechanism to be discussed is exchange. Exchange is understood here as both reciprocity and outright trade. The emphasis on the former or the latter is determined by the intent and social context of the practice. As a simplistic and expedient means to deal with the objectives of exchange in different contexts, I consider three main categories of exchange: (1) goods for solidarity, (2) goods for services, and (3) goods for goods. These categories are not hermetic, and criss-cross each other at various points.

Goods for Solidarity

Once again Cabeza de Vaca provides the behavior baseline. When on arrival Lope de Oviedo took the olla, the dog, and the fish from the Natives, the Europeans had to reciprocate by offering bells and beads to cancel out the wrong and avoid conflict. Afterwards, arrows—the instruments of subsistence, defense, and attack—were given as tokens of friendship (CV 37-38). Discussing the exchange of weapons among the Andamanese, Radcliffe-Brown stated that this special form of exchange “is particularly appropriate as it would seem to ensure at least some months of friendship, for you cannot go out to fight a man with his weapons while he has yours” (Kuper 1977:78).

In 1674, when Fray Francisco Peñasco visited the Manos Prietas on the north side of the Rio Grande, he reported that the Manos Prietas welcomed the Yorica with an elaborate reception that included the exchange of bows and arrows as a sign of consolidation of a peace arrangement between both groups. In turn, the Yorica offered their hosts a young Native male “captive” (Wade 1999:36).

The episodes related above raise the question of the symbolic role of bows and arrows. After the Quevène attacked the Doguene, the latter returned to their village and picked up the arrows the Quevène had left behind. Although Cabeza de Vaca did not say so, it is likely that the Doguene reused the Quevène’s arrows in their retaliatory attack on the Quevène. Joutel reported that on the occasion of a skirmish between the coastal Natives and the Europeans (French), the Natives, before departing, picked up all the arrows they had shot during the conflict (Foster 1998:106). On the other hand, bows and arrows were exchanged to seal peace pacts, and to signify a state of hospitality and the intention not to engage in conflict. Arrows were also used as de facto resource markers or as declarations of a state of conflict.

Although the evidence is insufficient to discern clear symbolic messages conveyed in a "language" of flechas, it is possible, at least, to begin charting an understanding of the likely meanings conveyed in the following episodes:

**Event 1.** Quevène attack on the Doguene and retaliatory attack by the Doguene on the Quevène, followed by peace negotiations; attacker group leaves arrows in attacked village: provocation or dare? Attacked group retrieves arrows and re-plays attack: accepts provocation or dare and returns arrows? Provocation with the possibility of peace (resolution).

**Event 2.** Coastal group engaged in conflict with European (French) colonizers; coastal group engaged in attack picks up the arrows it shot during the combat; no invitation to retaliate? no return of weapons? Combat fought with two different weapon systems, one of them not covered by the normal arrow symbolic language? Conflict without the possibility of peace (resolution).

**Event 3.** Cabeza de Vaca and companions given arrows as peace offerings; arrows
exchanged as peace offerings and evidence of intent not to enter into conflict.

**Event 4.** Manos Prietas and Yorica exchange bows and arrows to seal a peace agreement; weapons used to ratify peace agreement.

**Event 5.** Coastal Natives warn the Europeans (French) not to use the former's fresh water source by placing arrows around the water hole; arrows used as resource markers warning of unauthorized use.

**Event 6.** Apache groups stuck arrow shafts in the soil of San Antonio as a declaration of war made to the Marqués de Aguayo and the Spaniards; arrows used to declare war and mark territorial boundary.

From these few episodes it is possible to look at how arrows were used in a symbolic language that extended beyond the pragmatic use of weapons as instruments of defense, attack, and subsistence. The interpretation of the messages embodied by the presence of arrows depended on the contextual nuances in which the arrow was used: defense, attack, peace contract, resource marker, boundary marker, or warning sign. The messages conveyed by the events mentioned above should have been part of a common repertoire, since groups were expected to decipher the code embodied in the message. The vocabulary had to be unambiguous, or it could cause further conflict and defeat the purpose of the practice. This may be the reason why the coastal group that confronted Joutel picked up the arrows they had shot during combat. In sum, at least in some instances, the utilization of an arrow delivered a message and pointed to potential actions to be taken in the future.

**Goods for Services**

Arrows were exchanged in other contexts. The Cutalechich gave Cabeza de Vaca and his group long, highly valued projectile points as retribution for curing services (CV 60). Such gifts were not made to the Europeans per se but to the spirit world, because sickness is the ultimate conflict and gifts are part of the interchange of curing.

When Cabeza de Vaca and his four companions moved further west and reached the Rio Grande area and beyond, they encountered novel and extensive redistribution practices. In the first episode described by Cabeza de Vaca, the host group took all the possessions away from those who came to solicit healing (CV 71).

The group moved on to another village that practiced a different redistribution system. In this case, those who traveled with the Europeans ran-sacked the rancheras of the host group, leaving it destitute. When the Europeans commiserated with the Natives about their loss, the Natives reassured them, stating that they would get their compensation further on from groups that were far richer. And so it happened (CV 71). Obviously these patterns of behavior were well established before Cabeza de Vaca’s arrival since the groups involved knew what to expect, what to do, as well as how to evade doing it. Such complex redistribution systems and their territorial extent have obvious implications for the study and interpretation of archeological assemblages.

Among the Caoque and the Han, exchange took place as bride service and as food provisioning upon the death of some male relatives (CV 43). The Mareame purchased brides with bows, arrows, and nets (CV 52). According to the Mareame and the Igucan, they killed all their female infants and thus were made to purchase their brides from enemy groups. These are examples of the exchange of goods for services rendered, but they also signify relationships of solidarity.

When the Doñantes group was on Galveston Island and wished to visit Cabeza de Vaca, who had been sick, they traded their mink cover to the Natives for a canoe ride to the mainland (CV 45). In this act of exchange for service, note that one year after their arrival, the Europeans still possessed a Native-made coat which had to be highly coveted.

Cabeza de Vaca reported that many groups gathered annually to gorge on the ripe fruit of the prickly pear, the tuna (CV 53, 55, 57). This harvesting time served as a social setting for group interaction, trade, and probably bride acquisition. Other such gatherings lent themselves to feasting, trading, and the consolidation of alliances (Portillo 1984:157-159). Trade is probably the type of social interaction least affected by conflict. It can be made easy and fostered by conditions of friendship, but it is not impeded, and may be quite necessary in conditions of animosity to maintain a literal state of cold war and prevent overt conflict.
Goods for Goods

The purchase of brides by the Mareame and the Iguace from enemy groups is just one example of the extent to which exchange regulated conditions of enmity, since the women taken as brides were also their enemies. The Mareame and the Iguace explained to Cabeza de Vaca that they killed their female infants in order that their females would not marry their enemies and contribute to an increase in their enemies’ populations. In reality, the Mareame and the Iguace involved their enemies in the reproduction of their own groups, and by so doing established close ties of interdependence between themselves and their enemies. As Bourdieu (1992:6) stated: “If the system is to work, the agents must not be entirely unaware of the truth of their exchanges, which is made explicit in the anthropologist’s model, while at the same time they must refuse to know and above all to recognize it.”

When Cabeza de Vaca took up the role of trader between the peoples of the coast and the hinterland, he provided us with a glimpse of exchange of goods for goods (see Hester 1999). Role adoption had to be sanctioned by the trading partners. If this was not so, Cabeza de Vaca would have had problems in obtaining coastal trade items, and in returning yearly to the island to see Oviedo (CV 47). Cabeza de Vaca had certain qualifications as a social personality that can account for his success as a trader. He stated he was encouraged to become a trader because the groups involved in trade were at war, making traveling and trading dangerous (CV 46). Cabeza de Vaca was an “Other” to the trading partners and since he was not a warrior he, just like the women, crossed boundaries and enjoyed safe-conduct. He acknowledged that his status and role were intrinsically tied to the merchandise exchanges he transacted (CV 46). He was successful when he performed to the expectations of his role; that is, to the satisfaction of his customers.

In the space of a little more than a year, Cabeza de Vaca changed roles three times. The malleability of statuses and roles within the Native social milieu allowed him to maneuver out of roles in which he was less than successful. This flexibility appears to indicate that some local societies had very efficient role assignment procedures, since they encouraged the adoption of roles that best fitted Cabeza de Vaca’s abilities and met the needs of the community.

CONCLUSIONS

The behavior of all human societies is guided by a series of basic rules that permit and regulate safe and comprehensive interaction between individuals. I have called the sum of these rules a behavior baseline. These rules and practices are so interwoven into the fabric of everyday life that their existence becomes unnoticed. In a way, their regulatory power resides in their invisibility and in the fact that they are unquestioned and taken for granted (e.g., hospitality rules, traffic lights).

The analysis of the earliest historical documents that report contact situations between Europeans and Native Americans in Texas shows the existence of a pre-contact behavior baseline and provides information on some of the types of practices incorporated into it. The social mechanisms of avoidance, ritualization, and exchange in their various sanctioned formulations and practices helped Native communities to avoid or manage the resolution of disputes. Some of the basic elements of such behavioral common denominators as hospitality rules were shared by Europeans and Native populations, but the selective and sporadic character of these practices by Europeans resulted in serious misconceptions and unfulfilled expectations on the part of Native people. A language of signs, in which bows and arrows played a large symbolic role, was extremely important in exchange and conflict situations. Under such circumstances, misreadings had serious consequences for both Europeans and Natives.

By 1685, the encounters between Native Americans and Europeans reported by Joutel show that the traditionally sanctioned means to manage divergences of interest were no longer efficacious. First, although the Europeans understood the messages conveyed about hospitality rules and resource allocation, they stole the canoes of the Natives, trespassed on their water source, and competed for other resources. Second, unequal and more powerful weapons caused the Native Americans to reconsider their warfare tactics and to resort to attacks on lone, vulnerable individuals. Traditional mechanisms of dispute resolution began to be modified to the changing circumstances.

Colonial settings were not and are not conducive to the mutual understanding of socio-cultural rules. If nothing else, the demands placed on players to survive, and the cost of conflict, curtail efforts to communicate effectively and accurately.
The rapid pace of change during this period gave relationships a temporary character. Gift giving between Native Americans and Europeans might represent exchange for non-aggressive behavior, services, information, or simply goods, but it was not meant to establish enduring ties of reciprocity. Vis-à-vis the Europeans, the practices of warfare and hospitality acquired a pragmatic character that emphasized guerrilla war tactics in the case of the former, and conventional, but temporary, relationships in the case of the latter. With the onset of the 18th century, local Native populations, whenever possible, either chose when to engage in a conflict or studiously avoided Europeans. The price of contact was high.

NOTES

1. The word “Native” appears capitalized throughout the text because I use the word with the same grammatical and lexical value as “Portuguese” or “English.” It denotes citizenship not in a country but in a continent: the Americas.

2. All references made in the text to Alvar Núñez Cabeza de Vaca’s narrative are taken from Nauffragios y Comentarios Con Dos Cartas Y Relación De Hernando De Ribera. 1971, Colección Austral no. 304, Quinto Edición. Editorial Espasa-Calpe, S.A., Madrid. This is the Spanish version of the 1555 edition, published at Valladolid. References to specific page numbers are given in the text and preceded by the initials CV. All translations are the responsibility of the author. The Joint Report, a 30 page summary of the travels by Cabeza de Vaca, Castillo, and Dorantes, published by Captain Gonzalo Fernández de Oviedo and Valdés in volume III, book 35 of the Historia General y Natural de las Indias, Islas y Tierra-Firme del Mar Océano, was consulted but not cited.

3. I prefer to use the word “Europeans” because several of the individuals who came to the Americas with the expeditions of Pánfilo Narváez and the Sieur de La Salle were from modern European countries other than Spain or France. Although there were other non-Europeans among the crews in these expeditions, the known exception is Estevanico, the northern African who accompanied Cabeza de Vaca.

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The Southeast Texas Indian Response to European Incursion

Roger G. Moore and Madeleine J. Donachie

ABSTRACT

We examine the historic Native American inhabitants of Southeast Texas, concentrating on a region that extends from the tributaries of Galveston Bay east to the Sabine River. The most interesting aspects of this area’s culture history are its stability and resiliency. The impact of European colonization was not as dramatic as in other regions of the state, and the retreat of the upper Texas coastal Indians was gradual and incremental. Three factors were of critical importance in this incremental process: (1) the adaptive and social organization of the Indian groups; (2) the relatively low initial population levels; and (3) the peripheral location of these indigenous peoples. It is the first of these factors that is the most interesting. In the face of a contracting population, the maximal band was utilized as the fundamental social unit, and inter-relatedness provided a ready mechanism for social coalescence. Moreover, the Indians were willing to interact with the Europeans where they saw the opportunity for benefit. Interaction did not require, nor were the Indians willing to make, fundamental changes in their way of life. It appears that those few who survived found it preferable, and for a time possible, to continue to live a free life until the first decades of the 20th century.

INTRODUCTION

This article examines the historic Native American inhabitants of Southeast Texas. It concentrates on a region that extends from the tributaries of Galveston Bay east to the Sabine River; an area also referred to as the upper Texas coast. Due to the presence of sandy paste ceramics, such as the Goose Creek types, this region is taken to form a portion of the long-lived Mossy Grove archeological tradition as defined by Story (1990).

Other articles in this volume address the movement and transformations that seem to have typified the culture history of the Native Americans of Texas. We believe, however, that the most interesting aspects of this area’s culture history are its stability and resiliency. The Southeast Texas Indian culture, dating back at least 1500 years, was certainly affected by European colonization, but it was not as dramatic as in other regions of the state. Indeed, the depopulation of the upper Texas coastal Indians was gradual and incremental. It was a process of attrition that resulted in an end that was rather more a whimper than a bang.

Three factors were of critical importance in this process: (1) the adaptive and social organization of the Southeast Texas Indians; (2) the relatively low initial population levels; and (3) the geographically peripheral location of these indigenous peoples. We discuss how these factors may have interacted in the colonial period, looking generally at the adaptive response to European incursion and in particular at the surviving Native American remnant groups in Harris County.

ETHNOHISTORICAL BACKGROUND

Southeast Texas’ location on the periphery of Spanish and French colonial settlement has resulted in a disjointed and rather limited body of ethnohistorical information. There are no detailed records of continuous European-Indian interaction such as are available for the more successfully missionized regions of Texas, and much of our knowledge derives from the accounts of two persons who were stranded in the region in the 16th and 18th centuries.

When the Spanish “formally” arrived in Texas in the 18th century, major portions of Southeast Texas were sparsely settled by both the Akokisa (also known as Orcoquisac, Orcoquiza, or Arkokisa)
and the Bidai Indians. These peoples spoke Atakapan, a southeastern Indian language family of the Tunican stock, and were related to the nearby Atakapa-proper in southeastern Louisiana and the extreme edge of Southeast Texas (Newcomb 1961:316).

In 1746, a Spanish army officer, Joaquín Orobio y Bazterra, estimated the Akokisa population as 300 families living in five villages and identified seven Bidai rancheras, or villages, on the Trinity River (Newcomb 1961:316; Bolton 1970:330). Estimates by de Bellisle, La Harpe, and Sibley range more in the order of 200 to 300 persons (Swanton 1979:86). In his definitive work on the Southeast Texas region, Aten (1983:63) estimates the Indian population as between 1333-2000 individuals in A.D. 1700.

Until the early part of the 18th century, these Atakapan-speaking peoples were mobile hunters and gatherers. They moved in a yearly round from small, dispersed, band-sized groups during the warmer months to aggregated villages during the cold season (Aten 1979:466; Newcomb 1961). Some of them lived in family groups and fished along the upper reaches of Galveston Bay during the summer, but as the winter approached, they retreated to the interior and congregated in loosely organized semi-permanent villages under a single headman (Bolton 1970:333-335; Aten 1983:36).

**EUROPEAN EXPLORATIONS**

The most useful information on the Indians of Southeast Texas results from the misfortunes of two stranded colonial Europeans. The first, the indomitable Alvar Núñez Cabeza de Vaca, was shipwrecked off the upper Texas coast in 1528 (Covey 1961:54). Along with his companions from the Narvaez expedition, de Vaca was cast ashore upon the Isla de Malhado, which he called the Island of Doom (perhaps Galveston Island). There he encountered two Indian groups, the Capoque and the Han (Covey 1961:61). The Capoque were a Karankawan group, while the Han were Akokisas (Aten 1983:56, 69).

De Vaca wrote that these Indians stayed on the Isla de Malhado from October to the end of February, subsiding on fish caught in weirs and on roots of water plants (Covey 1961:61). They moved onto the mainland shores in order to gather shellfish and berries, and as Ricklis (1994:26) reasonably suggests, "doubtless to hunt as well." De Vaca also reported that the Han had no weapons other than bows and arrows, "which they use[d] with great dexterity" (Covey 1961:61). Houses were made of mats, "their floors consist[ing] of masses of oyster shells" (Covey 1961:62). While in Southeast Texas, de Vaca engaged in work both as a healer and a trader between the Indian groups (Covey 1961:64-68). He eventually made his way back to Mexico in 1536.

In 1719, a French officer, François Simars de Bellisle, fell to the same fate as de Vaca: he was stranded in Galveston Bay, eventually falling in with a group of Akokisas he saw collecting bird eggs (Folmer 1940:218). The Akokisa immediately stripped de Bellisle of his clothing, as well as his possessions, and cast him into a state of servitude. De Bellisle accompanied the Akokisas on their migrations while a captive, and he was finally rescued, at the request of the French, by the Hasinai, a neighboring confederation of Caddo tribes located to the northeast (Newcomb 1961:318). The saga of de Bellisle was verified when he was recognized by the local Indians on his return to Galveston Bay in 1721 (Folmer 1940:218-223).

De Bellisle confirmed that the Akokisas were a migratory group whose life was dominated by the seasons and a constant search for food:

> I passed the entire summer with them in this country with them going everywhere in search of food because they possess no cabins or fields. That is why they travel in this manner the entire summer. The men kill a few deer and a few buffaloes and the women search for wild potatoes. When the beginning of winter came, we all left to join a band of their people who were waiting for us at the end of the bay. We arrived there at the end of seven or eight days (de Bellisle, cited in Folmer 1940:216-217).

De Bellisle vouched that the Akokisas practiced no horticulture at the time of his captivity at the beginning of the 18th century. And, as Ricklis (1994:31) suggests, the meeting on the bayshore reflects "a shift from the summer reliance on mobile hunting to a winter emphasis on estuarine resources."

This assertion by de Bellisle is in direct contrast to the later observations made by the Spanish explorer, Orbório y Bazterra, who in 1748, noted that the Akokisa on Trinity Bay cultivated small
plots of corn and vegetables (Ricklis 1994:41). Indeed, Ricklis (1994:41) raises the question as to whether this contradiction reflects a change in the lifeway of the indigenous people described by de Vaca and de Bellisle, or whether it represents that more than one traditional adaptive strategy was operating in the region at a time. Considerable dietary evidence from skeletal data from the Akokisa Mitchell Ridge site on Galveston Island (Ricklis 1994:41) indicates that the former is more likely to be the case, with this shift in subsistence due to external cultural inputs rather than an adaptive transformation to population growth or systemic pressure. This hypothesis is reasonable, since the shift occurred during a period of population decline and population displacement. Moreover, there is evidence of “outsiders” among the burial population at Mitchell Ridge (Ricklis 1994:41).

Later in the 18th century, the Akokisas and Bidais hunted deer, buffalo, and bear in order to exchange the pelts with the French, notably Joseph Blanpain, who came west from New Orleans (Freeman and Hale 1978:119-122). It is, perhaps, worthwhile to consider whether the settled habits of participating in the French trading network might have also had a role in the partial adoption of horticulture.

Social organization among the Atakapan tribes has been examined by Aten (1983:68-83), who found that the status of “headman,” or “chief,” was recognized by all the Atakapan divisions but only during those periods when the groups were aggregated into villages. The authority of the headman must have been “subdued” (Aten 1983:68), as neither de Vaca nor de Bellisle mention this authority figure. There is no direct evidence of the headman being in a position to dispense power or goods in a patron-client relationship as would have been the case if any kind of ranking had existed. The utter failure of attempts by the Spanish to install a head chief over the Bidais and Akokisas is a further indication that consent authority appears to have been the basis for these statuses (Aten 1983:68). Other significant status roles were that of the “shaman” among the Atakapa and, perhaps, the Bidais, and that of “slave,” as implicit in the Akokisa treatment of de Bellisle (Aten 1983:69-70).

Given these factors, it is concluded that the Atakapan-speaking peoples were egalitarian tribes, consisting of a group of related bands, each identified with an aggregated village grouping. The related bands composing the tribe were created by a process of fissioning and budding off from a common ancestor group.

INDIAN-EUROPEAN INTERACTION

The 18th Century

Castaways aside, the initial period of formal European entry into Southeast Texas (1718-1820) is characterized by sporadic incursions of French and Spanish representatives, who sought to establish trade with the Native populations and to secure the territorial claims for European powers. With the founding of New Orleans in 1718, a French presence in Texas became more pronounced as traders, for example, Blanpain, moved in to negotiate with the Indians. By 1730, regular trade routes had been established.

While the Spanish were at Nacogdoches, and had been actively missionizing the Indians, up to the mid-18th century, they had ignored the lower Trinity and San Jacinto watersheds (Bolton 1970:327). But spurred by the continuing French infiltration of the Southeast Texas region, Captain Joaquín Orobio y Bazaerra was dispatched in 1745 to investigate the extent of the French presence among the local Indians. Bazaerra traveled from Nacogdoches, via the Bidai Trail, and reached seven Bidai villages on the Trinity River some distance above Galveston Bay (Bolton 1970:330):

I held a long conference with one of [the chiefs who] said that every year the French came with guns, cloths, knives and other goods used by the Indians...He also said that the past year of [17]45, those Frenchmen who usually came along the seacoast had selected a location for the purpose of bringing their families, building their homes, and trading for chamois and the other products of the region [Bazaerra, cited in Ricklis 1994:36].

Responding to an invitation by a contingent of the Akokisas, Bazaerra went south to two Akokisa villages on Trinity Bay, at the mouth of the Trinity River. The Akokisa chief informed him that “they expected some [French] to come with their families during the summer to live among the people of [the Akokisa] nation, because they had promised to do so
last year when they had selected the site for building their homes" (Ricklis 1994:36). So although the Spanish had little or no direct contact with the local Native peoples prior to 1746, the French had been trading with them directly as early as 1740.

To the consternation of the Spanish, by 1754 the promised French trading post had, indeed, materialized (Ricklis 1994:37). Lieutenant Marcos Ruiz was accordingly sent by the Spanish crown to win the alliance of the Indians and dislodge this French occupation. The expedition was provided with a “superabundant supply of goods for barter to use as gifts” (Ricklis 1994:27). Through this and the promise of spoils from the trading post, the Spanish secured the support of the Bidais and Akokisas (Bolton 1970:337). On reaching the outpost in October 1754, Ruiz and his party found crude buildings and a few men under the command of the Frenchman, Blanpain. The men were arrested, and Blanpain was transported to Mexico City for interrogation. He sickened and died there in prison, but not before he confessed that a civilian settlement of 50 French families was planned for the post site of Orocoquisac, and that the French had been trading among the Akokisa since 1722 (Ricklis 194:37).

In 1756, the Spanish, determined to prevent a French settlement of the area, constructed Presidio San Agustín de Ahumada and the mission of Nuestra Señora de la Luz del Orocoquisac at the site of Blanpain’s post (Bolton 1970:345-347). Although the outpost failed miserably and was abandoned in 1771, it served to suppress any French territorial ambitions in the area.

Trade flourished between the Spanish and the local tribes after this time, but as Bolton (1970:336) notes, it was of a character that was rather “contraband” in nature. It was controlled by a select few, and goods were carried to the tribes in pack-trains convoys by soldiers. The trade items included tobacco, combs, and even firearms, despite it being an offense to furnish weapons or ammunition to the Native peoples. In exchange, the Indians gave horses, corn, and hides of deer and buffalo (Bolton 1970:336-337).

One outcome of the burst of Spanish activity in the mid-18th century was the identification of the principal Akokisa village sites of that time. Bolton (1970:333) identified Spring Creek, a tributary of the West Fork of the San Jacinto River, as the Arroyo Santa Rosa de Alcazar of Spanish records and as the location of three of the four or five Akokisa villages that Bazzera had identified. The village of Chief Canos was located within a gunshot of the confluence of Spring Creek and the San Jacinto; Chief El Gordo’s village was perhaps 20 miles or so upstream; and somewhere “above” this point was the village of Mateo. The other village or villages were those of Calzones Colorado, situated on the east side of the Trinity River (Aten 1983:35; Bolton 1970:333).

Barter and Trade in the 19th Century

In the early 19th century, the settlements on Galveston Island and Matagorda Peninsula were instrumental in the expansion of trade in the Southeast Texas region (Dyer 1923a:7). The local Indians had opportunities to trade their pelts for goods from European traders. Unlike the Atlantic Coast Indians, the Akokisa-Bidais tribes had “little use for beads, mirrors, and medals,” preferring, instead, articles that were rather more practical (Dyer 1923a:9).

The Southeast Texas Indians excelled both in bee and bear hunting. Honey and bear meat were pioneer luxuries, and “bear lard took the place of oils, butter, and grease in the households of the log cabins” (Dyer 1923b:9). Moreover, at this time, they were the only tribes in Texas to barter carved wooden articles, as well as polished gourds. Acorn meal and wild fruits indigenous to the area were also used in exchange for European commodities (Dyer 1923b:9-10).

Further evidence for the survival of composite Atakapan-speakers into Anglo-American times in Southeast Texas is implied by the existence within the City of Houston of two Indian trading posts that operated in the 1830s and 1840s. In 1838, Gustave Dresel (1985:45) noted that groups of Bidais, Caddo, Coushatta, Alabama, and Lipans came into the city to trade furs and venison for lead, powder, cotton, and rugs. In 1839, Colonel Edward Stiff (1855:99) spoke of a small band of Bidai encamped more permanently at what was to become known as Beauchamp Springs, only a mile or two from the city center. Even after the Civil War, Dr. E. N. Gray (1991:83) recorded that a “mixed tribe of Coushattas, Alabamas, Seminoles, and perhaps others” had a village on Greens Bayou and came to Kennedy’s Trading Post every Saturday to exchange buckskins, venison, and wild turkey for powder, lead, calico, and whiskey. The mere fact
of the existence of these trading posts implies that the region maintained an aboriginal population viable enough to continue trading relations on a pattern first established with the French more than a century before.

HARDY SURVIVORS

Settlement on Cypress Creek

Aggressive Anglo-American settlement and continuing attrition of the Indians resulted in a much-reduced Atakapan population by the first decade of the 19th century (Ricklis 1994:41-43). According to Aten (1983:36), these Indians had “passed quietly into oblivion” by 1830. However, recent research for an archeological survey conducted along Cypress Creek, a tributary of Spring Creek in northwestern Harris County (Moore 1992), disclosed that oblivion for at least a few of the Akokisas and/or certainly for the closely related Bidai did not, in fact, come until the 20th century. Archival and oral accounts indicate that a group of Indians, who described themselves as Bidai, settled near the home of Matthew and Sallie Burnett, the first Anglo-American settlers on Cypress Creek.

In protohistoric times, the Bidai lived north of Livingston, along the Trinity River (Aten 1983:37-38). It can be surmised, therefore, that the group of Indians reported dwelling on Cypress Creek during the 19th century was a composite band of Akokisas and Bidai that formed after the drastic population declines of earlier years (Aten 1983:320). While the group referred to itself, and was referred to by the Anglos, as Bidai, it is assumed that the group may have, at least in part, consisted of Akokisas, since the village was within the historic Akokisa area.

In 1836, Matthew Burnett established the first Anglo-American homestead at the crossing of Cypress Creek and the Old Washington Road. By this time, the “Bidai” group was resident within its land grant. It appears that the Burnett’s maintained cordial relations with these Indians and, in fact, were indebted to them for their lives when they fended off raiding Comanches affiliated with the Mexicans during the Texas Revolution. It is fortunate that before her death in 1926, Rebecca Burnett Lee, a daughter of Matthew, composed a recollection of her early life on this homestead. Portions of this manuscript address the family’s Bidai neighbors (Moore 1992:105-111).

Mrs. Lee describes the Bidai settlement as a “little wigwam town” presided over by “the chief of this division [of the Bidais]...Francisco” (Moore 1992:105). This division usually (or previously) resided further north in Harris County and, perhaps in Montgomery County, probably along Spring Creek. Thus, it is possible that the group is, in part, descendent from one of the Spring Creek villages identified by Bazterra in the 18th century. There is considerable anecdotal ethnographic information in Rebecca Burnett Lee’s manuscript. First, there is an account of a Bidai dance, where a pavilion of bark was erected. Chief Francisco played the musical accompaniment on an instrument consisting of stretched alligator hide over which a small stone was rubbed, producing a “honk-honk” sound. A song was sung which Mrs. Lee transcribed as something like “Ki-yo-bully-kay-ya” (Moore 1992:110).

Mortuary customs are recounted in the funeral of a woman. Her remains were cremated, apparently the customary means of disposal of the dead for the Bidai. The woman’s bones were later scraped up into a small mound.

The production of a bread known as Pontuck is described. The bread was made from the root of a wild plant, most likely of the Smilax plant. A woman would chip up this root with hatchets. Two holes were then dug in a moist place, one a little higher than the other, and a bunch of moss placed between them. The chipped particles were placed in the higher hole. The woman would work them up, throw off the coarser particles, and allow the finer to filter through the moss, settling in the lower place. Later, it was dipped up to be cooked (Moore 1992:110).

The reference to Francisco as the chief of a “division” of the Bidai implies that the tribal division into aggregated band villages, each affiliated with a headman, was still functioning in 1836. It is provocative that while Mrs. Lee mentions the collection of wild plant foods, she does not speak of any Indian agricultural endeavors.

Mr. Chester Telge provided independent confirmation of these Indians’ survival. In the late 1850s, his family bought the land that included the Bidai
settlement. Mr. Telge related that Indians resided on the property until some time after his birth in 1918 (Moore 1992:44). It may be assumed that these Indians represented the surviving members of the group described by Mrs. Lee. For example, they lived in hide tents on floodplain pimple mounds, certainly a continuation of a very old settlement pattern in the Southeast Texas region. They still spoke their native language and were described as a friendly people who maintained the same good relations with the Telge’s as they had with the Burnett’s before them (Moore 1992:44).

Mr. Telge further related that his father and grandfather gave the Indians beef and hides periodically and went on to describe a charming incident of reciprocity. On baking day, his grandmother would wrap up a large loaf of bread and leave it on the back porch. By sundown, the Indians would have exchanged it for a large catfish. Mr. Telge stated that fish were, in fact, a major portion of their diet (Moore 1992:44).

In contrast to Mrs. Lee’s cremation account, the Indians were buried in the mounds. The end of the Bidai’s occupation was marked by the day in the early 1920s when the loaf of bread remained on the porch past sundown. Chester’s grandmother brought the bread back into the house, and announced in German that “the Indians are no more.” The last survivor, an old man, had apparently wandered off, never to return (Moore 1992:44).

Adaptive Strategies

Previously, it was suggested that the decline of Atakapan-speaking groups in Southeast Texas was a gradual and incremental process of attrition, largely disease-driven. While this process resulted in their eventual extinction, it was underlain by culturally inherent qualities that served to prolong their survival. Ricklis (1994:43) has noted that these remnant surviving groups “were able to retain a flexibility and resilience not available to larger, traditional sociopolitical organizations.”

This purported resilience is the result of three separate circumstances. First, it seems likely that the relatively low initial population levels of the Atakapan people made them uninteresting to Europeans looking for a pool of forced labor. Second, these groups occupied a region peripheral to areas of Spanish and French settlement. This occupation of what was for the better part of the 18th century a peripheral “no Europeans land” further cushioned the aboriginal peoples from the disruptive effects of colonization and great power conflicts. Similarly, they occupied an area which was not coveted by another larger, but displaced, Native American group. By the time the Alabama-Coushatta refugeed into portions of the Texas Atakapan-speakers’ territory in the beginning of the 19th century, population decline among the original inhabitants had precluded the necessity for conflict and long-range displacement. These mechanisms continued to work even with the coming of land-hungry Texans. There was almost always a corner which was far enough away that would accommodate these few survivors.

The third and, perhaps, most inherently interesting aspect of the Atakapan-speakers’ purported resiliency lies in their particular social and adaptive organization that utilized the maximal band as the fundamental unit. This feature is implicit in Aten’s (1983:319-323) Akokisa model, whereby a social organization, beginning in the Late Archaic, expanded into unoccupied spaces in the region. This expansion took place through a process of gradual population growth, maximal band/village fissioning, and the consequent establishment of new, but inter-related and affiliated, village bands. The fundamental social organization could thus replicate itself—as long as the available land and resources held out—without undergoing radical social and adaptive transformation.

Aten (1983:79) has characterized the historic era of disease-induced population reduction as the period of the formation of composite bands from the amalgamation of related remnant survivor groups. It is evident that the process of formation of composite bands is the Akokisa model standing on its head. Band fusion replaced fission as the operating adaptive response to retain the viability of the cultural system in the face of a contracting population. Inter-relatedness provided a ready mechanism for social coalescence. And, once the process was started, it required no great leap to embrace a few of the less-related, or even unrelated, peoples, as Ricklis (1994) found to be the case at Mitchell Ridge in Galveston.

Ricklis (1994:43) further points out that such an adaptive response would have been much less viable for a group organized on a more complex social basis. Such a society faced with the same stresses would be more likely to have collapsed
catastrophically and irretrievably. The Atakapan groups had no chiefly redistribution system to collapse and probably little or no cropland from which they could be forced. Thus, because of the simplicity of their life, it appears that the Atakapan groups were able to stave off for a time a fate that was in the end unavoidable. And, as the evidence from the Cypress Creek settlement implies (Moore 1992), they were able to do so without an obvious restructuring of their mode of living.

CONCLUSIONS

The nature of the relationship between the Atakapan speakers and their various European and American neighbors illustrates their ability to cope with great adversity. It seems that, within limits, these aboriginal peoples met their invaders on their own terms. The relationship appears to have been, for the Indians, fundamentally opportunistic. They were willing to interact where they saw the opportunity for benefit, whether through the fur trade, the acceptance of mission largess, or through the kindly provision of beef by a German farmer. These relationships did not require, nor were the Indians willing to make, fundamental changes in their way of life. It appears that those few who survived found it preferable, and for a time possible, to continue to live a comparatively free life in hide tents on an out-of-the-way creek even into the 20th century.

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Fiction and Fact about the Títskanwátiits, or Tonkawa, of East Central Texas

Daniel J. Prikryl

ABSTRACT

The Tonkawa were newcomers to Texas, having migrated from the north due to conflicts with other Native American peoples. Regularly encamped along the eastern edge of the Blackland Prairie adjacent to the Post Oak Savannah during the 18th and 19th centuries, the Tonkawa were hunter-gatherers who preferred an area with access to bison, yet with nearby oak thickets to provide protection from Apachean enemies. The Tonkawa lack close linguistic kin although their matrilateral social organization speaks for ancient ties with Southern Plains horticulturists. While the Tonkawa community was always small, remnant ethnic groups from South Texas and Mexico were attracted to them for protection. In the face of increasing intrusion by Europeans and hostile Native Americans, a reduced Tonkawa nation survived by allowing a scattering of non-Tonkawa to join them, by cooperating with other besieged Native Americans, by moving further south and raiding into northern Mexico, and by allying themselves with the Euro-American military in its wars against Plains Indians. In the late 1880s, most Tonkawa were removed to a reservation in Oklahoma, while a few settled in northeastern Mexico.

INTRODUCTION

Until relatively recently, the Tonkawa were considered Native Americans indigenous to Texas. This group of hunter-gatherers was so routinely seen and described by Europeans and Americans in Central Texas and immediately adjacent areas from the late 18th through the early 19th centuries that scholars such as Bolton (1910:998-999), Sjoberg (1953), and Newcomb (1961:133-153) thought that the Tonkawa were the Indian group native to this part of Texas and that they had been in this area for many centuries going back even to prehistoric times. An important part of this hypothesis was the belief that the Tonkawa tribe had always consisted of various bands who all had at least one thing in common: they spoke the Tonkawan language (Bolton 1910). These bands were listed as the Tonkawa proper, Emet, Mayeye, Yojuaue, Ervi-piame, Cava, Sana, Toho, and Tohaha. The fact that European documents indicated that at least some of these groups were seen very early in Texas, such as in the case of the Mayeye, who were seen in 1687 by Henri Joutel of La Salle’s expedition, strengthened the notion that the Tonkawa were indigenous to Central Texas and surrounding vicinities (Cox 1905, Volume II:114; Stiles 1906:127, 147; Margry 1879-1888, Volume II:288).

In the last 20 years new data have come to light which indicate that many previous hypotheses about the Tonkawa are based on misunderstandings. First of all, it can be said with a good degree of certainty that the Tonkawa proper were first found by Europeans in the year 1601 far to the north of Texas, either in northern Oklahoma (Newcomb and Campbell 1982) or in south central Kansas (Vehik 1986:22). Other documentary evidence indicates that the Tonkawa moved southward in historic times to the Red River in north central Texas in the early 1700s and then proceeded further southward along the Blackland Prairie-Post Oak Savannah ecotone until by the early 19th century they were found between the Colorado and San Antonio rivers (Newcomb and Campbell n.d.; Newcomb 1993:26-29). Through the course of this southern movement, the Tonkawa found both friends and enemies, with alliances shifting as time passed. Their initial migration appears to have been mainly caused by conflicts with hostile Native American groups, principally the Apache. Europeans also affected this migration, but until the late 18th century these effects (the early acquisition of the horse by the
Apache, the spread of European weapons to the Tonkawas' enemies, and the spread of European diseases) were mostly indirect.

The hypothesis that there were a number of Tonkawan bands who all spoke the Tonkawan language has been shown to be mistaken (Campbell 1979; Newcomb and Campbell n.d.; Newcomb 1993; Johnson and Campbell 1992). Aside from the Tonkawa proper, it appears that all other bands are remnant Indian groups who speak a variety of non-Tonkawan languages. Some of these bands are immigrants who came to Texas from as far north as Oklahoma or Kansas and from as far south as northeastern Mexico. A few other bands seem to be originally native to Central and coastal Texas. Many were eventually absorbed by the Tonkawa due to the need for self-protection and decreased populations of all groups. In all cases, the Tonkawa maintained an independent identity (Johnson and Campbell 1992; Johnson 1994). After the mergers, the groups are later listed as clans within the Tonkawa social system. For example, recent research by Johnson and Campbell (1992) has shown that the Sana, Cava, Tohaha, Toho, and possibly the Emet spoke a separate language called Sana. Sanan speakers probably originally ranged from Central Texas to northern Mexico. The group specifically called the Sana seems to have merged with the Tonkawa in the late 18th or early 19th century, becoming the Sana clan of the Tonkawa tribe, while the Cava, Emet, Toho, and Tohaha disappear from records.

Campbell (1979:13) has also demonstrated that the Ervipiame were first found by the Spanish in northeastern Coahuila between 1670 and 1688. Due to conflicts there with the Spanish, the Ervipiame moved northward to east central Texas in the early 1700s, where they became the dominant group in an amalgamation of over 20 displaced remnant Indian groups, most all of whom were also originally noted by the Spanish in northeastern Coahuila. The origin place of the Ervipiame would suggest that they were Coahuiltecan speakers, not Tonkawan. The Ervipiame settlement from 1716 to 1721 is thought to have been situated near the confluence of the Little and Brazos rivers near present-day Cameron, Texas. It was called the Rancheria Grande by the Spanish because it contained as many as 2,000 people. It is evident that they were living together for mutual protection from the Apache and the Spanish.

In 1755, some of the remaining Ervipiame entered the San Antonio missions, but the majority of them moved northward to live with the Tonkawa and other allies. By the end of the 18th century, these Ervipiame had been absorbed into the Tonkawa and became one of the Tonkawa clans. Likewise, the Mayeye, who were first noted in 1687 by members of La Salle's expedition in what may have been Matagorda County, Texas, just inland from the coast, later became a clan within the Tonkawa tribe (Newcomb 1993:24-25).

The last of the so-called Tonkawan speaking groups, the Yojuan, have, like the Tonkawa proper, been identified as living in northern Oklahoma (Newcomb and Campbell 1982) or southern Kansas (Vehik 1986) in 1601. The evidence points to the Yojuan being Wichita speakers (Newcomb and Campbell 1982). While they were enemies of the Tonkawa at that time, they later became allies. The Yojuan probably moved southward for the same principal reason as the Tonkawa, to escape Apache aggression. After suffering the loss of over one-half of their number in 1759 in a Spanish attack ordered in retaliation for the Yojuan participation in the burning and looting of the San Saba mission, the Yojuan found refuge with the Tonkawa and other mutual allies. That at least some of the Yojuan were absorbed into the Tonkawa tribe in the late 18th century is evidenced by the fact that a Yojuan warrior became the Tonkawa leader in the late 18th century and that one of the 'Tonkawa's later clans recorded in the 19th century was called the Yojuan clan (Newcomb 1993:22).

CONFLICT, MIGRATION, AND COALESCENCE

With these new facts in mind, the purpose of this article is to review the situation of the Tonkawa in Texas with attention given to themes of conflict, migration, and coalescence (see Kenmotsu and Hester, this volume), and the archeological evidence for these themes. Throughout the discussion I distinguish the Tonkawa from other groups who were absorbed by the Tonkawa. Most of the discussion of migration, conflict, and coalescence revolves around the recent work of Newcomb, Campbell, Johnson, and Vehik. As such, I acknowledge my debt to these researchers. Here, I attempt to report their work as accurately as possible and to further develop the themes as they pertain to the Tonkawa. I will also discuss where and how archeologists may find it
family, may have used the same word for the Titškanwaitits. Early European explorers, missionaries, and traders apparently grew accustomed to using the name applied to the Titškanwaitits by Caddoan language speakers such as the Caddo and the Wichita, probably because the Spanish had earlier and more frequent contacts with Caddoan speakers.

In a review of documents related to the Spanish expedition led by Don Juan de Oñate onto the Southern Plains in 1601, Newcomb and Campbell (1982) trace the route of the expedition to the boundary of north central Oklahoma and southern Kansas. There, the Spanish captured a young Indian named Miguel during a battle with a Native American group called the Aguaçanes. When Miguel was taken by the Spanish back to Mexico City and interrogated, he stated that he had previously been captured at the age of 12 by the Aguaçanes during their attack on his birthplace, which he called the “pueblo of Tanca.” The Aguaçanes were one of the ancestral Wichita groups (see Newcomb and Campbell 1982), and thus, would have been of the Caddoan linguistic stock. Since Miguel had lived with these Caddoan-speaking captors for many years, it is logical to assume that Miguel used his captors’ name “Tonkawa” for the Titškanwaitits, to describe his original home community.

During his interrogation in Mexico City, Miguel drew a map for the Spanish showing the Native American settlements and other geographic features with which he was familiar. Apparently, without any prompting from the Spanish, Miguel included on the map of his home area the locations of two salinas or locations of salt deposits. There are nine well-known salt plains or salt springs in western Oklahoma that have been described by geologists. Tracing the descriptions by Oñate’s chroniclers of their journey to the vicinity of the Aguaçane through written accounts and maps made by Oñate’s men,
and then adding to that knowledge Miguel’s map, Newcomb and Campbell (1982) concluded that the pueblo of Tancoa would lie between the Salt Fork of the Arkansas and the Medicine Lodge rivers in far northern Oklahoma (Location 1A on Figure 1).

Vehik (1986) has also examined the papers of the Oñate Expedition, and hypothesized that the Tonkawa were located even further north in south central Kansas, either near the confluence of the Little Arkansas and the main Arkansas river or near the confluence of Cow Creek and the Little Arkansas River (Location 1B on Figure 1). Her determination is based on a more detailed plotting of the distances the expedition would have traveled, a closer look at the stream channels in the area, and perhaps, most importantly, by reorienting Miguel’s map 90 degrees to the right so that San Gabriel, New Mexico, the place from which the expedition originated, is in its correct location to the southwest of other features on the map. The northern location hypothesis for the Tonkawa is strengthened by the fact that Cabeza de Vaca does not mention the Tonkawa or Titskanwatis in his early 16th century journal, nor do the slightly later chronicles of the De Soto entrada.

Following the documents of the Oñate Expedition, there is a large gap in European references to the Tonkawa until they are described by Casañas de Jesus Maria in 1691 as being among 18 Native American groups listed as enemies of the Hasinai Caddo of East Texas (Swanton 1942:251). The exact location of the Tonkawa at that time is not given but most of the Hasinai’s enemies are said to be living to the west, north, and northwest. The best explanation for the Tonkawa’s proximity to the Hasinai is a southern movement by the Tonkawa to escape Apache aggressors who were known to be spreading southward onto the Southern Plains. The Tonkawa would appear to have moved a considerable distance south, possibly all the way across Oklahoma to the Red River or south into northern Texas. And, the displacement of the Tonkawa may have been into lands marginally occupied or used by the Hasinai.

In 1711, St. Denis mentions that the Tonkawa are among the tribes no longer at war with the Hasinai (Shelby 1923:178). Soon thereafter, the French found Tonkawa among a war party of six groups on the Red River, probably in the vicinity of present-day Lake Texoma (see Location 2 on Figures 1 and 2). These warriors were all returning from a successful joint raid on the Apache in New Mexico (M. Wedel 1971:64). Other groups represented in this raiding party were the Kichai, Hasinai, and Yojuane. Again in 1723, the Tonkawa were recorded as being on the Red River, this time by Derbanne (Bridges and De Ville 1967). Interaction between the French and the Tonkawa seems to have been friendly.

Based on these documentary references, Newcomb (1993:27) postulated that the Tonkawa were probably living on the Red River in north central Texas in the early 1700s. Newcomb and Campbell (n.d:8) more specifically state that the Tonkawa may have lived along the eastern margin of the Blackland Prairie and just south of the Red River (see Location 3 on Figures 1 and 2). Such an area would have provided access to two environmental zones—the Blackland Prairie and the Post Oak Savannah—thus increasing their subsistence resource base. Within the Blackland Prairie, the Tonkawa would have found bison, an important element to their economy. Furthermore, the oak thickets of the Post Oak Savannah would have provided cover from attacks by the Apaches. The Spanish, themselves, dreaded to enter the oak thickets, and called the Post Oak Savannah by the name El Monte Grande (Gonzalez 1983).

In the late 1740s, three missions were established on the San Gabriel River near Rockdale, Texas, by the Spanish for the stated purpose of missionizing the Tonkawa (Bolton 1915:183). In this case, the Spanish chose an area along the Blackland Prairie-Post Oak Savannah boundary. However, a close examination of mission records shows that only one Tonkawa, an infant girl, was ever listed on the mission registers (Newcomb and Campbell n.d.:4). Newcomb (1993:27) notes that the Spanish discovered that the Tonkawa were living too far to the north to be attracted to the missions. However, several groups, such as the Mayeye and Ervipiame, who later merged with the Tonkawa, did stay at the missions.

In 1758, the Tonkawa were among the Nortenos, the Spanish name for the Indian Nations of the North, who attacked and burned the San Saba mission (Weddle 1964). Other groups who participated in this attack were the Wichita, Comanche, Hasinai, and the Yojuane. All of these groups had a mutual hatred of the Apache, and until the founding of the San Saba mission, the Spanish had also been at war with the Apache. When the Spanish reversed their policy toward the Apache
and built the San Saba mission specifically in an effort to missionize the Apache, the Nortenos felt betrayed by the Spanish.

Following the Nortenos’ sacking of the mission, the Spanish general, Parrilla, set out from San Antonio with a force of 600 militiamen, presidio soldiers, mission Indians, and Apaches in a retaliatory campaign. He traveled from San Antonio to the San Saba mission site, and then north-northeast. He attacked a Yojuane encampment, probably located on the Brazos near its confluence with the Clear Fork, killing or capturing two-thirds of the Yojuane Nation. Parrilla then moved north to attack the Wichita, but was repulsed in his attack on the Wichita’s fortification on the north side of the Red River at the site now known as Spanish Fort. A map entitled “Presidio de San Saba hasta Adaes, 1763” (on file in the Archivo General de Indias in Seville, Spain) shows the approximate route Parrilla took. On this map the Tonkawa are clearly marked as being located east of the Yojuane (see Jackson 1999: Figure 4 and Plate 33). Because there is no scale on the map, we can only say that the Tonkawa appear to have been living at that time in north central Texas, perhaps in the vicinity of Dallas.

By the late 1760s, the Tonkawa were ranging further south. De Mézières states in 1772 that the Tonkawa were usually found between the Trinity and Brazos rivers camping in El Monte Grande (Locations 4A and 4B on Figure 1 and Location 4 on Figure 2). In 1768, for example, the Spanish missionary, Solís, visited a Native American encampment on the Brazos near modern-day College Station (Location 4B on Figure 1). Groups living together there included the Tonkawa, Coco, Mayeye, and Yojuane. Solís stated that “all these people have one thing in common, that is the sign language with which they talk, not only for hours but entire days” (Kress and Hatcher 1932:58). One can conclude that sign language was used because groups with very different languages had coalesced.

By the 1770s, the Yojuane and the Mayeye appear to have merged with the Tonkawa due to their decreasing numbers and their need for a common defense from the Apaches (Newcomb 1993:22, 25). At that time, the Tonkawa were also allied with the Tawakoni and the Kichai. In 1778, de Mézières found the Tonkawa at a place called La Tortuga, which may be a hill near Tehuacana, Texas, in northwestern Limestone County (Location 4A on Figure 1). La Tortuga was soon afterwards occupied by the Wichita group called the Tawakoni, and their archeological remains have been found there at a site known as the Vinson site (Smith 1993). Significantly, La Tortuga is located on the Blackland Prairie-Post Oak Savannah boundary.

At about this time an epidemic spread through Spanish and French settlements in Texas and Louisiana (see Derrick and Wilson, this volume). It
subsequently spread through the Native American populations in more remote areas of Texas so that when de Mèzières again visited the Tonkawa in 1779, the nation was much reduced in numbers.

In the late 1770s and early 1780s, the Tonkawa engaged in trade with the Lipan Apache at times. This interaction with the Lipan Apache was brief and was probably due to the influence of the Tonkawa chief. This leader was, in fact, an Apache named El Mocho who had been captured by the Tonkawa in his youth and raised as a Tonkawa. In 1782, for example, the Tonkawa, Lipan Apache, Mescalero Apache, Natage Apache, Akokisa, Bidai, Cocos, Mayeye, and some Caddo met on the Guadalupe River for a trade fair, but the results greatly disappointed the Apache (John 1975:635-636). In 1784, the Spanish conspired and killed El Mocho. The following year, the Tonkawa under new leadership settled down on the Navasota River and planted corn (John 1975:665). This experiment at a sedentary life was brief and unsuccessful.

Also in 1785, the Comanches make peace with the Spanish, which lasted until around 1800 (John 1975:666). As part of the peace agreement, the Comanches swore to fight the Lipan Apache and all enemies of Spain. In 1786, the Spanish convinced the Tonkawa to join the Wichita and the Comanche in warfare against the Lipans.

The next few decades show continuing shifts in alliances involving the Tonkawa and other Native American groups. Generally, though, the Comanche and Wichita were at war with the Tonkawa and pushed the numerically weakened Tonkawa further south, by the late 1700s the Tonkawa were living between the Brazos and Colorado rivers (Location 5 on Figures 1 and 2). In the early 1800s the Tonkawa were located between the Colorado and San Antonio rivers (Location 6 on Figures 1 and 2).

The abandonment of the Taovaya, Tawakoni, Waco, and Wichita villages on the Red River in the Spanish Fort vicinity after the death of their great leader, Awajachea, in 1811 had dire consequences for the Tonkawa as many Wichita, Waco, and Tawakoni moved south into lands either occupied or adjacent to those of the Tonkawa. In 1823, records indicate that the Wacos raided the Tonkawa, with the Wacos being seen near La Grange, Texas, on their return from the raid (Barker 1924-1928:682). Likewise, in 1824, a large group of Waco and Tawakoni in pursuit of the Tonkawa were seen near Columbus, Texas (Barker 1924-1928:755). Continuing to decline in number despite absorbing other remnant groups, the Tonkawa appear to have made peace with the Lipan Apache in the early 1800s. In the 1830s and 1840s, the Tonkawa even joined the Lipans in their raids into northeastern Mexico.

In the 1850s, the Tonkawa were among a number of Indian groups from the eastern half of Texas who were moved by the U.S. Government onto a reservation on the Brazos River in north central Texas (Location 7 on Figures 1 and 2). In 1859, the Tonkawa were next moved by the government to a reservation near Anadarko, Oklahoma (Location 8 on Figure 1). The Tonkawas display of loyalty to the South during the Civil War led other Indian tribes with Union sympathies to massacre about one-half of the 300 remaining Tonkawa on that reservation. The remaining Tonkawa fled back to Texas to their old haunts. Some served as spies for Confederate forces and others survived by begging and stealing (Newcomb and Campbell n.d.:10). After the Civil War, the Tonkawa were moved by the U.S. Army to Fort Griffin on the Clear Fork of the Brazos (Location 9 on Figures 1 and 2). For a few years, some Tonkawa men served as scouts for the U. S. Army's campaigns against the Comanche and the Kiowa Apache. In 1884, following the end of these military campaigns, the Tonkawa, then numbering only 92 people and including some Lipan Apaches, were moved back to Oklahoma to a reservation on the west side of the Chikaskia River in northern Oklahoma (Location 10 on Figure 1). Although a few Tonkawa apparently chose to move to northern Mexico rather than be forced into Oklahoma, most went to Oklahoma and their descendants continue to live there today.

Turning to the archeological data, there do not appear to be any pre-reservation Tonkawa archeological sites that can add to the consideration of migration, conflict, or coalescence. In fact, this discussion opens with the gloomy statement that no archeological sites in Texas can indisputably be assigned to the pre-reservation era Tonkawa culture. As early as the 1940s, archeologists were examining archeological remains in Central Texas for evidence of the historic Tonkawa. By the 1950s, too, some archeologists and anthropologists were attempting to demonstrate an association between the Tonkawa and some prehistoric remains in South Texas (Krieger 1946:146; Sjoberg 1953:300), while others
were examining the prehistoric Toyah phase of Central Texas to determine if that culture might be the prehistoric ancestor of Tonkawa culture (Suhm 1956, 1957, 1958). Continuing from the 1960s through the present, archeologists have not been successful in locating any Tonkawa sites.

There are many reasons that Tonkawa sites have not been easy to find. First, historic Indian archeological sites are easiest found when a sedentary group was repeatedly visited at the same location by Europeans who left documents that describe the locations of these Native American settlements. Examples of such circumstances in Texas include the Wichita-speaking groups and the Caddo. Even so, it is often difficult for archeologists to relocate such sites. With the Tonkawa, archeologists are dealing with a nomadic hunter-gatherer group who never stayed in one place very long.

Furthermore, such historic Indian sites are more easily found if the group occupying the site obtained large quantities of European trade goods. Europeans had a special interest in trading with groups such as the Wichita speakers and the Caddo because they had large populations and military power. And, thus, could potentially help or hinder European colonization efforts. Since the Tonkawa were not powerful, the Europeans had less interest in visiting and trading with them. Additionally, the documentary evidence suggests that the Tonkawa did not have much in the way of goods with which to barter for European items, so the volume of European trade goods received by the Tonkawa should be less than that received by the Wichita and the Caddo. Since most historic Indian sites are recognized by an artifact assemblage that consists of a mixture of European trade goods and Native-made artifacts, distinguishing historic Tonkawa sites from pre-contact era sites is difficult.

One of the past problems in searching for Tonkawa sites was the misconception that the Tonkawa had always lived in Central Texas through all of the historic Indian period, and that they probably had been here in the Late Prehistoric period. Thus, some archeologists have been looking for Native-made artifacts that resembled those of the prehistoric Toyah phase. With the new picture of the migration of the Tonkawa and the amalgamation of many remnant groups into the Tonkawa social structure, we should now use this data in attacking the problem of finding Tonkawa sites.

First, since at the early end of the spectrum the Tonkawa were first seen by Europeans on the Plains in northern Oklahoma or southern Kansas, it would be logical that the Tonkawa would have brought with them to Texas at least a part of the tool kits that resemble those found at Late Prehistoric and protohistoric sites of those areas. These artifact assemblages can be characterized as Plains Village in outlook with triangular and side-notched triangular arrowpoints, primarily plain shell- and limestone-tempered pottery, and end scrapers, beveled knives, and flake drills for butchering bison and working their hides. Unfortunately, if the Tonkawa brought such an assemblage south with them, it might not differ, though, in most respects from those of Late Prehistoric, protohistoric, and historic Indian groups indigenous to the Red River and upper Trinity River areas. Such remains, which are known as the Henrietta focus or phase, date as early as A.D. 1300 to 1400 in northern Texas.

It is no help that the Oñate Expedition did not actually visit the “pueblo of the Toncoa.” Thus, there are no firsthand accounts of the tools, ornaments, or any distinctive material objects of the Tonkawa. Likewise, there is no information on the sizes or shape of early Tonkawa structures. It is not known whether the Tonkawa were hunter-gatherers or horticulturists at that time. Johnson (1994) has suggested a horticultural past for the Tonkawa based on his study of Tonkawa kinship terminology. If the Tonkawa were horticulturists in 1601, they may have brought horticultural tools (i.e., bison scapula hoes and bison tibia digging sticks) with them to the Red River. Again, these would be difficult to distinguish from those already present in the Henrietta phase sites.

Following Newcomb’s hypothesis about the earliest locations of the Tonkawa in Texas, one would look to the Red River area in north central Texas and slightly to the south on the prairie-savannah ecotone. In north central Texas these ecotonal settings would include the Blackland Prairie-Post Oak Savannah boundary, the Blackland and Grand prairies’ boundaries with the Eastern Cross Timbers, and the Grand Prairie and Rolling Plains boundaries with the Western Cross Timbers. However, such locations are also known places the Wichita chose for their campsites, and, indeed, some Wichita sites are known at such locations, including the Spanish Fort complex on the Western Cross Timbers-Rolling Plains boundary and the twin Tawakoni-Iscahi village known as the Pearson site.
in Rains County on the Blackland Prairie-Post Oak Savannah boundary. Tonkawa sites in these areas should date slightly earlier in time and should have earlier dating European trade goods.

As a final note on the early 18th century Tonkawa sites, the locale known as the Ranchería Grande—near the confluence of the Little River and the Brazos—may contain important clues about the Tonkawa since the principal group that occupied it, the Ervipiame, later were absorbed by the Tonkawa. Some Tonkawa may also have been as far south then to have been among the occupants of the ranchería. This site is described as a settlement of about 2,000 Native Americans and was occupied in the 1710s and 1720s. No archeological evidence of this site have ever been reported and no collections of private individuals active in that area are known to include the appropriate types of European trade goods that would be indicative of that era.

Mid-18th century Tonkawa sites would most likely be located on the Blackland Prairie-Post Oak Savannah ecotone between the Trinity and Brazos rivers. One place worthy of further investigation is the La Tortuga locale, given de Mézières’ account that the Tonkawa occupied the area in the 1770s. A historic Wichita occupation by the Tawakoni subdivision has been excavated at one site in that vicinity (Smith 1993). However, no evidence of a Tonkawa occupation could be distinguished in these excavations, nor was any evidence of any other historic Indian sites found in a brief survey of the La Tortuga locale in 1990 (Prikryl 1990).

Late 18th century Tonkawa sites should be located along this ecotone a little further south, probably between the Brazos and Colorado rivers. Early 19th century Tonkawa sites will probably be located east and southeast of Austin and San Antonio, Texas, between the Colorado and the San Antonio rivers. Some of the most likely places to search are in Washington, Fayette, Lavaca, De Witt, and Gonzales counties along the boundaries of a Blackland Prairie outlier and the Oak Savannah.

Historic maps can be used to identify Tonkawa sites on the three reservations the Tonkawa were placed on by the U.S. Government beginning in the 1850s. These reservations are the Brazos River Reserve (1854 to 1859), the Anadarko Reserve (1859 to 1862), and the Tonkawa Reserve (formerly known as the Oakland Reserve), initiated in the 1880s and continuing to the present.

To conclude, then, migration, conflict, and coalescence are important and inter-related topics when discussing the Tonkawa in the protohistoric and historic periods. The migration of the Tonkawa was most likely caused by conflicts, principally with the Apache. The Tonkawa migration caused them to move onto lands occupied by other groups, leading to additional conflicts, such as with the Caddo in the late 17th century. In most cases, as with the Caddo, the Tonkawa were later able to establish peaceful relations. This may have been because both groups saw the Apache as a mutual threat. Until the late 18th or early 19th century, the Tonkawa and the Apache warred. However, they subsequently became allies due to their decreased numbers and need for self-protection from the Comanche, the Wichita, and the Europeans. The earliest European documentation, the papers of the Oñate expedition, show the Tonkawa in conflict with Wichita-speakers, but during much of the 18th century they were allies, particularly in conflicts with the Apache and the Spanish. Then, in the early 19th century, the Tonkawa and the Wichita were again at war as the Wichita were pressed south into the central part of Texas.

During the 18th century, Central Texas became a refuge for many Native American groups, some of whom fled south to avoid the Apaches and the Comanches. Other groups moved north into Central Texas from northeastern Mexico to avoid the Spanish. As these events unfolded, conflicts occurred and relationships frequently changed with some remnant groups being absorbed by the Tonkawa. The fact that the Ttiskanwatis may have been known by Wichita-speaking groups as early as 1601 as the Tonkawa—the people who all stay together—could indicate that the Tonkawa had a long tradition of merging with other groups and had already established cultural mechanisms for amalgamation in prehistoric times.

By the 1820s, the Tonkawa, like almost all other Native American groups in Texas, had been devastated by European diseases and by warfare with Europeans. Even without this, there is considerable evidence that the Tonkawa world had been massively disrupted by the movement of Native American aggressors such as the Apache and Comanche, whose migration onto the Southern Plains had pushed groups like the Tonkawa and the Wichita south into the territories of other Native American groups. Speaking of the Tonkawa
in 1828, the botanist Jean Louis Berlandier (Ewers 1969:146) stated that the Tonkawa had probably once been a respectable people but were the time of his visit a cowardly, poverty-stricken group of wretches, who in his words were “stupid and disgusting to see.” As such, the Tonkawa were not seen as a threat to European and American settlers in the early and mid-19th century. This may have enabled the Tonkawa to survive while the Europeans and Americans proceeded to fight more powerful Native American groups who were viewed as threatening. The Americans even found the Tonkawa to be useful as scouts in helping them track down the final remaining Comanche groups in the late 19th century.

Many new facts have emerged in recent years which should help archeologists in their search for Tonkawa archeological sites. While the archeological evidence for the Tonkawa is presently lacking, the new body of data on Tonkawa migration and coalescence may aid archeologists in eventually locating Tonkawa sites in Texas.

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“The Great Kingdom of the Tejas”: The Life and Times of Caddo Peoples in Texas between ca. 1530-1859

Timothy K. Pertula

ABSTRACT

The Caddo peoples always played important political, economic, and social roles with other Native American groups of the Southeast and Southern Plains (most notably the Wichita, Comanche, and Apache tribes), and were powerful mediators and alliance-builders between European explorers/colonists and Native American groups. I consider the effects of European contact on the nature of changes in Caddo society between ca. 1530-1859, as well as their changing interaction with other Native American groups, by focusing on archeological and ethnohistorical information on Caddo territorial and group boundaries, times of conflict and cooperation, responses to population and disease, and their use of symbols of sacred/secular rituals. In the face of ever-increasing contact and conflict, Caddo territory was lost and populations were greatly diminished, but their societies and socio-political relationships were transformed and enhanced through the formation of the Hasinai, Kadohadacho, and Natchitoches confederacies and the strong leadership of the caddices.

INTRODUCTION

Outside of the Arkansas, Oklahoma, Texas, and Louisiana area, current knowledge about the cultural heritage of the Caddo Indian peoples is not widely shared or understood. During prehistoric and historic times, they were a powerful group of related theocratic chiefdoms, who exercised great political skill and trading savvy, through their political and religious elite, with their southeastern U.S. Mississippian neighbors (see Brown 1996; Early 1993; Miller 1996; Rogers 1996; Sabo 1995a), as well as with their hunter-gatherer neighbors in the Southern Plains, and the far-removed Puebloan communities of New Mexico (see Creel 1991; Wilcox 1991; Kenmotsu 1994).

They have also withstood in the face of disease, colonization, and acculturation, the centuries-long and continuing interaction with Europeans (see Avery 1996; Carter 1995a; Pertula 1994, 1996a; Rollings 1995; Smith 1995, 1996), surviving and apparently thriving at critical times amidst the onslaught of European and American empire-building on lands the Caddo have considered their own from time immemorial. I employ the archeological and ethnohistorical records to portray in this article the nature and character of Caddoan Native history between about 1530-1859 as a means to understand how relationships between Caddoan societies and Native American groups in Texas have changed and evolved since the initiation of contact and interaction with Europeans in the early 16th century.

CADDO ETHNOGRAPHY AND HISTORIC PERIOD ARCHEOLOGY

The Caddo peoples in historic times comprised at least 25 distinct but closely affiliated groups centering around the Great Bend of the Red River (see Swanton 1942:Figure 1) and extending into the Pineywoods of deep East Texas. Eventually, because of population loss, tribal movements, and village abandonments, these Caddooan affiliated groups became organized into the Hasinai, Kadohadacho, and Natchitoches confederacies (or better characterized, according to Gregory [1973], as kin-based affiliated groups of Caddoan communities) through group consolidation and coalescence in the Neches and Angelina river valleys, the Great Bend of the Red River, and in the vicinity of the French post of Natchitoches, respectively. The Hasinai Caddo groups continued to live through the 1830s in their traditional East Texas homelands, while the Natchitoches did the same in western Louisiana, but the Kadohadacho were forced to

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move off the Red River in the late 1780s to the Caddo Lake area, along the boundary between the territory of Louisiana and the province of Texas. Some Kadodahado remained there until about 1842 at the village of Sha’chahdinnih or Timber Hill (Parsons et al. 1999).

The Caddo peoples trace descent through the maternal line, with matrilineality reflected in kinship terms. They also recognized and ranked clans, with marriage typically occurring between members of different clans. Religious and political authority in historic Caddoan communities rested in a hierarchy of key positions shared among various affiliated communities and groups. The *xinesi* (pronounced chenesi, meaning Mr. Moon, see Miller 1996:243) inherited the position of spiritual leadership, the *caddi* the position of principal headman of a community, which was also inherited from father to son, and the *canahas* the position of village elder or subordinate headman. The Caddo people looked to the *xinesi* for mediation and communication with their supreme god, the *Caddi Ayo*, for religious leadership and decision-making influence, and in leading certain special rites, including the first-fruits, harvest, and naming ceremonies. In essence, the *xinesi* imbued everyday life for the Caddo peoples with the supernatural. The *caddi* was primarily responsible for making the important political decisions for the community, sponsoring other major ceremonies of a diplomatic nature, leading councils for war-raiding expeditions, and conducting the calumet (or peace pipe) ceremony with important visitors to the communities (see Rogers n.d.).

Considerable research attention has been devoted to late Caddoan area archeology and Native history, particularly the Caddoan communities, hamlets, and farmsteads that existed about the time of the European settlement of the "Great Kingdom of the Tejas" (e.g., Kelley 1994; Kelley et al. 1996; Pertulla 1996b; Story 1995). The "Great Kingdom of the Tejas," a populous and well-governed people, was how the Caddoan peoples of East Texas were first described by the Spanish in the mid-1600s from the accounts of the Jumano Indians (see Benavides 1965; Bolton 1912).

Caddoan archeologists, bioarcheologists, ethnohistorians, and historians, as well as the Caddo peoples themselves (Carter 1995a), are developing a broader understanding of the cultural heritage of the Caddo peoples. The Caddoan cultural tradition is characterized by widely dispersed but sedentary settlements, a horticultural to agricultural economy, and a complex socio-political structure marked by a heterarchical network of centers controlled by the political and religious elite. They engaged in extensive inter-regional trade in bison hides, salt, and bois d’arc bows, along with copper, turquoise, marine shell, pottery vessels (and their contents), and exotic lithic raw materials (see Story 1990; Early 1993; Schambach 1993; Lafferty 1994; Brown 1996). These items were often accumulated as grave goods to be placed in the burials of the Caddo social and political elite. After about A.D. 1400/1500, however, long-distance trade efforts were diminished, and elaborate mortuary ceremonials ceased to flourish outside of the Red and Little river areas of the Great Bend region.

In prehistoric times (beginning at the earliest about A.D. 800/900 across the Caddoan area), these centers were marked by mounds for the burial of the elite in elaborate mortuary rituals and as platforms for structures and public architecture used by the elite (Story 1990). The development of these well-planned mound centers went hand-in-hand with the development of elite status positions within powerful Caddoan communities. These larger communities were primarily located along the major streams—the Red, Arkansas, Little, Ouachita, and Sabine rivers. In historic times, after Caddoan mound-building activities were discontinued (Pertulla 1992), elite-controlled rituals and ceremonies were conducted among the Caddo in specialized public structures and plazas, and probably also at the community cemeteries common throughout the Big Cypress Creek basin in Northeast Texas (Thurmond 1990; Pertulla 1995, 1998).

Into the world of the Caddo peoples entered the Spanish entrada of Hernando de Soto, now led by Luis de Moscoso, who passed through Caddo lands in present-day Arkansas, Texas, and Louisiana in 1542-1543. Perhaps not far behind were the epidemic diseases introduced by the Europeans (but see Derrick and Wilson, this volume). When the Europeans next arrived among the Caddo (in this case the Hasinaí tribes) in 1686, the Caddo peoples lived primarily in small groups on the Red River and in East Texas. Through their missions, ranches, trading posts, and fur traders, the far edges of the French and Spanish empires laid claim to the land and loyalties of the Caddo Indians (Pertulla 1996b). Epidemics greatly reduced Caddoan populations—possibly by as much as 95 percent between 1691
and 1816. The Caddo were well situated to participate in the French fur trade, and they traded guns, horses, and other essential items to Indian groups and Europeans, and in the process they developed new trade and economic networks. The resulting economic symbiosis (cf. Gregory 1973) between the Caddo groups and Europeans was the key to the political success and strength of the Caddo tribes through much of the colonial era.

**CADDOAN TERRITORY, 1530-1859**

Where the Caddoan peoples differ from many of the other Native American groups that lived in Texas is in their known territorial stability. That is to say, their settlement and use of lands in what is now East Texas, Northwest Louisiana, Southwest Arkansas, and eastern Oklahoma has had great permanence—a thousand years or more living and sustaining themselves in the same broad forested and well-watered landscape of the western Gulf Coastal Plain. First visited by the De Soto entrada in 1542 in southwest Arkansas and eastern Texas (see Kenmotsu et al. 1993; Schambach 1989), the Caddo were described as having a sometimes dense but sometimes sparse population (dependent upon their location within rural or town communities, see Perttula 1992: Figure 13) that lived in scattered settlements with abundant food reserves of corn (Hudson 1997). Archeological investigations confirm that Caddoan communities were widely dispersed throughout all of the major and minor river valleys of the region from at least A.D. 800 until the early 1800s (e.g., Story 1990).

Looking more closely at the historic territory of the “Great Kingdom of the Tejas,” about 1520/1530, the Hasinai Caddo groups lived in permanent communities throughout the upper Neches and Angelina river basins (Figure 1). They are represented archeologically by the Frankston (ca. 1400-1600) and Allen (ca. 1600-1750) phases of the Anderson Cluster (Story and Creel 1982). Although occasional Hasinai Caddo groups or bands lived west of the Neches and Trinity rivers in historic times, they usually did not go beyond that boundary “unless going to war” (Margry n.d.: Roll 3, pp. 274-275). The Hasinai groups continued to live in the upper Neches and Angelina river basins until they were driven out of Northeast Texas by the Republic of Texas after 1836.

![Figure 1. The Distribution of Caddoan archeological phases at Initial Contact, ca. A.D. 1520: 1, Angelina phase; 2, Frankston phase; 3, Titus phase; 4, Belcher phase; 5, Texarkana phase; 6, McCurtain phase; 7, Mid-Ouachita and Social Hill phases; 8, Fort Coffee phase.](image)

European maps of the late 1500s to the mid-1600s located Caddoan groups such as the Naguautex, Nisone (Nasone), Pato, Lacane, Ays, Xualatino (or Soacatino) and Guasco on a western tributary of a drainage labeled Rio de Leon or Rio de Spiritu (Espiritu) Santo, the Mississippi River (Figure 2), but it is clear from similarities between 1572 and 1656 maps that geographic knowledge of the territory of the interior-living Caddo and other Texas tribes had not changed over that period (cf. Jackson 1995, 1999). It was not until Europeans (principally La Salle, see Weddle and Bell [1987] and Foster [1998]) ventured again into the Caddoan area in the 1680s, that the territory of the various Caddoan tribes, and their non-Caddoan allies and enemies, became better understood.

Delisle’s map of 1702 places a series of related Caddoan groups along a considerable stretch of a western tributary of the Mississippi River, obviously the Red River. Beginning on the lower Red River with the Nachitoches [Natchitoches] and proceeding up river, other Caddoan groups included the Nakasa (one of the enemies of the Kadodahach in 1687, according to Joutel [Margry n.d., Roll 3, p. 397]),
non-Caddoan communities living between the Trinity and Brazos (La Maligne R.) rivers. On the Brazos River lived the Canohatino tribe, one of the enemies of the Hasinai Caddo, who felt the brunt of a French-Caddoan attack in 1687 where more than 40 Canohatino were massacred by the joint, armed forces.

By the 1750s, the Europeans possessed a much better perception of the location of the Hasinai Caddo groups and related Caddoan tribes in East Texas and western Louisiana (Figure 4). This should not be surprising considering that there was a French trader reported to be living at each of the Caddoan settlements, even those in the province of Texas (Mori 1935-91). In a 1757 French map, Caddoan groups are dispersed from east of the Sabine River (Rio Zavinas), near the Spanish presidio at Los Adaes, to just west of the Neches River (Rio de Nechas), with Spanish missions in their midst at Nacoudoches [Mission Nuestra Señora de los Nacogdoches] and de los Hays [Mission Nuestra Señora Dolores de Ais].

Between the 1750s and the 1780s, the Tawakoni, Ysunci, and Kíchai tribes, affiliated Wichita-speaking tribes, had moved south and settled in large villages along the margins of the Post Oak Savannah (Newcomb 1993:36), in traditional Caddoan hunting territory (Figure 5). The Hasinai Caddo tribes and the Wichita groups were strong allies, and the Caddo leaders were of great assistance in concluding formal and peaceful relations between the Wichita-speaking tribes and the Spanish in 1771-1772, and again between the Caddo, the Wichita-speaking tribes and the Republic of Texas in 1843 (Smith 1995:70, 148). The Bidai tribe, also allies to the Hasinai, lived to their south along the Trinity and Neches-Angelina rivers (see Figure 4 and 5).

Because of the outbreak of epidemics at the Spanish settlement of Nacogdoches in the late 1770s-early 1780s, the Nadaco Caddo moved along the Caddo Trace to resettle on the Sabine River (see Figures 5 and 6), where they remained until
Caddo Lake. The Alabama and Coushatta people asked for, and received, the permission of the Kadohadacho caddi to resettle along the Red River, and they became strong allies of the Caddo peoples. This was not the case with the Choctaw, as conflicts between them and the Hasinai Caddo over hunting territories began almost immediately after the Choctaw moved in numbers into East Texas (Smith 1995:87-89, 97-98). Later, however, the Choctaw allied with the Caddo peoples and the Cherokee in war parties against the Osage.

Between about 1836 and 1842, the Hasinai, Nadaco, and Kadohadacho tribes had all been forcibly pushed out of East Texas, some moving into Indian Territory, while others moved west into the upper Brazos River drainage (Figure 7). This was the final and bitter end to the Caddoan settlement of their traditional homelands. Though the Caddoan groups made a successful agricultural living for a few short years in the hard but seemingly fertile lands of the Brazos River valley, they were never secure from Anglo-American encroachments, even when settled on the Brazos Reserve. They were compelled in 1859 “to abandon their homes, the fruit of their labors, and the graves of their kindred” (Swanton 1942:100), and were removed to the Washita River valley in Indian Territory (see Figure 7).

**CONFLICT AND COALESCENCE**

No Caddoan communities, towns, or mound centers were ever fortified, and there is virtually no evidence in the archeological record for warfare or violent conflict between the Caddos and other peoples. That is, evidence of individuals dying from wounds inflicted from an arrowhead, scalping, or forms of mutilation after death are rare indeed, and certainly very rare when compared to contemporaneous Indian groups in the Southern Plains (Brooks 1994). This is also quite a contrast with the

the establishment of the Republic of Texas. The Kadohadacho groups, with populations also diminished by epidemics, by this time had coalesced into one village for protection against the Osage, and relocated by 1795 along a small tributary feeding into Caddo Lake, a natural lake formed by the Great Raft along the Red River valley. Most of the Kadohadacho remained in the Caddo Lake area until 1842, while others had moved into Indian Territory shortly after 1836, or had settled in the upper Trinity River drainage (Smith 1995:130-131, 135).

The Hasinai Caddo groups—the Nacogdoche, the Hasinai, and Nabadache (or Tejas)—remained in their East Texas homelands, living in the early 1800s outside of the Spanish settlement of Nacogdoches, west to the Neches River, and north of the El Camino Real (see Figure 6). Immigrant Indians pushed west, including the Biloxi, Alabama, Coushatta, Choctaw, and Cherokee, and began to settle within traditional Caddoan territory, both north and south of Nacogdoches (see Perttula 1994:Figure 4), as well as along the Red River north and east of
of the moment, particularly the willingness to trade. All this was to change with the appearance and adoption of the horse and gun among the Caddo and their Southern Plains neighbors.

By the 1680s, those hunting-gathering groups to the west and southwest of the Hasinai Caddo tribes had horses in numbers, but lacked guns, which the Caddo peoples began to obtain (if sometimes only periodically) in trade with the French fur traders. The Hasinai Caddo peoples also had horses obtained through trading with their allied groups on the prairies and plains of Central and southern Texas, and through raiding on their enemies. The Caddoan groups were well placed along the “Horse Frontier” and the “Gun Frontier,” and “as of about 1716, the Hasinai and the Kadohadachos marked, respectively, the saturated frontier of horses moving eastward, and of muskets moving westward in trade” (Griffith 1954:118).

This accessibility of such desirable goods as guns and horses contributed strongly to the maintenance and expansion of Caddoan social and political power relationships among their Native American neighbors, allies, and enemies. With the horse and gun, the Caddos were able to increase their bison hunting in the prairies and plains well west and southwest of their territory, which probably exacerbated existing animosities, but did not prevent them from moving into and using new areas (i.e., new hunting territories and in settlements astride Indian and European trade routes). It also assured the Caddoan peoples of continued trade with the Europeans, and an active role in arranging political and economic measures between other Native Americans and the Europeans that directly affected their well-being.

Fighting between the Caddo and their enemies was mainly that of “hit-and-run raids upon an enemy in which an attempt was often made to capture a foe” (Smith 1995:13), rather than battles with large numbers of casualties on either side. This

Figure 4. Redrawn version of 1757 Map of La Province de Texas and Nueva Luciana. Note the western Caddoan groups (Adais, Haysitos, Nacoudoches, Nechas, Nazones, and Texas) between the Presidio de los Adaes and the Rio de Nechas.

Sedentary agriculturists living in the Mississippi Valley and interior Southeast, where heavily populated towns were palisaded, and Indian polities asserted political and economic authority through warfare (Dye 1990; Milner 1999). The widely dispersed prehistoric and historic Caddoan communities do not hint of a defensive posture (Kenmotsu and Perttula 1996:11).

This is not to say that there were not conflicts between the Caddo peoples and their neighbors. Indeed, French and Spanish documents of the 17th and 18th centuries clearly show that the Hasinai and the Kadohadacho had many enemies (Tables 1 and 2), some of long-standing like the Chicksaw, Lipan Apache, and Osage. For their other enemies, it is suspected that relations between them and Caddoan peoples alternated over the years between alliances and hostility, depending upon the needs
This disparity in supplies of the coveted horses and guns led to a profitable trade for the Caddo peoples, either in direct exchange or acting as middlemen, but over the long-run, the trade bounty did not serve to better protect them against the Osage, and Chickasaw, also well-supplied with guns, who, from the late 1600s to the early 1700s, ceaselessly raided the Caddo for slaves (Rollings 1992). Shortly thereafter, the Caddo became involved in the thriving traffic in Apache slaves, one outcome of the Southern Plains warfare between the Comanche and Apache that began about 1700 (see John 1975; John and Wheat 1989), trading European goods for Apache children to the French and Spanish markets at Natchitoches and Los Adaes (Gregory 1973:287). By the 1760s, the Osage were expanding their hunting and trapping territory to obtain more furs, however, and their depredations against the Caddo changed to a “war of conquest” (Bailey 1973:40). The Osage succeeded in eventually forcing the villages of the Kadodacho tribes to coalesce from five villages to one over a period of about 80 years. Along with the Yatasi, the Kadodacho moved far down the Red River and closer to the European post and fort at Natchitoches, abandoning the Great Bend area, in a desperate attempt to escape the aggressive expansion of the Osage tribe.

For the Kadodacho tribes, on the other hand, according to Joutel in 1687, “most of the hostile tribes are to the east...and have no horses; it is only those towards the west which have any” (Margry n.d.; Roll 3, p. 397). The hostile tribes to the east had plentiful supplies of guns obtained from both French and British sources, and their aggressive raids focused on obtaining Caddoan slaves, horses, and furs.

Figure 5. Late 18th Century Locations of the Caddo or Kadodacho and Hasinai Tribes on the Red River and in East Texas, the Wichita Tribes (Taovayas, Tawakoni, Yscani, and Kichai), the Bidai, and a band of Red River Comanche (after Carter 1995:182).

Figure 6. Redrawn version of Father Puelles 1801 Map of Provincia de Texas and Luisiana, showing Hasinai tribes between the Sabine and Trinity rivers, and the Kadodacho or Caddo tribe west of the Red River and near Caddo Lake.
Attention has also been devoted to examining trends and discontinuities in those aspects of the Caddoan archeological record—such as abandonment of regions and major sites, the appearance and role of community cemeteries among some Caddoan communities, or the discontinuation of mound building—that in certain circumstances seem to relate to cultural changes in demographic or health conditions (cf. Perttula 1992).

Burnett's (1993) bioarchaeological study of the Ouachita River basin in southwestern Arkansas, the most comprehensive bioarchaeological study of post-1500 Caddoan skeletal remains completed in the last few years, seems to suggest that between 1500-1600, Caddoan adults lived shorter lives than before, and that infection rates among sub-adults and adults were higher than at any other time in the Caddoan occupation of the basin. Might this evidence reflect population declines due to European diseases? The archeological record suggests otherwise, as the evidence from such sites as Hardman indicate that the Caddoan communities were flourishing in the Ouachita River basin about this time, due in no small measure to an expansion in the salt trade with Native Americans in the lower Mississippi Valley (Early 1993). After 1600, however, Burnett (1993) detected that infection rates declined and adult age at death increased, which she attributes to improved adaptive efficiency among these Caddoan populations; after 1700, however, the Caddo groups completely abandoned the Ouachita River basin.

With one exception, there is no direct bioarchaeological evidence that I am aware of for the presence of epidemic diseases in Caddoan historic bioarchaeological assemblages (Burnett 1993:194). However, acute epidemic diseases rarely leave specific direct evidence on archeologically-recovered skeletal samples (e.g., Ortaer 1992), limiting in this respect the interpretive significance of bioarchaeological remains to address the issue of disease impacts straight-on. Nevertheless, the further study of Caddoan bioarchaeological remains from post-1500 sites, even if done only under the provisions of the Native American Graves Protection and Repatriation Act (Carter 1995b), can contribute important new information on the overall health, demography, and diet of Caddoan populations in the contact era (see Derrick and Wilson, this volume).

There is no question that European epidemic diseases among the Caddo peoples resulted in
Table 1. Enemies and Allies of the Kadohadacho, 1687

<table>
<thead>
<tr>
<th>Enemies</th>
<th>Allies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannaha</td>
<td>Caisiban</td>
</tr>
<tr>
<td>Nasitti</td>
<td>Tahianihou</td>
</tr>
<tr>
<td>Houaneilha</td>
<td>Natsshосташтomo</td>
</tr>
<tr>
<td>Catouinayos</td>
<td>Cannaiiss</td>
</tr>
<tr>
<td>Souanetto</td>
<td>Hanagouy</td>
</tr>
<tr>
<td>Quisouha</td>
<td>Hiantati</td>
</tr>
<tr>
<td>Taneaho</td>
<td>Nadaho</td>
</tr>
<tr>
<td>Canoatinno</td>
<td>Nadeicha</td>
</tr>
<tr>
<td>Cantey</td>
<td>Chaye</td>
</tr>
<tr>
<td>Caitsodamme</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Nacobho</td>
<td></td>
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<tr>
<td>Nardichia</td>
<td></td>
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<tr>
<td>Nacassa</td>
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<td>Tchanhie</td>
<td></td>
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<tr>
<td>Datcho</td>
<td></td>
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<tr>
<td>Aquis</td>
<td></td>
</tr>
<tr>
<td>Nahacassi</td>
<td></td>
</tr>
</tbody>
</table>

* The Cadadaquis and Nadacho were listed by Joutel as enemies, but these appear to be the same name as Cadadaquis and Nadaco or Nondaco, respectively.

Eyeish (Ais) and Tejas (Hasinai) individuals were enrolled at missions San Jose and Valero in San Antonio in the mid- to late 1700s (Campbell and Campbell 1985:53-54).

The Caddos’ participation in the fur trade had important consequences for them, as well as for their European partners in the trading system. As with the fur trade elsewhere in North America (e.g., Kardulias 1990), the participation of the Caddo led to their acquiring and accumulating large quantities of desirable goods, which they in turn exchanged with other Indian groups for furs and horses, all the while exploiting existing trade networks to their advantage. The success of the fur trade for the Caddo also allowed them to expand their hunting activities into new territories, and/or reoccupy abandoned river valleys (such as the upper Sabine River basin after about 1740, see Pertulla 1994:86-87) for the same purposes. Their contribution to the European frontier economy, and their military presence, was recognized by the French and Spanish governments through their program of annual gifts and presents, reflecting the existence of political and economic commitments between the Caddo peoples and the Europeans (see Sabo 1987:42-44). These had considerable economic, military, and social values to the Caddoan peoples in their dealings with other Indian groups.

Other studies have focused on how historic Caddo societies and socio-political relationships were transformed, while also examining how key cultural concepts and symbols of sacred and secular rituals and ceremonies were maintained, amidst the European presence (Sabo 1995a, 1995b, 1998). George Sabo’s ethnohistorical studies of late 17th and early 18th century Caddoan societies in East Texas show how significant structural relationships within Caddoan society—such as village organization and the hierarchical ranking of peoples—were explicitly extended to Europeans (Sabo 1995a:85-87), thus drawing them within their world and scope of understanding, giving the Caddo regional population declines (certainly noticeable after 1691), group movements, and the eventual coalescence of once-separate Caddoan bands. Wood (1989:82-84 and Table 1) estimates that Caddoan populations declined an estimated 75 percent between 1687 and 1790 due to epidemics (see also Derrick and Wilson, this volume). Population declines and settlement changes appear to have been more substantial along the major rivers, as seen by the complete abandonment of the Ouachita and Little rivers by 1700, and the Arkansas River earlier in the 1600s, but there was no major abandonment of East Texas by the Hasinai Caddo in historic times. In my opinion, regional population decline and abandonment, in conjunction with the coalescence of disparate groups, are the major impetus for the development of the Kadohadacho, Hasinai, and Natchitoches confederacies.

While the establishment of the Spanish missions failed completely to convert the Caddoan peoples, or led to the resettlement of Caddoan communities around the missions, some Caddo apparently chose mission life rather than remain in East Texas. A few
### Table 2. Enemies of the Hasinai and Kadohadacho.

<table>
<thead>
<tr>
<th>Tribe</th>
<th>Hasinai Enemy</th>
<th>Kadohadacho Enemy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caiasban</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Cannahas</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Cannahios</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Chepoussa</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Chickasaw, E. of the Kadohadacho</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Datcho</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Hianagouy</td>
<td>X</td>
<td></td>
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<tr>
<td>Hiantatsi</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Osage, N. of the Kadohadacho</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Quiouaha, W. of the Kadohadacho</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Quiquaya, W. of the Kadohadacho</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Tahianihougs, N. of Red River</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Tchanchie, N. of Red River</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Zauanito, W. of the Kadohadacho</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Apache, W. of the Hasinai and Kadohadacho</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Choctaw, E. of the Hasinai and Kadohadacho</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Nabiri/Nabiti, N. of the Hasinai*</td>
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<td></td>
</tr>
<tr>
<td>Sadammo</td>
<td>X</td>
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<tr>
<td>Yojuane, W. of the Hasinai</td>
<td>X</td>
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<tr>
<td>Anao, W. of the Hasinai</td>
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<tr>
<td>Auyx</td>
<td>X</td>
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<tr>
<td>Caai, SW of the Hasinai</td>
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<tr>
<td>Cauucozi, SW of the Hasinai</td>
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</tr>
<tr>
<td>Caisquetebana, SW of the Hasinai</td>
<td>X</td>
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</tr>
<tr>
<td>Cantonon, on the Brazos River</td>
<td>X</td>
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<tr>
<td>Kannehouan, on the Brazos River</td>
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</tr>
<tr>
<td>Kanohtatino, on the Brazos River</td>
<td>X</td>
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</tr>
<tr>
<td>Karankawa, S. of the Hasinai</td>
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</tr>
<tr>
<td>Kichai, W. of the Hasinai</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Nauydx*</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Nondacau*</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Quibaga</td>
<td>X</td>
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</tr>
<tr>
<td>Simaoama, W. of the Hasinai</td>
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<tr>
<td>Tonkawa, W. of the Hasinai</td>
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</tbody>
</table>

* Caddoan-speaking tribes


a means to absorb and manipulate the Europeans. He uses symbols of sacred and secular Caddoan rituals and greeting ceremonies to draw out these relationships, as such rituals and ceremonies "conferred upon Europeans positions and statuses within indigenous social systems. By means of such incorporation...Caddos were able to extend to their relations with Europeans those basic principles and themes that ordered and gave shape to their own distinctive societies" (Sabo 1995a:86-87). Caddoan rituals and greetings seem to dominate much of the Spanish and French archival documents, puzzling the European observers with their effusiveness, but are sadly missing from the observations and records of the Americans, strongly hinting as the inability of the Caddo by the 1810s to exploit existing American trade and military relationships.

New historical studies of the Caddo are considering the social and political character of the Hasinai and Kadohadacho, two of the Caddo
confederacies in historic times (the other being the Natchitoches), following in the tradition of historians and ethnographers such as Herbert E. Bolton and John R. Swanton who pursued Caddo historical research in the early 1900s (see Lee 1998; Smith 1995, 1996; Tanner 1993, 1996). These studies are crucial to understanding the early historic (pre-1835) archeology of the Caddo peoples, as is the continued archeological study of the early 19th century Timber Hill site near Caddo Lake (Parsons et al. 1999). Other historians are focusing on the routes of European explorers in Caddo country (Hudson 1997; Foster 1995; Young and Hoffman 1993), helping to locate important Caddoan villages, tribal areas and aboriginal trails, as well as flesh-out economic and political relationships between the Caddo, other Native American groups, and with Europeans. These studies make evident the vibrant and dynamic nature of Caddo lifeways from prehistoric times down to the present-day, and the impressive social and cultural complexity and diversity that characterizes Caddo Native history.

As previously noted, the powerful, agricultural Caddoan chiefdoms were recognized as the “Great Kingdom of the Tejas” by the Spanish and French in the 17th and 18th centuries, who they chose to accommodate and cooperate with when it was to their advantage, while they introduced them to their own sacred and secular rituals. Even in the early part of the 19th century, the Caddo political leaders (such as the caddis Tinhouen, Dehauit, and Iesh or Jose Maria) were still recognized as politically astute and masterful mediators and alliance-builders between European and Anglo-American explorers and colonists (Carter 1995a; Pertula 1996c; Smith 1995), as well as with Native American groups such as the Comanche, Wichita, and Apache tribes.

With the permanent Anglo-American settlement of the region in waves of immigration after about 1815, it was the Caddos misfortune to have been living on choice and fertile farmlands desired by the Anglo-Americans (Smith 1995:103). In a few short years, they were dispossessed of their traditional homelands by the U.S. and Texas governments, their lands and goods swindled from them by U.S. Federal Indian agents in the Caddo Treaty of 1835, and eventually they were forced in 1859 to relocate from the Brazos Reserve in Texas to the Wichita Agency in western Oklahoma (then Indian Territory) (Smith 1996). Shortly thereafter, they were caught up in the Union and Confederate struggle for the Indian Territory during the Civil War, and with little trust for either the rebel or federal governments, the Caddo tribe abandoned their lands in Indian Territory for lands in Kansas (see Figure 7).

Carter (1995a) relates present-day Caddo thoughts, rituals, and ceremonies to highlight the strong and pervasive continuities from the Caddo’s past to modern times, even during times of conflict. The discussion of the Turkey Dance among the modern Caddos, when juxtaposed with the description of the Caddo women dancing the victory dance for Henri Joutel and his French companions in 1687, make clear how the victory dance then, and the Turkey Dance now, were and are used by the Caddo to celebrate their survival, plus “recount history... [and] carry messages from the past” (Carter 1995a:41).

Similarly, when she talks about the special place of “that kind of pole” (itcha kaan-nah) in the context of the Ghost Dance rituals among the Caddo in the 1890s, and the use of a similar kind of wood pole among the Nabedache Caddo in 1690, our understanding of the long-standing and continued importance of tobacco, fire, and smoke to Caddo religious rituals and ceremonies in prehistoric and historic times is broadened. Think of the powerful influence of John Wilson (Nishkantu or “Moonhead”) of the Caddo in the rise and spread of the peyote religion among Native American tribes on the Southern Plains in the 1880s (Andersot 1996:44-45; Miller 1996:245, 252), and it compares favorably to the influence and negotiating tenacity of Caddo leaders like the caiddices Tinhouen (from ca. 1760-1789) and Dehauit (from ca. 1800-1833) of the Kadohadocho, and Iesh or Jose Maria (from about 1842 to 1862) of the Anadarko or Nadaoco tribe.

Further insights into the traditional character of Caddo life bring out and pinpoint important historic period changes in their ritual beliefs and political practices. For instance, Carter (1995a:177) notes “a startling change in governance” described by Father Gaspar Jose de Solis in 1768 among the Nabedache, the westernmost of the Hasinai Caddo tribes. In that community, a Caddo woman called Santa Adiva was the principal authority, instead of the xinesi and caddi, hereditary male leaders. Not surprisingly, such a change is likely related to “epidemics decimating Hasinai villages after the coming of the missionaries or the Spanish policy of presenting the staff of leadership to an elected leader had broken the hereditary chain” (Carter 1995a:177).
In the larger context of Caddoan society, however, the hereditary chain of Caddo leadership—strong, peace- and alliance-building caddis—seems to have continued unbroken among the Hasinai and Kadohadacho; this ultimately was the source of their strength. From European and American accounts (see Bolton 1914; Garrett 1942-1946), it is clear that the Caddo political leaders played important and influential roles in shaping the major political decisions of the day to favor the Caddo peoples, decisions that affected other Native American groups and Europeans, and in arranging and bringing to fruition alliances between the Caddo, powerful Native American groups like the Comanche and Wichita tribes, and European nations.

CONCLUDING COMMENTS

From this review of Caddoan Native history from ca. 1530 to 1859, in the face of ever increasing conflict and contact, the Caddo peoples experienced devastating population losses from epidemic diseases, an estimated 75 percent between 1687 and 1790, group amalgamations, increased hostilities from slave-raiding Osage warriors, territorial abandonments and group movements, fundamental changes in trading prerogatives, and a forced removal from their ancestral homelands. Nevertheless, the Caddo peoples have survived, with a powerful influence over other Native Americans in Texas during much of that time. Their survival called on all their religious faith, their political strength, influence and leadership, and their continued traditions and beliefs. We have much to learn from them still.

The cultural and oral traditions of the Caddo peoples remain vibrant (cf. Carter 1995a; Newkumet and Meredith 1988). So too do archeological and historical studies of the Caddo. In some small way, then, I hope this brief study of the life and times of the Caddo peoples between 1530-1859 contributes to a broader and more meaningful understanding of their past—a past that is compelling but also tragic—as well as their present and future.

NOTES

1. Interestingly, some of the enemies of the Hasinai and Kadohadacho in the late 1600s included Caddoan-speaking groups such as the Nabiri or Nabití (Campbell 1996p), the Nondacau (or Nondaco [Campbell 1996r]), and Nauydix (or Nauydiche), groups who later were more closely allied with the Hasinai confederacy. Other possible Caddoan-speaking tribal groups mentioned by Henri Joutel (see Table 2) as enemies of the Kadohadacho include the Nadaho, Nadeichia, Nacohi, Nacassa, Nahacassi, Nadacho, and the Nardichia. All these tribal names begin with the Caddoan na, a locative prefix in the Caddoan language (see Chafe 1993:222).

2. Hasinai Caddo slave-raiding against the Yojuan in 1714 led to Yojuan retaliation, where they attacked and destroyed the Hainai fire-temple kept by the xinesi (Newcomb 1993:17; Smith 1995:42).

3. The area between the Sabine and the Sulphur rivers, occupied by Titus phase groups (Thurmond 1990; Pertula 1995, 1998), appears to have been essentially abandoned, however, by about 1680, if not earlier. The Caddoan groups that lived in this once-densely populated region were not directly visited or contacted by either the Spanish or the French. The introduction of European epidemic diseases is thought to be primarily responsible for the virtual abandonment of the region by these Pineywoods Caddo peoples.

ACKNOWLEDGMENTS

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The Effects of Epidemic Disease On Caddo Demographic Structure

Sharon McCormick Derrick and Diane E. Wilson

ABSTRACT

During the historic period the strong political foundation of the Caddo confederacies was shaken by a dwindling population, reduced in part by the demographic consequences of exposure to recurring infectious disease epidemics. The demographic effects of a devastating disease outbreak among the Caddo and their neighbors in Northeast Texas and Northwest Louisiana in 1777-1778 are examined and compared with demographic data from a skeletal sample of 482 individuals from 59 archeological sites associated with the Caddo peoples. The results of the burial population analysis show no demographic changes in age at death, age-specific mortality, or sex-specific mortality between pre-contact and protohistoric/time periods. These results suggest either that these trends cannot be ascertained from the existing skeletal samples recovered from the study area or that protohistoric epidemics did not produce drastic demographic trend effects among the Caddo.

INTRODUCTION

Infection is currently the leading cause of death worldwide and the third leading cause of death in the United States (Fauci 1998). The worldwide increase in emerging diseases led by antibiotic resistant strains of bacteria such as Streptococcus, Staphylococcus, Tuberculosis, and pathogenic Escherichia coli, and by the re-emergence of influenza, plague, pertussis, brucellosis, cholera, and dengue fever has fueled a renewed concentration on infection control in the public health community (Knox 1999; Krause 1998). New infections and emerging diseases that have redesigned themselves to thwart herd immunity currently threaten the survival of not just the immuno-suppressed, but all demographic categories of people in both non-industrialized and industrialized nations (Anderson 1998; Susser and Susser 1996). Potential terrorist attacks using biological weapons that disperse botulism, anthrax, or even smallpox have also become a concern to public health officials (Garrett 1999).

Therefore, studies of the geographic spread of past infectious disease epidemics, such as those that struck Native American communities during initial contact with Europeans, and the human cultural and physical reaction to those epidemics, can be useful not only to archeologists but also to modern public health researchers. This study examines the impact of an historic period infectious epidemic on one Native American group, the Caddo, in an effort to understand the possible effects of previous epidemics during prehistoric times.

The Caddo, a broad term for the descendants of Caddoan-speaking groups who had lived for a thousand years in portions of what is now Oklahoma, Arkansas, Louisiana, and Texas, were relocated by federal order from settlements in Texas to lands north of the Red River in 1859. The population of the various ethnic divisions of the Caddo had dwindled over time and this was one important factor in the loss of political clout that eventually allowed the Caddo people to be removed from their homes.

Eyewitness accounts from the late 1700s through the 1800s describe the great toll that disease took on various Caddo communities, and periodic 19th century census reports for the Caddo reflect decreasing numbers from one decade to the next (Bolton 1914; Morfi 1935; Sibley 1922). The Caddo population, contending with encroaching refugee groups displaced by the American Revolutionary War and sorting out power struggles with various European and American interests in the area, were not able to recover from the high mortality and
reduced fecundity and fertility that was the demographic result of epidemic diseases. The strong political foundation of the Caddo confederacies was shaken and fractionalization of Caddo communities led to a number of negative cultural changes, including breakdowns in leadership structure and a possible increase in interpersonal and intergroup conflict (Bolton 1914).

It seems logical, considering the devastation wrought by historic epidemics, that protohistoric epidemics of European-introduced diseases were also destructive to the Caddo in terms of high mortality, lowered fecundity and fertility, and related stress on their social organization. However, in spite of much scholarly interest in this topic, quantification of the demographic effects of epidemics upon the Caddo during the protohistoric and early contact periods has remained elusive for a number of reasons. There are no written records or actual population counts from which to calculate real mortality rates. The analysis of burial populations is hampered both by the acute nature of epidemic disease and by issues of incomplete recovery of remains. Death from the types of infectious diseases that produced these epidemics came quickly, so few of the infected persons experienced bone involvement and, therefore, diagnosis of smallpox, influenza, plague, etc., from skeletal remains is unusual. The archeological recovery of Caddo skeletal remains is also inherently biased, whether from poor bone preservation, or from the types of sites that have been excavated. However, Spanish and French records from the 1700s provide useful information concerning some of the early historic epidemic outbreaks that may be relevant to earlier disease episodes. In 1777, and continuing throughout 1778, a costly series of epidemics struck the Caddo, European-Americans, and African-Americans then living in the Red River basin and the Western Gulf coastal plain portions of northeastern Texas and northwestern Louisiana (Figure 1). The demographic effects of the 1777-1778 epidemics impacting the Caddo and neighboring residents of the area can be used to model some of the likely effects produced by protohistoric epidemics, and these data can be compared with demographic data from a large archeological skeletal sample from the area. If protohistoric disease epidemics, decimated Caddoan communities as severely as the 1777-1778 epidemics, the demography of the burial populations should reflect the presence of trends left by epidemic disease after the entry of Europeans into the New World.

**INFECTIOUS DISEASES AND THE CADDIO**

Infectious material that can cause human disease is spread from an infected person through person-to-person contact, contamination of objects in the environment, or transmission by a vector (e.g., mosquitoes or fleas). Whether an exposed person actually becomes ill depends upon the extent of contact with the infectious material, environmental conditions that affect the susceptibility of the person or survival of the infectious agent, the means of entry into the body, and individual behavior (Anderson 1998; Trimble 1986; Wilson 1995). The rate of death from contracted diseases in a group of non-immune people depends upon the same variables, with the addition of the pathogenicity and virulence of the disease-causing material.

Various observers described a high death rate in Native American communities from European-introduced infectious diseases as early as the 16th century (Nixon 1946; Stearn and Stearn 1945; Swanton 1942). A German missionary wrote in 1699 (reproduced in Stearn and Stearn 1945) that: “...the Indians die so easily that the bare look and smell of a Spaniard causes them to give up the ghost.” Although not all Native American populations were affected equally by the import of European diseases, and reports of deaths in some communities may have been exaggerated, the Caddo were at high risk for contracting infection because their villages were usually clustered in congregated settlements along river drainages and other trade routes (Ramenofsky 1990). In fact, at various times certain Caddoan communities were moved in order to facilitate trade (La Vere 1993, 1998). For example, in 1705 the Natchitoches moved closer to New Orleans after a successful meeting with French representative St. Denis and then later moved back to Natchitoches, ostensibly to renew trade with the Spanish (La Vere 1993). Due to frequent contact with outsiders who may have introduced disease, the Caddo propensity for trading probably placed some communities at greater risk for infection from non-residents, both Native American and European. Pre-contact population estimates, developed from ethnographic and ethnohistorical observations and archeological evidence related to numbers of houses
and settlement patterns, indicate that the Caddo may have experienced as much as a 94 percent loss in numbers from ca. 1520 to 1890 (Dobyns 1983; Ewers 1973; La Vere 1993, 1998; Mooney 1928; Pettula 1992, 1993; Smith 1995). Mooney’s (1928) estimate of 8,500 people living in the Caddoan area at sustained contact has been revised several times, most recently by Smith (1996), who placed the Caddo population at contact somewhere between 10,000 and 12,500, with a nadir of 500 in 1890. The accuracy of these types of estimates has been questioned by Henige (1986, 1998), who argues that the current methodology used to estimate pre-contact Native American population figures is inherently flawed and results in inflated numbers. Yet, regardless of the reliability of pre-contact Caddo population estimates, changes in demographic structure over time may be used to assess the effects of epidemic disease. For example, Thornton (1997) argues that although smallpox and other epidemics probably reduced Native American populations to a certain extent, mass death was not necessarily the primary factor in depopulation. Rather, he proposed that a drop in fecundity resulted as people lost their spouses, the mortality of pregnant women increased during epidemics, and cultural breakdowns occurred, preventing population recovery for a number of generations after a disease episode.

These types of demographic changes leave their mark in both living and burial populations. Living populations become smaller in number for several generations and the age and sex distribution becomes skewed for a time in favor of males and middle-aged individuals. If recovery occurs, the population then
becomes younger in average age as more babies are born and the sex distribution begins to return to normal. Burial populations can reflect the demographic changes seen in the living population. For a period of time, more young women, children, and the aged are buried. A burial population with an older average age that is skewed toward males follows this interval. After recovery, the burial population returns to a normal sex and age distribution. But if circumstances such as recurring disease epidemics prevent population recovery among the living, then the burial population will continue to exhibit a skewed sex and age distribution. In archeological populations with an under-representation of sub-adults and older adults, it is possible that the mortality curve will parallel an epidemic curve, although the slope will be less dramatic or steep. This would be expected if maternal mortality affected the population and resulted in a higher number of female deaths during the early child-bearing years. The result of relatively high maternal mortality can be a higher male adult mean age at death than experienced by females (Fix 1991).

Further, disease epidemics can disrupt a socio-cultural system, in turn increasing the impact of the epidemic. McGrath (1991) reports that flight and the subsequent spread of disease has traditionally been a common reaction to epidemics. In fact, the most frequently recorded reaction to epidemics that McGrath found in a search of the Yale Human Relations Area File is flight or migration, and flight from infection is still a common response in many parts of the world today (McGrath 1991; Wilson 1995). Abandonment of settlement localities within the Caddoan culture area as supported by archaeological evidence (Perttula 1992) may have been the result of flight from disease as well as amalgamation in response to shrinking numbers and changes in the sex and age distribution within communities. However, while migration may have profound effects on population growth and decline, it does not appear to affect mean age at death estimates in populations (Paine 1997).

THE "CRUEL FEVER"

At least two diseases were epidemic in northeastern Texas and northwestern Louisiana in 1777 and 1778. One disease was smallpox, an easily identifiable illness that had visited the Caddo in previous years; the other disease was unnamed in the Spanish records.

The unnamed disease sometimes referred to as the "cruel fever" appears to have been the driving force of the 1777 epidemic, returning in 1778. The symptoms and severity of this epidemic have suggested to some authors that the infection may have been one or more of the three forms of plague (Bolton 1914; Ewers 1973; Nixon 1946). The recorded descriptions of the symptoms and manifestation of this disorder are vague, as are many witness accounts of plague infestations (Twigg 1984). As described in de Mertens' (1977) account of the 1771-1772 plague epidemic in Moscow, many citizens believed plague to be a disease of history and were disbelieving of initial plague diagnoses. Possibly the European residents of New Spain did not recognize the disorder or refused to believe that the horrible disease had struck again.

Yersinia pestis, a gram-negative bacillus, causes plague, a European import that could have moved into New Spain by ship (Nixon 1946). Y. pestis, usually associated with rats, is actually transmitted either by the bite of one of several species of flea or the handling of the blood or tissues of an infected animal. Thus, hunters can become infected from skinning and butchering their prey. Plague is an acute infection with a 2-8 day incubation period followed by severe headache, fever, chills, delirium, and prostration. Bubonic plague is the most common type of plague and this form is associated with the presence of an extremely swollen lymph node (bubo) in the region near the flea bite. Untreated with modern drugs, bubonic plague has a 50-60 percent case-fatality rate. Septicemic plague may appear without the swollen node and resembles gastro-intestinal infection or appendicitis. If the infection spreads to the lungs, pneumonic plague results, leading to human-to-human transmission by coughing out airborne droplets (Goddard 1999; Hamilton 1987; Levy 1999). Septicemic and pneumonic plague, both highly contagious, have case-fatality rates approaching 100 percent.

THE 1777-1778 EPIDEMICS

A sequence of events set the stage for the epidemics of 1777-1778. An increase in contact between the Spanish and the Caddo, and poor health of the residents of some of the surrounding Spanish
settlements, were factors that put people living in the area at risk for epidemic disease. In 1770, Athanase de Mézières, the Lieutenant Governor of Natchitoches, began assembling a Spanish-sanctioned Indian trade system that resulted in increased traffic with the Caddo tribes (La Vere 1993). These peoples included the Cadohadacho, Yatasi, and Natchitoch, who lived along the Red River and Sulphur River drainages, and the Hasinai clustered along the Neches, Angelina, and Sabine drainages (see Figure 1). De Mézières wrote a letter to Unizaga y Amezaga (Governor of Louisiana) dated April 30, 1770, describing the poor circumstances of the inhabitants of the settlement of Los Adaes and predicting that if another epidemic should hit the region these malnourished people would suffer dire consequences (Bolton 1914). De Mézières’ thoughts foreshadow the terrible epidemics that began in the late spring or early summer of 1777 (Bolton 1914; Morfi 1935; Smith 1996).

The origin of these epidemics has not yet been pinpointed but two events that occurred in early 1777 are possible sources for the introduction of infection. In March 1777, de Mézières reported that at least 800 Panismahas (an ethnic grouping within the Pawnee culture) had recently moved into the region between the Taovayas and Cadohadachos (Figure 2). This influx of people from the Missouri River area was rumored to be the result of clashes with other Pawnees and the British over trade (Bolton 1914; John 1975). The Panismahas may have provided a large population of susceptible people needed to fuel a new epidemic.

In the late spring of 1777, an English ship, the Robert, was stranded on the Texas coast at the mouth of the Neches River in Sabine Lake. The Englishmen gave local Native Americans suits of cloth and bolts of material from the stranded ship (Morf 1935). Subsequently, the Robert was stripped of sails, rigging, and all materials that could be carried, leaving only the rest of the cargo (bricks). Although this act was blamed on nearby Native American groups, the ship was most likely stripped by Gil Ybarbo and company from the settlement of Bucareli who discovered the Robert in July 1777 (Weddle 1995). Ybarbo also found a lost Englishman named Miller who had originally sailed on the ship from England via Jamaica but had been put adrift in a canoe. Miller was suffering from a fever but returned with Ybarbo and his men to Bucareli (Weddle 1995).

Due to the common presence of domestic rats in the holds of historic era commercial ships, plague has traditionally been associated with commerce and ship travel (Levy 1999). Cloth from a ship’s cargo, an ideal environment for the flea vectors responsible for the spread of plague, was placed in a strategic location at the mouth of the Neches River and then carried north into Caddo territory. These tradeable goods, and people infected by them, could easily have traveled further, spreading disease into other Caddo and non-Caddo communities (see Figure 2).

A census for Natchitoches, Louisiana taken by de Mézières in February 1776 and reiterated by Rippeydá (Governor of Texas) in a letter to Teodoro de Croix (Commandant-General of the Interior Provinces of New Spain) in April 1777, reported that the Natchitoches presidio and villa comprised 1,021 people and Bucareli, 300 people (Bolton 1914). By August 1777, 17 people at Bucareli had died of disease and the Bidai, a neighboring non-Caddo group, had already lost approximately 50 percent of their population. Three important Native American leaders from the region also died from disease.

Natchitoches was particularly hard hit by the epidemic in October through December 1777. At least 91 deaths were registered in the parish records for the years of 1777-1778, 48 of which occurred from October to December 1777, in sharp comparison with the total of 29 deaths recorded during the previous two years (Mills 1977). De Mézières lost his wife, a son, a daughter, and several other members of his household to the epidemic during December (Bolton 1914; Mills 1977). Children comprised a large number of the dead (16 percent), but there was no difference in sex-specific mortality. Unfortunately, the ages of the adults were not given in the death records so age-specific cohorts among adults cannot be calculated. The epidemic continued until April 1778 in Natchitoches, although never again achieving the high mortality of the October to December 1777 period. In November 1778, de Mézières wrote that the epidemic that was so devastating in Natchitoches the previous year had reappeared among the natives of the surrounding area, including the Yatasi, Quitreis [Kicxal], Nasonis, Taconas [Tawakoni], and Taovayas, and that many people had died (see Figure 2). The Cadohadacho confederacy, which had not been greatly affected in 1777, was hit hard by the epidemic in 1778 (Smith 1996).
Following the 1777-1778 epidemics, certain groups of Caddo were described as consisting of very small numbers (Mori 1935). For example, the Hainai were reduced to about 80 warriors, the Napeda about 40, and the Nacogdoches about 300. Using a “best guess” figure of five people per adult male, the population estimates are 400 for the Hainai, 200 for the Napeda, and 1,500 for the Nacogdoches (cf. Smith 1996). However, these numbers may be inflated if women of child-bearing age and children were at greater risk for death from these epidemics than adult males. The mortality rates for the Caddo and their Native American neighbors during the 1777-1778 epidemics

were higher in most instances than those of the primarily Euro-American and African-American settlements. However, the number of individuals who died at Bucareli and Natchitoches suggests that the Euro-Americans were also heavily impacted by these epidemics.

Smallpox had previously been epidemic among the Native Americans in the Caddoan area and, in fact, there was a serious outbreak around Nacogdoches in 1759 (Ewers 1973). Prior exposure to Variola should have conferred some immunity to the adult inhabitants of the area. The high mortality experienced by both Euro-Americans and Native American peoples during the 1777-1778 epidemics suggests that the “cruel fever” may have been a disease of recent import. Mapping of recorded mortality for the epidemics shows the spatial trends in the diffusion of the disease (see Figure 2). Since not all people who got sick died, there were likely many more infected people than a map of those who died would show (Wilson 1993). However, the geographic spread of death from the epidemics shows an earlier incidence of disease in the southern portion of the study area while the people to the north, including the Cadzhadachos, were not heavily affected until 1778. This lends support to our hypothesis that the English ship may have had a role in the inception of the epidemics.

DEMOGRAPHY OF THE CADDIO

BURLAN POPULATIONS

Demographic information was compiled from a skeletal sample of 482 individuals representing 58 archeological sites located in northeastern Texas and northwestern Louisiana, and one site in southwestern Arkansas (Table 1). The sample was divided by date and location into four burial populations representing the Early Caddoan period (A.D. 900-1200), the Middle Caddoan period (A.D. 1200-1400), the Late Caddoan period (A.D. 1400-1685), and the Historic period (A.D. 1685-1860). Due to the lack of resolution in dating of the burial populations, placement of remains within a protohistoric time period of A.D. 1520-1685 was considered to probably be inaccurate and artificial. Therefore, the Late Caddoan period is used for the purpose of this study to approximate the protohistoric period, with the acknowledgement that some of the remains date between A.D. 1400-1520.

Each burial population is therefore an artificial cohort of individuals who lived and died over periods of time up to 300 years in length and who may have lived in different communities in the region. These cohorts were compared in terms of mean age at death, age-specific mortality, and sex-specific mortality in order to assess trends over time that could be attributed to the demographic effects of epidemics. Specifically, we anticipated there would be changes in life expectancy and age-specific or sex-specific mortality during the Late Caddoan and Historic periods in contrast to the earlier prehistoric periods.

The Early Caddoan period cohort is comprised of 89 individuals from eight sites (Figure 3, see also Table 1). The majority of these individuals come from mound sites, including George C. Davis (41CE19, n=14), Belcher (16CD13, n=9), and Mounds Plantation (16CD12, n=49). The Middle Caddoan period is not well represented with only 14 individuals present from three sites, Coker (41CS1, n=1), Forest Mound (41CE29, n=1), and Knight’s Bluff (41CS14, n=12). The Late Caddoan period contains the largest sample size at 287 individuals from 39 sites, providing the best representation of a specific time period. The majority of these individuals were recovered from large cemetery sites, such as Belcher (16CD13, n=37), Hatchel (41BW3, n=15), Tuck Carpenter (41CP5, n=44), Roitsch/Sam Kaufman (41RR16, n=46), and Mitchell (41BW4, n=74). Finally, 92 individuals represent the Historic period from 11 sites. Large cemetery sites such as Cedar Grove (3LA97, n=15), Goode Hunt (41CS23, n=17), and Clements Brothers (41CS25, n=26) include the majority of these individuals but other sites such as Moore’s Farm (41BW2, n=4), Susie Slade (41HS13, n=8), and Jim Allen (41CE12, n=13) are also represented.

The mean age at death for all four of the burial populations is relatively high but the Historic Caddoan period mean is the highest at 36.6 years (Figure 4). The Early Caddoan through the Late Caddoan periods have almost identical mean ages at death, ranging from 32.8 years in the Early Caddoan period to 32.4 years in the Late Caddoan period. The Middle Caddoan period mean age at death is 32.7 years.

Adult mean age at death was also calculated because it may be more relevant to archeological samples since it is not altered by sub-adult under-
Table 1. Archeological Sites.

<table>
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<tr>
<th>Site Name</th>
<th>Site No.</th>
<th>Early Caddoan</th>
<th>Middle Caddoan</th>
<th>Late Caddoan</th>
<th>Historic Caddoan</th>
<th>Total</th>
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Table 1. (Continued)

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<th>Late</th>
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</table>

Total Individuals    89  14  287  92  482

Figure 3. Locations of archeological sites providing data for this article.
enumeration. The adult means reflect a high of 42.2 years in the Early Caddoan period followed by 41.0 years in the Late Caddoan period, and 39.5 years in the Historic period. The lowest mean adult age at death was found in the under-represented Middle Caddoan period at 38.2 years of age at death (see Figure 4). There is no statistically significant difference between the burial populations in either overall mean age at death or adult mean age at death, and there is no statistically significant trend in changes in mean age at death over time.

The frequencies of individuals who died at certain ages within each time period are reported in Figure 5. Age-specific mortality figures for the statistically relevant cohorts illustrate the under-representation of subadults in the whole skeletal sample. The frequency of individuals represented by each subadult age category is only 13 percent or less of the burial population for each of the time periods, except for the Middle Caddoan period. This period exhibits a falsely inflated frequency of children represented by the 10-14 year age cohort due to the small sample size. The 40-49 year age bracket represents the majority of individuals for all of the cohorts.

Three of the burial populations exhibited a difference in age at death for each sex but, again, in none of these instances was the disparity statistically significant. Males had a slightly higher mean age at death than did females in the Early and Middle Caddoan periods. Females had a slightly higher mean age at death in the Historic Caddoan period, while males and females had an almost identical mean age at death in the Late Caddoan period (Table 2). These results suggest that maternal mortality did not result in significantly higher adult male mean ages at death throughout the temporal sequence, and that women of child-bearing age may not have been more prone to epidemic mortality than other age and sex cat-

Figure 4. Mean age at death by time period.

Figure 5. Age-specific mortality by time period.
Table 2. Sex-Specific Mean Ages at Death for the Caddoan Sample.

<table>
<thead>
<tr>
<th>Period</th>
<th>Females</th>
<th>Males</th>
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<td>Early Caddoan</td>
<td>42.1, n=24</td>
<td>44.4, n=14</td>
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<tr>
<td>Middle Caddoan</td>
<td>34.7, n=5</td>
<td>36.3, n=3</td>
</tr>
<tr>
<td>Late Caddoan</td>
<td>40.6, n=73</td>
<td>40.3, n=67</td>
</tr>
<tr>
<td>Historic Caddoan</td>
<td>39.2, n=17</td>
<td>36.5, n=22</td>
</tr>
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</table>

...categories, as suggested by accounts of the 1777-1778 epidemic.

Two important points must be made concerning the age-specific mortality rates calculated from examination of the Caddo burial populations. First, the very young and the very old are often under-represented in Caddo archeological samples. The traditional burial customs of the Caddo, along with the soil properties present in much of the Caddoan culture area, resulted in destruction of delicate bone through time, affecting the preservation of infants, children, and old adults who typically leave behind more fragile remains. Also contributing to the under-representation of the very young is the fact that Caddo infants were sometimes buried in a different location than the adults from the community, and thus a cemetery population is likely to under-represent that segment of the population. Secondly, the burial population cohorts used in this study are artificial groupings that accumulated over long periods of time. Such time periods tend to smooth out catastrophic mortality curves that are produced by high mortality events, such as can be caused by epidemics, warfare, and natural disasters.

Even given our reservations concerning the skeletal sample, if severe epidemics struck the Caddo from A.D. 1520 and continued throughout the Historic period, they should have produced a small but significant change in demographic composition between the Early and Middle Caddoan periods and the Late and Historic Caddoan period burial populations. In support of this assumption, the devastation caused by only one severe set of epidemic episodes in 1777-1778 resulted in such a loss of life that the Caddo almost disappeared as a separate ethnic group. However, the results of the burial population analysis suggest no real transition in mean adult age at death from the Early Caddoan period into the Historic period. It is possible that the demographic changes over time are so subtle that trends in age at death did not appear in the broadly-based burial populations examined here. Alternatively, the ultimate result of epidemic disease among the Caddo may have been decline in population, both through increased mortality and migration. Due to the smoothing effect of the archeological record and migration, the mean age at death was not affected, only absolute population numbers. The other, and perhaps more intriguing conclusion, is that epidemic disease was not as devastating to the Caddo population during protohistoric and early contact times as has been previously suggested.

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Smith, F. T.


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Susser, M. and E. Susser

Swanton, J. R.

Thornton, R.
Trimbale, M. K.

Twigg, G.

Weddle, R. S.

Wilson, J. L.

Wilson, M. E.
INTRODUCTION

The 230 years between the demise of prehistoric Pueblo settlements at ca. A.D. 1450 and the historic Pueblo Revolt of 1680 is archeologically perhaps the most poorly known period in far west Texas and southern New Mexico. Over the past two decades an impressive amount of archeological research has been completed regarding the nature of prehistoric settlement and adaptation in the region during the several millennia preceding A.D. 1450 (see Abbott et al. 1996; Miller and Kenmotsu 1999). Likewise, several investigations in the lower valley of El Paso and elsewhere have broadened our understanding of Pueblo Revolt and Mission period settlement and material culture between 1680 and 1880 (D. Brown et al. 1994, 1995; R. Brown et al. 1999; Gerald 1990a, 1990b; Martin 1999; Miller and O'Leary 1992a; Peterson and Brown 1992a, 1992b; Peterson et al. 1999; Staski 1998; Vierra et al. 1997, 1999). As a result, cultural historical and material culture aspects of the prehistoric and Spanish Colonial periods, as well as interpretations of settlement and adaptive systems during these periods, have undergone significant refinements.

However, with the possible exception of the Early Archaic period, the years between 1450 and 1680 probably remain the most poorly known interval in the entire archeological and historical sequence from the Paleoindian period to recent Historic times. Archeological evidence of post-Pueblo and protohistoric occupation by historically documented Native American groups is almost nonexistent. In a comparative sense, even the rather intangible occupations by Apachean groups, or at least evidence of their passing, seem to be much better represented in the archeological record (see Adams and Tagg 1997; Carmichael 1999; Eidenbach 1990; Fulghum 1988; Katz and Katz 1974; Kenmotsu 1992; Laumbach 1992; Sale 1991, 1997; Sale and Laumbach 1989; Southward 1978; Thompson 1979, 1983). The Jornada Mogollon area of far west Texas and south central New Mexico presents a stark contrast to adjacent regions—such as the central Rio Grande valley of New Mexico and the La Junta de Los Rios district of the Presidio Bolson—where numerous Spanish Colonial period Native American and European settlements have been documented, several of which were continuously occupied from Late Prehistoric through historic times (Cloud et al. 1994; Kelley 1953, 1985, 1986; Kenmotsu 1994; Mallouf 1990; Marshall and Walt 1984; Shackelford 1951).

Archival and ethnohistorical research provides conclusive evidence, albeit ambiguous and confusing, of the existence of numerous tribal groups, or naciones (nations), described under such names as the Mansos, Gortetas, Tanpachoas, Caguates, Sumas, Janos, and Jocomes in far west Texas, southwestern New Mexico, and northwestern Chihuahua (Bandelier 1890; Benavides 1965; Bolton 1916; DiPeso 1974, Vol. III; Forbes 1957, 1959; Gerald 1973, 1974a, 1990a; Griffen 1969, 1979; Hammond and Rey 1929, 1966; Hackett 1923-1937; Hodge 1907; Hughes 1914; Kenmotsu 1994; Naylor and Polzer 1986; Scholes and Mera 1940). Unfortunately, the archeological record seems to vanish about the point where the archival paper trail begins. Using the limited information available from the historical record, there have been some sporadic efforts to define various archeological expectations for the post-Pueblo and protohistoric periods (Beckett 1985, 1998; Beckett and Corbett 1992; Carmichael 1986; Everitt 1977; Lockhart 1998a, 1998b; Naylor
1969; Sale 1991, 1997). Given the almost complete absence of documented settlements and the extremely limited understanding of material culture for this period, most archeological reviews have been primarily structured in terms of presenting negative evidence and are therefore rather conjectural.

This article provides an updated and critical review of the extant chronometric and material culture evidence for settlements between 1450 and 1680 (Figure 1), a 230 year span between the presumed abandonment of prehistoric El Paso Puebloan settlements and the historically documented Pueblo Revolt of New Mexico when Tiwa, Piro, Tompiro, and other tribal groups loyal to the church and crown were resettled at the Ysleta and Socorro missions established in the El Paso lower valley (Hackett and Shelby 1942). However, the following discussion does not focus on historical accounts and ethnohistorical studies, as these are available in a number of primary and secondary sources. The specific intent is to examine the regional archeological evidence for post-Pueblo and protohistoric occupation, the problems of recognition and verification underlying this evidence, and hopefully to offer some new insights regarding the nature of settlement and material culture for this period. In turn, these discussions are related to the ethnohistoric accounts to assess how well these disparate sources of information correspond with each other.

**THE POST-PUEBLO AND PROTOHISTORIC PERIODS: A REVIEW OF THE CHRONOMETRIC EVIDENCE**

A comprehensive and unequivocal body of chronometric and archeological information indicates that Pueblo settlements across the Jornada Mogollon region of the western Trans-Pecos and southern New Mexico were abandoned around A.D. 1450 (Miller and Kenmotsu 1999). It is evident that a drastic reduction in the number of radiocarbon-dated features and contexts occurs between A.D. 1400-1500 (Figure 2). Using this as a proxy measure of feature construction and site formation, after A.D. 1450, rates of construction and use of major feature categories such as thermal features, habitation structures, middens, and storage or refuse pits declined to levels equivalent to the Middle Archaic or earlier. Another factor indicating that profound social and demographic changes took place is that the El Paso Brownware ceramic tradition, representing nearly 1200 years of relative technological continuity in manufacturing methods and raw material utilization, disappears from the archeological record after A.D. 1450. These patterns clearly suggest a major decrease in settlement intensity and a substantial decline in regional population occurred during the 15th century.

The demise of El Paso phase pueblo settlements after A.D. 1450 presents an instance, along with Casas Grandes, of abandonment of nucleated settlements by agricultural populations throughout much of the southern Southwest during the 15th century. Although several scenarios have been proposed for the decline of Puebloan occupations in West Texas (e.g., Upham 1984), two are relevant here. Foremost is the view that terminal events in the El Paso phase were a result of environmental change (an extended period of drought), or that such change was coupled with subsistence failure resulting from an over-specialized agricultural economy (O’Laughlin 1980; Upham 1984). A second position is that the fall—as well as the rise—of the Jornada pueblo system was a direct result of the influence of the Casas Grandes regional system (Schafsma 1979;
Figure 2. Summed probability histograms for 1305 radiocarbon age estimates from El Paso, Hudspeth, and Culberson counties of West Texas and Dona Ana and Otero Counties of south central New Mexico. Time interval of A.D. 1400 to 1500 is indicated by the vertical bar. Note the sharp decline in radiocarbon dates and dated features during this period.

Wimberly 1979). Kelley (1990; Kelley and Kelley 1991) proposes a similar explanation for developments during the La Junta phase in the eastern Trans-Pecos. Regardless of the nature of the underlying causes, however, the demise of the Pueblo settlement system clearly represents a profound change in social, economic, and subsistence systems in far west Texas.

Archeological and historical evidence indicates that quite a different series of events took place at this time in the eastern Trans-Pecos. Settlements in the La Junta del Los Ríos district may not have been abandoned around 1450, and may have been occupied until 1683 when Spanish missions were established in the Presidio Bolson. This period of time has been named the Concepcion phase (Kelley et al. 1940; Kelley 1985), but the dates are tentative. In contrast to the prominence of El Paso Brownware ceramics during the La Junta phase, locally produced ceramics such as Chinati Plain, Capote Red-on-Brown, and Paloma Red-on-Gray dominate Concepcion phase assemblages (Kelley et al. 1940). Intrusive wares from elsewhere, such as New Mexico or northern Chihuahua, are absent (Kelley 1986). More recently, Mallouf (1985, 1990, 1993) has documented a unique archeological manifestation designated the Cielo Complex. One of the more distinctive aspects of Cielo Complex settlements is an architectural style consisting of oval or round house enclosures measuring 2.7 to 3.4 m in diameter that are bounded by stacked stones. Radiocarbon dates indicate occupations dating between ca. A.D. 1330 and 1680 (Mallouf 1990). The particular settlement and adaptive system represented by the complex crosscuts the La Junta and Concepcion phases and offers intriguing support for a continuum of hunter-gatherer adaptations coexistent with agriculturalists in the Presidio Bolson, one that transcended the demise of agriculturally-based settlement systems in the adjacent Jornada Mogollon region.

No such distinctive continuity has been detected in the archeological record in far west Texas.
and south central New Mexico. Virtually all of the 206 architectural structures dated by radiocarbon and archaeomagnetism in the region can be confidently assigned to prehistoric periods prior to A.D. 1450/1500 or date after 1680. The earliest identified historic architectural feature is a collapsed and burned jicaral structure at the Ysleta WIC site (Miller and O’Leary 1992a), a Pueblo Revolt occupation dating between 1680-1725. Unlike areas to the east and north, no identifiable ceramic tradition such as the Chinati, Capote, and Paloma wares of the La Junta District or the Rio Grande Glazewares of the middle Rio Grande (Rio Abajo) of New Mexico has been identified in far west Texas.

In the absence of a distinct and visible archaeological record, the question of what transpired in the two centuries after A.D. 1450 has remained a perplexing one. Wimberley (1979), Beckett (1985), Tainter (1985), and Carmichael (1986) for the Jornada region, and Mallouf (1990) for periods after the end of the La Junta phase in the Big Bend region, take issue with the concept of abandonment, suggesting that populations reverted to a less intensive hunting-gathering subsistence organization similar to that practiced by indigenous groups observed by Spanish explorers during the 16th and early 17th centuries. Such adaptations may have left few visible archeological traces, although the Cielo Complex represents an archeologically distinct entity of this period in the Big Bend region (Mallouf 1985, 1990).

Offering a different perspective, Beckett and Corbett (1992; see also Beckett 1985) suggest that the existence of several radiocarbon and thermoluminescence dates postdating A.D. 1450 provide evidence of continued occupation of Pueblos through the 1500s. They further propose that El Paso phase Puebloan populations were ancestral to indigenous Manso groups described by early Spanish chroniclers. Beckett (1998) has recently extended this argument to include adjacent geographic regions, proposing ancestral connections between various prehistoric cultures in central and southeastern New Mexico and the historically documented Suma and Jumano groups of the Trans-Pecos.

In support of post-Pueblo occupations and settlement continuity, Beckett and Corbett (1992:43-47) provide descriptions of several chronometric age estimates thought to represent occupations of this period. Since this argument, as well as subsequent discussions in the literature (e.g., D. Brown et al. 1994; Lockhart 1998b; Peterson and Brown 1992a), have been phrased primarily in terms of post-A.D. 1450, or late, chronometric dates, it is important to review the accuracy and reliability of this evidence.

A critical appraisal of the extant radiocarbon database for the region indicates that several post-A.D. 1450 radiocarbon age estimates suffer from serious contextual, analytical, or interpretive problems. One such example is Pickup Pueblo in northeast El Paso, Texas. Beckett and Corbett (1992:44, after Gerald 1988:45-46) cite an uncorrected and MASCA-calibrated age estimate of A.D. 1530 ± 100 (RL-916) from Test Pit 2 situated outside the primary room block. Descriptions of the sample and context provided in the field notes and published report are vague, with some confusion over the composition of the sample, with both corn and charcoal specified in the report, field notes, and sample submission form.

To resolve this problem and clarify the dating of the pueblo, a portion of the original radiocarbon sample was obtained from the Centennial Museum, University of Texas at El Paso, and submitted to Beta Analytic, Inc. The results of the two chronometric studies are provided in Table 1. The measured 13C value of -11.5‰ for the replicate sample falls well within the range of C4 photosynthetic pathway plants of which Zea mays is a member. It is reassuring that the measured 14C ages of the original and replicate samples differ by only 20 radiocarbon years. However, correction of the Beta Analytic 14C age results in a conventional age estimate of 700 B.P. Since the sample material used for the original RL-916 date was corn, the age estimate should be corrected by adding 220 years. The calibrated age ranges for the Beta Analytic, Inc. and RL samples fall entirely within the accepted time interval of the El Paso phase. Moreover, two additional dates recently obtained from rooms and exterior activity areas at Pickup Pueblo fall securely within this period.

This illustrates one of the problems that may arise from an incautious use of radiocarbon data to identify Historic period occupations. Several age estimates listed by Beckett and Corbett were not corrected for isotope fractionation, nor calibrated for fluctuations in atmospheric carbon using recent dendrochronological calibration curves. In some cases, calendar dates were calculated by subtracting the radiocarbon age B.P. (often uncorrected) from A.D. 1950. Calibration will have various effects on the dates, in addition
Table 1. Results of Radiocarbon Dating for Replicate Sample from Test Pit 2, Pickup Pueblo.

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<th>δ13C</th>
<th>Corrected age BP</th>
<th>Calibrated age</th>
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<td>RL 916</td>
<td>Corn/Charcoal?</td>
<td>460 ± 110 BP</td>
<td>None</td>
<td>Not corrected</td>
<td>AD 1330 (1530)</td>
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<td>Beta 84959</td>
<td>Corn</td>
<td>480 ± 60 BP</td>
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<td>AD 1220 (1290)</td>
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* Hypothetical age estimate using assumed isotope value and corrected age based on results of replicate sample Beta 84959
1 MASCA dendrochronological calibration curve used by Radiocarbon Limited (RL)
2 Decadal calibration dataset and curve of Stuiver et al. (1998)

...to providing a statistical probability distribution (age range) that more realistically represents an interval in which the true age may fall. Several dates mentioned by Beckett and Corbett clearly fall within the El Paso phase when their calibrated age ranges are examined. As seen in the example above, the use of older calibration curves (e.g., Clark 1975; Damon et al. 1974; Klein et al. 1982; Ralph and Michael 1970) will provide different calendar age ranges and intercepts than more recent versions. Calibration curves also impose structure on the age ranges, and it is often useful to examine probability density histograms for particularly important or ambiguous dates.

Corrections for isotopic fractionation (13C) generally have less pronounced effects for wood charcoal samples of plants belonging to the C<sub>3</sub> photosynthetic pathway. However, significant age errors are possible if the particular sample consisted of materials derived from plant species of the C<sub>4</sub> or CAM photosynthetic pathways and the age estimate was not corrected for isotopic fractionation. Figure 3 illustrates the ranges of age corrections documented for samples from the study area. If a particular sample was charred plant material from common C<sub>4</sub> pathway plant species, such as Mormon Tea (Ephedra sp.), Dropseed (Sporobolus sp.), or Four-wing Saltbush (Atriplex sp.), or charred fragments of cacti or succulents of the CAM pathway (Agave sp., Yucca sp., Dasylirion sp.), the reported uncorrected radiocarbon age may be too young by 30 to 230 years. A substantial number of charcoal samples lacking a species identification have 12C values and age corrections ranging far outside the range of C<sub>3</sub> species (see Figure 3), indicating that these sample materials are from C<sub>4</sub> or CAM plants.

The majority of 13C corrections tend to increase the radiocarbon age of a sample. Thus, it is possible that an uncorrected date of apparent historic age will actually be older. Even dates obtained from common C<sub>3</sub> wood species such as mesquite (Prosopis sp.), creosote (Larrea sp.), and cottonwood (Populus sp.) may occasionally require correction factors of up to 80 years. In such cases, apparent post-Pueblo age estimates that fall near the prehistoric/post-Pueblo boundary would be pushed back securely into the prehistoric period if they had been corrected. Conversely, 13C corrections occasionally reduce the age of some C<sub>3</sub> wood charcoal samples, and some borderline prehistoric dates could actually fall within the post-Pueblo period. Such problems underscore the importance of correction factors in eliminating one of several uncertainty factors associated with radiocarbon dating. Unfortunately, in most cases the composition of the sample for uncorrected dates is unknown and this potential source of error cannot be evaluated or reconciled.

Some apparently late dates may have been obtained from samples that incorporated modern or recent materials, including organic material originating from non-cultural events. The current radiocarbon database lists nine samples where radiocarbon measurements were in excess of the modern standard, indicating bomb carbon and thus a post-1950
Figure 3. Correction factors in radiocarbon years for plant species common among archeological radiocarbon samples in West Texas and southern New Mexico. Note statistical outliers among series of unidentified samples, indicating the presence of C₄ and CAM plant species.

origin. All of these samples were thought to have been collected from prehistoric or early historic contexts, but the features were either modern or consisted of decomposed roots or other recent organic matter. Mesquite roots tend to decompose into dark brownish-black fragments in semi-arid copice dune environments, and without close inspection this material can be misidentified as prehistoric or historic charcoal of cultural origin. While such samples will usually provide post-1950 dates, an occasional sample may have older wood of sufficient age to yield a B.P. age estimate¹ that could be mistaken for a late cultural radiocarbon date.

Random laboratory counting errors or contamination during the collection, preparation, or storage of samples may also contribute to errors, although difficult to evaluate in a consistent manner. Heliotic effects may also result in highly anomalous dates, particularly for samples composed of annual plant materials. Such effects may be detected if replicate samples are analyzed or if three to five samples are submitted from the same context. In many cases, it is common for at least one anomalous date to appear among a series of submitted replicate or multiple samples from a specific context (see Camilli et al. 1988; Hard 1983; Mauldin et al. 1998; Miller 1996).

All these factors suggest caution in the interpretation of late radiocarbon dates or, for that matter, any radiocarbon date. Several of these effects can be eliminated or minimized through well-designed chronometric studies, including careful sample selection and documentation procedures. A critical evaluation of documentation for previously submitted samples may help discover the factors underlying the apparent reported ages, but unfortunately, detailed documentation that would provide information on context and sample composition is generally absent for the majority of samples.

With these factors in mind, I return to the issue of late dates. While several of the specific cases mentioned by Beckett and Corbett (1992) are in error or otherwise problematic, not all are without merit, and their premise of the existence of late chronometric dates deserves further consideration. Indeed, several pueblos aside from Pickup Pueblo have a small number of age estimates that extend slightly past A.D. 1450, as do several additional features and other archeological contexts throughout the region.
Chronometric methods utilized in the region include radiocarbon, archeomagnetism, obsidian hydration, and luminescence dating. Twenty-two archeomagnetic dates have been obtained from pueblo rooms, but only one from Firecracker Pueblo has a portion of the age range that exceeds A.D. 1400. Otherwise, the archeomagnetic dates closely and consistently correspond with the series of associated Pueblo radiocarbon dates ranging between A.D. 1275 and 1450 (Miller and Kenmotsu 1999). Beckett and Corbett (1992) reference a ceramic thermoluminescence (TL) date of A.D. 1561 ± 38 (WU-77d1) from pueblo site FB6913 (EPCM 31:106/3:1642) during Whalen’s (1980, 1985) chronometric study in the Hueco Bolson. They acknowledge Whalen’s (1980) observation that the series of TL dates were too young, a position subsequently verified by additional comparative studies that have confirmed ceramic TL dates are systematically younger than associated radiocarbon dates by 250 to 450 years (Miller 1996). Subtracting this offset factor would bring the TL date from FB6913 in line with the expected time interval for Late Formative pueblos in the region. Moreover, two obsidian hydration studies have been conducted at FB6913. As part of Whalen’s (1980) original chronometric study that included the TL dates, several obsidian artifacts were submitted to the Obsidian Hydration Laboratory, University of California at Riverside. Rim measurements ranged from 3.67-6.86 microns. A later unpublished study by Mark Bentley submitted an additional 10 samples to Chris Stevenson at Diffusion Labs. Again, rim measurements ranged between 3.30-10.96 microns. It is noteworthy that neither of these studies had rims measuring between 0.5 and 2.0 microns as provisionally identified at other late sites (see below). Obsidian hydration rim measurements may help substantiate the identification of Historic period contexts, but the current resolution and numerous contextual and methodological problems of the method limit its use to this corroborative role.

The current radiocarbon database for West Texas and southern New Mexico contains information on 1523 age estimates from 1095 individual contexts. Table 2 and Figure 4 review of the most convincing candidates for radiocarbon age determinations that may represent post-A.D. 1450 occupations. As a general rule, most age estimates between 550 and 10 radiocarbon years B.P. were included in the first selection. The second selection of candidates was based on an evaluation of sample context and composition, the precision of the age estimate, and whether it was associated with multiple dates or other chronological information. An additional nine dates extend through the historic period, but did not meet these criteria for inclusion. For example, Chrisman et al. (1996:358) report a corrected date of 350 ± 70 B.P. (UCR-2625) from Zone A at Pendejo Cave. However, the sample consisted of unburned twigs and other organic matter extracted from a packrat midden, and there is no demonstrable association with the limited amount of cultural materials recovered in Zone A. Accordingly, this date was excluded from further consideration. Despite these criteria, the list of 92 dates nevertheless represents a liberal selection: several are uncorrected, a few are from unreliable sample materials (e.g., bulk soil), and some are questionable on the basis of ambiguous archeological contexts or associations.

Table 2 and Figure 4 are divided into three segments according to their association with: (a) Late Formative period Pueblo contexts or other architectural features; (b) miscellaneous thermal features and rockshelter deposits; (c) known Pueblo Revolt and Mission period contexts in the Rio Grande valley. The uppermost group includes 28 potentially late dates from several El Paso phase pueblos or isolated rooms in the Hueco and Mesilla bolsons, including La Cabrera, Hot Well, Sgt. Doyle, Firecracker, and Embree Pueblos and the DACA Pithouse site. One date was from a charred maize cob collected from the surface of an isolated room at LA72147 in the San Andrés Mountains bajada north of El Paso. With the exception of three dates from the DACA pithouse site, the majority are corrected for isotopic fractionation.

The uppermost 13 dates of this group either terminate at A.D. 1450, or only minor portions of their probability distributions extend to A.D. 1500. A cursory inspection of the 2-sigma age ranges for 12 other dates would appear to indicate a significant occupation after A.D. 1450. However, this group of 12 dates represents only 10 percent of the 115 dates from pueblos and isolated rooms, the combined sequence clearly and unambiguously terminating at A.D. 1450 (Miller and Kenmotsu 1999). Virtually all the dates in this group are associated with sites, or in most cases specific contexts, from which two or more older dates have been obtained. Moreover, when probability density areas are examined,

Table 2. (Continued)

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<th>Sample Composition</th>
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<th>13C Age (B.P.)</th>
<th>δ13C</th>
<th>Corrected age B.P.</th>
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Miscellaneous Sites and Features with Post-A.D. 1450 Dates

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<th>Feature</th>
<th>Sample Composition</th>
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<th>δ13C</th>
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<td>41EP n/a</td>
<td>Castner 71</td>
<td>F.3*</td>
<td>Unid. charcoal</td>
<td>UGA 2288</td>
<td>520 ± 115</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>41EP493c</td>
<td>Keystone 33</td>
<td>Pit 7*</td>
<td>Unid. charcoal</td>
<td>RL 1165</td>
<td>400 ± 110</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>41EP1590</td>
<td>Vista Hills</td>
<td>F.9*</td>
<td>Unid. charcoal</td>
<td>Beta 79110</td>
<td>170 ± 50</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>41EP2770</td>
<td>Loop 375</td>
<td>F.2*</td>
<td>Unid. charcoal</td>
<td>Beta 26043</td>
<td>390 ± 110</td>
<td>-26.0</td>
<td>370 ± 110</td>
</tr>
<tr>
<td>41EP2933</td>
<td>Westport</td>
<td>F.1</td>
<td>Unid. charcoal</td>
<td>Beta 79607</td>
<td>500 ± 50</td>
<td>-24.7</td>
<td>510 ± 50</td>
</tr>
<tr>
<td>41EP2970</td>
<td>Vista del Sol</td>
<td>F.103</td>
<td>Unid. charcoal</td>
<td>Beta 47109</td>
<td>180 ± 50</td>
<td>-23.0</td>
<td>210 ± 50</td>
</tr>
<tr>
<td>41EP2970</td>
<td>Vista del Sol</td>
<td>F.103</td>
<td>Unid. charcoal</td>
<td>Beta 59974</td>
<td>70 ± 40</td>
<td>-24.1</td>
<td>90 ± 80</td>
</tr>
<tr>
<td>41CU008</td>
<td>Granado Cave</td>
<td>Burial 1*</td>
<td>Unid. wood</td>
<td>Tx 2829</td>
<td>510 ± 60</td>
<td>-25.8</td>
<td>500 ± 60</td>
</tr>
<tr>
<td>41HZ2504</td>
<td>Samalayuca</td>
<td>F.1</td>
<td>Unid. charcoal</td>
<td>Beta 91843</td>
<td>280 ± 60</td>
<td>-21.3</td>
<td>340 ± 60</td>
</tr>
</tbody>
</table>

a Indicates one or more earlier dates obtained from the same feature or context
b Indicates one or more earlier dates obtained from other features or contexts at the site
c Included in discussion of late dates in Beckett and Corbett (1992:43-47)
Figure 4. Calibrated 2-sigma age ranges for late radiocarbon dates from West Texas and south central New Mexico. Dates are arranged according to three major contexts: prehistoric pueblos, miscellaneous hearth features or rockshelter deposits, and Spanish Colonial settlements in the El Paso Lower Valley. Vertical bars indicate time intervals of interest for present discussion.
whether individually or as a group, the most statistically likely true ages of the samples range between A.D. 1400 and 1500. Accordingly, the most parsimonious interpretation is that these dates represent the terminal occupation period of pueblos at ca. A.D. 1450, although the possibility that some occupations lasted until A.D. 1500 cannot be discounted.²

The three lowermost dates in the pueblo group from La Cabrana, Hot Well, and the DACA Pithouse are different from the remainder in the upper group. The date from La Cabrana is intriguing since this pueblo is situated along the lower terrace of the Rio Grande valley at the northwest limits of El Paso, and lies within the historically documented area and topographic zone inhabited by the Manso nacion. However, the date has a calibrated age span nearly 500 years in duration; such poor precision hinders further temporal interpretations. Four additional dates from adjacent rooms at La Cabrana consistently fall within the El Paso phase. Likewise, the date from the uppermost fill of the DACA Pithouse has an exceptionally broad calibrated age span, in addition to being uncorrected. This date is substantially younger than four additional dates obtained from floor and subfloor contexts in the pithouse, and likely represents a natural intrusion within the aeolian dune deposits comprising the upper fill. This interpretation is supported by two mesquite wood charcoal samples from aeolian fills in features adjacent to the pithouse that yielded modern (post-A.D. 1950) dates. The very late date from Hot Well Pueblo does not accord well with chronometric and archeological evidence from adjacent rooms, and this strongly suggests it represents a modern contamination or other source of error.

The lowermost group includes 21 dates from Pueblo Revolt, late Mission, and late Historic period contexts documented during several excavations in the communities of Ysleta, Socorro, and San Elizario in the El Paso lower valley and at the Paraje San Diego locality north of Las Cruces, New Mexico. With the exception of two dates from San Elizario (41EP40) and one from the Garcia Locality (41EP4600), all are corrected for isotopic fractionation. Features investigated and dated include habitation structures, hearths, pits, and various undifferentiated cultural and natural deposits. These contexts are included to illustrate the typical radiocarbon age ranges expected for occupations associated with missions and presidios established after the Pueblo Revolt of 1680. Most are securely cross-dated by the presence of indigenous Valle Bajo Brownware ceramics, glazewares and polychromes from central and northern New Mexico, majolica wares from Mexico, and temporally diagnostic metal and glass artifacts. The majority of radiocarbon age ranges from these contexts clearly fall within the expected time interval beginning at A.D. 1680 and extending through modern times.

Seven dates have 2-sigma age ranges that extend into the protohistoric and post-Pueblo periods, although four of these have calibrated age ranges of nearly 400 years. Only the uppermost three dates depart significantly from the pattern of age estimates for Spanish Colonial period contexts. Other chronological and archeological information does not support the early ranges for three of the seven dates, and in one case the cultural association of the date is questionable. The two dates from 41EP3010 and 41EP38, the present-day location of Socorro Mission, are from contexts clearly associated with Valle Bajo Brownware ceramics and other artifacts of the Pueblo Revolt and Mission periods. The date from the remnant house structure at 41EP5204 is statistically indistinguishable from another younger date obtained from this structure; both dates and the structure are associated with ceramic and metal artifacts post-dating 1750. The date from the Old Socorro Mission (41EP1532) was obtained from a charcoal fragment collected from an undifferentiated soil stratum in a backhoe trench and was not associated with a cultural feature or recognizable artifact-bearing deposit. The age estimate from this sample predates the establishment of the mission at this location by a minimum of 70 to 100 years (Gerald 1990b; Martin 1999).

The three dates from 41EP40 and Paraje San Diego provide the sole evidence of potential earlier occupations. The date from 41EP40 near the San Elizario Chapel was obtained from a clay floor or occupation surface identified in a backhoe trench near the San Elizario Mission. The compacted stratum was situated at 110 cmbs and was associated with scattered pieces of adobe or daub, charcoal, and two brownware sherds (Peterson 1993). No additional cultural deposits were observed in a second backhoe trench placed 5 m south of the feature during subsequent investigations of the
locality (Vierra et al. 1997). The wood charcoal date from this context is uncorrected, and therefore the accuracy of the date and cultural context remain ambiguous. Two samples from Features 1 and 2 at Paraje San Diego have relevant age estimates. Paraje San Diego is an historically-documented campsite on the Camino Real, situated at the point where the trail leaves the Rio Grande valley and begins the crossing of the Jornada del Muerto (Staski 1998). Investigations here have documented a long period of use from protohistoric to Modern times. Based on the chronometric and ceramic data, it is likely that the campsite was used during the earliest periods of Spanish exploration. In sum, with the ambiguous exception of 41EP40, none of the archeological investigations in the Rio Grande valley have securely dated a Native American post-Pueblo or protohistoric component.

Returning to the post-Pueblo and protohistoric periods, the central group of 43 dates from miscellaneous features is particularly relevant. Twelve of the dates are not corrected for isotopic fractionation, and information on sample composition is available only for the date from LA26780. On the earlier end of the scale, the uppermost 11 dates have age spans and probability density areas similar to the Pueblo dates. The dated contexts were associated with typical ceramics of the period and it is reasonably certain these represent terminal Formative period features. On the later end of the distribution, about 35 percent of the features, represented by the lower 15 dates, have calibrated age ranges similar to those from Spanish Colonial contexts in the lower valley. While some may represent misidentified natural organic materials or modern features (e.g., Features 1 and 3 at LA107246 as documented by Sale and Gibbs [1998]), sample contamination, or heliographic effects, it is also quite likely several date indigenous occupations during the Pueblo Revolt and Mission periods. Although settlements during the Pueblo Revolt and Mission periods were centered in the Rio Grande valley floodplain, episodic use of the valley margins and interior basins is documented historically and archeologically (Gerald 1974b). The limited occupation at the Vista del Sol site (Miller et al. 1993) may represent such a location. Several features may be from Apache occupations at FB1613 (Carmichael, 1998 personal communication), LA39143 (Eidenbach 1983), several sites in the San Andres Mountains north of El Paso (Sale 1991), and possibly at Pintada Cave (MacNeish 1998).

CHARACTERISTICS OF COMPONENTS WITH POST-A.D.
1450 AGE ESTIMATES

Of primary interest for the present study are 17 age estimates from 15 features that fall primarily within the A.D. 1450-1680 interval. Characteristics of the 15 features and their associated site contexts are reviewed below. Eleven age estimates have sufficient precision that nearly the entire 2-sigma probability distribution falls within this interval. Two cases, LA49340 and Keystone 33 (41EP493), are among the late dates cited by Beckett and Corbett (1992).

41EP493 (Keystone Dam 33 North)

O’Laughlin’s (1980) investigations at Keystone Dam 33 North identified stratified Archaic and Formative period components. Work in Zone Two exposed a Formative component with several clusters of burned rock hearths and roasting pits; small pits were occasionally present in association with the burned rock features. Pits 5, 6, and 7 were in a relatively discrete cluster of several burned rock thermal features located in the north central portion of the site. Wood charcoal recovered from either Pit 5 or 7 yielded an uncorrected radiocarbon date of $400 \pm 110$ B.P.

There is some confusion about the provenience of this date. The text description of the cluster of pit features notes Pit 5 as having the late date (O’Laughlin 1980:131), while Table 2 and Figure 14 in the report indicate Pit 7 had the late date. O’Laughlin interprets the features as hearth pits cleaned after use, and suggests that Pits 5-7 are contemporaneous based on their proximity.

The majority of ceramics were El Paso Brownwares and other common prehistoric types. However, several unidentified sand-tempered sherd s were present from Keystone Dam 33 North. Additionally, Rio Grande Glaze F (n=2) and Glaze A (n=1) sherd s were found on the surface. Snow (1982) dates the production period of Glaze F from 1625-1680. It is unknown whether these sherd s were found in proximity to Pits 5, 6, and 7. Several projectile points were collected, but all appear to be
Archaic and Early Formative forms; no small triangular forms typical of the Late Formative and Historic periods were present. An obsidian sample from the fill of Pit 7 had no measurable hydration rim, an observation that could indicate either poor preparation of the sample for microscopic study or a recent origin for the flaked surface of the artifact.

41EP2770

41EP2770 is situated in the central Hueco Bolson (O’Laughlin et al. 1988). The site covered 1147 m² among several coppice dunes and deflated surfaces, and three features were investigated. Feature 1 was an eroded and disturbed hut structure. There was a small sample of lithic artifacts, a piece of red ochre and another mineral, and five El Paso Brownware sherds from the fill of the structure. A radiocarbon age of 125 ± 110 B.P. was obtained from a sample of wood charcoal from the structure fill. The other two features were basin-shaped pits (Features 2 and 3). An unidentified wood charcoal sample retrieved from Feature 2 yielded a corrected radiocarbon age of 370 ± 110 B.P., but it had no distinctive materials. Feature 2 was less than 5 m from Feature 1. It is difficult to interpret the age discrepancy between these spatially associated features, but the possibility that Feature 2 represents a minor protohistoric component cannot be ruled out.

FB1613 (Fillmore Pass)

Fillmore Pass is a dense, multi-component site situated along an alluvial ridge at Anthony Gap north of the El Paso city limits (Carmichael and Meyer n.d.). It has extensive Paleoindian and Archaic components, with several partial Folsom points and substantial numbers of channel flakes and Paleoindian tools. Other data also indicate a long history of occupation, including radiocarbon dates that range from 1890 B.C. through historic times, and over 300 obsidian samples, including several of the thinnest and thickest obsidian hydration rims on record in the region. The presence of an historic component is suggested by three late radiocarbon dates, several exceptionally thin hydration rims, and a small scatter of unusual brownwares. Several of the brownware sherds appear to be from a vessel with a conical base, and these may be of Apache affiliation (David Carmichael, 1998 personal communication).

Interpretation of the three late dates is hindered by several problems with sample composition and that the wood charcoal sample from Feature 8 was split and submitted to two laboratories. Beta Analytic, Inc. (Beta) reported an uncorrected age of 370 ± 50 B.P. for this sample, while the University of Georgia Radiocarbon Laboratory (UGa) reported a corrected age of 84 ± 55 B.P. Applying the ¹³C value of -26.7 ‰ for the UGa sample to the Beta date would correct it to 400 B.P., and thus the absence of a correction factor for the Beta date cannot account for the age discrepancy. A third uncorrected date of 210 ± 90 B.P. was obtained from a bulk soil sample retrieved from Feature 95. Based on ¹³C values and correction factors from other bulk soil samples in the region (see Figure 3), an additional 100 years could be added to this age estimate, thus bringing it into line with the Beta date from Feature 8.

FB12072

FB12072 is located in the central Hueco Bolson (Mauldin et al. 1998). It is an areally extensive site (ca. 23,000 m²), with 23 features, including burned caliche and limestone thermal features, one large stain, and several smaller hearth stains. Mauldin et al. (1998) report 13 radiocarbon dates from five features. Wood charcoal from Feature 12, a small burned caliche hearth, has a corrected age estimate of 270 ± 70 B.P. Multiple dates obtained from the other four features are internally consistent and range from 2040 ± 80 to 1640 ± 50 B.P. One obsidian artifact was submitted for hydration dating. The rim measurement of 2.59 microns for this sample is borderline for historic components, and the obsidian artifact was recovered over 10 m from Feature 12. Despite the size of the site, only 75 artifacts were recovered during surface collections and excavations, mostly chipped stone and a small number of groundstone artifacts. A single sherd of undifferentiated El Paso Brownware was also collected.

41HZ504

Site 41HZ504 and nearby site 41HZ505 are known as the Padre Canyon Paleoindian locality (Mauldin and Leach 1997a). The site is situated on
the floor of the Hueco Bolson, approximately 1 mile west of the Hueco Mountains. Feature 1 was a small (20 cm diameter) area of stained soil and charcoal on or near the surface. Several burned limestone pieces were scattered in the vicinity of the feature, but no artifacts were recovered from it. A small fragment of wood charcoal yielded a corrected AMS age estimate of 340 ± 60 B.P. (Mauldin and Leach 1997b). Aside from the radiocarbon age estimate, no other materials diagnostic of Formative or Historic occupations were recovered from Feature 1. Instead, formal tools, tool fragments, and other aspects of the lithic assemblage represent a substantial Paleoindian occupation.

**LA26780**

LA26780 is located at the Dona Ana County Airport just west of the El Paso city limits (Batcho 1987; Batcho et al. 1985; Duran and Batcho 1983). Chronometric data and several unusual aspects of the artifact assemblages indicate that LA26780 may represent one of the few substantial protohistoric Native American settlements in the region. A detailed examination of this site is provided below.

**LA49340**

LA49340 was recorded during the survey of the Navajo-Hopi Land Exchange on the west mesa of the Río Grande valley near the western limits of El Paso (Ravesloot 1988), and it has one of the late dates discussed in Beckett and Corbett (1992). An uncorrected age of 360 ± 50 B.P. was obtained from Feature 3, a small hearth stain associated with a scatter of burned rock. Aside from the radiocarbon date, the only other diagnostic item was a projectile point typical of Late Archaic forms.

**LA64087**

LA64087 was excavated as part of the GBFEL-TIE project near Orogrande, New Mexico, 45 miles north of El Paso (Swift et al. 1991). The site was a low density, multi-component hearth/artifact scatter distributed over 3600 m². Three widely spaced burned rock features were present. Feature 3 was a 1.2 m diameter charcoal-stained area, and mesquite wood charcoal from it yielded a corrected radiocarbon age of 440 ± 70 B.P. A corrected AMS date of 540 ± 90 B.P. was obtained from Feature 2. A third date of 1310 ± 100 B.P. from Feature 1 falls within the Formative period. Sixty-seven lithic artifacts and a small number of fauna were recovered during the excavations, but no ceramics or other distinctive items.

**LA72860, LA72169, and LA72151**

Surveys conducted on White Sands Missile Range property in the San Andres Mountains north of El Paso have documented several potential post-Pueblo or protohistoric sites, as well as several camps and rock art sites conclusively affiliated with Apache occupations of later historic times (Human Systems Research 1991; Sale 1991; Sale and Laumbach 1989).

The Horrendous Hearth site (LA72860) is situated near Hembrillo Canyon in the northern San Andres Mountains (Sale 1991; Sale and Laumbach 1989). It is dominated by a large burned rock feature (10 x 15 m) about 1 m in height. A corrected radiocarbon age of 330 ± 50 B.P. was obtained from a sample of wood charcoal collected from the periphery of the feature. The remainder of the site is a low density lithic scatter. Several micaceous brownware sherds were reportedly observed during the initial reconnaissance of the site, but could not be relocated during subsequent visits. Other notable artifacts include a projectile point typical of Archaic forms and one White Mountain Redware sherd.

Site LA72169 is situated on a canyon floor (Human Systems Research 1991; Sale 1991). It has a 13 m diameter burned rock feature associated with a low-density scatter of lithic and ceramic artifacts. A wood charcoal sample collected from a rock scatter at the feature margin yielded a corrected age of 290 ± 70 BP. The majority of the lithic assemblage consists of fine-grained materials. Other items include a single Chupadero Black-on-white sherd, a brownware rim sherd, and projectile point; the latter two artifacts are not described. A worn horseshoe was also present near the feature.

LA72151 is on a series of ridges bordering San Andrecito Canyon (Sale 1991), with two springs at its eastern margin. Occupation areas consist of approximately 10 burned rock features and several ash stains associated with a dense artifact scatter. Late Archaic projectile forms, El Paso Brown rim forms, and Lincoln Black-on-Red ceramics indicate
a long period of intermittent occupations from the Late Archaic through Late Formative periods at this favorable settlement location. Evidence of a post-A.D. 1450 occupation is provided by a wood charcoal sample from Feature 1 that yielded a corrected age estimate of 240 ± 50 B.P. Six obsidian flakes were submitted for hydration dating, and hydration rims range from 2.04 to 6.58 microns. Three specimens have rims of 2.04, 2.59, and 2.69 microns, which may represent relatively thin rims considering the higher altitude of the site. It is also notable that one of the obsidian flakes represents the only regional occurrence of the recently identified Jug Canyon obsidian source. The Jug Canyon source is located across the Rio Grande valley near the foothills of the Mimbres Mountains (Church et al. 1996).

**HAR 163 and HAR 166**

Comprehensive inventory surveys of lands under the jurisdiction of Holloman Air Force Base near Alamogordo, New Mexico, 90 miles north of El Paso, have identified several potential historic components (Lowry and Gibbs 1999). Site HAR 163 has two small hearth features associated with a very low-density artifact scatter dispersed over approximately 41,000 m² (Sale 1997; Sale et al. 1996a). Feature 2 was the best-preserved of the hearths and the only feature containing burned rock. Wood charcoal from the feature provided a corrected age estimate of 320 ± 60 B.P. In order to verify the dating of the feature, additional excavations were conducted and a second sample from the feature has a corrected age of 240 ± 50 B.P. (Sale et al. 1996b). A scatter of undifferentiated El Paso Brownware ceramics was present near the feature. The remainder of the site contained less than 400 lithic artifacts, a few groundstone fragments, and a small number of El Paso Polychrome sherds. Three projectile points typical of Late Archaic or Early Formative forms were collected.

Site HAR 166 is a large (ca. 1 km²) multi-component site with evidence of Paleoindian, Archaic, Formative, and post-1880 occupations (Sale 1997; Sale et al. 1996b). Several hearths were recorded but few artifacts were noted in association with them. Four features were tested, and three small ash stains yielded radiocarbon age estimates falling securely within the Late Formative period (A.D. 1200-1450). However, Feature 3 consisted of a very-well preserved burned rock hearth with substantial amounts of charcoal. It is noteworthy that, as with Feature 2 at HAR163, Feature 3 at HAR166 was the only hearth containing any substantial quantity of rock. A corrected radiocarbon age of 270 ± 60 B.P. was obtained from a sample of mesquite wood charcoal in the feature. As with HAR 163, a second investigation obtained additional dates, including a corroborative date of 290 ± 50 B.P. from Feature 3. In addition, a date of 340 ± 60 B.P. was obtained from mesquite wood charcoal in Feature 6. Projectile points representative of Paleoindian and Archaic forms were recovered from the site. Ceramics included typical Formative period wares, including six El Paso Brownware, four Lincoln Black-on-Red, and two Chapadero Black-on-White sherds, although a fragmentary vessel of possible historic affiliation was observed in the northern portion of the site. Sherds from this vessel had a reddish-orange surface color and a fine sand temper.

**Caballero Canyon**

Southward (1978) reports the results of investigations at a small site in Caballero Canyon, leading from the escarpment of the Sacramento Mountains. Artifacts include a glass trade bead and retouched and edge-damaged glass fragments associated with a burned rock feature with an uncorrected date of 325 ± 55 B.P. The artifact assemblage is characteristic of later historic Apache burned rock midden occupations in the Sacramento Mountains (Carmichael 1999), and thus it is possible that the true age of the sample, which was not corrected for isotopic fractionation, is younger than the measured radiocarbon age.

**THE POST-PUEBLO AND PROTOHISTORIC PERIODS: CONTINUITY, ABANDONMENT, OR DEPOPULATION?**

Table 3 provides a summary of these 14 sites and 15 dated features along with two features at Paraje San Diego and one at 41EP40 described earlier. The extent to which sampling or dating errors and other interpretive problems exist among these features is unknown, and it is uncertain whether they all represent late occupations. Corroborative samples have been submitted from only three features. In two cases involving Feature 2 at
<table>
<thead>
<tr>
<th>Site</th>
<th>Feature</th>
<th>Ceramics on Site</th>
<th>Ceramics in Features</th>
<th>Projectile Points</th>
<th>Additional Chronometric Data</th>
<th>Other Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>41EP40</td>
<td>Structure or stratum?</td>
<td>2 Valle Bajo Brownware</td>
<td>Same</td>
<td>None</td>
<td>None</td>
<td>Scattered daub</td>
</tr>
<tr>
<td>41EP493</td>
<td>Small pit</td>
<td>EP Wares, Mogollon brownwares, 3 Rio Grande glazeware sherds</td>
<td>Indeterminate</td>
<td>Several Archaic and Formative styles</td>
<td>2.59 micron hydration rim from pit</td>
<td></td>
</tr>
<tr>
<td>41EP2770</td>
<td>Small ash stain</td>
<td>EP Brownware</td>
<td>None</td>
<td>None</td>
<td>2 Formative Period radiocarbon dates</td>
<td>None</td>
</tr>
<tr>
<td>41HZ504</td>
<td>Ash stain with FCR</td>
<td>None</td>
<td>None</td>
<td>Folsom fragment</td>
<td>Diagnostic Paleoindian tools</td>
<td>None</td>
</tr>
<tr>
<td>FB1613</td>
<td>Small ash stain</td>
<td>Brownware (undescribed)</td>
<td>Indeterminate</td>
<td>Several Paleo-indian and Archaic forms</td>
<td>Radiocarbon 1890 BC - AD 1950, 300 hydration rims</td>
<td>None</td>
</tr>
<tr>
<td>FB12072</td>
<td>FCR hearth</td>
<td>EP Brownware</td>
<td>None</td>
<td>None</td>
<td>Multiple Late Archaic dates</td>
<td>None</td>
</tr>
<tr>
<td>HAR163</td>
<td>FCR hearth</td>
<td>EP Polychrome</td>
<td>EP UB</td>
<td>3 Archaic forms</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>HAR166</td>
<td>1 FCR hearth</td>
<td>Lincoln B/Red, Chup B/W, brownware (possibly historic)</td>
<td>Indeterminate</td>
<td>None</td>
<td>3 Formative Period radiocarbon dates, Paleo-indian formal tools</td>
<td>None</td>
</tr>
<tr>
<td>LA26780</td>
<td>FCR hearth</td>
<td>EP UB, Ramos Polychrome, Protohistoric brownware</td>
<td>None</td>
<td>Archaic and Late forms</td>
<td>1 Archaic radiocarbon date, very thin hydration rims</td>
<td>Spur rowel</td>
</tr>
<tr>
<td>LA49340</td>
<td>Small ash stain</td>
<td>EP UB</td>
<td>None</td>
<td>1 Archaic form</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>LA64087</td>
<td>FCR hearth</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>2 earlier radiocarbon dates</td>
<td>None</td>
</tr>
<tr>
<td>LA72151</td>
<td>FCR hearth</td>
<td>EP Brown, Lincoln B/R</td>
<td>Indeterminate</td>
<td>All Late Archaic forms</td>
<td>6 hydration measures, 3 between 2.0 and 2.6 microns</td>
<td>None</td>
</tr>
<tr>
<td>LA72169</td>
<td>Large FCR</td>
<td>Chupadero B/W sherd, brownware (undescribed)</td>
<td>Same</td>
<td>1 form undescribed</td>
<td>None</td>
<td>Horseshoe</td>
</tr>
<tr>
<td>LA72860</td>
<td>Large FCR</td>
<td>White Mountain Redware, Micaceous brownware</td>
<td>Same</td>
<td>Archaic forms</td>
<td>None</td>
<td>Fine-grained lithics</td>
</tr>
<tr>
<td>Caballero</td>
<td>Ash stain w/ FCR</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Glass beads, flaked glass tools</td>
<td>Glass beads, flaked glass tools</td>
</tr>
<tr>
<td>Paraje San Diego</td>
<td>2 Ash stains</td>
<td>Multiple New Mexican and Mexican historic types</td>
<td>Historic ceramics in Feature 1</td>
<td>None</td>
<td>None</td>
<td>Historic artifacts</td>
</tr>
</tbody>
</table>
HAR163 and Feature 3 at HAR166, the second age estimate fell within statistical limits of the original date, and therefore it can be assumed that at least these features do represent late occupations (Sale et al. 1996b). In the third case, two dates obtained from Hearth 1 at LA26780 differed by 2850 radiocarbon years. For the sake of discussion, however, if it is assumed that the majority of cases described above do constitute components or site areas occupied by post-Pueblo and protohistoric groups, they have several attributes in common.

First, and foremost, is the near universal multi-component nature of the sites with possible post-Pueblo or protohistoric components. Thirteen of the 14 sites have Formative period ceramics, radiocarbon dates, or both, while eight sites have Archaic projectile point forms or radiocarbon dates; three have Paleoindian components. However, artifacts characteristic of these prehistoric periods are seldom associated with the specific feature or site area assigned to the post-Pueblo/protohistoric period on the basis on late radiocarbon dates.

Overall, chronologically diagnostic materials not specifically attributable to prehistoric time periods are rare. Historic glass or metal items are limited to the horseshoe at LA72169, a spur rowel at LA26780, and several glass beads and flaked glass tools at the Caballero Canyon site. The chronometric data provide the sole means of detecting potential late components at these sites. While these patterns are not unexpected given that multi-component prehistoric sites—often lacking chronologically sensitive artifacts—are the rule rather than the exception throughout the region, it does suggest the need for more thorough field documentation, artifact description, and chronometric analysis of small sites.

A second characteristic is that the majority of features or components with late dates represent low intensity occupations with small, isolated thermal features associated with few artifacts, particularly on those in interior basin landforms. An exception includes a few settlements located in mountain areas, where large and exceptionally well-preserved burned rock features may indicate late use. About 63 percent of the thermal features have rock heating or construction elements, a relatively high proportion compared to features from the Formative and Pueblo Revolt/Mission periods. In fact, these attributes are similar to small sites of the Archaic and early Formative periods, and suggest that general parallels may be drawn between settlement systems of these chronologically distant periods.

It has been proposed that post-Pueblo populations reverted to a less intensive hunting and gathering subsistence organization having general similarities with the Archaic period (Beckett 1985; Carmichael 1986; Tainter 1985; Wimberley 1979). Unfortunately, the small assortment of scattered features and ambiguous artifact associations contribute little substantive information, and subsistence data are negligible. Faunal remains are scanty and, with the exception of a charred monocot stem possibly representing an Agave species recovered from the large burned rock feature at LA72860, virtually no macrobotanical data are available.

Despite these shortcomings, characteristics of features and settlement locations do offer insights into the changing nature of Post-Pueblo and protohistoric adaptations. Figure 5 illustrates patterns of feature classes and settlement locations among major prehistoric and historic time periods. The relative proportions of general feature classes and settlement locations of the Post-Pueblo and protohistoric interval most closely matches that of the Archaic period in general, specifically the Middle Archaic period. For clarity, as well as to provide sufficient sample sizes during each time interval, features have been grouped according to three general classes: thermal features with rock (limestone, granite, rhyolite, or burned caliche), thermal features lacking rock, and residential features. The latter include features characteristic of settlements of greater occupational intensity or duration, such as habitation structures, trash middens, and storage or trash pits.

The proportion of thermal features with rock heating elements decreases markedly during the Late Formative period (cf. Miller and Kenmotsu 1999), and is also low during the Mission/Historic period, suggesting an inverse relationship between residential features and thermal features that incorporated rock as heating or construction elements. In contrast, this feature class is substantially more common during the intervening Post-Pueblo/protohistoric period, and is also common in Archaic and Formative time intervals prior to the Late Formative Pueblo period. Residential features are common throughout the Formative period and peak during the Late Formative and Mission/Historic periods, but are relatively rare during the Archaic and post-Pueblo/protohistoric periods (see Figure 5).
Figure 5. Relative proportions of major feature classes and settlement locations among prehistoric and historic time intervals in West Texas and south central New Mexico.

The lower graph in Figure 5 illustrates the distributions of dated features among four major environmental or topographic zones. Again, the profile of the Post-Pueblo/protohistoric features most closely resembles the Middle Archaic, particularly in the lower proportions of settlements situated along alluvial fans, the more frequent occurrence of occupations in mountain landforms, and the more evenly distributed and areally extensive occupation of different landforms. In
contrast, settlements during the three Formative period intervals tend to have a greater focus on alluvial fans. Pueblo Revolt and Mission/Historic period settlements, tethered as they were to missions and presidios in the Rio Grande valley, are largely centered in the Rio Grande floodplain and the adjacent valley terraces.

To further explore these patterns, the proportional values of various feature classes and landforms are examined through two statistical classification and data reduction procedures: hierarchical cluster analysis and principal components analysis (Figure 6). The cluster dendrogram defines the Mission/Historic period as a distinctive cluster; the three Formative intervals form a separate cluster; while a third cluster comprises the Late Archaic, Middle Archaic, and Post-Pueblo/ protohistoric features and landform distributions. Principal components analysis offers a more robust alternative due to the fact that several of the variables are intercorrelated, but the results are consistent with the cluster analysis in having three distinct groups, one consisting of the protohistoric and two Archaic intervals, a second group including the three Formative period intervals, and an isolated group consisting of the Mission/Historic period features and landform distributions (see Figure 6).

One attribute of Post-Pueblo/protohistoric thermal features with rock construction or heating elements can be examined in more detail. Figure 7 provides a series of median boxplots with the distributions of burned rock weights by temporal interval among 119 radiocarbon-dated thermal features in the Hueco, Tularosa, and Mesilla bolsons. Rock weight data for the probable protohistoric component at LA26780 are shown separately. Although sample numbers are small for three of the six time intervals, the feature data suggest burned rock weights for protohistoric features are more similar to the low weights typical of Archaic features.

While these patterns are intriguing, the comparisons do not provide definitive statements regarding post-Pueblo/protohistoric settlement and subsistence systems, nor can they be used to infer that adaptations of this period were identical to that of the Middle or Late Archaic periods. The data are invariably biased by several factors. First, the apparent rarity of structures, midden, pits, or other features from more sedentary or intensive occupations during the post-Pueblo and protohistoric period is undoubtedly influenced by preservation and visibility factors. Many settlements at this time were apparently located in the Rio Grande valley and have been obliterated by several decades of agricultural and urban developments. Second, the low proportion of Archaic settlements on alluvial fans is conditioned to an unknown degree by site burial and limited archeological visibility. Third, the median value for protohistoric rock weights is biased because the calculations exclude two large rock features at LA72169 and LA72860 in the San Andres Mountains since such information was not obtained in limited surface reconnaissance. Finally, some features, such as the hearths at Paraje San Diego along the Camino Real, may not reflect aspects of a particular settlement or subsistence system in the conventional hunter-gatherer perspective, but rather functioned within realms such as transportation and economics (see Staski 1998). Despite the obvious biases and shortcomings, however, the preliminary evidence from features and landform distributions suggests that the post-Pueblo/protohistoric period represents a substantial change from the preceding Formative period, and may more closely approximate regional Archaic period settlement models.

In the absence of any form of unambiguous diagnostic artifact, architectural form, or unique feature that can be associated with the post-Pueblo/protohistoric period, chronometric evidence provides the only consistent and reliable empirical evidence to sustain arguments for post-Pueblo and protohistoric components at sites. Does other evidence exist regarding post-Pueblo settlement? There is as yet no recognizable ceramic tradition in the region until the 1680 Pueblo Revolt when the production of Valle Bajo Broweware became widespread. This does not mean that no ceramic production occurred between 1450-1680, as there is limited evidence for brownwares in the El Paso/Ciudad Juarez area (Gerald 1974a) and conclusive evidence of production in adjacent regions, such as the La Junta district and northern Chihuahua (Kelley et al. 1940; DiPeso 1974). However, technological attributes of the potential broweware collections at LA26780 (discussed below) and Mission Guadalupe have similarities to Spanish-influenced corriente wares common throughout the Spanish Colonial Southwest, and thus it is likely that they postdate A.D. 1581 as well as perhaps the establishment of the first missions in the area in 1659.
Cluster analysis dendrogram using average linkage method with squared Euclidean distance measure.

Principal Component | Eigenvalue | % of Variance | Cumulative %
1 | 3.32448 | 47.5 | 47.5
2 | 1.90186 | 27.2 | 74.7
3 | 1.13471 | 16.2 | 90.9

Component Loadings* | PC 1 | PC 2 | PC 3
Thermal w/ Rock | .95082 | | .23382
Residential | -.93746 | -.28718 | |
Terrace/Floodplain | -.70036 | .68928 | |
Interior Basin | .65027 | -.35341 | -.55300
Alluvial Fan | | -.87385 | |
Thermal w/o Rock | .52676 | .58229 | -.49506
Mountain | .58738 | .34163 | .71355

* PC loadings less than 1.0 have been removed

Plot of principal components 1, 2, and 3

Figure 6. Statistical classification and data reduction procedures comparing distributions of feature types and settlement landforms among prehistoric and historic time intervals.
Figure 7. Median boxplot illustrating distributions of burned rock weights for thermal features among major temporal periods. Distribution of weights for 17 thermal features at LA26780 is illustrated separately for comparative purposes.

Are certain projectile forms characteristic of the protohistoric period? One possibility is the Soto form (Phelps 1987), a style with close affinities to the Garza form of the Texas Trans-Pecos and Panhandle. Boyd et al. (1997:427-429) have synthesized the chronometric data for Garza specimens recovered from secure contexts at sites in the Panhandle, demonstrating that its primary age range is between ca. A.D. 1450-1650. Numerous Soto/Garza points have been collected at the Soto Ranch site in northern Chihuahua (Krone 1978), although associations between the projectile points and specific components there are unclear. It is also possible that several additional sites in northern Chihuahua with Soto points (Phelps 1968, 1987) may represent protohistoric occupations. However, projectile point collections from Fort Bliss and elsewhere in the Jornada region north of the U.S.-Mexico border have few examples of this form.

Summarizing the chronometric evidence for a post-Pueblo occupation of the region, there are indications of a continued Native American occupation, and thus the argument that the region was abandoned cannot be supported. However, the evidence is meager, and the position that post-Pueblo groups maintained a continuity after the Formative period in settlement, subsistence, and demographics also cannot be supported. There is ample chronometric evidence from secure associations that the primary period of Late Formative Puebloan occupations ended between ca. A.D. 1450 and ca. A.D. 1500. If it is assumed that the 18 features and 20 age estimates in Table 3 that fall within the A.D. 1450-1680 interval are valid, these few instances comprise just slightly over one percent of the total chronometric database (n=1523 dates). This percentage estimate may be biased by the fact that many prehistoric features have multiple dates, but late contexts are equally rare if counts of dated features rather than counts of dates are examined. Of the 718 hearth and stain thermal features, 206 architectural features, 55 rockshelter strata or
features, and 116 miscellaneous deposits, strata, pits, or burials dated in this region, only 17 thermal features and one habitation structure may date between A.D. 1450-1680 (2.4 percent of thermal features or 1.6 percent of all features). Only the Paleoindian and Early Archaic periods are more poorly represented in the radiocarbon record of the region, and the six to eight millennia of erosional and depositional processes that partially explain the rarity of Paleoindian and Early Archaic chronometric dates cannot account for the absence of post-Pueblo and protohistoric features and habitation structures.

The available archeological information supports a model of regional depopulation, along with concurrent and substantial changes in regional settlement patterns, subsistence economies, and technology. There is evidence of a consistent pattern in the late occupations in settlement locations, feature types, limited artifact inventories, and a generally low-intensity occupation, to support the idea that post-Pueblo groups had a less intensive and mobile adaptation, one which had closer affinities with distant Archaic period groups than they did with Formative period groups.

It is difficult to envision how a region having an archeological record spanning the Paleoindian to Historic periods would be completely devoid of settlement for a period of 200 years, particularly when Spanish accounts of the late 1500s and 1600s provide ample evidence that several groups inhabited the region. Yet, when the present evidence is examined, some event or process, or a combination of events and processes, essentially served to depopulate the region and forced a fundamental reorganization of demographic patterns, settlement, and adaptive strategies on a scale unprecedented during the previous millennium. How was such a change manifested in the archeological record, and how does the archeological record reflect the testimony of the ethnohistoric record?

MANSO AND SUMA

Turning now to the historical record, the sparse chronometric and material culture evidence does not accord well with historic accounts of several groups inhabiting the area during the late 16th through the 17th centuries. It is at this point that the archeological and ethnohistoric records diverge.

Commencing in 1565, several entradas by Spanish explorers passed through portions of the western Trans-Pecos and northern Chihuahua. Among the more important and well-documented early expeditions are the 1565 journey of Ibarra, the Rodríguez-Chamuscado and Espejo expeditions of 1581 and 1582-1583, Don Juan de Oñate’s journey of 1598, the Salmeron and Mendoza accounts of 1626 and 1683, and Fray Benavides’ detailed account of his passage through the region in 1630 and 1634. Several accounts by Spanish settlers and missionaries from the late 1600s through the early 1700s are also available. Each of these accounts describe various tribes that lived in the Rio Grande valley and adjoining regions. However, since these records span nearly 200 years, the various documentary sources provide an inconsistent and often confusing series of names to the tribal groups of the region. Additional sources of confusion include the lack of a standard orthography among Spanish chroniclers and their tendency to assign names to tribal groups based on aspects of their physical appearance, names of tribal leaders, terms of greeting, or prominent local geographic landmarks (Gerald 1974a; Naylor 1969; see Kenmotsu [1994] for a useful discussion regarding the identities of various groups). Only occasionally does it appear that the actual names were recorded that were used by the natives themselves. The most commonly accepted name for groups in the vicinity of El Paso and northern Chihuahua, using terms assigned during the late 1600s and early 1700s, are the Manso and Suma, although these differ from such names as Tanpachoas, Gorretas, and Caguates assigned by the earlier accounts of the late 1500s and early 1600s.

Little is known of these groups beyond the series of sometimes contradictory, often biased, and always brief accounts provided by Spanish chroniclers (Benavides 1965; Griffen 1979; Hammond and Rey 1929, 1966; Hughes 1914; Kenmotsu 1994; Mecham 1927), Fray Alonso de Benavides (1965) and Perez de Luxan (Hammond and Rey 1929, 1966) provide the most thorough accounts of the encounters between the Spanish and indigenous Manso and Suma groups in the Jornada Mogollon region. These accounts describe Manso groups living along the Rio Grande in communities, or rancherías, composed of straw or brush structures, and subsisting primarily on hunted and gathered foods. The Suma occupied areas along the Rio Grande southeast of El Paso, as well as portions of northern Chihuahua.
Archeological evidence of Manso and Suma occupations in the Jornada region remains elusive (e.g., Gerald 1973, 1974a). Aside from the known location of the Nuestra Señora de Guadalupe de los Mansos mission, no unequivocal settlement of this period has been identified despite extensive archeological survey coverage throughout the Trans-Pecos and south central New Mexico. Aside from the Guadalupe Mission locality, only two archeological sites have been specifically claimed to represent Manso or Suma occupations. As such, the archeological identification of Manso or Suma occupations has been comparable to the search for Apache sites, in the sense that both pursuits are fraught with chronometric and contextual ambiguities that make it difficult to securely identify them. Artifact affiliations are ambiguous since there are few, and often no, chronologically or culturally sensitive ceramics or projectile points that date solely to the 1450-1680 period or are otherwise not easily confused with other traditions. Aside from the intriguing possibility that the distinctive Soto/Garza points represent protohistoric use, typical projectile point forms are similar to those of the Late Formative period: small, triangular, side-notched or basally-notched forms. Similar forms also have been recovered from later Pueblo Revolt and Mission period contexts. Ceramic wares are infrequent.

Spanish accounts note that settlements were frequently encountered along the Rio Grande valley. The apparent absence of such sites may be due to limited archeological visibility and geomorphic factors. The latter is particularly salient if such settlements were situated in the floodplain of the Rio Grande, since Spanish Colonial archeological deposits throughout the El Paso lower valley are generally buried by more than 1 m of flood sediments. In addition, the terraces of the floodplain have been subject to several decades of intensive agricultural and urban developments that probably has left few traces of the small, ephemeral campsites characteristic of Manso and Suma settlements.

A few rumors, hints, and allegations of suspected Manso or Suma sites have surfaced over the years. It is possible that several of the post-Pueblo and protohistoric radiocarbon dates reviewed earlier may represent Manso or Suma occupations, although it is equally likely that many of the features in the Tularosa Basin and San Andres Mountains represent Apache occupations (Sale 1991, 1997; Southward 1978). In the absence of any signature material culture, it is very difficult to link most of these components with a specific historically-documented group, a problem that reflects the larger issue of determining ethnicity from the archeological record.

Nuestra Señora De Guadalupe De Los Mansos Mission, Ciudad Juárez

Gerald (1974a, 1990a) briefly reviews the results of unsystematic collections made in the vicinity of the present-day location of the cathedral in downtown Ciudad Juárez that overlies the original site of the Guadalupe Mission. He concluded that Manso and other mission settlers were producing brownware ceramics, although the mixing of materials from the earliest years of the mission with later materials from the Tiwa, Suma, and other groups precluded any specific association of ceramic materials with any ethnic group. More recently, streetscape improvement projects on the north side of the cathedral encountered part of the Camposanto of the original mission. Several burials were recovered by archeologists from the Instituto Nacional de Antropología e Historia, including some intentionally covered with a coating of caliche lime powder; one burial may have had filed teeth, although confirmation is awaiting the report from the physical anthropologist. A small collection of brownware ceramics was recovered from undifferentiated deposits along the trenches, and I examined these during a 1997 visit to the excavation site.

Mesilla Valley Site

Bentley (1991) attributes a Manso occupation to a small, unnamed site in the Mesilla segment of the Rio Grande valley north of El Paso. Situated on a terrace, the site reportedly consists of several lithic scatters in association with historic red-on-brown ceramics. The identification of a Manso occupation is predicated on the historic brownwares, its lower terrace location on the Rio Grande, and the absence of hearth features. The latter two criteria involve rather tenuous linkages between ethnohistoric accounts and archeological surface observations, such as the absence of evidence for hearth features reflecting Benavides’ (1965) account of the tendency for the Manso to eat meat without
cooking. Accordingly, the sole distinguishing characteristic is two ceramic sherds classified as Casitas Red-on-Brown, using type descriptions for historic brownwares adopted for the Estancia Basin of northern New Mexico (see Marshall 1984). Notwithstanding the inappropriate ceramic terminology derived from the distant Estancia basin, historic red-on-brown ceramics date after the middle or late 1700s in the El Paso area. While it is possible that the site represents an historic Native American encampment, without excavation data there is no means of confirming the age or affiliation of the site nor attributing a specific ethnic or cultural affiliation to the limited surface materials.

Soto Ranch Site and Other Localities, Northern Chihuahua

Soto Ranch is located southeast of El Paso across the Texas/Chihuahua border from Fabens, Texas, and is one of the more interesting sites in the region for the present study. Unfortunately, because of its difficult access in Mexico, the site has received no professional attention. Krone (1978) provides some basic descriptive information on the site and material culture, while Phelps (1987) has reviewed the projectile point collections that form the basis for his definition of the Soto point form. The Soto site has several distinct areas with features and artifacts along a major drainage leading from several mountain ranges, and this favorable settlement location has evidence of occupation from Paleoindian through Historic times, including a ca. 1850 ranch site and possible military encampment with standing adobe structures.

Two areas have distinctive evidence for occupation during the protohistoric or Mission periods. Several unique artifacts, including a quantity of lead beads made from melted musket projectiles, a copper ring, and a blue glass bead, were collected from two distinct loci situated some distance from the unrelated ca. 1850 or prehistoric settlements. Over 50 Soto/Garza points were recovered near these artifacts, although additional points were occasionally observed among the prehistoric and ca. 1850 components. Other materials observed at these two locations include burned rock, Harrell and Toyah points, groundstone and lithic artifacts, shell jewelry, and several undescribed ceramic sherds. It is likely that these loci represent occupations by Suma or later Apache groups, but detailed archeological investigations must be done to resolve their age and affiliation.

La Hacha y Los Moscos

Further afield in the bootheel region of southern New Mexico near the Chihuahuan border, Sechrist (1994) describes a site with late dates and several unusual assemblage characteristics. The site has six burned rock features and charcoal stains associated with a dense scatter of lithic and groundstone artifacts. Four mesquite wood charcoal dates from burned rock features range from 280 ± 50 B.P. to 470 ± 50 B.P. No ceramics were observed, but a large sample of projectile points was collected, principally a stemless form lacking notches with flat or concave bases. While associated with late dates, the La Hacha y Los Moscos specimens have close similarities with the Cortaro form, a type generally associated with Middle to Late Archaic occupations in Arizona. A moderate quantity of obsidian artifacts was also present. Geochemical sourcing indicated the obsidian materials were obtained from the Mule Creek source 220 km to the north and the Antelope Wells source 40 km to the south (Sechrist 1993). The chronometric and material culture evidence from this site is ambiguous, but there is a possibility that the site represents a protohistoric settlement, perhaps associated with the historically-documented Jocome.

LA26779 and LA26780, Dona County Airport Project

The most promising and thoroughly investigated sites that may be provisionally attributed to Manso or Suma occupations are LA26799 and LA26780 at the Dona Ana County Airport (DACA), just west of the El Paso city limits (Batcho 1987; Batcho et al. 1985; Duran and Batcho 1983). The two sites were originally recorded by the Office of Contract Archeology, University of New Mexico, during survey of the proposed airport facility and assigned field site numbers FA15 and FA16 (Moore and Bailey 1980). Subsequent data recovery investigations conducted in 1983 by the Cultural Resources Management Division (CRMD) of New Mexico State University assigned site numbers NMSU 1385 and 1380, respectively. The two sites are considered a single entity separated by several aeolian coppice dunes, and will hereafter be referred
to as LA26780 using the formal Museum of New Mexico Laboratory of Anthropology site number.

Surface collections and limited excavations conducted at these two conjoining sites recorded several clusters of hearths and artifacts distributed within two 60 x 50 m areas along the upper terrace of the Rio Grande. Despite several efforts, the site map cannot be found in the files and curation facility at the University Museum of New Mexico State University. Figure 8 represents a reconstruction based on information obtained from the interim data recovery report produced by CRMD (Batcho et al. 1985), a very preliminary and incomplete draft report of investigations (CRMD 1985), as well as an assortment of field notes, specimen logs, and provenience information present on artifact bags. It shows the general layout of the site, but precise locations of some features, collection areas and units, and select artifacts should be not considered entirely accurate.

Data recovery efforts were restricted to surface collections and hand excavations of limited areas around five hearth features. Upon completion of the hand excavations, shallow surface deposits of unconsolidated aeolian sands were removed with a backhoe. A formal grid system was not used during the surface collection. Ceramics, tools, and other noteworthy items were point provenienced in reference to a baseline and series of datum stakes established across the site. Otherwise, primary artifact collections centered on 5 x 5 m grid units placed around 17 hearth features. In addition, artifacts received a second provenience designation according to their location within one of seven areas, of which two represented particularly dense artifact concentrations.

Generally, the site consisted of two major occupation areas corresponding to the original boundary definitions for NMSU 1380 and 1385. The southeastern cluster (NMSU 1380) included Areas A, B, and E. Area A was a 10 x 10 m cluster of three hearths associated with a relatively sparse scatter of artifacts. Area B represented the larger (3500 m²) artifact scatter and seven additional
hearth in Area A. Area E was a dense concentration of obsidian and other chipped stone artifacts collected within a 5 x 5 m grid unit.

The northwestern cluster (NMSU 1385) consisted of Areas D and F, both with slightly higher artifact densities than Areas A, B, and E. Area D was the 5700 m² artifact scatter that comprised NMSU 1385. Field notes and specimen logs mention that seven hearth features were present in Area D. Area F was a relatively dense 200 m² concentration of obsidian chipped stone artifacts, ceramics, and groundstone artifacts situated within Area D.

Two additional artifact areas were present adjacent to these primary clusters. Area C had a small number of artifacts and a bifacial tool fragment distributed over 1125 m² of coppice dunes and deflated surfaces between Areas B and D. Area G was another small (200 m²) artifact scatter located northeast of Area D.

Burned rock and caliche hearths were the only identified features, although whether ephemeral habitation structures were present is unresolved since subsurface excavations were limited to hearths and surface grading; no charcoal stained-features were observed during surface grading. Seventeen hearths were present in three of the major provenience areas: seven features (Features 1, 10, 11, and 13-16) in Area D (a statement in the preliminary data recovery report [Batcho et al. 1985:40] incorrectly places Hearth 2 in this area); Features 2-6, 12, and 17 in Area B; and Features 7-9 in Area A.

Five of the better-preserved features were selected for excavation, while burned rock weights were obtained for the remainder (Table 4). Feature 1 was a deflated, basin-shaped burned rock hearth with a fire-reddened and hardened perimeter. The fill was relatively well-preserved and contained 8 g of mesquite wood charcoal. Feature 2 contained 37.5 kg of burned rock and caliche, but was severely deflated and little subsurface rock or fill deposits remained intact. Features 7-9 had dispersed burned rock and caliche, and only Feature 8 retained remnant fill deposits. Burned rock weights for the features ranged from 2.3-37.5 kg, with a mean weight of 8.7 kg. In comparison with similar prehistoric features throughout the region, the rock weights at LA26780 fall within the lower tail of the distribution and do not suggest intensive feature use.

As is typical for open-air sites in the El Paso area, macrobotanical analysis of four flotation samples collected from Features 1, 7, and 8 yielded meager results. Wetterstrom (1983) identified a small, charred Zea mays kernel fragment among the 7.1 g of light fraction material retrieved in two samples from Feature 1. A single unidentifiable charred seed fragment was observed in Feature 8, while no charred materials were recovered from Feature 7. The presence of corn is intriguing, but as discussed below, there is some doubt concerning the accuracy of this identification.

The artifact assemblage from LA26780 is quite diverse compared to similar open-air hearth sites in the region. Artifacts include ground and chipped stone, ceramics, and a single metal artifact. Perhaps the most notable item was a spur estrella or star-shaped spur rowel identified as 16th century Spanish in form and origin (Duran and Batcho 1983:6; CRMD 1985), found on the surface adjacent to Feature 11 in Area D. Unfortunately, while further study of this item could help verify the site’s age and affiliation, the artifact was removed from the collection by an unknown member of the field crew and has not been relocated (David Batcho, 1993 personal communication).

The collection of 17 ceramic sherd s includes both prehistoric decorated and plain brownwares as well as a distinctive group that resembles Historic sand-tempered brownwares (Figure 9). Eleven sherds are assigned to types common to several Late Formative period (A.D. 1275/1300-1450) settlements in the DACA project area, including four Ramos Polychrome sherds recovered from Areas B and E and seven El Paso Polychrome sherds (three from Area G and four from Area F).

Six distinctive brownware sherds were recovered from Area B in the southeastern portion of the site. These sherds have some affinities with Spanish Colonial brownwares described from the El Paso lower valley, but are different. They are not like prehistoric El Paso, Mogollon, and Convento series brownwares. The brownwares from LA26780 are coarsely finished and poorly fired. The sherds are friable, crazing is present on some interior surfaces, and exteriors have a distinctive mottled orange surface color (see Figure 9). Temper consists of rounded volcanic sands. The degree of surface finish in the form of slips, smoothing, or polishing characteristic of Valle Bajo Brownware (Marshall 1997; Miller and O’Leary 1992b) is absent in the LA26780 collection.
Table 4. Burned rock weights and other information for hearth features at LA26780.

<table>
<thead>
<tr>
<th>CRMD Site No.</th>
<th>Feature No.</th>
<th>FCR Weight (kg)</th>
<th>Excavated</th>
<th>Macrofloral</th>
</tr>
</thead>
<tbody>
<tr>
<td>1380</td>
<td>2</td>
<td>37.50</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>7.30</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>5.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>17.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>8.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>21.00</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>8.00</td>
<td>Yes</td>
<td>Unidentified seed fragment</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>2.50</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>3.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>9.80</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mean Weight= 12.2 ± 10.6 kg

| 1385          | 1           | 7.10            | Yes       | Zea mays (?) kernel fragment   |
|               | 10          | 1.80            |           |                               |
|               | 11          | 6.20            |           |                               |
|               | 13          | 2.30            |           |                               |
|               | 14          | 2.70            |           |                               |
|               | 15          | 2.50            |           |                               |
|               | 16          | 3.20            |           |                               |

Mean Weight= 3.7 ± 2.1 kg

Mean Weight for Overall Site= 8.7 ± 9.2 kg

Batcho and others (1985:41) cite a personal communication with Rex Gerald, who commented on the similarity of these sherds with brownware varieties common to mission contexts in the El Paso lower valley and Ciudad Juarez. My inspection of these sherds confirms this impression, and the LA26780 brownwares have close affinities with a small collection of sherds recovered during the recent excavations in the camposanto of Nuestra Señora de Guadalupe de los Mansos at Paso del Norte. One specimen from LA26780 has been submitted for neutron activation analysis to compare its chemical profile against several brownware groups in West Texas, south central New Mexico, and northern Chihuahua, but the results were not available for inclusion in this article.

Surface collections and the limited excavations recovered 230 chipped stone artifacts. Several aspects of the lithic assemblage are unusual when contrasted with assemblages documented at other historic and prehistoric sites in West Texas and south central New Mexico. Nearly 64 percent of the lithic assemblage is obsidian, an extremely high proportion in a region where this material rarely exceeds 10 percent in any known historic or prehistoric lithic assemblage (see Miller 1996:965), including sites situated directly adjacent to obsidian-bearing gravel deposits in the Rio Grande valley. The lithic assemblage consists predominantly of fine-grained materials such as obsidian, chert, and chalcedony.

Cortical flakes, small exhausted cores and core fragments, several bipolar-flaked obsidian and chert nodules, and non-diagnostic shatter are the most common artifacts; numerous bifacial thinning flakes are also present. Tools include informal flake tools, bifaces, unifaces, and a relatively large number of
and sandstone, all of which were locally available in secondary gravel deposits of the Rio Grande valley.

As noted previously, nearly two-thirds of the lithic artifacts were obsidian. The obsidian used in the manufacture of tools at LA26780 was obtained entirely from sources located in northern Chihuahua. Batcho (1987) had originally submitted a stratified random 25 percent sample of the obsidian from areas B, D, E, and F to MOHLAB for chemical characterization and hydration rim measurement. Of the 36 samples, 33 were assigned to the newly defined Rio Grande Gravels (RGG) Group III and IV compositional groups based on percentage weight values of five major oxides measured by atomic absorption spectroscopy (Michels 1984a, 1984b). Two samples were assigned to RGG Group V, while the remaining specimen had an unknown chemical profile.

Recently, it has been confirmed that Rio Grande Gravel Groups III and IV, and possibly RGG Group V, do not derive from primary sources in northern New Mexico (and redeposited as Pliocene and Pleistocene-aged secondary gravel deposits in the Rio Grande valley) but are from northern Chihuahua sources (Miller and Shackley 1998). In 1996, several of the original samples characterized by MOHLAB to first define RGG Groups III and IV, along with several previously unanalyzed specimens, were submitted to Dr. Richard Hughes (Geochemical Research Laboratory) for X-ray fluorescence analysis. Several samples were also submitted to Chris Stevenson (Diffusion Laboratories) for measurement of specific density and determination of intrinsic water content for hydration dating. Hughes' analysis of chemical profiles determined that the RGG Group III and IV samples did not match any known obsidian source in the United States. In fact, the RGG IV specimens have one of the most distinctive chemical profiles of all North American obsidian sources. RGG III and IV Group obsidian also have specific density and intrinsic water content values that differ markedly from other Southwestern obsidian sources.

Instead, the chemical profiles for RGG III and IV Groups match several newly characterized sources in north central Chihuahua. Of the 46 obsidian samples submitted for geochemical characterization or intrinsic water content measurement, 42 have been assigned to two obsidian geochemical compositional groups deriving from the Sierra Fresnal source in northern Chihuahua and a second as yet unidentified source,

![Figure 9. Ceramic assemblage from LA26780. All sherds are illustrated with the exception of three El Paso Brownwares from area G: a, Formative period Ramos Polychrome and El Paso Brownware sherds; b, possible protohistoric sand tempered brownwares; c, close-up view of exterior surface of possible protohistoric brownware.](image)

hammerstones and battered cobbles. Four projectile points and one small preform were also collected from the surface (Figure 10).

Groundstone artifacts include six metate and three mano fragments. Raw materials used for groundstone included quartz monzonite, limestone,
chemical profile for another specimen originally assigned to the RGG IV Group by MOHLAB. Although the use of inductively-coupled plasma spectrometry failed to provide some crucial element measures for this sample, a comparison of the existing element measures indicates that it probably originated from the recently identified Lago Barreal source located southwest of El Paso. Two of the three remaining samples are from an unknown source that may also be located in Chihuahua. The final specimen is from the Antelope Wells source in southwestern New Mexico. Table 5 provides a comprehensive summary of sourcing studies conducted on obsidian from LA26780 and other sites in the DACA project area.

Equally important is the finding that none of the 46 samples represent a source present in local secondary gravel deposits of the Rio Grande valley, despite the location of the site near the edge of the upper Rio Grande terrace. The obsidian assemblage from LA26780 is distinct from several nearby Late Formative components that were also investigated during the DACA Project (Table 6). Obsidian at two El Paso phase pithouse sites (LA26784 and LA26785) consists entirely of sources commonly found in the local Rio Grande gravels, such as Obsidian Ridge, East Grants Ridge, and Polvadera. A substantial number and variety of Medio period ceramic wares was recovered from LA26784 and LA26785, including Ramos, Carretas, Villa Ahumada, and Escondido Polychromes, Playas Red, and several textured and plain brownwares of the Convento series, which makes the absence of obsidian from northern Chihuahua significant considering the preponderance of ceramic wares from this region.

The assemblage of obsidian artifacts provides important insights into raw material use and tool production by the inhabitants of LA26780. Unfortunately, the majority of these obsidian artifacts could not be further analyzed because they had been destroyed during previous studies through the combined processes of conversion into powder for AAS geochemical analysis and cutting to obtain slide samples for optical measurement of hydration rims (see Table 5). The lithics that remain intact include split nodules and bipolar nodular cores, cortical and non-cortical flakes, shatter, and bifacial thinning flakes, as well as several unifacial flake tools, a preform, and two projectile points. The entire reduction trajectory is represented in the
Table 5. Summary of Obsidian Chemical Sourcing Studies for the DACA Project Area Sites.

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**LA26775, Formative Period**

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<td>RGG I</td>
<td>–</td>
<td>RGG I</td>
<td>–</td>
</tr>
<tr>
<td>182–1388–200–1</td>
<td>–</td>
<td>surface</td>
<td>specimen destroyed</td>
<td>RGG II</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>LA26769</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>182–1379–1</td>
<td>–</td>
<td>surface</td>
<td>specimen destroyed</td>
<td>Unknown</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>LA26772</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>182–1381–8</td>
<td>–</td>
<td>periphery</td>
<td>specimen destroyed</td>
<td>RGG II</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

RGG I=East Grants Ridge, central New Mexico, locally present in Rio Grande gravels; RGG II=Obsidian Ridge, central New Mexico, locally present in Rio Grande gravels; RGG III=Chihuahua B, northern Chihuahua; RGG IV=Sierra Fresnal, northern Chihuahua; RGG V=unknown, not a Rio Grande source, may be a vitrophyre; RGG VI=Polvadera Peak, central New Mexico, locally present in Rio Grande gravels.
Table 6. Summary of Geochemical Source Assignments for Obsidian Samples recovered from Protohistoric and Prehistoric Sites within the Dona Ana County Airport project area near El Paso, Texas.

<table>
<thead>
<tr>
<th>Site</th>
<th>Area</th>
<th>Northern Chihuahua</th>
<th>SW New Mexico</th>
<th>Rio Grande Gravels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Sierra Fresnal (RGG IV)</td>
<td>Chihuahua B (RGG III)</td>
<td>Lago Barreal</td>
</tr>
<tr>
<td>LA</td>
<td>B</td>
<td>6</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>26799/</td>
<td>E</td>
<td>-</td>
<td>8</td>
<td>-</td>
</tr>
<tr>
<td>26780</td>
<td>D</td>
<td>6</td>
<td>5</td>
<td>1?</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>1</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>13</td>
<td>29</td>
<td>1?</td>
</tr>
</tbody>
</table>

Protohistoric Component

Prehistoric El Paso Phase Components

<table>
<thead>
<tr>
<th>Site</th>
<th>Area</th>
<th>Lago Barreal</th>
<th>Antelope Wells</th>
<th>Obsidian Ridge</th>
<th>Grants Ridge</th>
<th>Polvadera</th>
<th>Cerro del Medio</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA 26784</td>
<td>All</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>LA 26775</td>
<td>All</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Others</td>
<td>All</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>-</td>
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<tr>
<td>Total</td>
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<td>0</td>
<td>0</td>
<td>18</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
obsidian assemblage, indicating that obsidian nodules were transported from distant sources and reduced into tools at the site.

Having reviewed the site layout, features, and the material culture at LA26780, the fundamental issue now concerns the chronological and chronometric evidence. Relative chronological indicators include ceramics, projectile points, and the spur rowel. Eleven of the 17 ceramic sherds recovered from LA26780 are common late Formative types, while the remaining six sherds probably represent protohistoric or Historic brownwares. One of the projectile points is a small, triangular form with side and basal notching that could be classified as a Toyah or Harrell, inasmuch as most triangular, notched forms in the region have been traditionally classified—correctly or incorrectly—under these terms. The specimen conforms most closely with the Toyah form, having more pronounced shaping along the basal margins and lower placement of notches. However, it is a unifacially worked flake blank, with the ventral surface of the original flake unmodified except for the tip of the blade and the margin of the base. The second projectile point, also a flake blank on which minimal pressure flaking was used to create side notches and modify the shape of the blade, lacks a basal notch.

Figure 11 compares these specimens with similar forms recovered from late Formative and Pueblo Revolt/Mission period contexts in the El Paso area. Four of the six projectiles from LA26780 and the Ysleta WIC site were manufactured from flake blanks, although this pattern has also been detected among point collections from Formative period sites in the region and does not constitute a particularly diagnostic attribute of one period or another. Otherwise, it is evident that this general projectile form is associated with occupations ranging in age from ca. A.D. 1150-1750, and is not a particularly refined chronological marker.

A third point from LA26780 has similarities to the Datil style (Dick 1965) of central New Mexico and to the recently defined Pendejo form (MacNeish 1993; Sanchez 1989) of northern Chihuahua; these generally date to the latter part of the Middle Archaic or early part of the Late Archaic. The fourth point appears to be Archaic, but has been extensively reworked to such an extent that it is difficult to identify the original form. Attributes of the base and lower haft element of this specimen resemble Early Archaic Jay and Bajada forms. The reworked blade edges have distinctive abrasions and micro-flake wear patterns indicating its use as a tool rather than as a projectile, and it is possible that this tool was scavenged, recycled, and discarded at the site by later occupants.

The spur rowel represents a critical piece of evidence for determination of age and affiliation. A description in the draft report of investigations (CRMD 1985) noted that the item was a hand-wrought iron spur rowel typical of Spanish forms manufactured during the 16th century (See Simmons and Turley 1980:Plate 20). Figure 12 provides a reproduction of this plate. While this six-pointed rowel style was supplanted by different styles during the late 16th and early 17th centuries, Simmons and Turley (1980) note that early examples of spurs and other durable aspects of horse gear continued to be used and maintained in the northern frontier of New Spain for long periods, and were often inherited over several generations. Therefore, it would be inappropriate to use the style of this particular artifact to specifically assign a 16th century occupation date to LA26780.

A confusing impression of age and affiliation emerges upon consideration of the temporally diagnostic artifacts from LA26780. The various projectile point and ceramic types represent the Middle/Late Archaic, late Formative, and protohistoric periods. Moreover, there is no consistent contextual patterning of these artifacts, in the sense that artifacts representative of particular time intervals were spatially segregated from those of other periods. El Paso Brownware sherds, an Archaic projectile point, a late projectile point, and the spur rowel were recovered from Areas D and F, while Ramos Polychrome sherds, sand-tempered brownwares, and late projectile points were present in Area B. Obsidian artifacts from Chihuahuan sources were present in generally equal proportions across each of the major provenience areas. If confirmed as such, the presence of a metal artifact of Spanish origin would impose a terminus post quem argument that at least one occupational component post-dates 1565 or 1581, the dates of the earliest of the Spanish entrada in northern Chihuahua and the El Paso area.

Mesquite wood charcoal from Feature 1 in Area D (Batcho 1987; Batcho et al. 1985:39) has a radiocarbon age of 340 ± 70 B.P. (Beta 5932). A 13C correction was not obtained since the sample was submitted prior to the widespread use of
availability of isotopic measurements provided by commercial laboratories. To compensate for this deficiency, the radiocarbon age has been corrected using an estimated $^{13}$C value of -24.7‰ that represents a mean value for mesquite wood charcoal calculated from over 100 mesquite charcoal samples documented in this region of West Texas and south central New Mexico (Miller 1996). The estimated isotope correction results in an age estimate of 348 ± 82 B.P.

Figure 13 provides the dendrochronological calibrations for this age estimate using both the bidecadal dataset of Stuiver and Pearson (1993) and the comprehensive decadal dataset of Stuiver et al. (1998). At the two-sigma (95 percent) confidence interval, the calibrated calendar age (rounded to the nearest decade) is AD 1420 to 1950, with intercepts centered around AD 1515, 1590, and 1620 (rounded to nearest five year interval). However, as illustrated in Figure 13, the densest area
under the probability curve falls within a much more restricted time interval. Using this approach, the most appropriate age estimate for the sample ranges from AD 1420 to 1680 (0.96 or 0.97 probability depending on the calibration dataset), while the one-sigma (65 percent) probability area affords a slightly narrower time span of AD 1480-1640. In summary, the radiocarbon age estimate provides a relatively secure age assessment for Feature 1 that falls comfortably within the protohistoric era.

However, not content to leave well enough alone, I submitted in 1995 a second sample thought to be from Feature 1 to further corroborate the original date. The sample consisted of a very small macrobotanical fragment collected from a flotation sample and identified as *Zea mays* (Wetterstrom 1983). However, the measured $^{13}$C value of -24.0

% indicates that the species identification of this very small specimen was in error. The sample yielded a corrected AMS radiocarbon age (Beta 81908/ETH 14334) of $3200 \pm 50$ B.P., placing it in the early part of the Late Archaic period.

The discrepancy of 2850 radiocarbon years between these two age estimates, thought to be from the same feature, is difficult to reconcile. The remnant of the original sample (Beta 5932) was examined by Tom O’Laughlin and I, and determined to consist of mesquite wood charcoal and not recently decomposed roots or other organic matter. On the other hand, the misidentification of a partial maize kernel fragment used for the second dating study is somewhat surprising, and thus there is some issue regarding the provenience of the sample. The sample was miniscule (less than 1 mm in diameter), and it is possible that some provenience or handling error occurred during the preceding 12 years, and that this actually represents the unidentified seed fragment recovered in the flotation sample from Feature 8 in Area A. However, providing additional support for the premise that the species identification was in error is the fact that three small macrobotanical samples identified as corn cupule fragments from nearby Formative period pithouse site LA26784 were submitted for AMS dating. The measured $^{13}$C values for these specimens were -18.3‰, -20.3‰, and -21.0‰, suggesting that Wetterstrom’s identifications of minute macrobotanical samples were occasionally inaccurate.

It should be noted that of 202 archeological contexts in the region for which two or more radiocarbon ages have been obtained, in only 12 cases have the earliest and latest age estimates differed by more than 500 years. The largest recorded difference is a single case of a 1400 year offset for two dates obtained from a hearth.
Laboratory #: Beta 5932
Sample composition: Mesquite wood charcoal (8 grams)
Uncorrected radiocarbon age: 340 ± 70 BP
Estimated correction factor: -24.7 with added variance
Estimated corrected age: 348 ± 82 BP

Calibration Datasets

<table>
<thead>
<tr>
<th>Age Estimates</th>
<th>Stuiver and Pearson 1993 (bidecadal dataset)</th>
<th>Stuiver et al. 1998 (decadal dataset)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curve Intercepts</td>
<td>AD 1517, 1588, 1622</td>
<td>AD 1516, 1598, 1617</td>
</tr>
<tr>
<td>1 sigma age ranges</td>
<td>AD 1444 - 1652</td>
<td>AD 1444 - 1646</td>
</tr>
<tr>
<td>2 sigma age ranges</td>
<td>AD 1424 - 1677, AD 1774 - 1800, AD 1941 - 1954</td>
<td>AD 1419 - 1672, AD 1778 - 1799, AD 1943 - 1945</td>
</tr>
<tr>
<td>1 sigma age probabilities</td>
<td>AD 1481 - 1637 (1.00)</td>
<td>AD 1476 - 1536 (0.397), AD 1537 - 1635 (0.603)</td>
</tr>
<tr>
<td>2 sigma age probabilities</td>
<td>AD 1421 - 1678 (0.600)</td>
<td>AD 1415 - 1675 (0.874), AD 1772 - 1801 (0.026)</td>
</tr>
<tr>
<td></td>
<td>AD 1771 - 1802 (0.030)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AD 1940 - 1955 (0.010)</td>
<td></td>
</tr>
</tbody>
</table>

Figure 13. Calibration results for radiocarbon age estimate from Hearth 1 at LA26780.
Therefore, the potential for laboratory error or contamination factors can be taken into account. It is possible that the sample was contaminated by 15 years of storage in a gelatin capsule, although this is not a high probability (Darden Hood, 1999 personal communication). Barring handling mistakes, laboratory errors, or contamination, a conservative interpretation is that radiocarbon evidence suggests Feature 1 represents either a protohistoric or Late Archaic occupation at LA26780.

Additional chronometric refinement has been attempted through the use of obsidian hydration dating. In 1983, 39 samples were submitted to MOHLAB for hydration rim measurement (Michels 1983). All of the hydration rims were relatively thin. Based on intrinsic hydration rate constants calculated for Rio Grande Gravel Groups III and IV, and using a weather station temperature model to estimate ambient effective hydration temperatures, Batcho (1987) calculated a series of dates ranging between A.D. 1440-1558, with a mean age of A.D. 1518 ± 26.

However, MOHLAB laboratory procedures, and the reliability of the dates, has been seriously questioned (Miller 1996; Scheetz and Stevenson 1988; Stevenson et al. 1989, 1990), and subsequently in 1995 an additional 13 samples were submitted to Chris Stevenson of Diffusion Labs (Table 7). Hydration rates were determined using the intrinsic water content method, with water content determined through a regression analysis of the relationship between specific density and water content (Stevenson and Ambrose 1995). In addition, thermal cells were implanted at the site in 1995 and measured after a period of one year to determine ambient temperature and relative humidity factors needed to accurately determine local hydration rates. None of these refined approaches provided a satisfactory suite of calendar age estimates for LA26780, nor for the Ysleta WIC site and other components in the region (see Table 7). While obsidian hydration dating has proven extremely troublesome and unreliable as a chronometric method, Miller (1996) suggests that the presence of unusually thin hydration rims may satisfactorily serve as a relative dating method for the identification of post-A.D. 1450 components when used in corroboration with other chronometric or chronological data. Compared to the 1529 hydration rims measured on prehistoric obsidian artifacts in the region, hydration rims measured on Chihuahua B obsidian from LA26780 are relatively thin, while those measured on a small number of Sierra Fresnal obsidian samples are all less than one micron in thickness. It is noteworthy that in the entire dataset of 1529 specimens, only one other obsidian specimen, a sample of East Grants Ridge source debitage from the Fillmore Pass site, has a rim measurement less than one micron.

Figure 14 is a series of boxplots with median values and interquartile ranges for hydration rim measurements from Archaic, Formative, and Historic components. Several geologic sources are represented among the obsidian assemblages, each of which potentially hydrates at a different rate, and accordingly the boxplots are arranged by specific sources common among all time periods. To provide a comparison with hydration rim values that may be expected from a Historic component, the boxplot furthest to the right provides rim measures obtained from the Ysleta WIC site, a Pueblo Revolt settlement conclusively dated to 1680-1725 (Miller and O’Leary 1992a). The Ysleta WIC samples were not chemically characterized, although it is likely that these specimens are Obsidian Ridge based on the prevalence of this source in the Rio Grande gravels. Macroscopically, the samples lack the rhyolitic phenocrysts and coarse texture characteristic of the East Grants Ridge source or banded ash inclusions of the Polvadera Peak source. Furthermore, the specific density and intrinsic water content values for these samples are not consistent with those measured among the Chihuahuan sources or Polvadera Peak. However, whether compared against the trend of rim measurements for the Obsidian Ridge or unsourced materials, the Ysleta WIC site clearly has very thin hydration rims compared to other periods.

Having demonstrated that historic components have markedly thinner hydration rims, consider the rim measurements obtained on Sierra Fresnal and Chihuahua B samples from LA26780. The median value for Sierra Fresnal hydration rims (0.88 microns) is significantly smaller (see Figure 14) than the median values of 3.51 and 1.70 microns for samples of this obsidian group from Archaic/Early Formative and Late Formative components, respectively (Mann-Whitney U test for independent samples, p = .024). The difference is not as pronounced for Chihuahua B rims, where the LA26780 median is 2.78 microns versus 3.35 microns for Archaic/Early Formative samples, although the Mann-Whitney U test is still significant (p = 0.50).
Table 7. Obsidian Hydration Dating at LA26799/LA26780 compared to other sites of similar age or location.

<table>
<thead>
<tr>
<th>Site</th>
<th>Rim Width</th>
<th>DL</th>
<th>Source</th>
<th>IWC Model 1</th>
<th>IWC Model 2</th>
<th>Standard Model 1</th>
<th>Standard Model 2</th>
<th>Regression Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MOHLAB (Microns)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DL (Microns)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ysleta</td>
<td>1.95</td>
<td></td>
<td>Unknown*</td>
<td>1336</td>
<td>1488</td>
<td>1779</td>
<td>1704</td>
<td>1406</td>
</tr>
<tr>
<td>41EP2840</td>
<td>2.10</td>
<td></td>
<td>Unknown*</td>
<td>1257</td>
<td>1428</td>
<td>1752</td>
<td>1664</td>
<td>1356</td>
</tr>
<tr>
<td>A.D. 1680–1750</td>
<td>2.18</td>
<td></td>
<td>Unknown*</td>
<td>1204</td>
<td>1388</td>
<td>1737</td>
<td>1642</td>
<td>1329</td>
</tr>
<tr>
<td>(ceramic dating)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DACA Manso</td>
<td>1.87</td>
<td>0.82</td>
<td>Chihuahua A</td>
<td>1803</td>
<td>1785</td>
<td>–</td>
<td>–</td>
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<tr>
<td>LA26799/26780</td>
<td>1.85</td>
<td>0.86</td>
<td>Chihuahua A</td>
<td>1794</td>
<td>1775</td>
<td>–</td>
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<td>–</td>
</tr>
<tr>
<td>A.D. 1581–1680?</td>
<td>0.96</td>
<td>1.92</td>
<td>Chihuahua B</td>
<td>1446</td>
<td>1386</td>
<td>1750</td>
<td>1711</td>
<td>1416</td>
</tr>
<tr>
<td></td>
<td>2.00</td>
<td>2.68</td>
<td>Chihuahua B</td>
<td>1428</td>
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<td>1691</td>
<td>1389</td>
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<td>2.39</td>
<td>2.68</td>
<td>Chihuahua B</td>
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<td>1056</td>
<td>1640</td>
<td>1580</td>
<td>1258</td>
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<tr>
<td></td>
<td>2.65</td>
<td>2.66</td>
<td>Chihuahua B</td>
<td>973</td>
<td>856</td>
<td>1569</td>
<td>1495</td>
<td>1168</td>
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<tr>
<td></td>
<td>2.78</td>
<td>2.98</td>
<td>Chihuahua B</td>
<td>908</td>
<td>784</td>
<td>1531</td>
<td>1449</td>
<td>1122</td>
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<tr>
<td></td>
<td>2.98</td>
<td>3.18</td>
<td>Chihuahua B</td>
<td>753</td>
<td>610</td>
<td>1468</td>
<td>1375</td>
<td>1051</td>
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<tr>
<td></td>
<td>3.49</td>
<td>3.49</td>
<td>Chihuahua B</td>
<td>594</td>
<td>432</td>
<td>1401</td>
<td>1295</td>
<td>978</td>
</tr>
<tr>
<td></td>
<td>4.35</td>
<td>3.45</td>
<td>Chihuahua B</td>
<td>-470</td>
<td>-758</td>
<td>923</td>
<td>724</td>
<td>539</td>
</tr>
<tr>
<td></td>
<td>2.04</td>
<td>2.04</td>
<td>Antelope Wells</td>
<td>1321</td>
<td>1246</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>DACA Pithouse</td>
<td>3.29</td>
<td></td>
<td>Obsidian Ridge</td>
<td>538</td>
<td>370</td>
<td>1362</td>
<td>1249</td>
<td>938</td>
</tr>
<tr>
<td>A.D. 1250-1450</td>
<td>1.81</td>
<td>7.04</td>
<td>Obsidian Ridge</td>
<td>-1398</td>
<td>-803</td>
<td>-740</td>
<td>-1260</td>
<td>-558</td>
</tr>
<tr>
<td>(¹⁴C and ceramics)</td>
<td>1.82</td>
<td>7.29</td>
<td>Obsidian Ridge</td>
<td>386</td>
<td>214</td>
<td>-856</td>
<td>-1398</td>
<td>-622</td>
</tr>
</tbody>
</table>

*Probably Obsidian Ridge
All ages are expressed in calendar ages; negative numbers denote B.C. dates
Figure 14. Boxplots comparing median obsidian hydration rim measurements among prehistoric and historic period components. Upper graph illustrates trend of rim measurements through major time intervals and among different geological source groups. Lower graph illustrates all rim measurements for selected components.
The comparison of hydration rims indicates, in relative terms, that flaked obsidian artifacts recovered from LA26780 and the demonstrably historic Ysleta WIC site are comparatively recent.

While comparisons of basic hydration rim measurements are intriguing and potentially useful, it is equally important to examine the derivation of actual calendar age estimates provided by the method since different ambient temperatures and other local factors affect hydration rates. Figure 15 compares the distributions of obsidian hydration and radiocarbon dates for 13 components dating

Figure 15. Trends among median and interquartile ranges of radiocarbon and obsidian hydration age estimates from components dating from 300 B.P. (ca. AD 1680) to 2200 B.P. (ca. 250 BC). Obsidian dates for historic components at LA26780 and the Ysleta WIC site are shown on the far right side of each graph. Obsidian hydration dates calculated using four hydration rate determination models: (a) intrinsic water content with direct measurement of effective hydration temperature (EHT); (b) intrinsic water content with measured EHT assumed at a depth of 10 cm; (c) standard Obsidian Ridge hydration rate with direct measurement of EHT; (d) dates calculated using empirical regression model of Mauldin et al. (1998).
between ca. 250 B.C. and A.D. 1680, and incorporates four models used to calculate calendar dates. The upper two models use intrinsic water content values to determine artifact-specific, rather than source-specific, hydration rates. The first of these has provenience-specific effective hydration temperatures based on thermal cell temperatures recorded at the depths from which artifacts were recovered. The second applies a regression-based temperature value for a uniform soil depth of 10 cm. The third model employs the same temperature model, but incorporates a source-specific induced hydration rate for Obsidian Ridge materials developed by Chris Stevenson (1985). The final model uses an empirical regression model (Mauldin et al. 1998). Technically, the standard Obsidian Ridge and regression models are inappropriate for the obsidian samples from LA26780 since they are specifically designed for the Obsidian Ridge source. They are included here to illustrate that a consistent trend exists among obsidian hydration age estimates despite the method or model utilized to estimate hydration rates.

The distribution of median obsidian hydration values along the trend of increasing radiocarbon age is non-linear, but does have a general sinusoidal trend. Previous analyses have detected this pattern and found it extends even further into the past, and there is an indication that paleoclimatic factors (paleotemperature fluctuations) may have some influence (Miller 1996). A fundamental problem is that this sinusoidal pattern creates a situation where a particular interval during the Late Archaic/Early Formative period has similar obsidian calendar age estimates to Historic components. However, this particular interval is much later than the 3200 B.P. radiocarbon date from LA26780, and thus the obsidian data appears to more closely corroborate the most recent of the two radiocarbon dates from the site.

In summary, while obsidian hydration analysis does not provide consistently reliable absolute chronometric dates, a consideration of the obsidian data as a relative dating method suggests that hydration rims at LA26780 formed relatively recently compared to prehistoric sites in the region. Furthermore, the hydration data do not support the presence of a Formative period occupation, although the non-linear relationship between hydration rims (actually hydration rates) and age does not entirely rule out an Archaic occupation.

The fundamental question is how many components are present at LA26780, and to which component or components do the majority of artifacts belong? Of the possibilities, the evidence for a Formative period occupation is clearly the weakest. There is no chronometric evidence for a Formative occupation (Figure 16). While the majority of the small number of ceramics are typical Formative period types, only 11 such sherds were found. This is a much lower count than any of the nearby Formative period sites within the DACA project area: NMSU 1393 (n=2891 sherds), NMSU 1383 (n=1226), NMSU 1386 (n=877), and NMSU 1389 (n=674) (Batcho et al. 1985). The other

![Diagram](image)

Figure 16. Summary of time intervals represented by various categories of chronological and chronometric data at LA26780.
chronological indicator is the two projectile points, both characteristic of later Historic forms. The Archaic period is represented by a problematic radiocarbon date and two projectile points, one of which was intensively reworked. Obsidian hydration rim measurements and calendar age estimates do not strongly support the presence of an Archaic occupation.

The strongest case is for a post-A.D. 1450 occupation. The original radiocarbon age is secure in terms of sample composition, provenience, and laboratory analysis, although unresolved is the second extremely discordant date obtained from Feature 1. Obsidian hydration data, although always suspect, corroborate the relative dating of LA26780 as a late occupation. It is reasonable to assume that the majority of the lithic assemblage is associated with this occupation, inasmuch as it consists predominantly of non-local obsidian transported to the site and subsequently reduced into several informal and formal tools. The presence of the Spanish spur rowel further substantiates the late age of the site, and may serve to narrow the proposed occupation period by imposing a terminus post quem later than 1565/1581. Overall, there is sufficient chronological evidence to support the hypothesis that the primary occupation of LA26780 occurred between 1565 and 1680.

ARCHEOLOGY AND ETHNOHISTORY AT LA26780

In a review of archeological and ethnohistorical research pertaining to the protohistoric period, Lockhart (1998b) expresses the need for multi-disciplinary efforts to identify and study Manso and Suma settlements. Here, the integration of archeological and ethnohistorical methods, chronometric studies (i.e., radiocarbon, obsidian hydration, and relative artifact dating), geochemical analysis and sourcing of obsidian and ceramic artifacts, and macrobotanical studies, have been brought to bear on defining the age and affiliation of LA26780. Yet, the summary results are ambiguous even in the most favorable light. If considered individually, none of the material culture attributes are particularly convincing, and the potential multi-component nature of the site, including the evidence for a Middle/Late Archaic occupation and the presence of a small number of Late Formative period ceramics, poses interpretive problems.

At the present time, however, LA26780, and perhaps the Soto Ranch site, are the most auspicious candidates for Manso or Suma settlements in West Texas, south central New Mexico, and northern Chihuahua. To further explore the nature of Manso or Suma settlement in the region, I assume that the principal occupation at LA26780 was affiliated with one or another of these groups, and compared to the collection of isolated features and components having late chronometric dates reviewed earlier, it is certainly the most substantial and thoroughly investigated settlement of this period. Working from this premise, I compare several aspects of the site and its artifact assemblage to historically documented characteristics of Manso and Suma settlement.

A limited amount of ethnohistoric and ethno- graphic information is available for the Manso and Suma, but they provide important and intriguing insights into the settlement and subsistence adaptations and material culture of these groups. The discussion centers on four aspects of the Manso and Suma ethnohistoric record—geographic location (i.e., mobility/territorial ranges), built environment, subsistence, and technology—for which archeological parallels may be drawn and subsequently used to derive archeological expectations concerning the nature of 1450-1680 settlements and material culture. Personal appearance, dress and adornment, social organization, characteristics of later Mission period settlement, and the history of assimilation among other ethnic groups are not considered here, nor is the debate regarding the linguistic affiliation of these groups (see Beckett and Corbett 1992; Forbes 1957; Griffen 1979; Kenmotsu 1994; Miller 1983; Scholes and Mera 1940).

The geographic location of the Manso nacion is relatively well-established through historical accounts, and included the Rio Grande valley in the area of El Paso and extending north past Las Cruces, New Mexico. The Espejo expedition of 1582 first encountered a group called the Tanpachoa in the vicinity of the El Paso lower valley (Hammond and Rey 1929). Most sources identify the Tanpachoa as an early encounter with the same group later identified as the Manso during Oñate’s journey in 1599 (Beckett and Corbett 1992; Hammond and Rey 1953; Kenmotsu 1994). Benavides (1665) observed several rancherías occupied by Manso groups for a distance of 30 leagues along the Rio Grande. During later years, in 1692 a large Manso rancheria
was observed along the Rio Grande valley near present-day La Union, New Mexico, just north of El Paso (Beckett and Corbett 1992), and near Dona Ana, north of Las Cruces (Espinosa 1942). The La Union rancheria would lie within a distance of five miles from LA26780.

Evidence of settlement beyond the Rio Grande valley is sketchy, but accounts do indicate that the Manso may have ranged beyond the confines of the river valley. Forbes (1959) describes a 1667 account of a Manso rancheria near the Florida Mountains, 100 km west of the Rio Grande. Documentary sources also mention the Manso as using salt salines, although the location is not specified (Kenmotsu 1994). The salines may be Coe Lake and Lake Lucero in the Tularosa Basin (north of El Paso) where later Spanish settlers established the San Andres Salt Trail; one of several lakebeds in northern Chihuahua; or perhaps the Salt Flat Basin near the Guadalupe Mountains.

Documentary evidence suggests the Suma inhabited a wide territory from the Rio Grande valley south of El Paso and extending across north central Chihuahua to Casas Grandes and perhaps westward into Sonora. The western Suma may have been the group encountered by Ibarra in 1565 (Griffen 1979). Kenmotsu (1994) reviews the account of Juan Domingo Mendoza, who traveled the Rio Grande valley from El Paso to Presidio in 1683. During seven days of travel down the valley from El Paso, Mendoza and his party observed several Suma rancherias near elevated landforms with access to the river valley. Suma groups were present at El Paso area missions by the mid-1600s (Griffen 1979). Other accounts reviewed by Griffen (1979) note widespread encounters with Suma groups throughout north central and northeastern Chihuahua, eastern Sonora, and the Rio Grande valley. Perhaps most informative is Benavides' (1965) statement "...thus moving from one set of mountains to another," suggesting a highly mobile settlement pattern in addition to the fact that mountain landforms were frequently occupied by the Suma.

Both Manso and Suma groups are documented across wide areas, particularly during periods of revolt in the late 1600s when members of several tribes joined in opposing the Spanish and raiding mission settlements. Conclusive statements that these groups—particularly the Manso—had much wider territorial ranges than indicated by the historical record must be tempered by the fact that ethnic affiliations may have occasionally been confounded by the Spanish; widespread mobility of the Suma is indicated, however. The Manso may have had more circumscribed settlements within the Rio Grande valley.

Spanish descriptions of the built environment of the Manso and Suma mention informal habitation structures consisting of straw, brush, or poles. Benavides (1965) described the Mansos "as a people which has no houses, but only huts of branches," while Luxan’s account of settlements along the Rio Grande valley north of El Paso noted the common occurrence of rancheria settlements with "straw houses" (Hammond and Rey 1966). Groups encountered in the vicinity of Casas Grandes by the Ibarra expedition in 1565, who likely were Sumas, were reported living in brush structures or jacaletes (Mecham 1927).

A number of primary and secondary literature sources have used the term jaca to characterize these structures, but it is not clear whether they more closely resembled hut structures or wickups instead of the more formal pole, thatch, and adobe plaster construction typical of jacaletes. In contrast to the usual descriptions of structures, the Mendizabal testimony of 1663 (Hackett 1923-1937, Vol. III) seems to make specific reference to the absence of houses of any form among the Manso encountered in the El Paso area: "...although the country is very cold, they have no houses in which to dwell, but live under the trees..." Likewise, Griffen (1979; see also DiPeso 1974, Vol. III; Naylor and Polzer 1986) provides several Spanish accounts of abandoned settlements encountered by them during the late 1600s. One such camp had beds of grass interspersed among approximately 40 small hearth features; another description of a camp in the Sierra Enmedio, northwest of Janos, Chihuahua, noted several petales of beargrass. It is not known whether some of these features represented the collapsed remnants of brush structures. Seldom considered in the review of the historical accounts is that these camps and their constituent features may have been atypical, given that they may have represented brief settlements by groups attempting to avoid Spanish military patrols during an active period of revolts by the Suma, Jano, Manso, and other allied tribes between 1684 and 1700. In one of the few descriptions of thermal features, Griffen (1979) notes the discovery of tatemes, or fire pits, at an abandoned Suma camp.
These facilities were questionably identified as places where meat was roasted, but it is also likely that they were rock-lined thermal facilities for processing cacti and other plant materials.

Spanish accounts of subsistence practices suggest a predominantly foraging economy based on gathering, hunting, and fishing. The sole reference to the use of cultigens among the Manso is found in Luxan’s account of the Tanpachoas (Hammond and Rey 1966). Otherwise, evidence for Manso and Suma agriculture has often been based on Spanish accounts of the Otomoacos encountered along the Rio Grande during the Chamuscado-Rodriguez expedition (Hammond and Rey 1966). Schroeder (1969) identified the Otomoacos as Suma, while Beckett and Corbett (1992) consider them to be Manso. A more detailed and reasoned examination by Kenmotsu (1994) places the Otomoacos in the La Junta and Conchos regions and finds no relation between this group and either the Suma or Manso. Otherwise, more specific accounts of Manso and Suma subsistence do not include descriptions of cultigens. Benavides (1965) observed that the Manso did not practice agriculture, “nor do they sow.” The Mendizabal testimony includes the statement “not even knowing how to till the land for their food” (Hackett 1923-1937, Vol. III), while Posadas notes in his memoir: “These people neither sow nor reap and are few in number” (Kenmotsu 1994).

The historic accounts provide few descriptions of specific food items utilized by the Manso. Benavides notes the consumption of rats and fish, and both fish and mesquite are mentioned in several accounts. However, a much wider variety of food items was undoubtedly consumed by the Manso as suggested by Luxan’s statement (Hammond and Rey 1966): “They brought also other samples of their food, in such great quantity that most of it was wasted because of the amounts they gave us.”

Luxan’s observation also accords well with the variety of food items observed to have been utilized by the Suma, including mesquite beans, tunas (Prickly Pear), mescal or maguey (Agave), dattles (Yucca), other cacti fruits, and various unspecified roots and seeds, several of which were ground for use in drinks and flours for baking (Griffen 1979). Bolton (1916) notes that the Suma living southeast of El Paso subsisted primarily on mescal that was baked while wrapped in the palms or leaves of the plant, while Mendoza’s account (Kenmotsu 1994) describes them as a “poor people who only sustain themselves with mescal.” While no information is provided on animal exploitation by the Suma, Naylor (1969) proposes that rabbits were an important food resource and also mentions historic accounts where jerky was prepared from horses and mules stolen from the Spanish.

The Suma were also described participating in ceremonies or communal gatherings involving intoxication or “drunkenness.” The form of intoxicant is not specified, and whether it involved some form of fermented beverage is unclear; Gerald (1974a) cites a documentary source that mentions the use of peyote. All accounts generally agree that the Suma did not practice agriculture, with the occasional exception of some bands that had been reduced at mission settlements. Benavides (1965) describes the Suma as a people who “wander...without houses, and without crops; they live from what they hunt, which is all species of animals.”

Descriptions of Manso and Suma material culture and technology are extremely meager. Benavides (1965) notes the use of “knives of flint” to cut meat, while Luxan’s account of the Tanpachoas notes the use of bows and arrows, bludgeons made of tornillo (screwbean mesquite) wood, and fishing nets (Hammond and Rey 1966). Several accounts mention the use of body paint, indicating that minerals and tools needed to produce pigments would have been used. In regards to the Suma, Griffen (1979) discusses several archival references to clubs and bows and arrows. The Suma were also observed with lances, swords, pikes, and shields, although such weapons and armor were obtained through contact with the Spanish. A 1695 Spanish account reports the use of saddles, halters, and other items of horse culture adopted from the Spanish (Griffen 1979). Of particular interest is a 1751 document stating that Apache arrows were distinctive from those of the Suma and other groups, but the document does not further specify in what manner they differed (Griffen 1979), nor whether the distinguishing characteristics referred to the arrow shaft, fletching, projectile tip, or a combination of these components.

I turn now to the archeological information available from LA26780, and other potential post-Pueblo and protohistoric components in the region, to compare the archeological record against historically documented aspects of Suma and Manso settlement and technology.
Artifacts of Spanish Origin

The presence of a metal artifact of Spanish origin does not help resolve the issue of ethnicity as far as Native American groups are concerned, but does introduce the question of whether LA26780 represents a Spanish occupation. Ahlborn (1992) has commented on the pitfalls of using metal artifacts to determine the ethnic or cultural affiliation of protohistoric and early Historic sites. However, Spanish settlements generally tend to have larger numbers of metal artifacts (Vierra 1989), as well as higher quantities of ceramics and relatively few chipped stone artifacts. Lithic artifacts have been recovered at Spanish mission and presidio settlements throughout the El Paso area, but unlike LA26780, they are present in very small numbers. It appears that chipped stone technologies at many Spanish missions, presidios, and domestic settlements were oriented towards the production of gunflints (Moore 1992; Shenk and Teague 1975; Vierra 1989, 1997). No gunflints were identified in the lithic assemblage from LA26780.

Common metal items recovered from Native American and Spanish settlements of the protohistoric and Mission periods include nails, hinges, and other domestic hardware, fragments of armor and weaponry, horseshoes, cooking items, and tools. Spurs and spur rowsels are not among the more commonplace European metal artifacts found at sites of this period, although they have been documented at 16th and 17th century Native American Pueblos and Spanish settlements. Vierra (1989:137) compiled information on the metal artifacts recovered from 14 Native American Pueblo and Spanish settlements in the middle Rio Grande valley of New Mexico. Spurs and spur rowsels occur at two of the sites, Mission San Gregorio de Abo (Toulouse 1949) and Quaraí Pueblo. Simmons and Turley (1980) also mention an intact spur from Pecos Pueblo.

Aside from the potential use of the spur rowel for relative dating, the presence of this item clearly indicates that the occupants of LA26780 had some contact with the Spanish and adopted certain technological items associated with horse culture (see Griffen 1979). Whether the occupants of LA26780 actually possessed horses obtained or stolen from Spanish settlements, or were using miscellaneous items associated with horse culture for some obscure purpose, is unknown.

Obsidian Sourcing Evidence for Territorial Ranges and Mobility, Ethnicity, or Mutualistic Relationships

Obsidian sourcing studies of the LA26780 lithic assemblage and other potential protohistoric components provide a key piece of evidence of the mobility ranges or extra-regional contacts of protohistoric groups in the region. Figure 17 displays the locations of obsidian sources identified at LA26780, and the territories inhabited by various tribal groups or naciones suggested by Spanish accounts of the late 16th through late 18th centuries. Distances between LA26780 and obsidian sources at Lago Barreal, Sierra Fresnal, and Antelope Wells are approximately 90, 120, and 190 km, respectively. The locations of obsidian sources correspond more closely to regions inhabited by Suma and Jano groups than the Manso, whose settlements were centered along the Rio Grande valley between El Paso and some distance north of Las Cruces, New Mexico.

Obsidian from distant sources is also documented at other protohistoric components. The sole occurrence of the Jug Canyon obsidian source in the Jornada region is at LA72151 in the San Andres Mountains. Sechrist's (1993) finding of Mule Creek obsidian at La Hacha y los Moscos indicates similar distances of obsidian movement. Even more distant transport is indicated by a specimen of Cow Canyon obsidian from southeastern Arizona among the chipped stone artifacts sourced at the Fillmore Pass site (FB1613), although unfortunately it cannot be determined whether this specimen is associated with the Paleoindian, Archaic, or Historic component.

The presence of obsidian materials from distant sources appears to be a significant aspect of protohistoric occupations in West Texas and southern New Mexico. Similarly, an analysis of over 1300 obsidian source assignments from the region has determined that distant obsidian sources are much more common among Archaic period artifact assemblages than those associated with more sedentary Formative period occupations, and Chihuahuan sources are almost exclusively represented among either Archaic or protohistoric assemblages in the region (Miller and Shackley 1998). With the dramatic decline in population levels that may have taken place during the post-Pueblo and protohistoric periods, it is possible that protohistoric groups reverted to the broad-scale territorial ranges characteristic of the Archaic period.
If the presence of distant obsidian sources is considered as one indication of group movement, the nature of the obsidian assemblage at LA26780 suggests that Manso groups had a greater territorial range and degree of mobility than that documented in the historical record (assuming, of course, that LA26780 is a Manso settlement). The majority of Spanish accounts of the El Paso area mention the presence of the Manso to the exclusion of other groups, although at least one testimony mentions a Manso ranchería in the Florida Mountains (Forbes 1959), 100 km west of LA26780.

The presence of non-local obsidian may not solely reflect group movements, but may also be viewed in terms of regional exchange relationships. From this perspective, equally plausible is that the obsidian sources at LA26780 reflect broad-scale mutualistic relationships between the Manso, Suma, and Jano, as well as other groups, similar to those documented by Kenmotsu (1994) for the La Junta de los Ríos and other areas of Trans-Pecos Texas.

Sufficient archeological information is not available to resolve which of these alternatives hold true, and, as noted by Swagerty (1991), even with the availability of historical documents, the study of regional exchange systems during the protohistoric is a difficult undertaking. Additional obsidian sourcing studies in Northern Chihuahua may help clarify the nature of group movement and relationships among tribes and naciones of the post-Pueblo and protohistoric periods.

Other Indicators of Settlement and Mobility

Other aspects of the lithic assemblage at LA26780 offer additional insights into mobility and settlement during the protohistoric period. As discussed earlier, the lithic assemblage at LA26780 is dominated by fine-grained materials, including a uniquely high and unsurpassed proportion of obsidian. The majority of the obsidian artifacts consist of
materials procured in northern Chihuahua, with a minor amount of obsidian from southwestern New Mexico that were transported for distances of between 100 and 200 km. The entire reduction and tool production sequence, including bipolar cores, debitage, utilized flakes, unifacial tools, thinning flakes, preforms, and projectile points, is represented among the Chihuahuan obsidian materials, suggesting the transport of raw materials to the site and subsequent reduction into formal and informal tools.

Obsidian raw materials were procured at distant, widely separated locations or from other groups inhabiting those locations, transported to the settlement at LA26780, and subsequently reduced into tools. This distinctive pattern of selection for particular high-quality raw material and transport over wide areas more closely resembles lithic assemblages associated with Archaic and Paleoindian groups in the region. If current conceptions regarding the relationships between raw material procurement and transport, tool manufacture, and settlement mobility hold true (e.g., Bamforth 1985, 1986, 1991; Kelly and Todd 1988; Kuhn 1991), the attributes of the chipped stone assemblage at LA26780 strongly indicate a high degree of mobility by the inhabitants, and perhaps the exploitation of an extensive area subsuming the bolson regions of north central Chihuahua, far west Texas, and south central New Mexico.

Built Environment, Settlement Structure, and Subsistence

Aspects of the built environment, settlement structure, and subsistence economies of protohistoric settlements, as suggested by the historical record, prove to be among the more difficult issues to examine with the current body of archeological information. Excavation data are lacking for nearly all potential sites of this period, and for the single thoroughly investigated case at LA26780, there is no site map illustrating the actual locations and relationships of features.

Historical accounts frequently describe the occupation of ranchería settlements as groups of informally constructed brush structures. The presence or absence of structures is an important but unresolved issue at LA26780 and other potential protohistoric components. Absence of evidence for structures does not imply evidence of absence, and it is likely that had ephemeral brush structures been present at LA26780 and/or associated with any of the late hearth features, little or no evidence would have survived in the aeolian environment.

It does seem that a majority of potential late occupations consist of small hearth features and meager artifact assemblages. This may be misleading, however, since the extent to which other artifacts and spatial clusters from protohistoric occupations within multi-component sites is difficult to assess because of the absence of any consistent or common diagnostic traits. If more intensive investigation of such sites does reveal that many such sites consist of isolated hearth features with minimal artifact inventories, this would suggest the existence of additional components of the ranchería settlements (i.e., logistical camps) beyond those in the Spanish accounts that focused on river valley settlements.

The absence of macro-botanical data from the small number of investigated features at LA26780 and other possible protohistoric components precludes comparisons with the historical record. This means that the intriguing historic accounts of Manso and Suma subsistence practices as ones that provide clear hints of a hunter-gatherer foraging economy similar to that of the Archaic period cannot be evaluated or confirmed at the present time. A crucial issue is whether horticulture or agriculture was practiced by the Manso and Suma since the historic record is ambiguous in this regard. The identification of maize at LA26780 is doubtful, based as it is on a minute sample that subsequent stable carbon isotope analysis indicates derived from a C₃ photosynthetic plant rather than a C₄ plant such as maize. Despite the absence of direct macrobotanical evidence, inferences based on settlement and material culture attributes of the few known protohistoric sites suggest high levels of mobility and broad territorial ranges that are more consistent with foragers than agriculturalists. In this, I tend to agree with Kenmotsu's (1994) conclusions that the Manso and Suma were predominantly, if not exclusively, foragers.

As a final consideration, it should be kept in mind that the Suma participated in several rebellions against Spanish authority during the late 1600s. They were often joined in these revolts by members of other naciones, including the Manso, Jocome, and Jano. Griffen (1979), DiPeso (1974), and Naylor and Polzer (1986) provide several Spanish accounts of widespread searches for, and pitched battles against, rebel Suma bands, as well as descriptions
of abandoned Suma settlements at numerous locations in north central Chihuahua and north-eastern Sonora. Several of these events occurred near what is now the U.S.-Mexico border, and it is conceivable that the remains at LA26780 reflect a temporary camp occupied by participants in one of the revolts.

**SUMMARY**

The post-Pueblo, protohistoric, and early Mission periods comprise an important link between the long trajectory of prehistoric settlement and adaptation in the region and later developments during the Mission and Historic periods. They also provide an important contrastive database for considerations of the effects of Spanish contact and missionization or reducción programs on Native groups in the region. The majority of information on this important period has been obtained through archival and historical research and, unfortunately, archeological studies that could offer important corroborative information have lagged behind. Yet, with the limited available archeological information, it is rather interesting that there appears to be little concordance between several of the expectations regarding settlement, mobility, and geographic location derived from the historical record and inferences derived from the archeological record, although both sources of information are often sketchy and ambiguous. The archeological record seems to differ substantially in some regards from the historical record, suggesting new avenues of inquiry for both research domains.

Another important aspect of this period involves its similarities with the Archaic period in terms of settlement location, mobility and territoriality, and technology. Although the data are admittedly meager, there is a noteworthy cluster of traits shared between the two periods. A more concise understanding of the post-Pueblo and protohistoric periods of the Jornada Mogollon region may offer important insights into patterns of regional reorganization and adaptive changes resulting from the collapse of sedentary or semi-sedentary agriculturally-based settlement systems.

However, all of these potential research pursuits first require more consistent archeological identification and documentation efforts. For example, work by Sale (1991, 1997) in the San Andres Mountains and Tularosa Basin identified several late components, suggesting that exceptionally well-preserved burned rock features found on the surface among otherwise non-descript and dispersed artifact scatters and other burned rock features may be indicative of late occupations. A closer inspection of sites and patterns of material culture patterns that deviate from the archeological record on small sites typically encountered in the region, the application of refined relative and chronometric dating applications, and the use of various archeometric sourcing techniques may result in the identification of additional post-Pueblo and protohistoric occupations. More thorough investigation and documentation of such components will help diminish the gap between archeology and ethnohistory in western Trans-Pecos Texas and south central New Mexico, and illuminate the reasons underlying the apparent disparities between them. Such a process will ultimately lead to a more refined and comprehensive understanding of this important and intriguing period that bridges the prehistory and history of the region.

**NOTES**

1. In a recent study of potential old wood effects among modern mesquite wood samples in the Hueco Bolson, radiocarbon dating of 10 unburned samples collected in the Small Site project area at Fort Bliss yielded several B.P. dates (Mauldin et al. 1998).

2. The series of dates from Firecracker is most notable in this regard in that six of eight dates range slightly later than most Pueblo components. The excavator, Tom O'Laughlin (1995 personal communication) does not agree, as virtually no post-A.D. 1450 ceramics were recovered during the extensive excavations within the roomblock or exterior pithouse and extramural activity areas.

3. MacNeish and Wilner (1998:165) state that this and one other of the five radiocarbon age estimates from Pintada Cave should be rejected since they do not accord with the proposed Archaic occupation of the shelter. However, the stratigraphic sequence identified in talus slope deposits outside the shallow shelter is probably more complex than presented in the report. Projectile point forms and other evidence from shelter and talus excavations indicate that earlier and later occupations are represented in the archeological deposits.

4. It must be noted that the DACA project was inherited in 1983 by David Batek and Steadman Upham from a previous administration at the CRMD. The previous project manager had seriously underbudgeted the data recovery project, and an underlying factor in the budget calculations was that all
sites were low density and surficial hearth/artifact scatters. Credit is due David Batcho and the CRMD field crew who, through the novel use (in 1983) of backhoes, magnetometers, and other investigative methods, discovered pithouses, hearths, trash and storage pits with impressive macrobotanical contents, and other features buried below aeolian coppice dunes at several sites in the project area. Additionally, several innovative chronometric and archeometric studies were conducted; despite the budget limitations, the pithouse component at LA26784 remained the most thoroughly dated El Paso phase component in the region until 1996. Other archeometric analyses established the framework for the present study, and lacking such preliminary work, it is possible that the potential protohistoric component at LA26780 may have continued to exist only as a rumor in the CRM literature.

5. Obsidian data for LA26780 presented in Miller (1996:Table III.14) are erroneous. The total lithic count in this table includes groundstone artifacts, while the count of obsidian artifacts (n=67) was based on the number of specimens remaining in the collection of chronometric samples rather than the total number of obsidian artifacts (n=147) noted in Batcho (1987).

6. The metal artifact is not listed in the specimen logs, although this does not discount its presence because all artifacts within each 5 x 5 m unit placed around a hearth were bagged together and assigned a single specimen number. The spur rowel is mentioned in Duran and Batcho (1983:6), and the preliminary CRMD (1985) report of investigation describes its provenience. However, the item is not mentioned in the interim data recovery report prepared for BLM (Batcho et al. 1985) or in an unpublished draft MS reviewing chronometric studies at the DACA sites (Batcho 1987). For the record, the presence of the spur rowel is accounted for through my personal communications over the past several years with three individuals affiliated with the project: David Batcho, Melba Duran, and Steadman Upham.

7. This excludes 728 hydration rims measured by MOHLAB. These rim measurements are not considered reliable because of several MOHLAB laboratory procedures that are inconsistent and not comparable with those used by other laboratories (see Miller [1996] for a review of this problem).

8. It is likely that this impression, or the perceived absence of houses, has more to do with the restrictive and formal meaning of the Spanish term casa. As implied by the passage in Benavides’ Memorial, it appears that a distinction was maintained between formally constructed and relatively permanent domiciles (casas) and informally constructed and impermanent brush structures called ranchos. Therefore, the Mendizabal testimony may not necessarily imply a complete absence of house structures, and it is possible that the description of the Manso as “living under trees” may refer to brush structures.

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ABSTRACT

The 1991 and 1992 Texas Archeological Society Field Schools held along the Red River and tributaries in Northeast Texas were designed to obtain new and important information on the Caddoan prehistory and early history of the middle reaches of the Red River, and they were a considerable success. Archeological investigations at the Roitsch (or Sam Kaufman), Fasken, Ray, and Salt Well Slough sites, along with the finding of more than 85 new prehistoric sites during the archeological survey, recovered significant archeological evidence of late Early Ceramic to Caddoan structures and features, mound construction, salt-making, burial practices, a substantial faunal and floral database on subsistence practices (particularly the use of maize), and from bioarchaeological studies, a new appreciation of the health conditions and dietary adaptations of generations of Late Caddoan (ca. A.D. 1300-1700) farmers who lived on Mound Prairie. The historic archeological investigations at the Jonesborough locality, one of the earliest Anglo-American towns in Texas, did succeed in identifying the 1846 burial crypt of the wife of William Henry Gill, a large plantation owner in the area between 1844 and the late 1860s.

INTRODUCTION

The 1991 and 1992 Texas Archeological Society (TAS) Field Schools were held in Red River and Lamar counties, Texas, under the direction of Dr. James E. Bruseth of the Texas Historical Commission (THC), and assisted by THC staff. The immediate impetus for holding the Field Schools in Northeast Texas was the 1990 flood along the Red River, which washed away the West Mound at the Sam Kaufman site (41RR16, now known as the Arnold Roitsch site), previously investigated in 1968 by Skinner et al. (1969). Future floods threatened to remove even more of this important prehistoric and early historic Caddoan village. Furthermore, the Sam Kaufman site was being subjected to looting of prehistoric Caddoan burials and other impacts associated with the modern farm use of the land. It was our feeling that the archeological work that could be accomplished by the TAS would help to obtain significant information on the character of this prehistoric Caddoan site and, moreover, increase our knowledge of the Native history of the Caddo peoples who lived along the middle reaches of the Red River for at least a millennium.

In addition to the investigations completed at the Roitsch site, the TAS Field School conducted work at the Fasken (41RR14), Jonesborough (41RR15), Salt Well Slough (41RR204), and Ray (41LR135) sites (Figure 1) during either or both years of the Red River Field School effort. The TAS also completed an extensive archeological survey on the Roitsch farm lands, which was followed up by additional survey on the Tarrant farm lands, adjacent to the Wright Plantation Mound site (41RR7).

As set out in Bruseth et al. (1991, 1992), our work was guided by several basic research goals, each designed to address research problems that we considered relevant to the kinds of archeological sites and deposits to be investigated during the Field School. Furthermore, they were research problems where substantial and pertinent evidence could be
expected to be gathered during the course of the Field School work, not simply research problems posed that could only be addressed at the conclusion of a long-term research program in the Red River valley of Northeast Texas (and southeastern Oklahoma), an area unfortunately long-neglected by Caddoan archeologists (see Story 1990; Kenmotsu and Perttula 1993; Bruseth 1998). Our goals included: (1) improve chronology; (2) understand the village structure at the Roitsch site, as well as the other Caddoan sites; (3) understand the mounds at the Roitsch and Fasken sites; (4) identify the historic tribal affiliation of the archeological deposits at the Roitsch site; (5) analyze human subsistence in the Red River valley of Northeast Texas through faunal, floral, and bioarchaeological remains; (6) determine if the Caddo Indians were processing salt near the Roitsch site; and (7) examine early Anglo-American settlement and trade if the Jonesborough site could be definitely identified through archeological investigations (Bruseth et al. 1991:17-26; Bruseth et al. 1992:19-28). We will discuss our findings relative to these goals from time to time in different parts of this article when we consider it relevant in evaluating site-specific TAS findings, and we will also consider the findings of the project in the concluding section of this article.

In this article, then, we present the varied findings of the archeological investigations held at several major prehistoric Caddoan settlements in the Red River drainage basin of Northeast Texas. Because of the substantial amount of work accomplished during the 1991 and 1992 Field Schools (600 people do move a lot of dirt in a week, even when it rains), and the even more impressive amounts of archeological remains that were recovered (i.e., more than 100,000 artifacts from the village areas at the Roitsch site alone), we cannot hope to communicate in this single article all that we learned, all that we puzzled over, and all the questions still left unanswered after all the work was done. To carry the story farther, the Texas Historical Commission has supported the preparation of more detailed monographs on the 1991-1992 archeological investigations, and we anticipate that those volumes will be in print about the same time as this volume of the *Bulletin of the Texas Archeological Society* (see Bruseth n.d.; Kenmotsu 1999; Perttula 1999a, 1999b; Prikryl 1999; Reese 1999).
CULTURAL AND NATURAL SETTING

Extensive discussions of the cultural and natural settings of this part of Northeast Texas can be found in a number of recent publications, including Story (1990), Kenmotsu and Pertula (1993), and Bruseth (1998). Most of the Field School sites lie in the northwestern portion of Red River County, in Northeast Texas, while the Ray site (41LR135) is in northern Lamar County, about 25 km from the Roitsch site (see Figure 1).

The ecotonal setting of the Field School sites in the West Gulf Coastal Plain (Fenneman 1938) centers on the Red River valley, with widely scattered intermittent and/or permanent streams (such as Nolan Creek, one of the northward-flowing tributaries of the river) that eventually flow into the Red River. While now mainly agricultural fields, pasture, and second growth pines and hardwoods, this part of Northeast Texas was an area of mixed oak woodlands and mixed pine-hardwood forests (Brown et al. 1998; Diamond et al. 1987) in the uplands, and hardwoods, swamps, and marshes in the broad Red River riparian bottomlands. Also present in these floodplains were sloughs, abandoned channels, and oxbow lakes, and many fertile sandy elevated terraces and natural levees (Thomas 1977) adjacent to them that were ideal habitation areas for foragers and agriculturists alike. While the Tall Grass Prairie habitat and black clay soils are situated to the west and south of the Roitsch site, there were scattered prairies in Red River County (see Jordan 1981). These include small prairie patches downstream from Roitsch in the Pecan Point area and Shawnee Prairie in the Sulphur River drainage, as well as Mound Prairie (or Jonesborough Prairie) from the confluence of the Kiamichi and Red rivers (near the Fasken and Wright Plantation sites) as far downstream as the mouth of Big Pine Creek, several kilometers below the Roitsch site itself. In modern times, the middle reaches of the Red River were well-watered (about 110-120 cm of precipitation annually), with a mild, humid, sub-tropical climate with more than a 220 day growing season (Thomas 1977:88).

This part of Northeast Texas was settled first by mobile hunter-gatherers as early as 12,000 years ago (the Paleoindian period), and used by Archaic foragers for millennia (Fields and Tomka 1993). About 2000 years ago in Northeast Texas, however, during the Woodland period, the prehistoric Native Americans living in the Red River basin began to settle down in small hamlets and camps dispersed across recognizable territories (Pertula et al. 1993; Schambach 1982). These Native American groups made thick and plain grog-tempered pottery, and used Gary and Kent dart points for hunting and other tasks (Story 1990). About A.D. 700, these groups began to make and use small stemmed arrow points for hunting.

The principal occupation of Red River and Lamar counties in prehistoric and early historic times (up to about A.D. 1800) was by southern Caddo speaking groups (specifically the Kadohadacho and affiliated groups) that lived in settled horticultural and agricultural communities (principally farmsteads and small hamlets), with larger villages situated along the Red River during much of the prehistoric and early historic era (e.g., Story 1990; Pertula 1992; Bruseth 1998:55-62). The current chronology of Caddoan periods and phases in the middle Red River valley is provided in Table 1.

Caddo archeological sites in the region are known to be located on elevated landforms (alluvial terraces and rises, natural levees, and upland edges) adjacent to the major streams, as well as along the minor tributaries and spring-fed branches. They are also located in proximity to arable sandy loam soils, presumably for cultivation purposes. These Caddo groups were powerful theocratic chiefdoms that built mounds for political and religious purposes and functions, traded extensively

<table>
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<th>Period</th>
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<tr>
<td>Formative Caddoan</td>
<td>—</td>
<td>A.D. 900-1100</td>
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<td>Middle Caddoan</td>
<td>Sanders</td>
<td>A.D. 1100-1300</td>
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<td>Late Caddoan</td>
<td>early McCurtain</td>
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<td>Historic Caddoan</td>
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<td>A.D. 1700-1730+</td>
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* after Bruseth 1998:Figure 3-4
across the region with other Caddo communities as well as with non-Caddoan-speaking groups, and in certain settings, developed intensive maize-producing economies.

Certainly the best known prehistoric Caddoan period in the middle Red River valley is the Late Caddoan period and the McCurtain phase. Bruseth (1998) provides the most current discussion of the archeological character of the Late Caddoan McCurtain phase. From stable isotope and bioarcheological evidence, the McCurtain phase Caddo were agricultural peoples, depending heavily on the cultivation of maize as the main staple of the diet (Rose et al. 1998; Colby 1997). Like other Late Caddoan groups on the Red River, the McCurtain phase settlement pattern includes numerous habitation sites (with household cemeteries) and mound centers—such as the Roitsch, Dan Holdeman (Perino 1995), and Rowland Clark (Perino 1994) sites—though the mounds appear to have mainly been constructed between ca. A.D. 1300-1500. Bruseth (1998:62) suggests that the Caddo settlements along this stretch of the Red River resembled the Teran-Soule model (i.e., Schambach et al. 1983; Trubowitz 1984) in that Caddo villages were composed of individual compounds of houses and other structures associated with mounds and the residence of a caddi or chief. The density of McCurtain phase sites indicates that “greater numbers of people were living in closer proximity than before” (Bruseth 1998:64). At the Roitsch site, the mound in McCurtain phase times was used as a place for the burial of the social elite, as a shaft tomb with 11 individuals and many grave goods was located near the center of the mound (Skinner et al. 1969). Special purpose salt-processing sites (such as the Salt Well Slough site [41RR204]) are also common in the vicinity of the Roitsch site.

Due to diseases introduced by Europeans, and the incursions of the Osage into the Red River valley to obtain deer hides and Caddo slaves, by the late 1700s, the Kadodahadocho groups had abandoned the Red River basin (see Smith 1998). These Caddo groups subsequently moved to the Caddo Lake area along the Louisiana and Texas borders.

ARNOLD ROITSCH SITE (41RR16)

The Roitsch site (formerly the Sam Kaufman site) represents a village and ceremonial center of the prehistoric and—perhaps historic—Caddo Indians, based on the results of sporadic archeological investigations over the past 40 years. Members of the Dallas Archeological Society, most notably the late R. K. Harris, conducted limited work at the site during the 1950s. Much of this effort was directed toward salvaging burials that were exposed by plowing (Harris 1951, 1953; Harris et al. 1954; Harris and Wilson 1956). In 1968, Southern Methodist University (SMU), with funding from the National Park Service, conducted about one month of field work under the direction of Dr. S. Alan Skinner. The purpose of this field work was to gather data on the site, since even at that time it was in danger of washing into the Red River (Skinner et al. 1969). This effort concentrated on the two known mounds, and only limited work was conducted away from the mounds. Although SMU’s effort left much of the village deposits untouched, it was quite successful in gathering important information about certain aspects of the Caddoan occupation at the Roitsch site.

Based on the investigations at the Roitsch site and surrounding sites like Roden (Perino 1981) and Bob Williams (Perino 1983), much can be said about the site complex. The Roitsch site was first occupied over 1500 years ago by people that may be affiliated with the Fourche Maline or Woodland period culture. A few artifacts, including Gary dart points and a Williams Plain pottery vessel, suggest limited occupation during this time (Skinner et al. 1969). There is also evidence of occupation at a slightly later time by people who made, or perhaps traded, Coles Creek style ceramics. Little is known about these people, other than that they left behind a few ceramics from their occupation of the area.

The earliest known Caddoan occupation of the Roitsch site occurred around A.D. 1000 to A.D. 1100. The settlement, whose nature and extent are poorly known, is represented primarily by a few rectangular houses in the vicinity of the East Mound (see Skinner et al. 1969:Figure 5). The major occupation at the site occurred after about A.D. 1300, when a village was established. Two earthen mounds were constructed at the Roitsch site during Late Caddoan times. One of the mounds, referred to as the East Mound (Figure 2), was constructed up to a height of about 1 m and covered the remains of a structure. At the death of a prominent person—perhaps a tribal leader—a large pit measuring 4 m in diameter and over 1.8 m deep was excavated
Figure 2. General Map of Roitsch Site, showing East Mound and TAS Blocks.
through the floor of this structure and used as a burial tomb (Skinner et al. 1969:Figures 6, 10-11). The remains of the deceased were placed into the pit along with a female, who may have been his principal wife, and nine other individuals, probably retainers or slaves. Many artifacts were also placed in the pit, including elaborately decorated ceramic vessels, finely made arrow points, shell and turquoise beads traded from other areas, and ground stone celts. The artifacts, representing the wealth of the deceased leader, were most likely used to provision his entourage during their journey to the land of the deceased.

The West Mound was about 60 m in length, 46 m in width, and over 2.1 m tall. Based on SMU’s excavations, the mound apparently consisted of superimposed burned layers from former structures (Skinner et al. 1969). This mound likely served as a platform for a temple.

The West Mound was destroyed by erosion during flooding of the Red River in the Spring of 1990. In 1991, in response to the destruction of the West Mound, the TAS approached Mr. Roitsch and requested permission to conduct the 1991 TAS Field School at the site in order to retrieve as much information as possible before the river could destroy any more of this important Caddoan village and ceremonial center. The TAS investigations included excavations at the East Mound, in Early (Block VIII, 1991 Youth Area), Middle (Block VI), and Late Caddoan (Blocks III and IV) village deposits across the large site, as well as in a possible historic Caddoan occupation (Block V) well to the southwest of the East Mound (see Figure 2), and also investigated a looted and eroded Late Caddoan cemetery (Block VII) on the edge of the alluvial terrace, east of Blocks IV and VI.

**Blocks I, II, and IX,**

_by Timothy K. Pertutila, William A. Martin, and James E. Bruseth_

Due to its low height and the absence of layers of burned structures like those found in the West Mound, Skinner et al. (1969) concluded that the East Mound might be a natural feature, resulting from flood deposits. Prior to the start of the 1991 Field School, the TAS wished to evaluate this conclusion, as it had significance in determining the history of use by the Late Caddoan community at the Roitsch site. Using three long backhoe trenches, SMU’s old excavations were found and two perpendicular continuous profiles were exposed through the mound (Figure 3). In addition, during the 1991 Field School, individual 1 x 1 m units were excavated at various points around the mound to investigate the natural soil layers and compare them with those observed on the mound (see Figure 2). The results of this work allowed us to identify definite layers of mound fill and to convincingly demonstrate that the East Mound was man-made and about 1 m in height.

Most excavation occurred within two 4 x 8 m block units (Blocks I and II). The blocks were positioned to avoid SMU’s earlier excavation units (see Figure 3), and were intended to uncover artifacts and features related to the construction of the mound. In 1992, three 4 x 4 m units, called Block IX, were also excavated not far to the south of the East Mound (see Figure 2).

All of the mound fill was removed from Block I by the last day of the 1991 Field School. Block II reached the base of the mound fill in the northern half of the block, coming down on top of a thin lens of charcoal believed to be the remains of a burned structure, probably related to the abandonment and destruction of House 2 that had been uncovered by Skinner et al. (1969) immediately below the East Mound mound fill (see Figure 3). Excavation in the southern end of Block II ceased at various levels in different units. Both blocks were covered with a layer of plastic and backfilled at the end of the 1991 Field School.

Because all of Block I was taken down to the same level, just above the contact with the underlying black clay, in 1992 the backfill was removed by scraping the area with a bulldozer, stopping just above this contact between mound fill and the buried natural Redlake soil (see Thomas 1977:28). We scraped an area much larger than Block I, in order to encompass the post holes observed in the backhoe trenches in 1991 (see Figure 3). The backdirt was removed from Block II prior to the start of the 1992 Field School and excavation resumed where it had left off in 1991. Because Block II was deeper and more complex than Block I, the excavation units stopped at various levels in 1991.

During both field seasons, a total of 42.5 m³ of sediments were removed from the two main blocks; the mound fill was completely removed across both Blocks I and II. Another 4.0 m³ was excavated in Block IX in 1992. Due to the heavy rains during the
1992 Field School, and the very muddy conditions around the blocks and in the bulldozer scrape area, excavations were difficult to carry out and complete. This was particularly true for the shovel scraping and trowel work intended to identify and define features and cultural disturbances in the bulldozer scrape area in and southeast of Block I (see Figure 3).

The fill of the East Mound is composed of a mottled mixture of dark reddish-gray, reddish-
brown, and yellowish-red sandy loam (zones 2, 3, and 8), the upper 20 cm of which (zone 1) has been plowed in modern times (Figure 4); the fill also has dark brown, red, and dark reddish-brown sandy loam and clay mottles, probably inclusions from the dismantling and burning of House 2 and the subsequent excavation of the Burial 15 shaft tomb. The mound fill is about 50 cm thick in Block II. At its base, at least in parts of Block II and in the area of Burial 15, is a ca. 5 cm thick lens of red clay that marks the prepared clay floor of House 2 (see zone 4 in Figure 4). The floor of House 2 was placed on top of the A-horizon of the Redlake soil, and the A-horizon does not appear to have been removed or artificially leveled prior to the construction of the clay floor.

Underneath the mound fill, at least to a depth of 125 cm bs, are the top three zones of the buried Redlake soil (see Figure 4). Zone 5 is a 15 cm thick reddish-brown A-horizon that is underlain by dark reddish-brown B21 and B22 clays (zones 6 and 7)

**Features in the East Mound**

Other than the mound fill, few cultural features were documented in the East Mound excavations (see Figure 3). In Blocks I and II, this included five post holes, a large pit, and a clay hearth in Block I (see Figure 3) and three post holes and a burial (Feature 208, Burial 36) in Block II. One other post hole (Feature 107) was identified in the bulldozer scrape area southeast of Block I (see Figure 3), and an extended burial (Feature 204, Burial 35) and a charcoal concentration (Feature 203) were exposed on the north side of Trench 2, about 2 m north of Block II (see Figure 3). Other possible features on the East Mound include a number of probable post holes along the eastern edge of the mound (in Trench 1). These were identified in the natural soil under the mound, and relate to a rectangular structure or structures (similar to those exposed by Skinner et al. [1969:Figures 5 and 7]) that probably date to the Early or Middle Caddoan period.

At the close of the 1991 Field School, a large "bathtub"-shaped pit feature (Feature 101) was uncovered as the last of the mound fill was removed from level 4 along the eastern edge of Block I (see Figure 3). This feature contained ash and charcoal from a fire that appeared to have burned sometime during the actual construction of the mound. The calibrated 1-sigma radiocarbon age of AD 1275-1383 (relative area under probability distribution=1.00) obtained from the charcoal provides a date for the initial construction of the East Mound during the early McCurtain phase.

Measuring approximately 110 x 190 cm, most of this large pit feature fell within Block I. However, a small portion extended east of the block, so the actual length of the feature was probably closer to 230 cm, assuming that the pit was symmetrical in shape (Figure 5). This feature originated just above the natural ground surface below the mound, ca. 33-37 cm bs. The bottom of the pit was reached
about 81-87 cm bs, and the pit was approximately 48-50 cm deep (Figure 6).

When the feature was exposed, clearly visible was a thin layer of red clay, perhaps oxidized from burning, that paralleled the pit outline on the two long edges of the pit (it was not visible along the western edge). The red clay appeared as a 2 cm thick lens that was visible about 1-2 cm inside the wall of the pit (see Figure 5). It appeared to be an intentional clay lining. Although it may have been oxidized due to burning, the clay was relatively soft, unlike the hardened clay lining the bottom of Feature 601 in Block VI that had obviously undergone intense burning (see below). The red clay lining was observed to ca. 71-77 cm bs, but only a few scattered patches remained near the bottom of the feature.

About the same depth, a layer of ash was observed (see Figure 6), along with three large concentrations of charcoal (see Figure 5). The ash and charcoal concentrations were lying near the bottom of the pit along with baked clay. At least one of the ash and charcoal concentrations was linear, paralleling the long axis of the feature. In fact, the wood grain of the charcoal also appeared to parallel the orientation of the pit, suggesting that these were the remains of logs that burned in place and were subsequently backfilled. The previously mentioned radiocarbon sample was taken from this charcoal.

The western half of the pit was taken down beneath the feature matrix and a profile drawn and photographed of the bisected ash and charcoal concentration. Once the pit fill was completely removed, two intrusive post holes (Features 102 and 103) were identified in the lighter-colored soil beneath Feature 101 (see Figure 5).

![Plan Map of Feature 101, and Feature 102 and 103 below it.](image-url)
The feature matrix contained a red-slipped, everted rim sherd reminiscent of that from an effigy vessel, that was found at the top of the pit, along its western edge (see Figure 5). The sherd appears to represent trash incorporated into the pit fill, since no other related sherds from this vessel were found in the pit fill. A total of 78 sherds were recovered from Feature 101, as well as 167 pieces of daub and burned clay, eight fire-cracked rock, and seven long-stemmed pipe sherds from at least two different pipes. Throughout the excavation of the pit matrix, it was also apparent that the density of lithic debris (n=183) inside the feature was higher than what was recovered from 1 x 1 m units excavated outside the feature.

The fact that part of the feature extended outside of Block I proved to be a very fortunate circumstance because it allowed us to examine a profile that provided critical information for dating the mound construction. It is clear from examining the profile in Figure 6 that the pit penetrated a 2-5 cm thick layer of water-lain sand with siltation lenses. This layer rested on top of a 2 cm thick lens of charcoal and baked clay on the northern side of the pit (see Figure 6), and this lens in turn rested on the buried A-horizon of the natural soil.

Identical siltation lenses were observed in backhoe trench profiles where the trenches bisected excavation units from the 1968 excavations. Heavy rains occurred during those excavations, and sand was washed into the units. The same phenomenon was observed in excavation units during the TAS Field School after a rain. It appears that some basket loads of sandy mound fill had been dumped adjacent to Feature 101 during initial mound construction (which covered the thin charcoal and baked clay lens, probably from a dismantled and burned structure), then a rain event washed some of the sand into low spots nearby. Shortly thereafter, Feature 101 was dug, a burning episode occurred in the feature, the feature was backfilled, and then the remaining mound fill was added that capped it. Given the fact that a date was obtained from charcoal at the base of the feature, and the feature appears to have been used while initial mound construction was underway, we can place the construction of the East Mound between cal AD 1275-1383.

A basin-shaped hearth (Feature 104) was exposed at ca. 55 cm bs in Block I (see Figure 3), under the mound fill. It was about 66 cm in diameter, and extended to ca. 70 cm bs. The hearth was filled with ash lens 1-4 cm thick, charcoal, and clumps of burned clay. One shell-tempered Nash Neck Banded sherd was in the fill. Underneath the hearth was a 21 cm diameter post hole (Feature 108) with a flat bottom that reached to 86 cm bs. The post hole probably represents the hole where the center post
of a structure was removed after the structure had been built, and the basin-shaped hearth was then constructed over the filled in post hole.

There were two Caddoan burials excavated in the East Mound during the TAS Field School. The first is an extended burial of an adult female (Burial 35) on the north side of Trench 2, and a 6-12 month old child burial (Burial 36) in Block II. The adult female burial was placed in a 197 cm long pit that was oriented northeast-southwest and extended to 160 cm bs, with the head at the eastern end of the grave and facing west. The other Late Caddoan burials at the Arnold Roitsch site have the same orientation. Funerary objects placed with this woman included an Avery Engraved bowl by her left arm, a Nash Neck Banded jar by the left shoulder, a mussel shell south of her head, as well as a lump of yellow clay next to the mussel shell; there were also apparently unassociated shell and non-shell-tempered sherds in the grave fill. Other funerary objects included 14 small bone disc beads. Immediately outside the grave pit was a linear concentration of charcoal (Feature 203) and lumps of red clay. The charcoal lay atop the buried A-horizon.

The child burial (Burial 36) had been placed in a 50 cm diameter pit that was dug from the surface under the mound, probably from the McCurtain phase house floor covered by the East Mound. The pit was 21 cm in depth. No clear funerary objects were placed with the child, although there were several burned corn cob fragments in the eastern part of the grave.

Artifacts from the East Mound

The ceramics from the East Mound investigations, as well as from many other parts of the Roitsch site, are indicative of lengthy and repeated occupations during much of the Caddoan settlement of the Mound Prairie area along the Red River. The sherd sample from the three blocks includes 70 plain rims and 195 decorated sherds, 230 from Blocks I and II and 35 from Block IX, along with 7600 plain body and base sherds. Features 101 (n=78), Feature 104 (n=1), Feature 105 (n=17), Feature 106 (n=1), and Feature 209 (n=1) had a few sherds in their fills.

The density of sherds in the East Mound ranged from 86-714 per m², with the lowest density in Block I (86 per m²) and the highest density in Block IX, just south of the mound; the sherd density in Block II is 150 per m². The low density of sherds is on the crest of the mound (Blocks I and II), and the fact that the proportion of shell-tempered sherds is quite low (see discussion below) there compared to Block IX, suggests that most of the sherds in the mound fill on the East Mound crest became incorporated in the fill from trash deposits produced during the Early and Middle Caddoan period occupations in the vicinity of the mound. The very high sherd density in Block IX, and the correspondingly high proportions of shell-tempered sherds (see below), suggests, however, that the archeological deposits there are the product of a Late Caddoan habitation near the southern mound slope.

Other than the ceramics from the 1991 Youth Area (see Pertulla and Inuegas, below), and Blocks V and VI (all of which have relatively small samples of decorated sherds), only the collection from Blocks I and II has a predominance of grog-, grit-, and bone-tempered sherds in the ceramic assemblage. Shell-tempered sherds comprise only 40 percent of the sherds from Blocks I and II, compared to between 90-95 percent shell-tempered in Blocks III and IV as well as at the Terrace area. Indeed, the percentage of shell-tempered sherds from Block IX, near the south end of the East Mound, is 80 percent. Clearly, the main focus of the Late Caddoan, McCurtain phase, settlement at Roitsch (with the exception of burial interments) was along a ca. 200 m long stretch across the alluvial terrace south of the East Mound, not concentrated on the East Mound itself.

The grog-, grit-, and bone-tempered ceramics are almost exclusively from the Middle Caddoan occupation in and beneath the mound. Several Coles Creek Incised sherds from Blocks I and II also suggest occupation of the Roitsch site during the latter part of the Early Ceramic or Woodland period, from ca. A.D. 700-900. Coles Creek Incised ceramics have been previously noted in low frequencies in the East Mound (see Skinner et al. 1969), as well as at other large prehistoric sites along the Red River, such as Rowland Clark, Bob Williams, and Dan Helderman (Bruseth 1998; Perino 1983, 1994, 1995), and the Ray site (see below).

The Middle Caddoan ceramics from Blocks I and II include plain, red-slipped grog-tempered bowl sherds (n=3) (Sanders Plain), as well as plain bowls, bottles, and jars without slipping (n=27), and diagonal engraved sherds from carinated bowls, some of which have a red slip (Sanders Engraved). Grog, grit, and bone-tempered incised (n=37) and punctated (n=13) sherds from utility vessels of Canton Incised are also common in the Middle Caddoan period deposits.
The McCurtain phase ceramics from the East Mound include sherds with a variety of engraved, punctated, punctated-incised, appliquéd, and neck-banded decorations. Avery Engraved and Emory Punctated- Incised sherds are the most frequent decorated sherds in the assemblage, and Nash Neck-Banded jar sherds are also present in abundance; the latter, however, only represents about 11 percent (n=13) of the rim and decorated shell-tempered sherds from the East Mound compared to more than 21 percent from the Block III and Block IV village areas. It has not been determined whether this difference represents ceramic functional variability between the two areas of the site, or is instead related to temporal differences in when the two areas were occupied during the McCurtain phase.

The investigations by R. King Harris (1953) and Skinner et al. (1969) in the East Mound disclosed continued Caddoan use of the mound slopes primarily for burial interments after about A.D. 1650, and the shell-tempered ceramics from Blocks I and II reaffirm their findings. Although not present in great quantities, Hudson Engraved, Keno Trailed, and Simms Engraved sherds, typical of the kinds of decorated ceramics to be expected in post-A.D. 1650 archeological deposits along the middle Red River (cf. Bruseth 1998; Pertulla 1992), were found from a number of different contexts across the mound.

Burial 35 is also indicative of the McCurtain phase use of the East Mound. Grave goods with the burial include a vertical-rimmed Avery Engraved bowl and a Nash Neck-Banded jar with a peaked rim and strap handles (Figure 7). Based on changes in the form and design of McCurtain phase ceramics from the Rowland Clark site (cf. Perino 1994:28-29), Burial 35 may have been placed in the mound during the earlier part of the phase; that is, before A.D. 1450.

There are 27 ceramic pipe sherds in the East Mound excavations, 16 from Block I, eight from Block II, two from Backhoe Trench 2, and one from Block IX south of the mound. Twenty-six of the pipe sherds are from long-stemmed Red River pipes, including nine bowl, 15 stem, and two butt sherds. The one elbow pipe stem sherd, made with shell temper, is from Block IX.

More than 4400 pieces of daub and burned clay have been recovered in Blocks I, II, and IX. The highest densities (170 per m²) occur in Block IX in association with a McCurtain phase habitation area that also has abundant ceramic sherds.Proportionally, however, the amount of daub and burned clay in the

Figure 7. Ceramic Vessel from Burial 35 in the East Mound.

East Mound deposits to ceramic sherds is 2.5 times less than in the Village areas at Roitsch (see below).

Lithic debris (n=2953) and chipped (n=37) and ground stone (n=6) tools, as well as fire-cracked rocks (n=153), are relatively abundant in the East Mound archeological deposits, at least in comparison with the number of sherds and pieces of daub/burned clay. The density of lithic debris, tools, and fire-cracked rock ranges from 46.6-90 artifacts per m³ in Blocks I, II, and IX. The manufacture and use of stone tools, as well as the occasional use of stones for boiling and cooking of foodstuffs, appears to have been more prevalent in pre-A.D. 1300 archeological contexts, with much of the evidence incorporated in the mound fill from earlier Caddoan habitation deposits on the terrace where the East Mound was subsequently constructed in Late Caddoan, early McCurtain phase times.

The chipped stone tools are dominated by stemmed arrow points (n=9), drills and perforators (n=6), arrow point fragments (n=4), scrapers (n=4), expedient flake tools (n=4), and small bifacial tools or tool fragments (n=4). The stemmed arrow points and arrow point fragments, including Catahoula, Alba, Reed, and Hayes styles as well as unifacially retouched specimens, are found in the mound fill but are more common in the buried natural soil under the mound. The Maud points were found in the upper 30 cm of the mound fill in Block I and a similar depth in Block IX. The East Mound arrow points have been manufactured from a variety of locally available lithic raw materials, including
novaculite, gray chert, brown chert, yellowish-brown chert, claystone/siltstone, brownish-gray chert, Big Fork chert, dark brown chert, and Ogallala quartzite.

There are differences in the use of lithic raw materials for chipped stone tools between the three excavation blocks on and in the vicinity of the East Mound. In the later McCurtain phase deposits in Block IX, novaculite and Big Fork chert from the Red River gravels comprise 63 percent of the tools, while brown chert and yellowish-brown chert are more common in Block I (60 percent); novaculite is absent in the Blocks I and II tools. In Block II, Big Fork chert and claystone/siltstone are the most abundant raw materials used for tools. These differences between the three blocks—particularly between Blocks I/II and Block IX—suggest that there were changes through time in the use of locally available raw materials, and perhaps also in the sources that were collected by the Caddo toolmakers for knappable stone. High-quality Red River gravel cherts represent only 30 percent of the tools in Block I, 53 percent of the Block II tools, and 88 percent of the tools in Block IX. Coarse-grained cherts and quartzites, available either in Red River gravels or gravels mantling uplands and terrace landforms, comprise 70 percent of the Block I tools, and only 47 and 12 percent of the Block II and IX tools, respectively.

The six ground stone tools from the East Mound investigations (two tools from Block I and four from Block II) at the Roitsch site include three manos or mano fragments and three grinding slabs. Sixty-seven percent of the mano and grinding slab tools are made from a locally available sandstone, with the remainder manufactured from a coarse-grained quartzite.

**Block III and IV,**

*by Timothy K. Perttula*

TAS excavations in these areas of the site explored primarily Late Caddoan, McCurtain phase, archeological deposits, although a small earlier Caddoan occupation is also present in both block areas that perhaps is contemporaneous with the Caddoan archeological deposits radiocarbon dated at cal AD 1154-1296 (1 sigma, 0.75 relative area under probability distribution) in Block VI or in House 3 by the East Mound (four calibrated dates that range at 1 sigma between cal AD 982-1250, see Perttula [1998:Table 1]). These Caddoan remains consisted of an extensive and dense midden deposit built up around and in a number of house structures and outdoor features, and the deposits contain large amounts of sherds from broken and discarded pottery vessels and daub/burned clay from plastering structure walls with mud, lining hearths with clay, and the outdoor firing of hearths and pits. By way of comparison with other areas of the Roitsch site, Table 2 provides information on the density of archeological materials from Blocks III/IV, V, and VI in the village.

The Block III and IV excavations were located about 100-200 m south of the East Mound, and near the crest of the alluvial terrace (Figure 8), and

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**Table 2. Density of Archeological Materials from Different Areas at the Roitsch Site.**

<table>
<thead>
<tr>
<th>Block</th>
<th>Sherds*</th>
<th>AP</th>
<th>DP</th>
<th>LD</th>
<th>Tools</th>
<th>GS</th>
<th>Bone</th>
<th>Shell</th>
<th>Daub</th>
<th>FCR</th>
<th>Totals/ m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>III</td>
<td>997</td>
<td>0.9</td>
<td>0.2</td>
<td>93</td>
<td>1.0</td>
<td>0.2</td>
<td>177</td>
<td>2.1</td>
<td>1539</td>
<td>1.2</td>
<td>2887</td>
</tr>
<tr>
<td>IV</td>
<td>306</td>
<td>0.4</td>
<td></td>
<td>22</td>
<td>0.4</td>
<td>0.2</td>
<td>46</td>
<td>1.3</td>
<td>228</td>
<td>1.7</td>
<td>607</td>
</tr>
<tr>
<td>V</td>
<td>29</td>
<td>0.1</td>
<td></td>
<td>8.2</td>
<td>0.4</td>
<td>0.4</td>
<td>2.8</td>
<td></td>
<td>269</td>
<td>0.4</td>
<td>310</td>
</tr>
<tr>
<td>VI</td>
<td>256</td>
<td>0.7</td>
<td>0.2</td>
<td>83</td>
<td>0.2</td>
<td>0.2</td>
<td>51</td>
<td>10.8</td>
<td>412</td>
<td>2.1</td>
<td>816</td>
</tr>
</tbody>
</table>

* Frequencies per m²

AP = arrow points; DP = dart points; LD = lithic debris; GS = ground stone tools; FCR = fire-cracked rock
Figure 8. Excavation Areas, Block III-IV and VI, Roitsch Site.
the two blocks were approximately 60-70 m apart. In Block III, hand excavations were conducted during both the 1991 and 1992 TAS Field Schools, with a total of 33 m² carried down to 50 cm bs, while 24.25 m² were excavated as three 1 x 8 m trenches in Block IV during the 1991 field season. In 1992, two narrow trenches were machine-scraped to remove the plow zone on either side of Block III in an attempt to locate cultural features, including post hole patterns from Caddoan structures (see Figure 8); these trenches were approximately 2-2.5 m in width and 20 m in length.

The Block III archeological deposits consisted of a ca. 18 cm thick plow zone overlying a midden area with an abundance of daub near the top of the midden (ca. 22-25 cm bs); the midden also contained quantities of ceramics and animal bone (see Table 2). Underlying these zones was a dense red B-horizon clay about 50 cm bs.

A number of cultural features and possible features were exposed in Block III and the two scraped areas east and west of the block (Figure 9). Of the features that were identified, profiled, and excavated, there were 22 post holes, two possible post holes, two hearths (Features 310 and 323), a small daub-filled pit (Feature 317), an animal bone concentration (Feature 356), and a dog burial (Feature 346). Two of the postholes (Features 302 and 304) were overlain by sherd/vessel concentrations at 25-28 cm bs, with the underlying postholes extending to about 53 cm bs.

The Feature 310 hearth appears to have been resting at ca. 25 cm bs on the original surface or floor of a Caddoan structure—probably in the center of the structure—with the top of the hearth at 14-16 cm bs. It was composed of burned or fired clay and contained an abundance of ash. To the north and west of the hearth in the block was an extensive amount of daub and burned clay between ca. 22-25 cm bs, probably representing the collapsed remnants of the structure walls. A possible arc of post holes that may be associated with Feature 310 is represented by Features 305-308 to the north and east (see Figure 9) and Features 302-304 to the south. The Feature 346 dog burial would have been placed outside the structure walls. Some of the post holes in this area of the excavations contain quantities of charcoal, ash, and burned clay, suggesting that the structure(s) had been burned before collapsing. Daub-burned clay concentrations within Block III are confined almost exclusively to the units north of Feature 310 (perhaps suggesting the direction in which the structure walls collapsed), while the ceramic sherd and animal bones occurred in high densities to the south of the central hearth, but probably still within the structure itself.

A second hearth (Feature 323) is approximately 4.5 m to the west-southwest (see Figure 9), and may also represent an interior central hearth for another structure as there are several post holes (running in an north-northwest arc) 2.5 m from the feature. A third cluster of post holes (Features 327-331) in the western scrape trench may belong to a third structure, based at least in part on their distance from the two hearths as well as their distinctive size and depth (see below).

The post holes in the near vicinity of the Feature 310 hearth (2-2.5 m from the hearth) and the Feature 323 hearth probably represent wall support posts (rather than interior roof supports) as they are approximately 20-24 cm in diameter and set 10-15 cm into the B-horizon clay; by contrast, roof supports and central posts may range to 40-50 cm in diameter on Caddoan structures. The Feature 327-331 post holes are slightly larger in size (24-30 cm in diameter), and set more deeply into the B-horizon clay, suggesting that they are wall post supports for a larger structure that stood in this part of Block III.

In Block IV, the midden deposits were less substantial, as were the quantities of features and artifacts from the Late Caddoan McCurtain phase occupation. Excavations here identified three cultural features and seven possible post holes, mainly at the northern end of the block trenches (Figure 10). The features included a flexed dog burial (Feature 401) between 40-60 cm bs, a small charcoal-filled pit with a broken Nash Neck-Banded jar (Feature 405) that overlay a 19 cm diameter post hole, and an ash and burned clay basin hearth (Feature 402) at 24.5-40 cm bs (see Figure 10). The Feature 405 pit with the broken ceramic jar resembles two features in Block III (Features 302 and 304) where a post hole was identified immediately underlying ceramic sherd/vessel concentrations; it appears to be the case that the broken ceramics were stuffed in the top of the post hole after the poles had been pulled and the hole filled with sediments.

The more definite post holes (Features 404 and 405, and possible post hole 5) ranged from 19-20 cm in diameter, consistent with wall support posts.
Figure 9. Features and Possible Features, Block III.
They were exposed between 25-30 cm bs, and were anchored by digging the holes solidly into the B-horizon clay.

The occurrence of most of the post holes in Block IV in proximity to the basin hearth (probably a central hearth) suggests that a portion of a Late Caddoan structure was present in the northern part of the block (see Figure 10). The posts and possible post holes are ca. 2-4 m distance from the hearth, hinting at a structure that may have been as much as 8 m in diameter. Much of the daub and burned clay pieces found in the excavations are distributed in the northern part of the block (as are highest densities of ceramic sherds), and they may demarcate the general area of the house; the units containing the highest densities of animal bone occur in the southwestern part of Block IV, south of Feature 405, and in the area of the Feature 401 dog burial (which was surely placed outside the house).

**Artifact Assemblage, Blocks III and IV**

A substantial assemblage of artifacts was recovered in these village areas at the Roitsch site, particularly daub/burned clay, ceramic sherds, and lithic debris, with much smaller amounts of chipped (n=82) and ground stone (n=15) tools and fire-cracked rocks (Table 3). The densities of artifacts per m² in Block III were about five times higher than in Block IV (see Table 2), indicating a much more intensive occupation there during the McCurtain phase.

An extensive Caddoan ceramic assemblage was recovered from Blocks III and IV, comprised of 214 plain rims and 771 decorated rim and body sherds, as well as approximately 38,400 plain body and base sherds; no whole vessels were encountered in these habitation deposits, although portions of a Nash Neck-Banded jar were recovered from Feature 405. The proportion of decorated sherds is only 2 percent, which is quite low by comparison with contemporaneous Caddoan groups living to the south in the Pineywoods and Post Oak Savannah of Northeast Texas (Perttula et al. 1995), but is consistent with ceramic assemblages from the Fasken and Salt Well Slough sites in the Mound Prairie area (see below).

About 90 percent of the rim and decorated sherds have shell tempering, and the other 10 percent of the sherds are tempered with grog, or combinations of grog, bone, and grit (crushed rock and pebbles); most of the latter sherds were found in Block III. The relative frequency of shell-tempered ceramics in these habitation areas is, of course, completely consistent with a Late Caddoan, McCurtain phase occupation on this part of the Roitsch site. The non-shell-tempered ceramics, with a few exceptions (i.e., several Keno Trail painted bottle sherds with finely crushed grog tempering), denote the Caddoan use of the area prior to ca. A.D. 1300, after which the use of shell tempering began to completely dominate Caddoan ceramic assemblages along the middle Red River.

The earlier Caddoan decorated ceramics from Blocks III and IV principally include diagonal and horizontal incised motifs, along with punctated and punctated-incised decorations on the vessel rim; the latter have zones of punctations delimited by broad incised lines, and may be from Canton Incised or Pennington Punctated-Incised bowls and jars. Engraved sherds are comprised of fine-line horizontal and diagonal decorative elements along the rim of carinated bowls, and along the neck and bodies of bottles. Another ceramic form present among the earlier Caddoan ceramic assemblage from Blocks
Table 3. Artifact Assemblages in Roitsch Village Areas.

<table>
<thead>
<tr>
<th>Area</th>
<th>Shards</th>
<th>Arrow Point</th>
<th>Dart Point</th>
<th>Lithic Debris</th>
<th>Tools</th>
<th>Ground Stone</th>
<th>FCR</th>
<th>Bone</th>
<th>Shell</th>
<th>Daub/ Burned Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>III*</td>
<td>32409</td>
<td>35</td>
<td>2</td>
<td>3018</td>
<td>33</td>
<td>10</td>
<td>38</td>
<td>5773</td>
<td>69</td>
<td>50006</td>
</tr>
<tr>
<td>IV</td>
<td>6896</td>
<td>9</td>
<td>1</td>
<td>506</td>
<td>2</td>
<td>5</td>
<td>39</td>
<td>1033</td>
<td>30</td>
<td>5135</td>
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<td>69</td>
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<td>46</td>
<td>1750</td>
</tr>
<tr>
<td></td>
<td>41130</td>
<td>49</td>
<td>3</td>
<td>4075</td>
<td>37</td>
<td>17</td>
<td>95</td>
<td>7092</td>
<td>145</td>
<td>63350</td>
</tr>
</tbody>
</table>

* Not included in the tabulation is a single chert gunflint from N459E493; FCR = fire-cracked rock

III and IV is the thick-walled, flowerpot-shaped Williams Plain vessel; at least three basal sections of such vessels were recovered in our investigations here. Williams Plain vessels were first manufactured during the Early Ceramic or Woodland period in Northeast Texas (e.g., Schambach 1982), but they apparently also continued to be produced into the earlier part of the Caddoan occupation of the region.

The Late Caddoan, McCurtain phase ceramic assemblage from Blocks III and IV is dominated by Nash Neck-Banded jar sherd (approximately 26 percent of the shell-tempered decorated sherd). The neckbanding was confined to several bands along the rim of large rounded to globular jars (Figure 11). In addition, most of the incised/appliqued (n=15), node (n=14), and punctated/node (n=7) sherd (and probably many of the vertical incised lines or dashed decorations, and many of the appliqued ridges, on body sherds) are from decorating the bodies of Nash Neck-Banded jars with vertical incised lines and/or appliqued triangles and chevrons, while the nodes and the punctated/node sherd are probably from rim nodes placed in sets of four around the rim (see Perino 1994:Figure 7a, c-e). Based on the Caddo vessel data from the contemporaneous Rowland Clark and Holdeman sites a few miles downstream from Roitsch (e.g., Perino 1994, 1995), this type of rim decoration was used throughout the McCurtain phase.

Emory Punctated-Incised appears to also be well represented in the collection from the two blocks, as shell-tempered incised and punctated sherd account for about 29 percent of the decorated and rim sherds (see Figure 11). The Emory Punctated-Incised sherd are from relatively squat jars with everted rims. Most of the incised and punctated sherd seem to be from Emory Punctated-Incised vessels with body decorations of horizontal punctations, diagonal incised lines on the rim, and/or incised lines between vertical appliqued ridges, although some of the vessels simply have a few rows of horizontal punctations on the rim. This form of Emory jar seems most common during the later part of the McCurtain phase (after ca. A.D. 1600), but the other decorative combinations are the same as what Perino (1981:33) calls the “Early Emory Punctated.”

Engraved sherd from Avery Engraved bottles and bowls are common in the Blocks III and IV ceramic assemblages, and Simms Engraved bowls with inverted rims are also present. Some of the scroll and circle motifs on engraved bowls resemble decorative elements seen on Clark Engraved bowls from the Rowland Clark site (see Perino 1994:Figures 11 and 12). These types of engraved bowls were common at Rowland Clark in the earlier part of the McCurtain phase (ca. A.D. 1300-1450). Noticeably absent from the ceramics in Blocks III and IV is Hudson Engraved, a consistent marker for a very late (ca. A.D. 1650+) McCurtain phase occupation in the middle Red River area.

Pipe sherd were abundant in Blocks III (n=28) and IV (n=8), particularly in two small clusters
south and east of Feature 310 in Block III, the probable central hearth to a Late Caddoan period structure. Three of the sherds are from the bowls of elbow pipes, and the remainder are from the long-stemmed Red River style clay pipes (cf. Hoffman 1967); the latter continued to be made until ca. A.D. 1400, before they were replaced by the elbow pipe. Among the Red River pipe sherds from these blocks are 26 stems, two stem/bowl base sherds, two bowl sherds, and three sherd from the butt end of variety Haley Red River pipes.

While the types of shell-tempered ceramics and pipe sherds present in Blocks III and IV indicate Caddoan domestic use of this area between approximately A.D. 1300-1650, our general impression based on particular decorative styles and comparisons with other excavated Late Caddoan sites along the Red River is that this area was primarily occupied before about A.D. 1450. As such, the occupation here is earlier in the McCurtain phase than the component in the Block I and II or Terrace areas at Roitsch. Further stylistic and decorative element analyses of the Blocks III and IV ceramics, in conjunction with additional radiocarbon dates from McCurtain phase occupations along the middle reaches of the Red River, should clarify the chronological position of these deposits.

Block III tools are dominated by arrow points, arrow point preforms, and arrow point fragments, as they comprise 44 percent of the chipped and ground stone tools (see Table 3). They were recovered from the southern half of the probable structure area delimited by the Feature 310 hearth, the daub concentrations, and the Block III postholes. The dominant Late Caddoan arrow point forms are Maud (n=9), Fresno (n=2), Talco (n=2), Scallorn, *variety sattler* (n=2), and Washita (n=2) types (Figure 12a, c); three rectangular Alba specimens were also recovered in the excavations, along with a broken Gary point and a dart point tip. Also common throughout the block are a variety of flake tools, including three drills, five side scrapers, three thumbnail scrapers, an end scraper, and seven utilized flakes (Figure 12b, e). There are two bifacially-worked pieces that may be knifes, and one (from N463E493) has a beveled blade (see Figure 12c).

Among the ground stone tools are fragments of five cells (three from surface contexts), two pitted stones, a battered cobble, and two pieces with smoothed/ground facets (see Figure 12d). These tools occur both north and south of the Feature 310 hearth. In addition to the relatively abundant lithic debris (93 pieces per m²), other evidence for the manufacture and maintenance of lithic tools in Block III include two cores and nine broken and discarded biface fragments.

Including three cores, 20 chipped and ground-stone tools were found in the Block IV excavations (see Table 3). This includes a variety of arrow points (two Maud, one Scallorn, *variety sattler*, one Fresno, and one Alba), along with four arrow point tips and blades, and a single dart point base from N377E521. There are also two flake tools, two battered cobble hammerstones, three ground stone tool fragments, and three cores.

**Block V/Trench I,**

*by Timothy K. Pertulla*

The Block V or Trench I excavations in 1991 and 1992 occurred along the south side of the alluvial terrace, some 400 m southwest of the East Mound and 120 m south of the current bank of the Red River (see Figure 2). They were placed about 20 m west of a phone pole, 20-40 m south of a terrace knoll, an area where a Historic Caddoan...
burial with glass beads was reportedly found some years previously (Figure 13).

A total of 24 m² were excavated here during the Field School, 14 m² in a 2 x 7 m trench and the other 10 m² in a 2 x 5 m trench (Figure 14). The archeological deposits were confined to a shallow plow zone and a reddish-brown Redlake sandy loam A-horizon (approximately 30 cm in total thickness) overlying a B-horizon clay; no midden deposits were present. During the excavations, seven postholes and two possible postholes (Features 510 and 511) were identified, but (due at least in part to the limited excavations) they formed no obvious pattern. Nevertheless, they do constitute evidence, along with the substantial amount of daub and burned clay recovered in the excavations (n=6459), that a Caddoan structure(s) stood in the area. We may speculate that the concentrations of daub, animal bone (n=69), and ceramics in the northwestern part of Block V/Trench 1 represent floor debris from the interior of the postulated structure.

In addition to the daub and animal bone recovered in the excavations, a small amount of ceramics, lithic debris (n=197) and stone tools (n=8) were also present in the area (see Table 3). They appear to comprise household trash discarded in and around a Caddoan structure during the course of its residential use. Other than daub/burned clay, the very low density of Caddoan artifactual debris from Block V/Trench 1—9-30 times lower in density
than either Blocks III and IV in the heart of the site (see Table 3)—clearly suggests that this part of the Roitsch site was utilized for only a limited time, perhaps less than 5-10 years in toto.

The small lithic tool assemblage is represented by three arrow points (two arrow point tips and a Late Caddoan period Maud type), a chipped drill and unifacial tool, a small chert core (from the surface), a pitted stone, and a battered cobble hammerstone. With the exception of a single arrow point from N105E104, the remainder of the stone tools were found within the interior of the possible Block V/Trench I structure.

The Block V/Trench I ceramics (n=699) are uniformly small in size, and the decorative elements/motifs on the 17 decorated sherds are difficult to discern; a single plain grog-tempered rim sherd was also found in the Block V/Trench I investigations. A mixture of shell- and non-shell-tempered ceramics were recovered from this block, with the non-shell-tempered sherds representing 61 percent of the small rim/decorated sherd assemblage.

The non-shell tempered sherds are primarily decorated on the body and rim with broad incised lines and/or punctations, although one small engraved sherd of indeterminate design is also present in the collection. While the sample of non-shell-tempered sherds is very small, the relative frequency of incised and punctated sherds is consistent with a ceramic assemblage that dates relatively early in the Caddoan settlement of the Roitsch site (i.e., prior to ca. A.D. 1300). The shell-tempered sherds, on the other hand, include neck-banded decorations (n=1), horizontal punctations (n=2) from Emory Punctated- Incised jars, one broad incised or trailed sherd from a Keno Trailled bottle, and three engraved sherds, one of which may be from a distinctively shaped and short-rimmed Simms Engraved shouldered bowl.
The ceramics from the Block V investigations do not clearly support the suggestion (Bruseth et al. 1992) that this area has an Historic Caddoan occupation, although the one shell-tempered sherd from a possible Keno Trailed bottle may be indicative of a limited 17th century use by Caddoan peoples (cf. Bruseth 1998:62). Other ceramic information that argues against a single component Historic Caddoan occupation, or even an occupation primarily limited to the Late Caddoan McCurtain phase, is the relatively low frequency of shell-tempered sherds (39 percent) in the small ceramic assemblage. Evidence from other areas at Roitsch (particularly Blocks III/IV and the terrace area), as well as other nearby Caddoan village sites (such as Rowland Clark, Roden, Holdeman, and Bob Williams [Perino 1981, 1983, 1994, 1995]), is that shell-tempered ceramics fully dominate the ceramics from Caddoan sites dating after ca. A.D. 1300. Thus, the Block V ceramics suggest at least two occupations on this part of the site, one during the earlier part of the Caddoan sequence at Roitsch (perhaps broadly contemporaneous with the Middle Caddoan occupation in Blocks I/II), and the other at the latter part of the McCurtain phase, ca. A.D. 1650-1700 (e.g., Perino 1994:28).

Block VI,

by Timothy K. Perttula

Block VI is a small excavation (4.25 m²) centered over a large Middle Caddoan period ash and midden-filled pit feature (Feature 601) identified during core probing of the alluvial terrace south of the East Mound conducted at our request by Mr. Greg Perino of Idabel, Oklahoma. The block is approximately 35 m east-southeast of Block III (see Figure 8).

Feature 601 is a 1.2 m diameter pit that extends from 23-83 cm bs, with relatively straight walls and a flat, level floor (Figure 15). The pit feature had unfortunately been previously disturbed by pothunters, but its overall character and contents were still readily ascertained. The feature was excavated well into the underlying clay B-horizon, and it was filled primarily with midden debris (including ceramics, animal bone, daub/burned clay, and freshwater mussel shells), but the lower 25 cm of the pit was composed of an homogenous bed of ash (see Figure 15). The pit walls had been fired red, to the extent that a 3 cm thick fired lining was apparent around the edges of the feature. The high heat that created the fired walls, and the thick ash bed, suggest that Feature 601 was a heavily utilized cooking feature. Similar kinds of ash-filled pit features were noted at the nearby Rowland Clark site (Perino 1994:Table 2). A radiocarbon sample on charred nutshellsh from the feature dates to cal A.D. 1154-1296 (0.75 relative area under the probability distribution at 1 sigma) (Beta-46957).

Twenty-two decorated sherds and 10 plain rims were found in the Block VI excavations, along with 1054 plain body and base sherds. About 47 percent (n=15) of these decorated/rim sherds were recovered in the fill of Feature 601, the large ash-filled pit, with the remainder being scattered from 0-40 cm bs in general midden and habitation contexts outside of the feature itself. The feature has a mixture of Early and Late Caddoan ceramics, another indication that the feature had been disturbed by looting activities before the TAS investigations.

Most of the sherds (72 percent) were tempered with grog, grit, or bone. These sherds are from the Middle Caddoan use of the feature in that Sanders Engraved, plain grog-tempered red-slipped bowls, and a Crockett

Figure 15. Profile of Feature 601, Block VI.
Curvilinear Incised rim from a large bowl were identified in this sherd assemblage (Figure 16).

The remainder of the sherds have abundant burned shell fragments added as temper to the paste, and these are likely associated with the large McCurtain phase village deposits encountered in nearby Blocks III and IV. Of the nine shell-tempered rim and/or decorated sherds, five are from Nash Neck-Banded jars, three are plain rims, and the last is a fingernail punctated body sherd, probably from Emory Punctated- Incised. Although the sample is small, the frequency of neck-banding in the Block VI ceramics is consistent with the Block III/IV McCurtain phase ceramic assemblage, rather than to the later (after ca. A.D. 1600) McCurtain phase ceramics on the East Mound and in several of the graves on the terrace. This suggests that the archaeological deposits in Blocks III/IV are generally contemporaneous with the McCurtain phase use of the Block VI area.

Four Red River style long-stemmed pipe sherds were found in Block VI, three stem sherds and a bowl sherd; the stems were all from Feature 601. The pipe sherds were tempered with finely-crushed bone, and both bowl and stem pieces had remnants of a red slip on the exterior of the pipe.

Only three lithic tools were found in the Block VI excavations, two arrow points and a possible ground stone gorget fragment. The arrow points include an Early Caddoan Catahoula specimen from N446E531, and a Late Caddoan triangular Fresno point from an adjoining excavation unit.

**Terrace Area (Block VII),**

by **Timothy K. Perttula**

The terrace area contained a looted and disturbed Late Caddoan cemetery, including two separate areas where several domesticated dogs were also interred (see Yates 1992). The terrace area was heavily eroded, and 10 clusters of human remains were visible on the disturbed surface east of the more intact burials farther up the terrace slope (Human Bone Concentrations 1-10 on Figure 17); the surface-exposed human remains and the burials covered an area approximately 25 x 25 m in size. The area also contained a light scatter of Late Caddoan occupational debris that probably has eroded from the terrace edge and the village settlement investigated in Block III/IV as well as on a small knoll about 40 m south of the cemetery.
area (see Figure 2). Eleven burials (Burials 24-34) were excavated by the TAS in the terrace area.

The burials that were exposed and excavated during the course of the TAS Field School investigations were all previously eroded, disturbed, and/or disarticulated as a result of 1990 flooding, pothunting and grave looting, and landowner farming and grading activities. Nevertheless, significant bioarchaeological information was obtained on the age, sex, health, and diet of these Late Caddoan individuals (see below), as well as a modicum of archeological information on the kinds of grave goods placed with these people at death; the vast majority of the grave goods, however, had been previously removed by the grave looters.

The available information on grave orientation and body position indicates that these individuals were buried in pits generally laid out in an east-west direction, with the body laid on the grave floor in an extended supine position with the head at the eastern end of the grave and facing west. A variety of grave goods would have been placed with the individuals—including ceramic vessels (probably containing foodstuffs), ceramic pipes, arrow point quivers, celts, bone tools, and shell and bone ornaments—depending upon their age, sex, and social position in the community. Among the more notable grave goods placed with the deceased (Table 4) in the Terrace area cemetery include an elbow pipe, an arrow point, red ochre (in the elbow region), marine shell beads (at the skull), and four drilled animal rib ornaments with Burial 30 (a young adult male); a shell bead headdress and a European glass trade bead with Burial 31 (adult female); and an elbow pipe and a cache of arrow points with Burial 33 (an adult male). Four of the burials had marine shell bead grave offerings (see Table 4). Most of the burials had ceramic sherds in the grave fill, as well as broken remnants of vessels (whole vessels had been previously removed by pothunters).

One of the Terrace area graves contained only a subadult (Burials 29), another six had adults (Burials 24, 25, 30-33), and the remainder contained both adults and subadults. The subadult (Burial 29) was buried next to a burned clay hearth and hard-packed surface, which probably marks the remnants of a house floor; children were commonly buried below the floors of Caddoan structures. All the single adult burials were confined to a small area at the southwestern margins of the cemetery, with adult/subadult interments to the east and north (see Figure 17).

In addition to the burials, five other features were identified and excavated in the Terrace area: three features with dog burials (Features 701-703), the previously mentioned possible burned clay hearth (Feature 704), and an isolated Nash Neck Banded jar (Feature 706). All of these features occur at the margins of the cemetery (see Figure 17), clearly indicating that the cemetery had well-recognized and sacred boundaries during its use. The four dog burials (Feature 703 contained two dogs, an adult and a puppy) were not apparently placed in pits. Based on the recovery of shell-tempered pottery sherds in association with Feature 703, the dog burials also date to the Late Caddoan McCurtain phase. As previously mentioned, Feature 704 consisted of a shallow burned clay concentration and a related hard-packed surface, perhaps a house floor remnant. Found with the Feature 706 ceramic jar was a single unmodified freshwater mussel shell.

A wide assortment of archeological remains were recovered in the investigations of the Terrace area, particularly Caddoan ceramics, along with a small variety of chipped and ground stone tools. Much of the material probably represents broken and disturbed vessels and vessel sections that had probably been originally placed as grave goods, although some habitation debris is present around Feature 704, the probable burned clay hearth. The total sample of decorated and/or rim sherds, and whole or partial vessels, from the terrace area is extensive: six vessels and 352 decorated and/or rim sherds. All the vessels, and about 95 percent of the sherds in the grave fill, are shell-tempered, and thus are from the Late Caddoan, McCurtain phase use of the terrace area (see Table 4); the non-shell-tempered sherds were found in general surface collections of the eroded terrace as well as in the fills of Burials 24, 25, and 28, and signify a very limited Caddoan use of the area before ca. A.D. 1300.

The whole or partial vessels were found as grave goods in Burials 27, 28, and 34, and as an isolated vessel in Feature 706. They included a Hudson Engraved bowl with a short everted rim in Burial 27, parts of three Nash Neck-Banded jars (two of which had appliqued lines extending downward from the shoulders of the vessels) in Burial 28, and the reconstructed base and lower body of a plain shell-tempered jar in Burial 34. The Feature 706 vessel is a large Naså Neck-Banded jar (the
Table 4. Artifacts Associated with Burial Features at the Roitsch Site, Terrace Area and East Mound.

<table>
<thead>
<tr>
<th>Human Bone Concentration (HBC)</th>
<th>Burial 25</th>
<th>Burial 26a-b</th>
<th>Burial 27a-b</th>
<th>Burial 28a-d</th>
<th>Burial 29</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 shell-tempered engraved sherd</td>
<td>12 plain shell-tempered body sherds</td>
<td>16 plain shell-tempered body sherds</td>
<td>9 plain shell-tempered body sherds</td>
<td>87 plain shell-tempered body sherds</td>
<td>None</td>
</tr>
<tr>
<td>HBC 2</td>
<td>5 plain shell-tempered rim sherds</td>
<td>2 plain shell-tempered rim sherds</td>
<td>6 plain shell-tempered body sherds</td>
<td>6 plain non-shell-tempered body sherds</td>
<td>None</td>
</tr>
<tr>
<td>None</td>
<td>9 shell-tempered engraved sherds</td>
<td>4 shell-tempered engraved sherds</td>
<td>12 plain shell-tempered rim sherds</td>
<td>19 plain shell-tempered body sherds</td>
<td>None</td>
</tr>
<tr>
<td>HBC 3</td>
<td>4 shell-tempered punctated sherds</td>
<td>(Simms Engraved)</td>
<td>22 shell-tempered engraved sherds</td>
<td>2 shell-tempered punctated sherds</td>
<td>None</td>
</tr>
<tr>
<td>None</td>
<td>3 shell-tempered appliqued sherds</td>
<td>5 shell-tempered punctated sherds</td>
<td>1 shell-tempered incised sherd</td>
<td>1 shell-tempered incised sherd</td>
<td>None</td>
</tr>
<tr>
<td>HBC 4</td>
<td>1 non-shell-tempered appliqued sherd</td>
<td>2 shell-tempered appliqued sherds</td>
<td>3 shell-tempered appliqued sherds</td>
<td>4 shell-tempered punctated sherds</td>
<td>None</td>
</tr>
<tr>
<td>7 plain shell-tempered body sherds</td>
<td>9 shell-tempered neck-banded sherds</td>
<td>4 shell-tempered neck-banded sherds</td>
<td>10 shell-tempered appliqued sherds</td>
<td>18 shell-tempered neck-banded sherds</td>
<td>None</td>
</tr>
<tr>
<td>1 shell-tempered engraved sherd</td>
<td>1 shell-tempered neck-banded sherd</td>
<td>1 shell-tempered neck-banded sherd</td>
<td>3 shell-tempered neck-banded sherds</td>
<td>3 partial Nash Neck-Banded jars</td>
<td>None</td>
</tr>
<tr>
<td>1 shell-tempered incised sherd</td>
<td>1 shell-tempered neck-banded sherd</td>
<td>1 Hudson Engraved bowl</td>
<td>2 animal bones</td>
<td>2 animal bone fragments</td>
<td>None</td>
</tr>
<tr>
<td>2 shell-tempered appliqued sherds</td>
<td>1 shell-tempered noded sherd</td>
<td>2 small marine shell beads</td>
<td>2 mussel shell valve fragments</td>
<td>1 large columella bead</td>
<td>None</td>
</tr>
<tr>
<td>2 shell-tempered neck-banded sherds</td>
<td>1 mussel shell valve fragment</td>
<td>1 large columella bead</td>
<td>1 large columella bead</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>HBC 5</td>
<td>1 shell-tempered neck-banded sherd</td>
<td>1 shell-tempered neck-banded sherd</td>
<td>1 large columella bead</td>
<td>1 large columella bead</td>
<td>None</td>
</tr>
<tr>
<td>8 plain shell-tempered body sherds</td>
<td>1 fossil shell valve</td>
<td>2 small marine shell beads</td>
<td>1 large columella bead</td>
<td>1 large columella bead</td>
<td>None</td>
</tr>
<tr>
<td>1 plain shell-tempered rim sherd</td>
<td>1 mussel shell valve fragment</td>
<td>1 large columella bead</td>
<td>1 large columella bead</td>
<td>1 large columella bead</td>
<td>None</td>
</tr>
<tr>
<td>1 shell-tempered neck-banded sherd</td>
<td>HBC 7</td>
<td>1 shell-tempered neck-banded sherd</td>
<td>1 large columella bead</td>
<td>1 large columella bead</td>
<td>None</td>
</tr>
<tr>
<td>1 fossil shell valve</td>
<td>1 mussel shell valve fragment</td>
<td>1 shell-tempered neck-banded sherd</td>
<td>1 large columella bead</td>
<td>1 large columella bead</td>
<td>None</td>
</tr>
<tr>
<td>1 mussel shell valve fragment</td>
<td>HBC 8</td>
<td>10 plain shell-tempered body sherds</td>
<td>1 shell-tempered engraved sherd</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>12 plain shell-tempered body sherds</td>
<td>10 plain shell-tempered body sherds</td>
<td>1 shell-tempered engraved sherd</td>
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<tr>
<td>HBC 9</td>
<td>10 plain shell-tempered body sherds</td>
<td>1 shell-tempered engraved sherd</td>
<td>6 plain non-shell-tempered body sherds</td>
<td>6 plain non-shell-tempered body sherds</td>
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<tr>
<td>1 shell-tempered engraved sherd</td>
<td>HBC 10</td>
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<td>5 plain shell-tempered rim sherds</td>
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<td>4 shell-tempered engraved sherds</td>
<td>4 shell-tempered engraved sherds</td>
<td>1 shell-tempered incised sherd</td>
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<tr>
<td>(Simms Engraved)</td>
<td>4 shell-tempered incised sherds</td>
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<td>4 shell-tempered punctated sherds</td>
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<td>4 shell-tempered incised sherds</td>
<td>1 shell-tempered punctated sherd</td>
<td>1 shell-tempered punctated sherd</td>
<td>10 shell-tempered appliqued sherds</td>
<td>10 shell-tempered appliqued sherds</td>
<td>None</td>
</tr>
<tr>
<td>1 shell-tempered punctated sherd</td>
<td>2 shell-tempered appliqued sherds</td>
<td>18 shell-tempered neck-banded sherds</td>
<td>3 partial Nash Neck-Banded jars</td>
<td>3 partial Nash Neck-Banded jars</td>
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<tr>
<td>2 shell-tempered appliqued sherds</td>
<td>1 medium-sized marine shell bead</td>
<td>3 partial Nash Neck-Banded jars</td>
<td>2 animal bones</td>
<td>2 animal bone fragments</td>
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<tr>
<td>1 medium-sized marine shell bead</td>
<td>HBC 24</td>
<td>38 plain shell-tempered body sherds</td>
<td>16 shell-tempered neck-banded sherds</td>
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<td>38 plain shell-tempered body sherds</td>
<td>2 plain non-shell-tempered body sherds</td>
<td>4 daub</td>
<td>4 daub</td>
<td>4 daub</td>
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<td>4 plain shell-tempered rim sherds</td>
<td>1 small marine shell bead</td>
<td>1 small marine shell bead</td>
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<tr>
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<td>18 shell-tempered engraved sherds</td>
<td></td>
<td></td>
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Table 4, (Continued)

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<tr>
<th>Burial 30</th>
<th>2 shell-tempered engraved sherds</th>
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<tr>
<td>97 plain shell-tempered body sherds</td>
<td>4 shell-tempered incised sherds</td>
</tr>
<tr>
<td>1 plain shell-tempered rim</td>
<td>2 shell-tempered punctated sherds</td>
</tr>
<tr>
<td>1 shell-tempered engraved sherd</td>
<td>1 shell-tempered neck-banded sherd</td>
</tr>
<tr>
<td>32 shell-tempered sherds from</td>
<td></td>
</tr>
<tr>
<td>Keno Trailled vessel</td>
<td></td>
</tr>
<tr>
<td>2 shell-tempered punctated sherds</td>
<td></td>
</tr>
<tr>
<td>3 shell-tempered neck-banded sherds</td>
<td></td>
</tr>
<tr>
<td>1 ceramic elbow pipe</td>
<td></td>
</tr>
<tr>
<td>2 mussel shell valve fragments</td>
<td></td>
</tr>
<tr>
<td>1 bone tool</td>
<td></td>
</tr>
<tr>
<td>4+ drilled animal ribs</td>
<td></td>
</tr>
<tr>
<td>Burial 30, cont.</td>
<td></td>
</tr>
<tr>
<td>1 lithic debris</td>
<td></td>
</tr>
<tr>
<td>1 arrow point</td>
<td></td>
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<tr>
<td>27 small, flat marine shell beads</td>
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<td>1 bone bead</td>
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<tr>
<td>1 carpal bone</td>
<td></td>
</tr>
<tr>
<td>1 glass trade bead</td>
<td></td>
</tr>
<tr>
<td>1 mussel shell valve fragment</td>
<td></td>
</tr>
<tr>
<td>Burial 32</td>
<td></td>
</tr>
<tr>
<td>51 plain shell-tempered body sherds</td>
<td></td>
</tr>
<tr>
<td>1 plain shell-tempered rim sherd</td>
<td></td>
</tr>
<tr>
<td>Burial 33</td>
<td></td>
</tr>
<tr>
<td>1 ceramic elbow pipe</td>
<td></td>
</tr>
<tr>
<td>1 mussel shell valve fragment</td>
<td></td>
</tr>
<tr>
<td>8 arrow points</td>
<td></td>
</tr>
<tr>
<td>Burial 34a-b</td>
<td></td>
</tr>
<tr>
<td>1 reconstructed base/upper body of plain shell-tempered vessel</td>
<td></td>
</tr>
<tr>
<td>1 pebble with ground facets</td>
<td></td>
</tr>
<tr>
<td>Burial 35 (from the East Mound)</td>
<td></td>
</tr>
<tr>
<td>43 plain non-shell tempered body sherds</td>
<td></td>
</tr>
<tr>
<td>8 shell-tempered engraved sherd</td>
<td></td>
</tr>
<tr>
<td>(Avery Engraved)</td>
<td></td>
</tr>
<tr>
<td>1 shell-tempered neck-banded sherd</td>
<td></td>
</tr>
<tr>
<td>1 Avery Engraved bowl</td>
<td></td>
</tr>
<tr>
<td>1 Nash Neck-Banded jar with strap handles</td>
<td></td>
</tr>
<tr>
<td>2 plain rims, shell-tempered and non-shell-tempered</td>
<td></td>
</tr>
<tr>
<td>1 non-shell tempered appliqued sherd</td>
<td></td>
</tr>
<tr>
<td>14 small bone beads</td>
<td></td>
</tr>
<tr>
<td>1 mussel shell valve fragment</td>
<td></td>
</tr>
<tr>
<td>Burial 36 (from the East Mound)</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

Neck bands have been partially obliterated by smoothing with a vertically appliqued ridge and a single horizontal row of fingernail punctations around the vessel’s midsection (Figure 18a). Although not readily reconstructed, some 32 sherds from a Keno Trailled bottle were part of the grave goods in Burial 30 (Figure 19a). In general, the whole and partial vessels found in the terrace area are from a Late Caddoan, McCurtain phase occupation postdating ca. A.D. 1450 (see discussion in Perino [1994:28]), and the Hudson Engraved and Keno Trailled vessels bespeak continued use of the area (as well as the East Mound) for interments to at least A.D. 1650.

Decorated pieces and rims of shell-tempered sherds were recovered in the following burial features: Human Bone Concentrations (HBC) 1, 4, 5, 9, and 10, Feature 706, as well as Burials 24-28, 30, 32, and 34. Engraved vessels and sherds (n=79) of Avery Engraved, Simms Engraved, and Hudson Engraved are well represented in the collections, and engraved sherds were found in all the burial features with the exception of HBC 5 (see Figure 19b). The recovery of incised and/or punctated sherds (n=44) from broken Emory Punctated-Incised jars in HBC 4 and 9, as well as with Burials 24-28, 30, and 32, suggest that these were probably also common grave good inclusions during the later part of the McCurtain phase. Neck-banded sherds (n=56) from the Terrace area, sherds with nodes (n=4), and sherds with appliqued ridges and triangles (n=30) are from Nash Neck-Banded jars; the common use of appliqued decorisons on the shoulders of these vessels also suggest that the burials and HBC’s with neck-banded vessels date late in the McCurtain phase occupation of the site, probably after A.D. 1450. Neck-banded sherds were found in HBC 4 and 5, and in Burials 24-28, 30, and 32.

Lithic tools, as well as cores (n=5), from the Terrace area are dominated by arrow points (n=15). Among the arrow point types are seven Talco points, single examples of the Bassett and Keota types, along with six stemmed forms (from Burial 33) of
unidentified type (Figure 20). The prevalence of Talco points is consistent with the primary use of the Terrace area after ca. A.D. 1500-1600.

Other lithic tools include a biface fragment, a pitted stone, one ground stone celt, two slabs with polishing-grinding, and a small single polishing stone. The latter tool may have been used in smoothing and polishing the surface of ceramic vessels.

**Bioarcheological Investigations at the Roitsch Site**

Archaeological investigations in the East Mound and the Terrace areas of the Roitsch site uncovered 13 human burials and 22 individuals associated with the Late Caddoan period occupations of the site. Analyses of the human remains, most of which were highly fragmented by erosion and weathering, as well as from the recent grave looting and vandalism activities of pothunters, were completed by Derrick et al. (1994).

Based on stratigraphic context, artifact associations, and radiocarbon dates from Burials 34 and 35, these two burials probably date to the earlier part of
the Late Caddoan McCurtain phase (ca. A.D. 1300-1450), while all the other interments date after ca. A.D. 1450. Represented in the burials are five adult males, seven adult females, three adults of indeterminate sex, and seven subadults (Table 5) (Derrick et al. 1994). Adults ranged in height from 153.22 cm (a young adult female) to 163.32 cm (a male in his late 40s to mid-50s). Most of the individuals at the Roitsch site died before they were 40 years of age, although some of the adults lived to old age, between 55 and 60 years of age at death.

A number of medical disorders were identified by Derrick et al. (1994), with degenerative joint diseases, osteoarthritis, and vertebral osteophytosis being particularly common among both adult males and females at Roitsch (see Table 5). Bone infections were also prevalent in the Roitsch human remains, especially healed supra-inion depressions on the occipital bones which Derrick et al. (1994:18-19) attribute to infections associated with the practice of cranial modeling among the Caddoan population at the site. As Derrick et al. (1994) note, cranial modeling is a common practice among Caddoan groups on the Red River (see also Loveland and Bass 1983; Derrick and Wilson 1997), and Burials 24, 27b, 28 (it is not clear which of the four individuals [Burial 28a-d] had cranial modeling because of the erosional commingling of individuals in the burial deposit), 31, 33, 35, and 36 exhibit the shaping of the frontal and occipital areas of the head.

Pathologies indicative of nutritional and developmental disorders are present only in low frequencies in the Roitsch burials (see Table 5). However, there is a high incidence of local trauma in a number of the individuals, including both male and female: healed skull and postcranial fractures, a damaged tooth, and trauma damage to a shoulder joint and patella.

All of the adult individuals from the Roitsch site had dental caries, and the dental caries rate is 8.6 caries per person (Derrick et al. 1994:Figure VIII). There is also less tooth wear among the Caddoan populations living at Roitsch, which may relate to the “use of wooden mortars and pestles when grinding corn” (Derrick et al. 1994:13).

The prevalence of caries among the adults, significant tooth loss and abscesses among the adults, and the high stable carbon isotope rates from Burials 24 and 35 (as well as similar high rates from two individuals in the East Mound shaft tomb at Roitsch [Skinner et al. 1969] analyzed by Derrick et al. [1994]), all are clear evidence that the Caddoan groups at Roitsch were agriculturists who consumed large quantities of maize. Interestingly, there were no real difference between males and females in the stable carbon isotope values, suggesting that the Caddo population at Roitsch had a homogenous diet, regardless of status or sex. Stable carbon isotope results from other Caddoan populations in the middle Red River (e.g., from the Roden, Holdeman, and Rowland Clark sites; data on file at the Texas Historical Commission) suggest that the intensive consumption of maize occurred only after ca. A.D. 1200.

1991 YOUTH AREA
INVESTIGATIONS AT THE
ROITSCH SITE,

by Timothy K. Pertulla and Sergio A. Iruegas

The 1991 TAS Youth Area excavations (Block VIII) were placed at the extreme south end of the large alluvial terrace some distance from where most of the field school investigations took place at the A. E. Roitsch site. The terrace overlooks a small drainage, probably an old filled-in Red River channel, that flows between Salt Well Slough and Big Pine Creek. Extensive Early-Late Caddo habitation areas are located some 300-400 m north of the Youth Area along the same terrace (Figure 21)

This part of the Roitsch site was selected for investigations because it had intact, but fairly
Table 5. Burial Descriptions.

<table>
<thead>
<tr>
<th>Burial</th>
<th>Sex</th>
<th>Age</th>
<th>Stature (years)</th>
<th>Medical Disorders</th>
<th>Cranial Modeling</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>male</td>
<td>30-35</td>
<td>Unknown</td>
<td>Supra-inion depression, caries, abscesses</td>
<td>Present</td>
</tr>
<tr>
<td>25</td>
<td>IND</td>
<td>40-55</td>
<td>160.92 cm</td>
<td>DJD*, osteopityosis, trauma, caries</td>
<td>IND</td>
</tr>
<tr>
<td>26a</td>
<td>female</td>
<td>20-24</td>
<td>159.82 cm</td>
<td>Caries, frontal bone pitting</td>
<td>IND</td>
</tr>
<tr>
<td>26b</td>
<td>sub-adult</td>
<td>18 ± 6 mos.</td>
<td>Unknown</td>
<td>None</td>
<td>IND</td>
</tr>
<tr>
<td>27a</td>
<td>sub-adult</td>
<td>12 ± 2.5</td>
<td>Unknown</td>
<td>Caries, dead tooth (trauma?)</td>
<td>IND</td>
</tr>
<tr>
<td>27b</td>
<td>female</td>
<td>young adult</td>
<td>153.22 cm</td>
<td>Trauma, caries, abscesses, roughened palate</td>
<td>Present</td>
</tr>
<tr>
<td>28a-d</td>
<td>com-mingled</td>
<td>3 adult, 1 sub-adult</td>
<td>Unknown</td>
<td>Periodontal disease, roughened palate, caries</td>
<td>Present</td>
</tr>
<tr>
<td>29</td>
<td>sub-adult</td>
<td>birth ± 2 mos.</td>
<td>Unknown</td>
<td>None</td>
<td>IND</td>
</tr>
<tr>
<td>30</td>
<td>male</td>
<td>17-23</td>
<td>163.20 cm</td>
<td>Osteochondritis, supra-inion depression, trauma, caries</td>
<td>IND</td>
</tr>
<tr>
<td>31</td>
<td>female</td>
<td>early-late 30s</td>
<td>156.80 cm</td>
<td>Osteoarthritis, DJD, supra-inion depression, caries, and abscesses</td>
<td>Present</td>
</tr>
<tr>
<td>32</td>
<td>female</td>
<td>45-49</td>
<td>154.21 cm</td>
<td>DJD, trauma, caries</td>
<td>IND</td>
</tr>
<tr>
<td>33</td>
<td>male</td>
<td>25-35</td>
<td>157.44 cm</td>
<td>Nutritional stress, trauma, caries, abscesses</td>
<td>Absent</td>
</tr>
<tr>
<td>34a</td>
<td>male</td>
<td>late 40s-mid-50s</td>
<td>163.32 cm</td>
<td>DJD, S. nodes, periostitis, periodontal disease, caries</td>
<td>Absent</td>
</tr>
<tr>
<td>34b</td>
<td>sub-adult</td>
<td>6 ± 3 mos.</td>
<td>Unknown</td>
<td>Otitis media, occipital infection</td>
<td>IND</td>
</tr>
<tr>
<td>35</td>
<td>female</td>
<td>30-35</td>
<td>158.35 cm</td>
<td>DJD, supra-inion depression, periodontal disease, caries</td>
<td>Present</td>
</tr>
<tr>
<td>36</td>
<td>sub-adult</td>
<td>9 ± 3 mos.</td>
<td>Unknown</td>
<td>Supra-inion depression</td>
<td>Present</td>
</tr>
</tbody>
</table>

* DJD=degenerative joint disease; IND=indeterminate; S. nodes=Schmorl's nodes
Figure 21. Location of 1991 Youth Area (Block VIII) at the Roitsch site.

Figure 22. Block VIII Map for 1991 Youth Area and the locations of the possible posthole and charcoal concentrations in Blocks A-C.

of the village structure and use of the Roitsch site during several cultural periods (e.g., Bruseth et al. 1991:21-22).

The Youth Area Director for the work was Sallie Taylor. Three 4 x 4 m blocks (Blocks A-C) were laid out near the edge of the terrace, and a total of 20 1 x 1 m units within the three blocks were excavated during the course of the Field School (Figure 22). The units were excavated in 10-cm thick levels to between 20 and 50 cm below surface (bs), depending on the unit; culturally sterile deposits were not reached during the work, although the greatly diminishing artifact densities below 40-50 cm bs suggest that excavations had sampled the principal occupational deposits in the Youth Area.

The Youth Area has a fairly dense archeological deposit pertaining almost exclusively to an Early to Middle Caddo period (ca. A.D. 1100-1300) occupation on this part of the alluvial terrace; a few artifacts may also be indicative of limited Early Ceramic period (ca. A.D. 1-800) and Late Caddoan McCurtain phase (ca. A.D. 1300-1600+) use, but substantial occupations during that time were not present. The archeological materials are confined to a ca. 40-50 cm thick brown sandy loam A-horizon alluvial sediment overlying a B-horizon sandy clay subsoil.

No cultural features were documented in the excavations, although one possible posthole stain was noted in Block C. Six other widely scattered charcoal stains were described in the field notes as lying between 20-40 cm bs in the three blocks (see Figure 22); these might represent additional post holes. These stains probably represent vestiges of a Caddoan structure (or structures) that stood on the terrace; the quantity of daub recovered in the excavations also suggests that structures were likely shallow, archeological deposits containing a variety of stone and ceramic artifacts that appeared to be either Early Ceramic or Early Caddo period in age; no Late Caddo materials seemed to be present. It was hoped that excavation work by the children here would provide useful archeological information on the material culture and features from these earlier occupations—which are somewhat masked by Late Caddoan occupational remains elsewhere on the site—contributing to our overall understanding
present in this area. Substantial amounts of fire-cracked quartzite and sandstone pieces hint that hearths and cooking features (i.e., pits and ovens) may also be preserved in the Youth Area.

A large quantity of archaeological materials were recovered in the block excavations, including 627 pottery sherds (including two sherds from long-stemmed Red River pipes), 65 chipped and ground stone tools, 1,550 pieces of lithic debris (some 1 percent of which are flakes from the resharpening of ground stone celts) and cores, 72 pieces of daub and fired clay, 308 fire-cracked rocks, 136 animal bones, and one mussel shell fragment (Table 6). About 92 percent of all the artifacts recovered in the Youth Area come from the top 30 cm of the A-horizon deposit.

Most of the ceramics from the Youth Area are relatively thin and plain, grog-tempered (62 percent), and grog-bone-tempered (27 percent) wares. Bone, bone-grog-grit, and grog-grit were less common tempers. A single thick Williams Plain flowerpot-shaped base sherd was found in the block excavations. Some eight percent of the grog-tempered sherds (and one bone and grog-tempered sherd) have a hematite-derived red slip that was applied to the exterior surface of bowls and bottles; this is probably Sanders Plain (cf. Brown 1971, 1996), an Early and Middle Caddoan period type along the middle Red River. One sherd has a black slip, indicating that the hematite-rich slipped vessel had been reduced during firing, rather than being oxidized as with the other sherds.

The decorated sherds include small samples of incised (n=11), punctated (n=6), and punctated-incised (n=1) body and rim sherds from Canton Incised, East Incised, or Crockett Curvilinear Incised vessels, along with diagonal and horizontal engraved decorative elements (n=5) probably from carinated bowls of the Sanders Engraved and Hickory Fine Engraved types (Figure 23). These kinds of decorated Caddoan ceramics have been found in the ca. A.D. 1100-1300 Caddoan component around the East Mound (Blocks I/II) at Roitsch, and in abundance in grave lots at the western end of the Holdeman site (41RR11), a few km downstream from the Roitsch site along the Red River (Perino 1995; see also Bruseth 1998). One grog-tempered and red-slipped noded-punctated sherd is from a Maxey Noded Redware bottle (see Figure 23).

There are also nine plain rims in the Early to Middle Caddoan ceramic assemblage. They have standing (or vertical) profiles, ranging in thickness from 5.5-8.5 mm, with rounded to flat lips. Two of

| Table 6. Vertical Distribution of Prehistoric Artifacts from the 1991 Youth Area, Block VIII. |
|---------------------------------|-------|-------|-------|-------|-------|------|
| Level                          | 1     | 2     | 3     | 4     | 5     | N    |
| Pottery                        | 257   | 248   | 107   | 15    | --    | 627  |
| Arrow point                    | 6     | 3     | 2     | 3     | --    | 14   |
| Dart point                     | 1     | --    | --    | --    | --    | 1    |
| Biface                         | 1     | 3     | 2     | 1     | --    | 7    |
| Unifacial tool                 | 20    | 3     | 14    | 3     | --    | 40   |
| Groundstone                    | 1     | 1     | 1     | --    | --    | 3    |
| Lithic Debris                  | 466   | 548   | 355   | 139   | 29    | 1537 |
| Cores                          | 4     | 4     | 1     | 4     | --    | 13   |
| Daub/Burned Clay               | 18    | 31    | 16    | 7     | --    | 72   |
| Fire-cracked rock              | 79    | 116   | 95    | 14    | 4     | 308  |
| Bone                           | 9     | 46    | 66    | 11    | 4     | 136  |
| Shell                          | --    | 1     | --    | --    | --    | 1    |
| Totals                         | 862   | 1004  | 659   | 197   | 37    | 2759 |
| Density/m³                     | 415   | 484   | 394   | 125   | 23    | 306.5|


the rims have a hematite-rich red slip added to interior and/or exterior surfaces.

About 5 percent of the plain body sherds from the Youth Area are from plain shell-tempered vessels (likely jars), most coming from the upper levels of Blocks A and B; only 1 percent of the sherds from Block C had shell tempering. These indicate some limited use of this end of the alluvial terrace during the early part of the Late Caddoan McCurtain phase, probably between ca. A.D. 1300-1500, as this would be contemporaneous with the main Late Caddoan occupational deposits elsewhere on the alluvial terrace (particularly in Blocks III and IV).

The two long-stemmed Red River pipe sherds, from an unknown variety (Hoffman 1967), were found in nearby units in Block B. Temper and surface treatment attributes indicate they are from two different long-stemmed pipes.

A small amount of burned clay and daub is dispersed throughout the archeological deposits in the Youth Area (see Table 6). The burned clay probably represents the remnants of Caddoan clay-lined hearths and mud applied to grass and stick-lined structure walls that did not preserve impressions, while the daub are pieces of fired clay from structure walls that did retain impressions of the grass and stick wattle.

The 14 arrow points include three of the Alba type, and one Catahoula, along with 10 unidentifiable arrow point blade and tip fragments (Figure 24a). These kinds of stemmed arrow points are principally recovered in Early and Middle Caddoan contexts in northeastern Texas.

The Alba arrow points, all fragmentary, have parallel stems, rounded bases, and serrated blades.

Two were manufactured on claystone/siltstone, and the third was made on a heat-treated Ogallala quartzite. The Catahoula specimen has characteristic broad and prominent barbs, deep corner-notches, and a short expanding stem; the blade is serrated. It was manufactured on a Ouachita Mountains chert.
originating in the Red River gravels. The only complete arrow point from the 1991 Youth Area has an expanding stem, a rudimentary shoulder on one side of the point, a flat base, and a long, narrow blade (see Figure 24a, bottom row). It is roughly-flaked, lacking fine pressure flakes, and may not have been completed before it was discarded. The point was made on a black siliceous shale.

A single small contracting stem Gary dart point, missing much of the blade, made of Red River claystone/siltstone, was recovered in Block B (see Figure 24b). The point has irregular margins and lacks fine-pressure flaking along the blade edges, suggesting either it was not completed before it was broken, or that the blade edges were worn from use. The dart could represent evidence for an Early Ceramic or Woodland period occupation of the Youth Area based on its stem width (17.5 mm) and thickness (6.0 mm) (cf. Schambach 1982:176 and Table 7-3), which are consistent with the variety LeFlore style of Gary points. Conversely, it may represent a multi-purpose tool (such as a knife or scraping implement) employed by the Caddoan occupants.

Other lithic tools in the assemblage include unifacial retouched pieces, gravers, drills, and perforators, bifacial tool fragments and bifacial arrow point preforms (see Figure 24a, top row), fragments of three ground stone manos, and part of a ground stone Celt made from Ouachita Mountains siliceous shale. The sandstone and quartzite sandstone manos were all fire-cracked and fragmentary, having been recycled from tools to hot rocks in hearths and ovens. One or two surfaces of the tools were ground, and one mano cobble had been edge-modified by pecking and hammering.

The quantity of flake cores (n=13), lithic debries, and bifacial preforms (n=4) from the excavations indicate that stone tool manufacturing and refurbishing tasks were important activities during the Caddoan use of the Youth Area. Additionally, some of the fire-cracked rock may be from the heat-treating of local quartzites and cherts to improve their knappability (Larry Banks, 1991 personal communication). Most of the lithic raw materials, however, are fairly high-quality Ouachita Mountain chert and quartzite raw materials collected in Red River gravels. The cores are concentrated in Block B; 77 percent of the cores were in this block. Lithic debris is also concentrated in this block, at densities 40-160 percent higher than in Blocks A and C, respectively. Block B appears to represent a loci of general tool manufacture.

The analysis of the small amount of 1991 Youth Area faunal remains was completed by Bonnie C. Yates (U.S. Fish and Wildlife Service, Ashland, Oregon), the project zooarcheologist. The faunal remains were concentrated (ca. 89 percent) in the upper 30 cm of the archaeological deposit. Of the 136 pieces of animal bone from the block excavations, 13 faunal elements were identified to the species level: white-tailed deer (n=5), turtles (n=4), mud turtle (n=1), and eastern cottontail rabbit (n=2), species that are abundant in riverine and floodplain habitats in Northeast Texas. All species were commonly exploited by Caddoan hunters living in the middle Red River valley. Also in the assemblage were 31 elements from medium/large mammals, 28 from vertebrates, six from small-medium mammals, and one from a small mammal.

The Texas Archeological Society excavations at the Roitsch site by the Youth group in 1991 barely scratched the surface of a potentially very interesting prehistoric Red River Caddo habitation site occupied between about 650-800 years ago. Through the well-placed and well-supervised efforts and hard work of the Youth group and the Youth Area supervisors, some 20 m² of archeological deposits were excavated and studied during the 1991 Field School, resulting in the recovery of a substantial archeological assemblage of lithics, ceramics, and bone that helps to tell the story of the prehistoric Caddo people’s settlement of the Red River Valley of Northeast Texas. Best of all, much of this part of the site remains untouched and undisturbed, waiting to disclose its secrets to future archeologists.

In summary, excavations in this area of the Roitsch site identified prehistoric use of the alluvial terrace during Early Ceramic, Early to Middle Caddoan, and Late Caddoan periods. By far the most intensive occupation took place in the Early to Middle Caddoan period, from ca. A.D. 1100-1300. One posthole and several charcoal concentrations may be part of a grass and mud-covered Caddo structure(s) built during this period at the site.

THE RAY SITE (41LR135),

by James E. Bruseth, Larry Banks, and Jimmy Smith

The Ray site is located in Lamar County, Texas, about 5 km northwest of the town of Post
Oak. This site is situated on an upland ridge between two forks of Nolan Creek, the southernmost head-water tributary of Big Pine Creek. An unnamed tributary of Nolan Creek flows by the western portions of the site. Today, a portion of the unnamed tributary has been dammed to create a small pond. The pond is said to be located over a spring that flowed through the driest of years, and this spring was undoubtedly an important factor influencing the selection of the area for prehistoric occupation.

The site is owned by J. R. and Marlene Ray, who kindly consented to the Texas Archeological Society Field School investigations in 1991 and 1992. The site was selected for investigation at the urging of Larry Banks, later the field director of the site. Mr. Banks had tested the site in 1966 with Dr. Robert Coleman, and found an array of artifacts suggesting a pre-Caddoan occupation. Since the site seemed to offer information on a time not well represented at other Field School sites, the decision was made to investigate it.

The Ray site soils consist principally of the Annona series, while the westernmost edge of the site has Woodtell series soil. Both soils have deep loamy A-horizons (about 30-80 cm in depth), and below this are brown, red, or brownish-gray B-horizons. The presence of a shallow clay B-horizon was an important factor for locating features at the site. Typically, the portions of pits, postholes, and other subsurface cultural features are preserved when they were dug into clay subsoils. The upper portions of features tend to be lost in the A-horizon due to soil turbation.

Figure 25 is a map of the site and it shows the locations of the Field School excavations. The site was divided into four areas, based on unique topographic characteristics or data from test excavations that suggested important archeological deposits were present. Area A is in the central portion of the site, and was identified by Mr. Banks based on his testing in 1966. This area became the focus for much of the 1991 and 1992 field school work because of the presence of numerous features and artifacts (Figure 26a-b). Area B was investigated because the topographic setting suggested a likely location for Caddoan habitation: on the tip of an upland ridge overlooking the creek. Area C was the location of a midden deposit visible at the surface, and such midden deposits often contain large quantities of artifacts. The final area of investigation was Area D at the southern end of the site, also in an area where a small midden was identified (see Figure 25). The total amount of excavations at the site was 88 m² in Area A, 4 m² in Area B, 12 m² in Area C, and 47 m² in Area D.
identification of complete house patterns, and to gather a large sample of artifacts related to the Early Ceramic time period. This would provide important information for one of the overall Field School problems, namely improving the cultural historical chronology of the area (Bruseth et al. 1991, 1992).

All of the units in Block I/II were excavated in 10 cm levels, and all soil was screened through 1/4-inch mesh. The goal was to hand excavate by levels until the clay B-horizon was encountered. To find house patterns, it was considered essential that large areas made up of contiguous 1 x 1 m units be excavated to a common level, and that suspected postholes and other features be flagged for later investigation. In this manner, much of the area of Block I/II was excavated to a common, flat surface about 40 cm bs. After most of the area was taken down to this level, the excavation strategy changed to investigate individual features. These were examined by drawing them in plan view at the top of the clay B-horizon, and then by cross-sectioning each feature to obtain a profile, which was drawn and photographed. Finally, the contents of the fill from features was saved for flotation recovery of macrobotanical remains, especially features thought to be pits.

**Artifacts Recovered from Area A**

A total of 14,387 artifacts were recovered from Area A (Table 7). This includes all of Block I/II and three additional units in the immediate area adjacent to the block (see Figure 25). Lithic debris is the most common artifact type, accounting for 35.2 percent of the assemblage. Ceramics are next with 23.0 percent, followed by bone at 17.2 percent, and fire-cracked rock at 14.4 percent. The presence of more than 1100 pieces of burned clay (see Table 7), some of which contained thatch impressions, confirms the fact that one or more structures was located in this part of the site.

A more detailed analysis was conducted of the ceramics to determine the vessel forms and decorations that are present. Figure 27 graphically depicts the range of vessel forms from Area A. The identification of forms is biased by two factors. First, the relative size of the sherds is small, with most less than 7 cm in greatest dimension. This hampers accurate determination of vessel forms, since only a few sherds were large enough to ascertain form. Second, some vessel forms have

**AREA A**

During the 1991 Field School excavations at the Ray site, several units in Area A had a high density of artifacts and several features, including pits and postholes. A small block excavation was started by the crew, under the direction of Mr. Banks, and the results quickly showed that artifacts of the Early Ceramic period (ca. A.D. 200-900) were present. This was a time period not well represented elsewhere in this part of northeastern Texas, and the decision was made for a major expansion of the excavations during the 1992 Field School. For purposes of managing the excavation activity, two blocks—labeled I and II—were designated for Area A. In reality though, both blocks were immediately adjacent, and are here reported as a single block labeled as “Block I/II.”

The goal of the work in Area A was to open up a sufficiently large area to expose postholes for...
Table 7. Artifacts Recovered from the Ray Site.

<table>
<thead>
<tr>
<th></th>
<th>Area A</th>
<th></th>
<th>Area B</th>
<th></th>
<th>Area C</th>
<th></th>
<th>Area D</th>
<th></th>
<th>Other</th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Decorated Sherds</td>
<td>51</td>
<td>0.4</td>
<td>-</td>
<td>0.0</td>
<td>10</td>
<td>0.3</td>
<td>30</td>
<td>0.6</td>
<td>10</td>
<td>0.5</td>
<td>101</td>
</tr>
<tr>
<td>Plain Sherds</td>
<td>3,248</td>
<td>22.6</td>
<td>7</td>
<td>1.9</td>
<td>353</td>
<td>11.7</td>
<td>1,555</td>
<td>31.5</td>
<td>556</td>
<td>26.7</td>
<td>5,719</td>
</tr>
<tr>
<td>Ceramic Pipes</td>
<td>34</td>
<td>0.2</td>
<td>1</td>
<td>0.3</td>
<td>6</td>
<td>0.2</td>
<td>25</td>
<td>0.5</td>
<td>40</td>
<td>1.9</td>
<td>106</td>
</tr>
<tr>
<td>Arrow Points</td>
<td>71</td>
<td>0.5</td>
<td>3</td>
<td>0.8</td>
<td>7</td>
<td>0.2</td>
<td>39</td>
<td>0.8</td>
<td>11</td>
<td>0.5</td>
<td>131</td>
</tr>
<tr>
<td>Dart Points</td>
<td>35</td>
<td>0.2</td>
<td>-</td>
<td>0.0</td>
<td>5</td>
<td>0.2</td>
<td>8</td>
<td>0.2</td>
<td>6</td>
<td>0.3</td>
<td>54</td>
</tr>
<tr>
<td>Lithic Debris</td>
<td>5,065</td>
<td>35.2</td>
<td>187</td>
<td>50.1</td>
<td>720</td>
<td>23.8</td>
<td>960</td>
<td>19.5</td>
<td>666</td>
<td>32.9</td>
<td>7,618</td>
</tr>
<tr>
<td>Lithic Tools</td>
<td>40</td>
<td>0.3</td>
<td>3</td>
<td>0.8</td>
<td>3</td>
<td>0.1</td>
<td>12</td>
<td>0.2</td>
<td>16</td>
<td>0.8</td>
<td>70</td>
</tr>
<tr>
<td>Ground Stone</td>
<td>51</td>
<td>0.4</td>
<td>3</td>
<td>0.8</td>
<td>29</td>
<td>1.0</td>
<td>5</td>
<td>0.1</td>
<td>4</td>
<td>0.2</td>
<td>92</td>
</tr>
<tr>
<td>Bone</td>
<td>2,480</td>
<td>17.2</td>
<td>56</td>
<td>15.0</td>
<td>1,136</td>
<td>44.2</td>
<td>1,105</td>
<td>22.4</td>
<td>358</td>
<td>17.2</td>
<td>5,335</td>
</tr>
<tr>
<td>Mussel Shell</td>
<td>119</td>
<td>0.8</td>
<td>-</td>
<td>0.0</td>
<td>11</td>
<td>0.4</td>
<td>95</td>
<td>1.9</td>
<td>9</td>
<td>0.4</td>
<td>234</td>
</tr>
<tr>
<td>Burned Clay</td>
<td>1,122</td>
<td>7.8</td>
<td>46</td>
<td>12.3</td>
<td>177</td>
<td>5.9</td>
<td>479</td>
<td>9.7</td>
<td>116</td>
<td>5.6</td>
<td>1,940</td>
</tr>
<tr>
<td>Fire-Cracked Rock</td>
<td>2,071</td>
<td>14.4</td>
<td>70</td>
<td>18.8</td>
<td>366</td>
<td>12.1</td>
<td>621</td>
<td>12.6</td>
<td>270</td>
<td>13.0</td>
<td>3,398</td>
</tr>
</tbody>
</table>

Total | 14,387 | 373 | 3,023 | 4,934 | 2,082 | 24,799

particular characteristic traits that tend to preserve better than other forms. For example, the thickened bases of Williams Plain vessels survive disproportionately well. The observed vessel forms fall into four general groups: simple bowls (Figure 27a-c), straight-walled to outflaring rim jars (Figure 27d-e), modified barrel-shaped jars (Figure 27f-g), and flat-based jars with outflaring walls and everted rims (Figure 27h-j).

Many of the sherds from the Ray site can be identified as Williams Plain, a common type of the Fourche Maline culture in eastern Oklahoma and southwestern Arkansas (Brown 1996; Schambach 1982). The sherds from the Ray site are 12-17 mm thick, are without surface decoration, have a coarse textured paste, and are grog- and/or grog and bone-tempered. The color varies from gray to brown to tan. Three base-body junctures can be identified in the sample. The first is rounded (Figure 28a-b), the second is squared (Figure 28c-d), and the third is stilted (Figure 28e). These sherds represent vessel forms h-j, and possibly vessel form e in Figure 27.

Several other vessel types are recognized in the ceramic sample based on decorative motifs, although only 1.5 percent of the sherds are decorated. Thirty-nine sherds had an incised line decoration (Table 8), and while most could not be identified to type because of their small size, five sherds may be Coles Creek Incised (Figure 29a-c). The ceramics have horizontal lines parallel to the rim, and incised lip grooves. Vessel shapes appear to have been small, simple bowls (see Figure 27b). Tempers are mostly grog, with some bone; paste textures are medium to fine. Thickness of the sherds range from 4-6.5 mm. Colors range from tan to dark brown exteriors and brown to black interiors.

Two sherds from this area at the Ray site are of sufficient size and decoration to tentatively identify them as Crockett Curvilinear Incised (Suhm and Jelks 1962:31-33). They have parallel incised lines, with areas in between the lines filled with closely-spaced perpendicular incised lines.
(see Figure 29d-e). Both are grog-tempered, with a medium textured paste. The thicknesses are 5 mm and 6.7 mm. One sherd is dark brown on the exterior and red slipped on the interior (see Figure 29d), while the remaining sherd is uniformly black in color.

Two unique sherds appear to be good examples of French Fork Incised, a type originally defined in the lower Mississippi River valley (Ford 1951). One of the sherds (see Figure 29f) is grog-tempered, has a coarse-textured paste, and a distinctive curvilinear incised pattern with an excised circle. The sherd is 10 mm in thickness, and is a light brown color. The other sherd actually consists of three sherds found together in the field and treated as a single sherd for this analysis. The decoration is a scroll pattern of curvilinear incised lines with excised circles at the ends (see Figure 29g). A pattern of small punctuations fills a zone between two of the incised lines. The sherd has grog and bone temper, a coarse paste, and a brown exterior with an interior red slip. The thickness is 10.0 mm.

The remaining ceramics from Area A are largely undiagnostic. Seventy-three percent are grog-tempered and an additional 26 percent have bone temper in the paste. The sherds are nearly all coarse textured, and likely represent utilitarian bowls and jars. The mean thickness for the sample is 8.5 mm, with some as thick as 20 mm. Two sherds have what appears to be a brushing decoration and a single sherd is engraved.

Thirty-four pipe sherds were found from Area A (Table 9). One fragment is a stem, oval in shape and made from a coarse-textured sandy paste with small flecks of bone temper. This pipe appears to be a Poole type (Hoffman 1967:5-6). Another pipe is made from a similar paste but has a slightly polished exterior; it represents part of the stem at the juncture with the bowl. This pipe is classed as the Crenshaw variety of the Red River type (Hoffman 1967:7-8). Twenty-two pipe sherds are part of the Miller’s Crossing variety of the Red River type (Hoffman 1967:9). These fragments are all made from fine-grained pastes with some bone temper. The stems are all small (less than 9 mm), and the bowl walls are very thin (less than 2 mm). Most of these pipe fragments exhibit polished exteriors.

One hundred and six projectile points were recovered from the Area A excavations: 71 arrow points and 35 dart points. One of the darts is a Wells
Table 8. Distribution of Decorated Ceramics from the Ray Site.

<table>
<thead>
<tr>
<th></th>
<th>Area A</th>
<th>Area C</th>
<th>Area D</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontally Incised</td>
<td>11</td>
<td>–</td>
<td>6</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>Incised, Orientation Not Observable</td>
<td>28</td>
<td>9</td>
<td>20</td>
<td>8</td>
<td>65</td>
</tr>
<tr>
<td>Hand Punctuation</td>
<td>2</td>
<td>–</td>
<td>1</td>
<td>–</td>
<td>3</td>
</tr>
<tr>
<td>Tool Punctuation</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Brushing</td>
<td>2</td>
<td>–</td>
<td>1</td>
<td>–</td>
<td>3</td>
</tr>
<tr>
<td>Engraved</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>51</td>
<td>10</td>
<td>30</td>
<td>.0</td>
<td>101</td>
</tr>
</tbody>
</table>

(Figure 30a); it is made of local Red River gravel. Another is an Edgewood made from non-local chert (Figure 30b). Other dart points include an Ellis, made on petrified wood, and a Kent, made from local chert. In addition, six Gary points were recovered from Area A (Figure 30c-e); one is made from novaculite, one from local Ogallala quartzite, and the rest from Red River gravels. The remaining darts points were either not typeable or were too fragmentary for reliable identification.

Arrow points outnumbered dart points from Area A by more than a 2:1 ratio. The most common arrow point is Homan (see Figure 30f-k), a type that has been identified from points found at the Crenshaw and Poole sites, both in southwest Arkansas (Wood 1981:1-2). The type is thought to be associated with the latest Fourche Maline period in the Great Bend of the Red River sequence (Schambach 1982:177). All are made from novaculite, local cherts, Red River gravels, or unidentified non-local chert (Table 10). An Alba point made of local chert was also recovered from this area of

Figure 29. Decorated Ceramics from Area A: a-e, possible Coles Creek Incised; d-e, possible Crockett Curvilinear Incised; f-g, French Fork Incised.
Table 9. Pipe Fragments from the Ray Site.

<table>
<thead>
<tr>
<th>Area</th>
<th>Pipe Type/Variety</th>
<th>Portion</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Poole</td>
<td>Stem</td>
<td>1</td>
</tr>
<tr>
<td>A</td>
<td>Red River</td>
<td>Bowl</td>
<td>10</td>
</tr>
<tr>
<td>A</td>
<td>Red River, Crenshaw</td>
<td>Stem/partial bowl</td>
<td>1</td>
</tr>
<tr>
<td>A</td>
<td>Red River, Miller’s Crossing</td>
<td>Stem</td>
<td>22</td>
</tr>
<tr>
<td>B</td>
<td>Red River</td>
<td>Bowl</td>
<td>1</td>
</tr>
<tr>
<td>C</td>
<td>Red River</td>
<td>Bowl</td>
<td>4</td>
</tr>
<tr>
<td>C</td>
<td>Red River, Miller’s Crossing</td>
<td>Stem</td>
<td>2</td>
</tr>
<tr>
<td>D</td>
<td>Poole</td>
<td>Stem</td>
<td>1</td>
</tr>
<tr>
<td>D</td>
<td>Red River</td>
<td>Bowl</td>
<td>3</td>
</tr>
<tr>
<td>D</td>
<td>Red River, Miller’s Crossing</td>
<td>Stem</td>
<td>19</td>
</tr>
<tr>
<td>D</td>
<td>Red River, Miller’s Crossing</td>
<td>Distal stem</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>Red River</td>
<td>Bowl</td>
<td>6</td>
</tr>
<tr>
<td>Other</td>
<td>Red River, Miller’s Crossing</td>
<td>Stem</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td><strong>Totals</strong></td>
<td></td>
<td><strong>106</strong></td>
</tr>
</tbody>
</table>

the site (see Figure 30), along with three Scallorn points (see Figure 30m) made from non-local cherts or Red River gravels. A single Hayes point was found in the area, and is on a cream-colored non-local chert (see Figure 30n). Two Steiner or Friley points were recovered of Red River claystone or Red River gravel chert.

Unique to the Ray site are several unifacially-flaked, and crudely-made, arrow points, provisionally termed here as the “Ray” type (see Figure 30o-q). The points are triangular with convex lateral edges, and have parallel to slightly expanding stems. Their most diagnostic trait is that they are crudely made by retouching the lateral margin of small flakes. Ray points tend to be small, with most less than 2 cm in length. They are made from a variety of local and non-local cherts (see Table 10). The other projectile points from this part of the Ray site are either too fragmentary or otherwise not typeable.

Forty lithic tools were recovered from Area A. The vast majority (n=33) are fragments of bifacial performs or finished bifaces. Some probably represent portions of projectile points, but lack diagnostic characteristics to be identified as points. Three tools are scrapers: one is a flake scraper made on local Uvalde gravel chert, and two are end scrapers, both made of white to gray fossiliferous chert possibly from an Arbuckle Mountain source. Two of the lithic tools are gravers, made by forming finely chipped pointed ends on flakes.

Area A Features

Ninety-eight features were found in Area A at the Ray site (Figure 31). All but three features appear to be postholes from structures such as houses or arbors. Despite extensive efforts to identify complete posthole patterns, this effort was unsuccessful and only portions of circular houses could be defined. Quite probably several overlapping houses existed inside and around Block I/II.

Feature 1

This feature was a large circular pit, measuring about 2 m in diameter near the top (see Figure 31), and tapering to about 1.5 m in diameter near the bottom. It was flat-bottomed and 70 cm deep. During excavation, several postholes were noted along the exterior, bisecting the wall of the pit. Further, there was the indication that the pit actually consisted of two, slightly offset, features of similar size and shape, as if a single pit was later re-excavated, and in so doing, shifted about 20 cm to the south. The upper 30-40 cm of the pit consisted of a dark brown sandy loam, quite possibly darker in color.
Figure 30. Projectile Points from Area A: a, Wells; b, Edgewood; c-e, Gary; f-k, Homan; l, Alba; m, Scallorn; n, Hayes; o-q, Ray.
<table>
<thead>
<tr>
<th>Area</th>
<th>Projectile Point Type</th>
<th>Raw Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Alba</td>
<td>Non-local chert</td>
</tr>
<tr>
<td></td>
<td>Edgewood</td>
<td>Non-local chert</td>
</tr>
<tr>
<td></td>
<td>Ellis</td>
<td>Petrified wood</td>
</tr>
<tr>
<td></td>
<td>Fragmentary arrow</td>
<td>Red River gravel (n=2), local chert (n=3), local quartzite (n=2), Red River claystone (n=1), non-local chert (n=1)</td>
</tr>
<tr>
<td></td>
<td>Friley</td>
<td>Red River claystone</td>
</tr>
<tr>
<td></td>
<td>Gary</td>
<td>Novaculite (n=1), Ogallala quartzite (n=1), Red River gravel (n=4)</td>
</tr>
<tr>
<td></td>
<td>Hayes</td>
<td>Non-local chert</td>
</tr>
<tr>
<td></td>
<td>Homan</td>
<td>Non-local chert (n=3), novaculite (n=4), local chert (n=8), Red River gravel (n=9), local quartzite (n=1), Red River claystone (n=1)</td>
</tr>
<tr>
<td></td>
<td>Kent</td>
<td>local chert</td>
</tr>
<tr>
<td></td>
<td>Ray</td>
<td>Novaculite (n=2), Gray chert (n=1), Ogallala quartzite (n=1), Red River gravel (n=3), local chert (n=2), Red River claystone (n=1)</td>
</tr>
<tr>
<td></td>
<td>Scallorn</td>
<td>Non-local chert (n=1), Chalcedony (n=1), Red River gravel (n=1)</td>
</tr>
<tr>
<td></td>
<td>Steiner or Friley</td>
<td>Red River gravel</td>
</tr>
<tr>
<td></td>
<td>Unidentified dart</td>
<td>Novaculite (n=1), local chert (n=1)</td>
</tr>
<tr>
<td></td>
<td>Unidentified Early</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Archaic dart</td>
<td>Non-local chert</td>
</tr>
<tr>
<td></td>
<td>Unidentified arrow</td>
<td>local chert</td>
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<tr>
<td></td>
<td>Wells</td>
<td>Red River gravel</td>
</tr>
<tr>
<td>B</td>
<td>Catahoula</td>
<td>Novaculite</td>
</tr>
<tr>
<td></td>
<td>Unidentified arrow</td>
<td>Red River gravel (n=1), local chert (n=1)</td>
</tr>
<tr>
<td>C</td>
<td>Bulverde</td>
<td>local chert</td>
</tr>
<tr>
<td></td>
<td>Fragmentary arrow</td>
<td>Red River gravel (n=2)</td>
</tr>
<tr>
<td></td>
<td>Homan</td>
<td>Red River gravel (n=1), local chert (n=1)</td>
</tr>
<tr>
<td></td>
<td>Unidentified arrow</td>
<td>Red River gravel</td>
</tr>
<tr>
<td>D</td>
<td>Carrollton</td>
<td>local quartzite</td>
</tr>
<tr>
<td></td>
<td>Gary</td>
<td>Red River gravel (n=2)</td>
</tr>
<tr>
<td></td>
<td>Hayes</td>
<td>Novaculite (n=1), Red River gravel (n=1)</td>
</tr>
<tr>
<td></td>
<td>Homan</td>
<td>Red River siliceous shale (n=1), local chert (n=2), Petrified wood (n=1), Novaculite (n=1)</td>
</tr>
<tr>
<td></td>
<td>Ray</td>
<td>Red River gravel</td>
</tr>
<tr>
<td></td>
<td>Scallorn</td>
<td>Red River gravel (n=1), local chert (n=1)</td>
</tr>
<tr>
<td></td>
<td>Unidentified arrow</td>
<td>Ouachita Mountains quartzite</td>
</tr>
<tr>
<td></td>
<td>Unidentified dart</td>
<td>Ogallala quartzite</td>
</tr>
<tr>
<td>Other</td>
<td>Alba</td>
<td>local chert (n=2)</td>
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<tr>
<td></td>
<td>Darl</td>
<td>local quartzite</td>
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<tr>
<td></td>
<td>Gary</td>
<td>Red River gravel (n=1), local chert (n=2), local quartzite (n=1)</td>
</tr>
<tr>
<td></td>
<td>Homan</td>
<td>Red River gravel (n=2), non-local chert (n=1), local chert (n=2)</td>
</tr>
<tr>
<td></td>
<td>Ray</td>
<td>local chert</td>
</tr>
<tr>
<td></td>
<td>Unidentified arrow</td>
<td>Red River gravel (n=1), Novaculite (n=1)</td>
</tr>
</tbody>
</table>
Figure 31. Location of Features in Area A (Block I/II) at the Ray site.

from a light midden stain present over many of the units in Block I/II. The bottom portions of the pit were a brown sandy loam with mottled flecks of wood and nut charcoal, specks of oxidized orange clay, and pieces of white calcined bone.

Flotation samples were taken from Feature 1, but resulted in minimal amounts of charred botanical remains being recovered. Hickory nutshell was the most frequent, with walnut and acorn fragments also present. Very few charred seeds were recovered, and the only identifiable ones were five seeds of *Galium* spp. (bedstraw).

Two radiocarbon dates were run on charcoal samples from the feature (Table 11): Beta-88420 with a one sigma ranges of cal AD 1055-1090 and AD 1150-1270; and Beta-88421, with a one sigma range of cal AD 690-890. Both samples were taken from 40-50 cm bs. The discrepancy in the two dates indicates that the Ray site is multi-component (see below). The pit most likely dates from the cal AD 1055-1270 interval, and the earlier date represents older charcoal from an earlier occupation of the site that was dug through to construct the pit.

**Feature 2**

This feature was a small basin-shaped pit about 30 cm in diameter and 40 cm in depth. Both wood charcoal and corn fragments were found. The wood charcoal was dated to cal AD 690-890 and AD 910-960 age ranges (Beta-46264). Due to the presence of corn in this feature and the inferred early date for corn based on the wood sample, two AMS dates were run directly on the corn. These came back at cal AD 1000-1040 and AD 1035-1205 (Beta-88418 and Beta-88419, respectively; see Table 11). From these results, the corn clearly dates to a post-A.D. 1000 component.

**Feature 37**

This was also a small basin-shaped pit that at first was thought to represent a posthole. It was 18 cm in diameter and 46 cm in depth. The macrobotanical analysis of the contents of the feature indicated that corn was present and, thus, the feature was likely a small pit rather than a posthole. AMS radiocarbon date ranges of cal AD 1045-1105 and AD 1115-1220 (Beta-88423) were obtained on the corn. These ranges are generally contemporaneous with the corn dates from Feature 2, and support the interpretation that the corn from the site dates to after A.D. 1000, and perhaps as late as after A.D. 1100.

**Remaining Features**

The remaining 95 features from Block I/II were all likely postholes from several structures (see Figure 31). A calibrated date range of AD 1235-1300 was obtained from charcoal associated with Feature 60 (see Table 11), and indicates that the structure associated with this posthole dates to a post-A.D. 1200 component. The postholes ranged in diameter from 10-30 cm, with an average diameter of 15 to 20 cm. Depths ranged from 35 to 60 cm. While the majority of the artifacts from Block I/II appear to be associated with a transitional Early Ceramic to Early Caddo occupation dating between A.D. 800 and A.D. 1000, the structures associated with the postholes cannot be confidently associated with this particular occupation. This is not to say that some, or even many, of the postholes do not
Table 11. Radiocarbon Dates from the Ray Site.

<table>
<thead>
<tr>
<th>Lab Number</th>
<th>Calibrated Date</th>
<th>Date Range</th>
<th>Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beta-46264</td>
<td>AD 820, 840, 860</td>
<td>AD 690-890</td>
<td>Feature 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AD 910-960</td>
<td></td>
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<td>Beta-46265</td>
<td>AD 1000</td>
<td>AD 900-915</td>
<td>Block I/II, Level 4</td>
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<tr>
<td></td>
<td></td>
<td>AD 950-1030</td>
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</tr>
<tr>
<td>Beta-46266</td>
<td>AD 1253</td>
<td>AD 1210-1290</td>
<td>Block I/II, Level 4</td>
</tr>
<tr>
<td>Beta-88418*</td>
<td>AD 1020</td>
<td>AD 1000-1040</td>
<td>Feature 2</td>
</tr>
<tr>
<td>Beta-88419*</td>
<td>AD 1165</td>
<td>AD 1035-1205</td>
<td>Feature 2</td>
</tr>
<tr>
<td>Beta-88420</td>
<td>AD 1215</td>
<td>AD 1055-1090</td>
<td>Feature 1, 40-50 cm</td>
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<tr>
<td></td>
<td></td>
<td>AD 1150-1270</td>
<td></td>
</tr>
<tr>
<td>Beta-88421</td>
<td>AD 790</td>
<td>AD 690-890</td>
<td>Feature 1, 40-50 cm</td>
</tr>
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<td>Feature 60</td>
</tr>
<tr>
<td>Beta-88423*</td>
<td>AD 1175</td>
<td>AD 1045-1105</td>
<td>Feature 37</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AD 1115-1220</td>
<td></td>
</tr>
</tbody>
</table>

*AMS dates

belong to this transitional phase, but that the radiocarbon evidence is inconclusive about Early Ceramic period structures at Ray.

### AREA B

This part of the site is on the northern terrace edge adjacent to the principal site area (see Figure 25). Four 1 x 1 m units were excavated during the 1991 Field School to determine the extent of any cultural occupation on the terrace, and to see if additional field school effort was justified. The units were taken down as deep as 80 cm bs, and 373 artifacts were recovered (see Table 7). These were principally lithic debris (50.1 percent), fire-cracked rock (18.8 percent), bone (15.0 percent) and burned clay fragments (12.3 percent). Seven sherds, all plain, were also recovered. A single bowl fragment of a Red River type pipe was recovered (see Table 9). Arrow points consisted of a reworked Catahoula made from novaculite, and two unidentified specimens (see Table 10). The work at the four units determined that the area was disturbed, perhaps from recent land clearing, and the area was abandoned for future work.

### AREA C

During the initial work at the Ray site, a midden discoloration was noted on the northern part of the principal terrace (see Figure 25). The midden consisted of a dark brown sandy loam soil that appeared, based on surface evidence, to contain higher densities of artifacts than most other parts of the site. For this reason, work during both Field School seasons was focused here; the area is referred to as Area C on Figure 25.

Several units were placed inside and around the midden to obtain a sample of artifacts, to determine the depth and overall density of artifacts, and to gain a general idea of the midden’s limits. All units were dug in 10 cm levels and all soil was screened through 1/4-inch mesh. The midden consisted of a dark brown sandy loam deposit that
extended from the surface to between 50-60 cm bs. A total of 3,023 artifacts were recovered from the work in Area C (see Table 7). Unlike most other parts of the site, lithic debris was not the most frequent artifact category, accounting for only 23.8 percent of the sample; rather, bone was the most common (44.2 percent). This is in general keeping with midden deposits found at other Caddoan sites where the preservation of organic materials, such as bone, tends to be better. The high frequency of bone is also likely due to more bone being deposited into the midden during its accumulation from trash dumping. Further supporting this interpretation of a trash midden is the fact that no features were encountered during the excavation, in contrast to Areas A and D where postholes were found representing residential structures.

Of the 363 sherds found from the midden, 69.3 percent are grog-tempered and the remainder are a combination of grog- and bone-tempered wares. Ninety-two percent have coarse paste, with the remainder having a medium texture. Sherds average 7.9 ± 4.7 mm in thickness. Ten sherds are decorated (only 2.8 percent of the sherds); nine have incised line decorations and one has punctated tool impressions (see Table 8).

Of those sherds that are of sufficient size for type identification, two are Crockett Curvilinear Incised. The two sherds are both grog-tempered body sherds with medium texture paste, and may be part of the same vessel. The decoration consists of one or more incised lines parallel to the rim, with several closely spaced incised lines diagonal to the lowest incised line (Figure 32a-b). The closely spaced lines have white pigment rubbed into them. They are 6.0 and 5.3 mm in thickness, and dark brown to black in color.

Another sherd may have a French Fork Incised decoration (see Figure 32c). While the sherd is too small for firm identification, it is similar to the specimens found in Area A. The sherd is dark brown, with grog temper, a medium paste texture, and is 4.6 mm thick.

A single sherd is possibly Coles Creek Incised (see Figure 32d). This sherd has a coarse paste, consists of two incised lines parallel to the rim, and has a lip groove. It is from a small, simple bowl, and the color is dark brown on the exterior and black on the interior. Thickness is 5.8 mm.

Three base sherds likely represent flat-based jars with outflaring rims (see Figure 32e-g). Two of these sherds are grog and bone-tempered and one is only grog-tempered. All three have coarse paste and can be typed as Williams Plain. Thicknesses range

Figure 32. Decorated and Base Sherds from Area C: a-b, Crockett Curvilinear Incised; c, possible French Fork Incised; d, possible Coles Creek Incised; e-g, flat-based jar sherds; h-i, base sherds from simple outflaring rim bowls.
from 14-22.4 mm. Two other base sherds are from simple outflaring rim bowls (see Figure 32h-i).

Six pipe fragments were found. Three represent bowl and stem fragments of Red River type pipes, likely the Miller's Crossing variety (see Table 9).

Twelve projectile points were found in the midden area and in units immediately adjacent to it. Only one dart point is typeable as a Bulverde (Figure 33a). It is made from a light tan local chert. Two arrow points are typed as Homan (Figure 33b-c); one is made from Red River gravels and the other from local chert. Other points are too fragmentary for type identifications.

There are three other lithic tools from Area C. One is a scraper made from a light gray, yellow, and brown chert, likely from the Kiamichi River gravels. Two others are fragments of bifaces; one a mottled light gray chert (from the Johns Valley Shale) and the other a local Uvalde gravel chert.

**Figure 33.** Projectile Points from Area C: a, Bulverde; b-c, Homan.

Trenches to find postholes that would complete a house pattern. As with Block I/II, the first four levels were excavated in 10 cm levels, and at 40 cm bs possible postholes and other features were noted. These were then investigated individually as time allowed. None of the fill from the features in Area D was analyzed, however. Since only two possible pits were found, the lack of analysis does not seriously hamper the interpretation of this part of the site.

**Artifacts Recovered from Area D**

The Area D excavations recovered a total of 4,934 artifacts (see Table 7). This includes all items found from the Block plus four units in the immediate vicinity. As with Area C, lithic debris is not the most frequent artifact class; it accounts for only 19.5 percent of the sample. Ceramics are the most frequent artifact, accounting for 32.1 percent, with bone comprising 22.4 percent, and fire-cracked rock 12.6 percent. Thirty nine of the 47 points found in the area are arrows, and this, coupled with the higher relative incidence of ceramics, suggests a heavier post-Archaic occupation of this part of the Ray site relative to other areas.

Looking at the frequency of vessel forms observed from Area D, generally speaking, the same range is present here as in Area A. As with the latter area, the range of vessel forms in Area D is biased by the small size of most sherds and the disproportionate representation of certain distinctive vessel forms. The forms identified are simple bowls, a compound bowl, flat-based jars with outflaring walls and everted rims, and a bottle.

The flat-based jars can be attributed to Williams Plain. The thickness of these ceramics ranges from 10.4-17.9 mm. Tempers are mostly grog with the addition of bone in a few specimens. Pastes are uniformly coarse textured, and colors vary from reddish-brown to tan. The bases of these vessels are flat with outflaring rims (Figure 34g, i); a single example of a stilted based is also present (Figure 34h).

Only 1.9 percent of the sherds are decorated. Six sherds contain horizontally incised line decorations (see Table 8). The sherds are mostly grog-tempered with the addition of bone in a few
examples. All are from simple bowls with slightly outflaring to direct rims. Pastes are mostly medium with some coarser-textured specimens. Sherd thickness ranges from 6.0-8.0 mm. The shape and form of these vessels is similar to the types Coles Creek Incised and East Incised (see Figure 34a-c), although none of the rims have a lip groove. All have brown interior and exterior colors. Another 20 sherds have incised line decorations, but lack a rim to determine the orientation of the lines. Some of these sherds are undoubtedly parts of vessels similar to those with the horizontal line decorations.

Two sherds are portions of French Fork Incised vessels (see Figure 34d-e). One is grog-tempered and the other is grog and bone-tempered. Both have a coarse paste, and are 7.8 and 9.1 mm thick. One has a brown exterior and a black interior, and the other sherd is black on both sides.

Three sherds have punctuation decorations. Tempers are mostly grog with occasional bone temper inclusions. Their paste is medium in texture, with thickness ranges of 6.4-9.7 mm. Colors are buff to light brown. Some of these sherds may be parts of Crockett Curvilinear Incised vessels (see Figure 34f). These sherds are too small to determine vessel form.

A single sherd from Area D is listed as brushed in Table 8; however, this decoration may actually be very fine, closely spaced incised lines (from a comb?) that give the appearance of brushing, as opposed to an actual brushing technique. This sherd is grog-tempered, has coarse paste, is 6.3 mm thick, and is brown in color.

The remaining 1,555 sherds from Area D are undecorated. Forty-one sherds are rims of plain vessels. In fact, only six decorated rim sherds were recovered from Area D, indicating that the vast majority of the vessels were undecorated. Seventy-three percent of the plain sherds are grog-tempered, with the remaining 27 percent having grog and bone. These sherds have a coarse paste, and a mean thickness of 9.3 ± 3.3 mm. The majority of these sherds are from Williams Plain vessels.

Twenty-five pipe fragments were found. One is an oval stem piece from a Poole type (Hoffman 1967:5-7); the paste of this specimen is coarse with sand and small pieces of bone temper. The remaining pipe sherds are all from Red River types, and mostly from the Miller’s Crossing variety (see Table 9). The stems are all small (less than 9 mm), and the bowl walls are very thin (less than 2 mm). Most of these pipe fragments have polished exteriors.

A total of 47 projectile points were found at this area of the Ray site. Dart points account for 17.0 percent, with the remainder arrows. One of the dart points is a Carrollton (Figure 35a), and two
tool was a thick scraper made of light gray, slightly mottled, Edwards or Johns Valley Shale chert. The other tool is an unifacial flake tool. It is made of a grayish-yellow and brown-splotched Johns Valley or Edwards chert.

**Features in Area D**

Seventeen features were located in Area D (Figure 36). All but two of these were postholes or possible postholes likely associated with one or more structures.

**Feature 102**

This feature was a small pit 28 cm in diameter and a maximum of 73 cm bs in depth; the pit was first observable at 40 cm bs. The fill was a tan sand with a gray sand in the bottom of the feature; it had no artifacts. The pit, while identified in the field as such, may actually be a posthole.

**Feature 110**

This feature is an oval-shaped pit, measuring 70 x 50 cm. The bottom depth of the pit was 62 cm bs. The feature fill was a dark brown ashy soil, and it contained no artifacts.

**Other Features**

The other 15 features found in the Area D excavations are postholes or possible postholes (see Figure 36). They varied from 10-30 cm in diameter, and their bottoms were 50-70 cm bs in depth. Despite the extensive effort made by the dedicated crew, who worked beyond the formal end of the field school to find additional postholes, no complete house patterns could be found. The effort at Area D resulted in a final outcome much like that in Area A: parts of structures have been found, but
they cannot be confidently linked into an entire pattern. Also like Area A, the structures at Area D were most likely circular in shape, and in the instance of Block III, may have been about 4 m in diameter, if the rough circle noted by the dark-colored postholes in the central part of Block III is in fact a single structure.

OTHER AREAS

Fifteen 1 x 1 m units were excavated in various other parts of the site. Several of these were done to investigate anomalies indicated by Ground Penetrating Radar (GPR). The GPR work was provided by Dr. George McMechan from the University of Dallas. Despite a diligent effort to locate features, including burial pits, none of the GPR anomalies was found to have an archeologically identifiable feature below the surface.

A total of 2,082 artifacts were found from units excavated in other parts of the site (see Table 7). As with most other parts of the site, lithic debris is proportionally most frequent (32.9 percent), followed by ceramics (26.7 percent), animal bone (17.2 percent), and fire-cracked rock (13.0 percent). The 10 decorated sherds are largely culturally undiagnostic: nine are incised and one is punctated (see Table 8). Projectile points from these units include one Darl, four Gary, five Homan, one Ray point, and two Alba specimens. The points are made from a variety of cherts (see Table 10).

INTERPRETATIONS OF THE RAY SITE

During the 1991 and 1992 Field Schools, several questions were posed for the Ray site that centered around helping to refine the culture-historical chronology of the area (Bruseth and Banks 1992). The analysis of artifacts and features from the site enables us to address all of the questions to some extent. At the same time—as with most archeological excavations—the analysis also presents us with new questions that only future field work can address.

Most importantly, the work at Ray has resulted in a sample from a kind of site that is unique for Northeast Texas. This is not to say that the site is necessarily rare in the archeological record of the area, but rather that it represents a site that has not been previously investigated, or at least reported. The uniqueness of the Ray site is that the vast majority of the artifacts seem to reflect a very late Early Ceramic to very early Early Caddoan period occupation. Temporally, we suggest that the principal occupation of the site was between A.D. 800 and A.D. 1000, although dart points indicate an earlier Archaic occupation, and the radiocarbon dates clearly show that the site was occupied later in time as well (Figure 37). In particular, the artifact assemblage and the radiometric results seem incongruent. We can only speculate that the Early Ceramic to Early Caddoan period use of the site resulted in a relatively small number of activities that left charcoal in pits and other features for dating purposes.

In terms of the specific problem of refining the cultural chronology of the area, the Ray site adds as much confusion as it provides clarity. Some aspects of the site appear to fall into Schambach's (1982) Fourche Maline 7 period, dating from ca.
A.D. 700-900. Characteristics that support this include the Poole pipe fragments, the Williams Plain sherds, the Homan points, and the French Fork Incised pottery. Other artifacts, however, do not fit within Schambach’s temporal model. For example, the decorated ceramics, typed as possible Coles Creek Incised, are likely from vessels with contrasting rim and body fragments. That is, none of the horizontal line incised sherds are large enough to positively determine that the bodies of the vessels were plain. Rather, the many zoned punctated body sherds could very well be parts of the vessel bodies from the incised line rim sherds. In actuality, then, these sherds are more probably from Crockett Curvilinear Incised vessels, with horizontally incised lines along the rim and curvilinear incised lines with zoned punctations on the body. Examples of this vessel type are illustrated in Suhm and Jelks (1962:Plate 17). The difficulty this presents for a Fourche Maline assignment is that the combination of contrasting rim and body decorations is considered to be a post-Fourche Maline, or a basic Caddoan, trait (Schambach 1982:191).

The pipes from the site also suggest a Caddoan occupation. As noted above, two Fourche Maline Poole type pipes were found, but the vast majority of the pipes are of the Red River type, Miller’s Crossing variety. Schambach (1982) places these into the Lost Prairie phase of the Early Caddoan period in southwestern Arkansas.

Finally, to complicate the picture even more are the Ray points found at the site. They occurred most commonly in Area A, and we believe they relate to the earlier part of the Early Ceramic to Early Caddoan occupation of the site. At present, this is largely a guess and will have to await the identification of these points at other sites in Northeast Texas. However, these crudely-flaked arrow points are not reported at any Fourche Maline sites in southwestern Arkansas and may be unique to Northeast Texas.

What all of this suggests is that either Schambach’s chronological model for southwestern Arkansas does not fit exactly for Northeast Texas, or that the model is not quite so cut-and-dried as Schambach seems to imply. We choose to believe that both issues are at play and that the chronologies of each region, while closely related, need more refinement. Nonetheless, the Ray site provides an important example of an Early Ceramic to Early Caddoan transitional occupation for Northeast Texas.

One final point needs attention. During the 1991 Field School, corn was obtained from Feature 2, and the speculation was made that the Ray site had some of the earliest dated corn for Northeast Texas (Bruseth and Banks 1992:54). At the encouragement of Dr. Gayle Friz, who did the analysis of the 1991 botanical samples, we submitted two fragments of corn for direct radiometric dating. The dates came back with post-A.D. 1000 dates (see above), and confirmed her suspicion that the corn at the site was from a later Caddoan occupation.

SALT WELL SLOUGH (41RR204),

by Nancy A. Kenmotsu

The 1991 TAS Field School included investigations of a site long suspected to have been used by the Caddo to manufacture salt, the Salt Well Slough site (Figure 38). R. King Harris appears to have been the first to suspect that this important product was manufactured along Salt Well Slough (Gregory 1973:258). His reconnaissance led to a notation that “Salt Works” existed along the slough in the 1973 nomination of the Roitsch site for the
National Register of Historic Places. During pre-field investigations for the 1991 TAS Field School, the owner, Mr. Harold Williams, pointed the site out to Bruseth and Pertulla. Mr. Williams noted that the exceedingly clayey conditions at the site, along with an abundance of broken pottery sherds, caused plows and discs to skip over the surface of this portion of his fields and that crops in this small area were less robust. Aware of the notation on the National Register map, Bruseth and Pertulla requested and were graciously given permission to investigate the possibility that the Caddo who occupied Mound Prairie were manufacturing salt.

Although there has been little investigation of Caddoan salt-making sites (Early 1993; Pertulla 1992:13; Gregory 1973:254-262), early documents (Anonymous 1933:238; Biedma 1865:437) attest that the Caddo both manufactured and traded salt, sometimes in large quantities. The following pages detail the results of the investigations at Salt Well Slough, preceded by a short discussion about prehistoric Caddoan salt production.

Salt Production

Prehistoric salt production and the features and material remains at production sites are remarkably similar, whether one is in Africa, Europe, or the Americas (Brown 1980). Production was accomplished by one of two methods: *sal solar* or *sal cocida*. *Sal solar* is the slow evaporation of water in large open ponds, typically near coastal estuaries (Andrews 1983:16). In *sal cocida* (from the Spanish word cocer, meaning to cook), briny water is heated, hastening evaporation of the water from the sodium chloride. While the former method required large expanses of shallow ponds walled off from other ponds, neither required a large quantity of workers (Hewitt et al. 1987:813). Total production, even from small efforts, has a high return from the labor investment. At times, a few workers can produce as much as 10 kg (ca. 30 lbs.) of salt every three months from a 1 m² solar pan (Hewitt et al. 1987:809; Andrews 1983:25-30).

The type of salt production practiced by the Caddo was *sal cocida* production. In this method, salt was extracted in stages. During the final salt extraction, large vessels were placed on pedestals that were used to support them during cooking. After the evaporative effort, the salt was usually scraped from the larger vessels into small molds (i.e., small ceramic vessels) and placed over a low fire where the final drying process was initiated. Upon completion of the final extraction of water from the salt, molds with the intact salt were transported to economic centers, or the molds were broken to extract the salt that was then put into a container that was lighter in weight and more easily transported.

*Sal cocida* sites are most often encountered at or near saline springs that outcrop in regions underlain by large salt basins (Brown 1980:11; Early 1993). The saline springs that outcrop in these regions are many times more concentrated than sea water (Landes 1960). *Sal cocida* sites have also been documented at coastal sites and above inland salt domes. The archeological remains at *sal cocida* sites are typically dominated by broken sherds. The ceramics at salt sites typically fall into one of two types: plain vessels with very thick walls (in excess of two cm), known as salt pans, or plain, thin-walled jars or bowls.

Caddoan Salt-Making Sites

The Caddoan archeological area roughly over- lies the northwestern extent of a large salt deposit known as the Salina Basin, dating to the Jurassic age (Brown 1980:11-13). Salt Well Slough sits on the northwest edge of this salt basin. Salt springs are common along the Red, Ouachita, and Sabine rivers, and many of these are known to have been used to harvest salt. Moreover, historic documents indicate that the Caddo took advantage of the available briny water. For example, in the middle Ouachita River region of Arkansas in 1542, de
Soto’s survivors first noted Caddoan salt production at Chavite or Chaguete (Biedma 1865:437). Several days later, the expedition arrived at Aguacay where “a considerable quantity of salt was made from the sand that they gathered in a vein of earth like slate” (Anonymous 1933:238).

After leaving Aguacay, the next large Caddo town visited by the expedition was Naguatex, the Spanish orthography for the Caddo word *Navuish*, which is still in use today. It derives from “Na” meaning “the place of,” and *widish* meaning salt (Chafe 1993:222). Although the documents from the de Soto expedition do not again mention Caddoan salt-making or salt springs, it is clear from these accounts that the Caddo were making salt, even naming one village for its proximity to a rich salt source. Moreover, as Chafe (1993:223) points out in the following passage, linguistic evidence indicates that salt has long played a significant role in Caddo society:

It is interesting to observe that the importance of salt to traditional Caddo culture is manifested in several ways in the language. For one thing, although the basic meaning of the word *widish* is “salt,” it also means “soup.” By metaphorical extension, the same word is used to refer to a person who is a “show-off.” It appears with the diminutive suffix -*itii,* to form the word *widishitii,* “cute.” When it is followed by the adjective *habitaws,* “sweet” in the phrase *widish habitaws,* the resulting meaning is “sugar,” literally “sweet salt.” A concept that lends itself to such variety of extended meaning is clearly one that played an important part in the lives and thoughts of these people.

At the time of the 1991 TAS Field School, archeological data on Caddoan salt making was limited. Only two known Caddoan salt-making sites had been formally reported: Drake’s and Little Cedar Lick site near Natchitoches, Louisiana (Gregory 1973:256-261), and Potter’s Pond in northwestern Louisiana (McCrocklin 1985). The sites are located near briny water sources, are shallow, have archeological collections that are dominated by plain shell-tempered jars or salt pans, and contain evidence that small hearths were common. Another salt-making site, the Hardman site on Saline Bayou, a tributary of the Ouachita River in south central Arkansas, was investigated in 1987, but not reported (Early 1993) until after the Salt Well Slough investigations were undertaken. The site is much larger than either Drake’s and Little Cedar Lick and Potter’s Pond, and had extensive evidence of Late Caddoan occupation: a large midden, 11 hearths, and 900 postmolds that defined two complete circular houses and “a partial circular arc of what appears to be a fence of some type surrounding the residential compound” as well as several other structures, 40 pits, and 17 burials (Early 1993:37). Although a few hearths were small, most were horizontally large (ranging from 1.37-22 m²), shallow (10-15 cm thick), with “lenses of ash, [and] scattered charcoal” (Early 1993:47). Their intense and repeated use indicate that they were “related to brine-boiling activities carried out at the site” (Early 1993:226). Large, heavy salt pans were present at Hardman, constituting 85 percent of all the sherds recovered from the site (Early 1993:101 and Table 9).

Even with these sites, the total number of Caddoan salt-making sites that have been identified is small. Given the historic data that describe a large Caddoan interaction sphere that included a trade in salt (Gregory 1973), it seems likely that the identified Caddo salt-making sites dramatically underrepresent the total that once existed. Nonetheless, using data from both Caddoan and other known salt-making sites, several expectations were made for the investigations at Salt Well Slough: (1) given the small size of the site, there would be little to no evidence of domestic debris (lithics, fauna, etc.) or structural remains; (2) plain salt pans or jars would dominate the collection; (3) features would consist of small hearths, some with evidence of intense burning, but likely lacking prepared pits; and (4) the deposits at the site would be shallow.

**Investigations**

The Salt Well Slough site is situated on an alluvial terrace on the west side of Salt Well Slough. It sits approximately 150 m west of the slough and approximately 5 m higher in elevation than the slough. Only the southern portion of the site is relatively flat, with the remainder sloping down to the north and east, and sloping up to the west. The site is on poorly drained and slowly permeable, clayey soils, known as Redlake clay. Redlake soils are deep, nearly level, and quite clayey soils on and
adjacent to bottomlands (Thomas 1977:27-28). The upper 12-15 cm layer is a dark reddish-brown clay that is underlain by a reddish-brown clay of similar thickness. Both layers retain water, a fact made clear to field school participants when it rained during the TAS Field School. Redlake clays generally are mapped as linear bands, paralleling the course of the Red River. During the excavations, it was noted that the natural profile consisted of a 2-3 cm darkly stained organic horizon underlain by a reddish-brown slightly sandy clay. The primary distinction in the soils across the site was that some areas had higher charcoal staining, and, thus, were darker in color.

During the field school work at Salt Well Slough, four small blocks and three 50 x 50 cm shovel tests were excavated to a depth averaging 20 cm bs between June 7 and June 14, 1991 (Figure 39). Completed hand excavations in the blocks resulted in the removal of 4 m³ from 20 individual 1 x 1 m units. The field and laboratory methodology followed the procedures established for the other sites investigated during the Field School, with one exception. The exception was an effort to compensate for the shallow depth of the excavations caused by the difficulty in digging the clayey soil. When dry, the soil had to be dampened in order to trowel; when wet, it was exceedingly difficult to control trowel or shovel scraping. Since it rained intermittently during the field work, the matrix was usually wet and its clay content prevented it from drying. Moreover, screening the wet matrix was slow and difficult, and our inability to screen the soils greatly reduced the overall size of the blocks and the depth

Figure 39. The Salt Well Slough Site and the locations of Blocks I-IV.
Table 12. Artifacts from Salt Well Slough Site, by Block.

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<tr>
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<td>2765</td>
<td>191</td>
<td>19</td>
<td>83</td>
<td>79</td>
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<td></td>
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<td>1147</td>
<td>96</td>
<td>9</td>
<td>138</td>
<td>54</td>
<td>172</td>
<td>–</td>
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<td></td>
<td>3</td>
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<td>91</td>
<td>62</td>
<td>1288</td>
<td>–</td>
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<td>2/3</td>
<td>86</td>
<td>6</td>
<td>–</td>
<td>–</td>
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<td>64</td>
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<td>54</td>
<td>8</td>
<td>14</td>
<td>18</td>
<td>703</td>
<td>5</td>
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<td></td>
<td>2</td>
<td>805</td>
<td>126</td>
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<td>2078</td>
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<td></td>
<td>2</td>
<td>1010</td>
<td>165</td>
<td>8</td>
<td>17</td>
<td>98</td>
<td>824</td>
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<td></td>
<td>3</td>
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<td>95</td>
<td>3</td>
<td>111</td>
<td>46</td>
<td>106</td>
<td>–</td>
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<tr>
<td>subtotal</td>
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<td>6646</td>
<td>599</td>
<td>34</td>
<td>208</td>
<td>218</td>
<td>3008</td>
<td>6</td>
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<tr>
<td>Total</td>
<td></td>
<td>17671</td>
<td>1467</td>
<td>72</td>
<td>703</td>
<td>576</td>
<td>8372</td>
<td>50</td>
</tr>
</tbody>
</table>

to which they could be excavated. After obtaining a sizable artifact sample, it was decided to shovel scrape but not screen deposits from nine 10 cm levels in the seven 1 x 1 m units in Block I and the four 1 x 1 m units in Block III in order to expose as many features as possible during the short field season.\(^1\) Screening continued in Blocks II and IV. When the decision was made, level 1 of both Blocks I and III had been completed and, in some units, level 2 had been partially excavated and screened. Thus, reference to the numbers of artifacts from the units should be used cautiously. Excavation into level 3 was only achieved in four 1 x 1 m units, and none of those units were completed.

As a result of these efforts, 11 features were recorded and 19,138 sherds, 72 lithics, 576 pieces of bone, 703 fragments of mussel shells, and 8,372 clumps of daub were recovered, along with 50 small pieces of historic ceramics (Table 12). These materials were relatively evenly distributed across Blocks I, II and III, although the remains in Block III are lower in total quantities than those in Blocks I and II. The lower numbers in Block III may simply reflect the fact that less of level 2 had been excavated in that block when the decision was made to shovel scrape and discard deposits. The similarity in quantities between these three blocks may reflect their similar site setting. All three were in close proximity while Block IV was at a greater distance and also downslope from the other three. Because level 3 was not fully excavated, its artifact content cannot be evaluated. The level 3 excavations, however, do demonstrate that the deposits at the site continued to an unknown depth below the levels reached in 1991.

Of the materials recovered, ceramics represent 66 percent of the total. If the mussel shell and the bone are discounted, ceramics represent 69 percent of the total. Sherd density per m\(^2\) is comparable to the village deposits at Roitsch (see Table 2), with an overall density of 586 per m\(^2\) in Block I, 995 in Block II, 490 in Block III, 1661 in Block IV, and an overall sherd density of 955 per m\(^2\) for the Salt Well Slough site.

The ceramic assemblage is overwhelmingly shell-tempered; less than 50 sherds at Salt Well Slough had orgo grog and shell temper. This compares favorably to the ceramics from the McCurtain Phase village deposits (Blocks III and IV) at the Roitsch site, and parallels the findings elsewhere along the middle Red River (see Bruseth 1998). Another significant aspect of the overall
ceramic assemblage was the eroded condition of the specimens. Pits were present on both the interior and exterior surfaces of most sherds; spalling was not infrequent; and the original surface treatment was often completely eroded from either or both sherd interiors or exteriors (Figure 40).

At Salt Well Slough, plain ceramics \((n=17,671)\) clearly dominate the collection (92.2 percent). Deleting the plain rim sherds and base sherds \((n=668)\) (Table 13), the percent of plain ceramics rises to 95.6 percent. This ratio of plain to decorated wares is slightly lower than from the McCurtain phase deposits at Roitsch (98 percent). Decorated sherds large enough to classify were overwhelmingly Nash Neck-Banded (71 percent). The neck banding from the Nash Neck-Banded jars is quite variable (Figure 41). While a single band was the most common, up to four bands of pinched banding were found. Some of the bands retained their deeply pinched shapes, but the majority had been intentionally smoothed. Late forms of Nash Neck-Banded along the middle Red River are characterized by bands that have been smoothed. Thirty-five sherds had vertical or chevron-shaped appliqued ridges, a style frequently found in late Nash Neck-Banded jars (Perino 1981:Figure 20). From the many large Nash Neck-Banded sherds with their lack of curvature, the most common jar form appears to have been a tall, straight-sided vessel with straight to slightly curving mouths and rim nodes. The plain rim sherds that are large enough to indicate vessel shape appear to have also been straight-sided vessels. Occasionally the smoothed bands have small ticks at their bases, giving them the appearance of Emory Punctated-Incised. Nonetheless, these can be distinguished from Emory Punctated-Incised by the still evident neck crimping. Perino (1983:56) considers late forms of Nash Neck-Banded to have been used exclusively as a “household cooking vessel rather than as a personal vessel,” although this statement has yet to be systematically tested.

Avery Engraved accounted for the next highest proportion of decorated wares (8.5 percent). However, the average size of the Avery Engraved red-slipped sherds was usually less than 1 cm, whereas most other decorated sherds were larger, many in excess of 5 cm in diameter. Avery Engraved (Suhm and Jelks 1962:1-4) is the most frequently identified of the shell-tempered engraved wares in McCurtain phase occupations (Bruseth et al. 1991:10; Perttula 1995:73). Early forms of Avery Engraved were distinguished by their chevron and semi-circular motifs and black colored bottles (Perttula 1992:128). After ca. A.D. 1650/1700, Avery Engraved was largely replaced along the middle Red River by other wares such as Hudson Engraved. Only one example of black Avery Engraved sherds, more commonly found in sites dating prior to A.D. 1400, was present in the Salt Well Slough collection. The remainder were red-slipped and highly polished or burnished; where designs could be identified, they were curvilinear and/or scrolls.

The remainder of the decorated sherds mostly contained punctations and incising with only four sherds of other engraved wares. These types fit well into McCurtain phase collections from Roitsch, Bob Williams, and other excavated sites along the middle Red River, but their proportion to either Nash Neck-Banded or Avery Engraved wares is much lower than at those sites.
Table 13. Decorated, Rim, and Base Sherds from Salt Well Slough Site.

<table>
<thead>
<tr>
<th>Prov.</th>
<th>Plain Rim</th>
<th>Base</th>
<th>Avery Eng.</th>
<th>Nash Nb</th>
<th>Emory P-I</th>
<th>Incised</th>
<th>Punctated</th>
<th>Appliqued</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. I</td>
<td>134</td>
<td>10</td>
<td>6</td>
<td>120</td>
<td>21</td>
<td>11</td>
<td>8</td>
<td>9</td>
<td>2</td>
<td>321</td>
</tr>
<tr>
<td>B. II</td>
<td>177</td>
<td>9</td>
<td>26</td>
<td>143</td>
<td>12</td>
<td>10</td>
<td>22</td>
<td>3</td>
<td>2</td>
<td>404</td>
</tr>
<tr>
<td>B. III</td>
<td>46</td>
<td>3</td>
<td>8</td>
<td>58</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td></td>
<td>126</td>
</tr>
<tr>
<td>B. IV</td>
<td>263</td>
<td>14</td>
<td>30</td>
<td>232</td>
<td>8</td>
<td>18</td>
<td>20</td>
<td>10</td>
<td>5</td>
<td>600</td>
</tr>
<tr>
<td>Misc.</td>
<td>10</td>
<td>2</td>
<td>1</td>
<td>33</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>53</td>
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<tr>
<td>N</td>
<td>630</td>
<td>38</td>
<td>71</td>
<td>586</td>
<td>44</td>
<td>41</td>
<td>54</td>
<td>27</td>
<td>13</td>
<td>1504</td>
</tr>
</tbody>
</table>

Two ceramic specimens appear to be cylinders or pedestals. One (from Block IV, level 1) is 3 x 1.2 cm in diameter, and appears to be a lump of clay that was roughly molded into its present shape with little to no effort to finish the surface. The other specimen was formed with greater care, and was found 18 cm bs, at the base of a concentration of sherds in Feature 8. The cylinder measures 1.2 cm in diameter and 1.9 cm in length. It was well-shaped and smoothed, and its upper end has an outflaring, saucer-like rim that has been partially broken. Its smoothed upper surface suggests that it was not an applique node for a vessel or once attached to a fired vessel. Rather, its position below the sherd cluster and its shape argue that it served as a pedestal, and the only piece of *briquetage* (cf. Brown 1980) that was recovered from the Salt Well Slough site. The Salt Well Slough fired cylinders also resemble unfired clay artifacts called spacers (i.e., wet fragments of clay placed between vessels surrounding a single heat source in order to prevent their touching) at the salt-making site of Palencia in coastal Belize (MacKinnon and Kepecs 1989:527:Figure 3). Since these are the first artifact of this type found on a Caddoan salt-making site, they are tentatively interpreted as pedestals but confirming artifacts of the type will need to be recovered from this or other Caddoan salt-making sites.

Daub, representing 29 percent of the total assemblage, is the other large category of material recovered from the site (see Table 12). This category of material remains included both daub, with stick and other impressions, as well as burned clay. The total density (419 pieces per m²) of daub across the site was less than that recovered from Block III of the village deposits at Roitsch, but more than those of Roitsch’s Block IV (see Table 2). With the exception of the daub in Blocks II and III of Salt Well Slough, level 1 consistently contained much higher quantities than did level 2.

The Salt Well Slough site has only a small assortment of lithic artifacts (n=72), and they occur in extremely low densities of only about three to four artifacts per m². The lithic assemblage from this McCurtain phase site includes 55 pieces of lithic debris, one Maud arrow point, three cores, three pieces of hematite, two celts or celt fragments, and one hammerstone. None of the levels at Saltwell Slough with lithic debris had more than five pieces of lithic debris, and most of the excavated contexts contained only one to two pieces of flaking debris. More than 96 percent of the lithic debris appears to be of locally available raw materials (Banks 1990), and is uniformly small in size (<20 mm in length and width). The only diagnostic lithic artifact was a single Maud arrow point made on a gray Ogallala quartzite flake (level 1, Block IV). The point was broken laterally across the blade, and a portion of the basal portion appears to have also been removed. Similar arrow points have been found in early and late McCurtain phase contexts at the Rowland Clark site, a few miles downstream from Saltwell Slough (Perino 1994:Figure 6b).

The animal bone from Salt Well Slough has been inventoried, but not analyzed in detail. It was noted that a portion of it was burned, and a number of the long bones of what appeared to be deer were broken green, likely to extract marrow (B. Yates, 1991 personal communication). The inventory
indicates that, like other materials recovered, Block IV contained the highest quantity of fauna.

Blocks I, II, and III also contained the 11 features recorded during the investigations. The features were consistently recorded at a rather shallow depth of approximately 10-13 cm bs (Table 14). All but three of the features were sherd concentrations within an area of orange/red mottling caused by heating. While the site contained a high density of sherds in its matrix, these sherd concentrations were distinguished by their almost stacked appearance and by the fact that they usually included several sherds in excess of 3-4 cm in diameter. Shortly after identifying one of these concentrations, an orange/red mottled clay was encountered, usually at the base level of the sherd concentrations. As excavations were expanded to record the feature in plan view, it was found that each feature had more than one sherd concentration (Figure 42). In Feature 3, three sherd concentrations were present. The south group consisted of four rim sherds and two body sherds of Nash Neck-Banded; the eastern concentration had the base fragments along with five rim and one body sherd of Nash Neck-Banded and three body sherds of Emory Punctated-Incised; and the northern concentration contained two rim and two body sherds of Nash Neck-Banded along with one strap handle from a vessel. Of these, few refit, and in any given group of Nash Neck-Banded, typically more than one vessel was represented. The sherd clusters were recorded, together with the mottled, burned soil, as features because they were so distinct from the remaining matrix. None of these types of clusters was encountered in Block IV, despite the overall high artifact density there.

The orange/red mottling was not uniform across the features, but was distinguished from the surrounding, more uniform dark brown clayey matrix. Four of these (Features 3, 6, 8, and 11) were cross-sectioned to determine their depth. Only two, Features 6 and 8, had small central pits, measuring between 22-32 cm in depth and ca. 65 cm in width. The others appeared to be surficial, usually 80-100 cm in diameter, suggesting they represented wood fuel placed and burned on the surface with little or no effort to prepare a burning basin, apparently surrounding them with vessels. Few artifacts were recovered from their fill, but a small quantity of charred seeds, charred hickory and pecan shells, and charred wood were present.

Four radiocarbon dates were obtained from Salt Well Slough. One from Feature 6 proved to be quite small and even with extended counting and \(^{13}C/^{12}C\) adjustment, the resulting corrected date was A.D. 1140 ± 120 (Beta-46959). Another sample drawn from Feature 11 has a corrected date of A.D. 1180 ± 160 (Beta-46958). Both assays have large sigmas and appear too early to be reasonable for the types of Late Caddoan artifacts present at the site. Two other samples, both from Block IV, have corrected dates that are more congruent with the McCurtain phase material culture: A.D. 1350 ± 100 (Beta-46269) and A.D. 1560 ± 60 (Beta-92199), taken from charcoal and charred hickory shell, respectively.

The remaining three features consist of two possible post molds and one concentration (Feature 9) of Emory Punctated-Incised sherds from Block I. One, Feature 1, was quite shallow and located during troweling an area of a hard-packed surface. Roughly circular and charcoal-flecked, it was ca. 13 cm in diameter and 4 cm deep. Although suspected to be a post mold given its small circular shape, it was not given much credence until another feature (Feature 12) with the same approximate shape was located in Block I. It, too, had heavy charcoal staining and a matrix that could be distinguished in texture from the surrounding soil. Their small circular shape, their tapered bottoms, and their relatively close proximity suggest that they were postmolds. Feature 12 was detected at the base of level 2, and extended to 40 cm bs, whereas Feature 1 was identified at the base of level 1 and was only four cm in depth. If they were postmolds, the structure(s) (ramada, granary, or other) that they supported were never defined.

The final feature (Feature 9) was a concentration of two Emory Punctated-Incised body sherds, one base sherd, and seven Nash Neck-Banded rim and body sherds. Although it was in an area that had orange/red mottled soil, excavation of the unit was incomplete at the end of the Field School and the collection was made in the hope that the sherds would refit. They did not, although several of the Nash Neck-Banded do refit.

Although no features were identified in it, artifact recovery from Block IV was markedly higher than elsewhere at the site. Thirty-eight percent of all the ceramics came from Block IV as well as 36 percent of the daub (see Table 12); mussel shell fragments and faunal remains were quite frequent.
Table 14. Features from the Salt Well Slough site.

<table>
<thead>
<tr>
<th>No.</th>
<th>Block</th>
<th>Unit(s)</th>
<th>Level(s)</th>
<th>Type</th>
</tr>
</thead>
<tbody>
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<td>Feature 1</td>
<td>I</td>
<td>N100E105</td>
<td>1, 2</td>
<td>Possible Post Mold</td>
</tr>
<tr>
<td>Feature 2</td>
<td>I</td>
<td>N101E106</td>
<td>2</td>
<td>Sherd concentration with orange mottled soil</td>
</tr>
<tr>
<td>Feature 3</td>
<td>I</td>
<td>N100E105, N101E104, N101E105, N101E106, N102E105</td>
<td>2</td>
<td>Cluster of sherds with orange mottled soil</td>
</tr>
<tr>
<td>Feature 4</td>
<td>II</td>
<td>N105E101</td>
<td>2</td>
<td>Concentration of sherds with burnt clay soil</td>
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<tr>
<td>Feature 5</td>
<td>II</td>
<td>N106E100</td>
<td>2</td>
<td>Concentration of sherds with burnt clay soil</td>
</tr>
<tr>
<td>Feature 6</td>
<td>II</td>
<td>N105E100</td>
<td>2</td>
<td>Burnt clay soil with sherd concentration</td>
</tr>
<tr>
<td>Feature 7</td>
<td>I</td>
<td>N101E105</td>
<td>2</td>
<td>subsumed under Feature 2</td>
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<tr>
<td>Feature 8</td>
<td>II</td>
<td>N105E100, N104E100, N106E101</td>
<td>2</td>
<td>Concentration of sherds with burnt clay soil</td>
</tr>
<tr>
<td>Feature 9</td>
<td>I</td>
<td>N101E104</td>
<td>1</td>
<td>Cluster of Emory Punctated-Incised sherds</td>
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<tr>
<td>Feature 10</td>
<td>II</td>
<td>N104E100, N103E100</td>
<td>2</td>
<td>Area of burnt clay soil</td>
</tr>
<tr>
<td>Feature 11</td>
<td>III</td>
<td>N105E96</td>
<td>2</td>
<td>Concentration of sherds with burnt clay soil</td>
</tr>
<tr>
<td>Feature 12</td>
<td>I</td>
<td>N99E104</td>
<td>3, 4</td>
<td>Possible Post Mold</td>
</tr>
</tbody>
</table>

Figure 42. Plan view of Feature 3 with sherd concentrations.

In part, this reflects the fact that all deposits from Block IV were screened. However, the quantities from this block were also significantly higher than the recovery from Block II, also fully screened.

Block IV also had several other distinctive characteristics. First, it had slightly sandier soil than the other blocks. Bone, as noted above, was more common, and the matrix throughout the block was more darkly stained with charcoal than the other blocks. Finally, macrobotanical remains in this block, while still small compared to the remains from McCurtain phase middens at Roitsch, greatly exceeded the quantity and variety from the flotation samples from feature context (see Fritz 1992). The only two tiny cupules of maize came from a general flotation sample in this block, and seeds, burned hickory and pecan shells, along with cane and burned wood, were recovered here. The higher artifact counts, coupled with its distinctive sediments and a greater variety of plant and animal remains, suggest that this portion of the site was probably a small midden area. Clearly, however, the aboriginal use of this area of the site differed from the higher areas where Blocks I-III were placed.

Summary of the Salt Well Slough Investigations

The 1991 TAS Field School attempted to “determine if the Caddo were processing salt near the Sam Kaufman [A. E. Roitsch] site” (Bruseth et al. 1991:25). Evidence indicates that the Caddo produced and traded salt to other Native American groups (Gregory 1973:256-263; Biedma 1865), beginning as early as A.D. 1150, but this increased
from ca. A.D. 1350 to 1700 (Early 1993:224-225). Salt production among the Caddo is similar to salt production elsewhere around the globe.

Ceramic sherds dominate salt production sites (see Mock 1994; Hewitt et al. 1987; MacKinnon and Kapcs 1989). Caddoan salt-making sites tend to exhibit minimal quantities of non-ceramic materials as well (McCrocklin 1985:4; Gregory 1973:257). Although the Hardman site (Early 1993) contains substantial evidence of domestic activities, the frequency of stone tools and lithic debris recovered from the site was also quite low.

The ceramic assemblage at Salt Well Slough overwhelms the remaining quantities of artifacts from the site. Moreover, the ceramic assemblage at Salt Well Slough overwhelmed all other classes of material remains. These data contrast with investigations of Red River Late Caddo farmsteads (such as the Block III and IV areas described above at the Roitsch site) that typically contain one to several circular structures, burials, abundant faunal materials, a broader array of artifact classes, and a wide variety of ceramic styles (e.g., Kelley 1994; Trubowitz 1984). The sample of fine ware ceramics from the Salt Well Slough is similarly low (8.7 percent) when compared to small Caddoan farmsteads where engraved or fine wares can represent the majority of the collection (Kelley 1994:74; Schambach and Miller 1984:109). Although two possible post molds were identified at Salt Well Slough, there is no clear evidence that they represented parts of houses. Given the absence of domestic debris, they may just as likely have represented an arbor or other type of temporary structure.

The small hearths at Salt Well Slough, consisting of ephemeral and amorphous orange/red mottled areas surrounded by sherd scatters, are not unlike the evidence found at some sal cocida sites (Mock 1994:112-121), particularly those from the Mississippi Valley (Muller 1984:500-503). These data parallel the experiments reported by Riehm (1961:184) demonstrating that low temperatures, using small fires, enhance the evaporative process. Moreover, liquid can be evaporated from a container simmered over low heat in three hours (MacKinnon and Kepecs 1989:530).

Not only do small fires enhance salt production, they have other benefits. If salt production is undertaken with thin-walled vessels, such as Nash Neck-Banded and plain jars, then slow heating of small fires would reduce the potential for thermal shock that would easily shatter the low-fired clay jars. Small fires also require less fuel. Salt production requires a steady fuel source. While wood was certainly present in Mount Prairie, residents of the larger Roitsch/Bob Williams complex may have preferred to use that wood for other purposes (house construction, arbors, etc.), reducing the overall quantity of available firewood for salt production.

Finally, the presence of the two small ceramic cylinders lends support to the notion that the Salt Well Slough site was a Caddoan salt production site. Similar cylinders, part of the briquage of salt production sites, have been recovered from a number of sites around the globe, and were used to support ceramic vessels above small, slow-heating fires. While many are larger than those from Salt Well Slough, a few small examples have been recovered (Brown 1980).

Tentatively, then, the Salt Well Slough site is concluded to have been used for salt production. This is based on the evidence of repeated burning at the site; the very high numbers of sherds recovered; the limited quantity of fine ceramic wares; the limited evidence of domestic features or other domestic remains; and the two small ceramic pieces of what appear to be briquage. While its small size is unusual, its size may merely reflect a scale of production that was geared to obtain salt for household use (however, there are other larger probable salt-making sites recorded along Salt Well Slough during the 1992 archeological survey; see below). If true, then small ephemeral fires, heating briny water in small straight-sided utilitarian jars, used intermittently over several generations, would have been adequate to produce the quantities of this important mineral needed for daily household consumption.

THE FASKEN MOUNDS SITE
(41RR14),

by Daniel J. Prikryl

The Fasken Mounds (41RR14) is a major Caddo mound complex or ceremonial center located on the first terrace above the Red River floodplain, approximately 4 km upstream of the river’s confluence with one of its major tributaries, the Kiamichi River (see Figure 1). The site is also about 1.95 km south of a well-known Caddo mound
complex, the Wright Plantation (41RR7); Banks (1996:1120) calls both sites the Kiomatia Mounds. The Fasken site was originally recorded in the 1930s by R. K. Harris, who found Historic Indian period artifacts there, including glass beads and brass ornaments (TARL n.d.). The site was known at that time as the Flying K Ranch site. Other than Harris’ limited work, the site remained relatively unknown until the 1991 and 1992 Texas Archeological Society Field School investigations.

The principal features on the landscape at the Fasken Mounds site are two large man-made mounds, A and B (Figure 43a-b). Both mounds are owned by The Archeological Conservancy. Mound A, at the south end of the site, is 90 x 55 m in size and rises 4.3 m in height, making it one of the largest known Caddo mounds in the western part of the Caddo culture area (see Story 1990). Mound B, a linear mound situated about 200 m north of Mound A, covers a 60 x 40 m area and is 1.6 m in height. Viewed in profile from the east or west, Mound B appears to be saddle-shaped with a slightly depressed area in its center (see Figure 43a). At least one other smaller mound, Mound C, is also present at Fasken. It is a slight 25 cm rise that lies about 200 m northwest of Mound B. The last noticeable feature at the site is a large 80 m diameter pond located immediately northeast of Mound A. The pond appears to represent a borrow pit used for the construction of Mound A and probably for Mound B as well.

The site is presently in pasture and the tall grass in some areas may mask the presence of other smaller mounds like Mound C. Such mounds may also have been flattened when the site was under cultivation in the late 19th-early 20th century. Aside from previous disturbances to the archeological deposits by cultivation, the site has also been damaged by the construction of FM 410, which runs through the site on a north-south line. Other site damage includes the destruction of, and activities associated with, several rural farm residences, including one that once stood atop Mound A. A former rodeo arena was constructed north of the pond and southeast of Mound B. Additionally, according to legend, a horse-powered cotton gin was built on Mound B sometime between the 1860s-1880s. Another legend states that during the Depression, the former landowners dug up some Indian pottery vessels from Mound B.

Research Design

At the start of the TAS Field School investigations, it was assumed that the mounds had been constructed during the Formative to Middle Caddoan periods and that the Historic artifacts found by R. K. Harris were debris left by later aboriginal peoples, either Caddo or Cherokee, or even by later Anglo-American settlers. The goals of the TAS Field School work at the Fasken Mounds site were to: (1) learn more precisely when the site was occupied; (2) gain a better understanding of the types of artifacts and features present; and (3) identify the limits of the site deposits. Foremost among the research goals was to gain data on the chronological placement of the site.

Because of the enormous size of Mound A and the limited amount of time and effort that could be expended by the TAS Field School, no work was undertaken on this mound. Instead, excavation of mound features focused on Mounds B and C, also called Areas B and C, respectively. Limited excavations were also conducted at two other portions of the site, labeled as Areas A and D. A shovel testing program using 50 x 50 cm units was first undertaken to better define the boundaries of the site. Additionally, two remote sensing surveys were conducted on parts of the site to search for buried features. One of these utilized a magnetometer while the other involved the use of a ground penetrating radar unit.

Excavation Results

At Area A, on the terrace edge east of Mounds A and B and FM 410 (see Figure 43b), a total of 20 1 x 1 m units were excavated through 30-50 cm thick sandy loam deposits to the top of the orange clay B-horizon. These units comprised a small central 2 x 2 m block with lines of other 1 x 1 m units radiating off the block in all four cardinal directions. The investigations here produced the highest number of prehistoric artifacts and a more diverse assemblage of remains than were found in other portions of the site. The character of these materials strongly suggest they are associated with a Caddoan residential occupation as opposed to a special (religious and/or political) use in other parts of the Fasken site. Features found at Area A include a 1.6 m diameter storage or trash pit and two possible post holes.
Figure 43. Topographic Map of the Fasken Site (41RR14), depicting location of Mounds A-C and 1991-1992 Excavation Areas: a, northern and central part of the site; b, southern and western part of the site.
Figure 43. (Continued)
Work at Area B principally focused on the excavation of two 1-m wide trenches on the east slope of Mound B. The most significant archeological finds came from Trench #2 on the northern lobe of the mound. This trench consisted of 11 1 x 1 m units with the seven western units forming a contiguous line from the crest of the mound downslope to the east. The units were excavated to various depths, with the deepest (the three units at the western end of the contiguous trench) being excavated to 200 cm bs. This trench penetrated the mound fill and extended 40 cm below the original surface upon which the mound had been erected.

The profile from these three units provides the best evidence of the mound construction sequence and revealed at least three construction episodes (Figure 44). From bottom to top, this profile includes the original pre-mound yellowish-red subsoil (98.60-98.74 m in elevation); the very dark grayish-brown, organic-stained pre-mound topsoil (98.74-99.02 m); the multi-colored dark to very dark grayish-brown sandy loam and yellowish-red clay basket loads of soil that formed the first mound-building episode (99.02-99.88 m); the thin yellowish-red clay that capped the first construction episode (99.88-99.92 m); the dark grayish-brown sandy loam that formed the second construction episode (99.92-100.29 m); the remnants of a second yellowish-red clay cap at 30 cm bs (100.29-100.31 cm); and the uppermost deposit of dark to very dark grayish brown sandy loam, which is a third construction episode (100.31-100.60 m) that extends to the current ground surface.

Trench #1, the other trench excavated on Mound B, was placed 11 m south of Trench #2. It consisted of 10 1 x 1 m units excavated for the purpose of exploring the slightly depressed central part of the mound. Several contiguous units forming the bulk of Trench #1 were excavated to a maximum depth of 100 cm bs. The profile of these deepest units showed four sandy loam soil zones, with the upper three zones providing much evidence of disturbance in the upper 60 cm of mound fill. The disturbances may be related to pothunter excavations and/or the construction and operation of the 19th century cotton gin on the mound. Although no evidence of the yellowish-red clay that capped the first two construction episodes was observed there, hand augering further to the south on the southern lobe showed the earlier yellowish-red clay cap to be present at the same approximate elevation as on the northern lobe. It may be possible that in the first episode of construction, this mound had a true saddle shape with slightly elevated lobes at its north and south ends. Perhaps these lobes served as platforms for twin structures with the yellowish-red clay being the floors of the structures.

To further explore the possibility that structures had been erected at the north and south ends of the original mound construction, a 2 x 2 m unit was excavated 5 to 7 m north of Trench #2 to a depth of 60 cm bs in the area where the augering indicated the northern edge of the yellowish-red clay cap. The purpose of this excavation was to determine if post holes from one of the hypothesized structures were present in this part of Mound B. Although no such post holes were discovered there, a potential wall trench was found. It is a narrow, 10 to 30 cm wide, 15 cm deep depression that extended from the top of the clay lens downward 15 cm. However, it was oriented on a north-
south line across the entire 2 x 2 m unit rather than along an expected east-west line that would have marked the northern edge of a structure (and perhaps it may be an entranceway).

The excavation of an 20 m$^2$ area at Area C over the two field seasons showed that a man-made mound, Mound C, was, indeed, present in the northern portion of the Fasken site. The soil profile at Mound C is a 20 cm thick surface deposit of sandy loam soil that overlies an approximately 10 cm thick layer of red clay that was purposely dumped on this area by aboriginal Caddoan peoples to cap several structures whose post holes were found in deeper levels. Artifact yields were high in the first three levels of Mound C (mainly above the red clay cap), but the deeper deposits (levels 4-7) representing the floors of these structures yielded extremely few artifacts, suggesting that the structures may have had special (i.e., religious or public) rather than residential functions.

A small excavation (seven 1 x 1 m units) was also undertaken at Area D (see Figure 43b). This area is located between Mounds A and B, where a slight topographic rise similar to that at Mound C had been noted. The excavations at Area D did not encounter any evidence of mound building within the 50 cm sandy loam deposits but did identify a midden zone with some evidence of cultural stratigraphy.

A total of 22 50 x 50 cm and two 1 x 1 m test units were also excavated to help define the site boundaries at Fasken. These excavations substantiate the findings of dense archeological materials along the terrace edge in the vicinity of Area A. The test units also suggest that little occupational material exists east of Mound B and in the areas east and west of Mound C at the north end of the site (see Figure 43b).

The two remote sensing surveys defined numerous anomalies, and in many cases the magnetometer and ground-penetrating radar (GPR) work identified anomalies that could be correlated. Five of these anomalies were "ground-truthed" through the excavation of 1 x 1 m units. On the terrace edge north of Area A (see Figure 43b), excavators found burned sandstone rocks in the areas at the locations of two of the anomalies. These fire-cracked rocks are among the very few found during the two years of excavations at the Fasken site. A third anomaly tested in this vicinity yielded some historic metal fragments that appear to be the source of the anomaly. Excavation at the location of a fourth anomaly identified by the GPR revealed a thin topsoil deposit, probably indicating that the anomaly is due to the shallow B-horizon clay. Time did not allow for the completion of the fifth 1 x 1 m unit at the north end of Mound B where both the magnetometer and GPR showed unusual readings.

**Features**

Individual post holes account for the vast majority of the features recorded during the investigations at Fasken. Other features consist of a post hole alignment that forms portions of the east and south walls of a structure, three pits, three prepared clay floors, and a possible wall trench.

**Structure #1**

Eleven post holes were recorded in Area C beneath the clay cap. They appear to form the southeastern wall of a structure (Figure 45). Eight of the post holes are part of a north-south trending line that extends for a length of 3.5 m and forms the southern part of the east wall of the structure. Three other post holes comprise the eastern part of the south wall. The arc at the intersection of the two walls suggests that the structure was sub-rectangular (see Figure 45). The post holes were first noted at depths of approximately 25 cm below the red clay cap (52 cm bs). The average diameter of the post holes is 15 cm and the maximum observed depth of the post hole stains is 48 cm. No diagnostic artifacts which would aid in dating this structure were found, and, indeed, very little in the way of material remains were found in the levels that would approximate the living surface associated with the structure.

**Individual Post Holes**

Aside from those post holes that define Structure #1, 33 other individual post holes were recorded. These consist of 26 post holes at Area C (see Figure 45), two at Area A, and five at Area B. Twenty-four of the 26 post holes in Area C were recorded beneath the clay cap. Generally, the tops of those post holes south of Structure #1 occur at slightly higher elevations than those comprising Structure #1. Two post holes situated at the north end of the Area C block differ from all others in that they are more recent ones extending through the clay cap. These
may represent a Caddoan structure(s) associated with the aboriginal archeological remains found in levels 1 and 2, or conversely they may represent historic period fence posts.

Four post holes in Area B occur in the N500/E504 unit in Trench #1. They were observed in the floor of level 7 at 99.60 m and do not form any recognizable pattern. A possible fifth post hole (N518/E500, base of level 6) probably represents a gopher burrow. None of these post holes nor the two found at Area A are well-preserved, and therefore their actual definitions as true post holes are questionable.

**Pit Features**

One of the three pit features recorded during the excavations is a 1.6 m diameter storage/trash pit (Feature 2) found in the initial excavations at Area A. The feature was first noted just beneath the plow zone at a depth of 20 cm. It was distinguished by very dark fill that extended downward 25 cm (to a maximum depth of 45 cm bs) into the orange clay B-horizon. The recovery of a side-notched arrow point from the lower part of the pit fill suggests that the feature may date to the Late Caddoan period, although some types of side-notched arrowpoints (such as the Reed form) date prior to ca. A.D. 1300.

The second pit feature (Feature 50) is located in the northeastern part of the Area C block. It is an approximately 1.3 m diameter oval patch of mottled dark brown sandy clay and red clay. The feature was first noted at a depth of 70 cm. It was not cross-sectioned or excavated, however.

The third pit is in unit N695E459 (Feature 15). It is only 10 cm in diameter and 10 cm in depth (30-40 cm bs), and contained several small sandstone rocks and sherds; the sherds were oriented vertically in the pit.

**Prepared Clay Floors**

One well-preserved clay floor, Feature 3, and the remnants of two other clay floors, Features 1 and 16, were found within Mound B. The best
preserved clay floor, Feature 3, is represented by a 4 cm thick (99.88-99.92 m) yellowish-red clay on the north lobe of Mound B (see Figure 43a). It extended from the E500 line to approximately E500.5. In the mound profile, this clay lens appears to cap the first mound construction episode, which consists of an approximately 88 cm thick mass of individual basket loads of dirt.

Feature 3 was not evident 11 m to the south in Trench #1, and hand augering conducted before the beginning of the second field season showed that the clay lens extended only 1 m south and west of Trench #2. A total of 31 auger holes were excavated on the north lobe, indicating that the Feature 3 clay lens extended over an area measuring 6.5 m north-south by 5.5 m east-west.

Other auger holes excavated on the south lobe of Mound B south of Trench #1 showed that a similar yellowish-red clay lens (Feature 16) is also present on that part of the mound at almost the same precise elevations as Feature 3. The clay lens on the south lobe extended from the N478 line on the crest of the mound south for almost 16 m. The width of Feature 16 was not determined.

The third prepared clay floor, Feature 1, is a discontinuous 2 cm thick yellowish-red clay lens that is visible in several units at the west end of Trench #2 at a depth of approximately 30 cm bs. This clay lens probably represents a clay cap placed on the mound following the second construction episode. The poor preservation of this clay lens, in comparison to Features 3 and 16, is probably due to damage from plowing and land clearing.

Wall Trench

This feature is a 10-30 cm wide depression that may represent a wall or entranceway trench associated with Feature 3 in the N517/E501 and N518/E501 units on Mound B. The depression is an almost continuous north-south trending line that begins at the surface of Feature 3 at approximately 60 cm bs and extends downward a maximum depth of 15 cm. No individual post hole stains were visible in the depression. Interestingly, these excavation units were part of a 2 x 2 m unit excavated for the purpose of locating post holes along the north edge of Feature 3. It was expected that if post holes were found, they would form an east-west alignment for a portion of the north wall of a structure. The fact that the depression has a north-south alignment suggests that it represents part of an entranceway rather than a wall trench.

Aboriginal Artifacts

Ceramics

The most common prehistoric artifact recovered during the Fasken excavations are Caddoan ceramic sherds. Of the 4,228 sherds, 172 exhibited decorations and/or were part of a vessel rim (either plain or decorated). In addition to incised, engraved, punctated, brushed, and appliqued decorations, the decorated sherds includes body and rim sherds with a red hematite-rich slip, characteristic of the Sanders Plain and Sanders Engraved types (Brown 1996; cf. Krieger 1946:185-192) as well as Late Caddoan period types such as Avery Engraved (although these are shell-tempered). Area A has the largest number of decorated/rim sherds, followed by Area C (Table 15). A relatively high number of decorated/rim sherds come from the small test pits excavated in the southwest quadrant of the site, the same area as the later Area A block excavations. A low volume of decorated/rim sherds occur in the fill at Mound B.

The most common decoration is engraving, which accounts for 52 percent of the decorated rim and body sherds, including the red-slipped sherds (Table 16). Although it is not indicated on Table 16, approximately 31 percent of the engraved sherds are red-slipped, including many of the Sanders Engraved type. In particular, pendant triangle designs commonly seen on Sanders Engraved vessels (Figure 46d-e) are abundant in the upper levels of Mound C (n=12). However, a majority of these Sanders Engraved sherds at Mound C may come from a single broken vessel. Other identifiable engraved types include at least one sherd each of the Avery Engraved (Figure 46c) and Clark Engraved types.

After the engraved category, plain red-slipped body and rim sherds together constitute another 25 percent of the decorated rim and body sherds. Many of these appear to be examples of either Sanders Plain (see Figure 46b) or come from non-decorated portions of Sanders Engraved vessels. Almost equal numbers of incised, punctated, and appliqued sherds (see Figure 46a) make up the remainder of the decorated sherds with the exception of one example of the Late Caddoan Nash Neck-Banded type from surficial deposits on Mound B.
Table 15. Distribution of Ceramic Sherds at the Fasken Site.

<table>
<thead>
<tr>
<th>Area</th>
<th>Plain Body Sherds</th>
<th>Decorated Sherds</th>
<th>Plain Rim Sherds</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1992</td>
<td>42</td>
<td>20</td>
<td>2054</td>
</tr>
<tr>
<td>B</td>
<td>534</td>
<td>20</td>
<td>5</td>
<td>559</td>
</tr>
<tr>
<td>C</td>
<td>809</td>
<td>37</td>
<td>6</td>
<td>852</td>
</tr>
<tr>
<td>D</td>
<td>387</td>
<td>12</td>
<td>6</td>
<td>405</td>
</tr>
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<td>33</td>
</tr>
<tr>
<td>SW Tests</td>
<td>253</td>
<td>8</td>
<td>8</td>
<td>269</td>
</tr>
<tr>
<td>SE Tests</td>
<td>40</td>
<td>5</td>
<td>1</td>
<td>46</td>
</tr>
<tr>
<td>Surface</td>
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<td>8</td>
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<tr>
<td>Totals</td>
<td>4056</td>
<td>126</td>
<td>46</td>
<td>4228</td>
</tr>
</tbody>
</table>

Middle Caddoan period ceramics. Shell tempering, the principal tempering material used along the middle reaches of the Red River in the Late Caddoan period, is predominant only at Area B, where it comprises 48 percent of the decorated/rim sherds (see Table 17). Significantly, most of the shell-tempered sherds at Mound B occur in the uppermost levels, suggesting a Late Caddoan, McCurtain phase occupation that post-dates the mound construction sequence.

Concerning the vertical distribution of the pottery at Fasken, it is noteworthy that very few sherds were recovered from the lower levels of Mound B and beneath the clay cap at Mound C. This indicates that Mound B served a non-residential function until late in its use through time. Similarly, the structures, as indicated by the post hole patterns beneath the clay cap, at Mound C must also have served some special non-residential function.

Lithic Artifacts

A total of 1548 chipped stone and five ground stone artifacts were recovered during the excavations. The chipped stone assemblage consists of 45 tools and 1503 pieces of lithic debris (Table 18). The 17 complete and fragmentary arrow points constitute the most common chipped stone tool. Arrow point types consist of Alba (see Figure 46f, i), Scallorn, Bonham (see Figure 46g), and Perdiz types, along with a side-notched specimen (see Figure 46h). The most common arrow point types are the Bonham (n=4) and Alba (n=4) types; all

Among the incised sherds, several examples of Canton Incised are evident.

Among the decorated/rim sherds, the most common temper is a combination of grog and grit, amounting to 27 percent of the assemblage (Table 17). This temper category is predominant at Area C (40 percent) and occurs in high percentages in all other areas of the site. The second most common temper is grog. It is slightly more common than grog/grit at Area A (27 versus 24 percent) and is very common at Areas C and D (see Table 17). Overall, grog, grit, and various combinations of grog, grit, and/or bone were the preferred temper inclusions, and these various categories account for 75 percent of temper types in the decorated and rim sherd sample. Generally, these temper categories and combinations are indicative of Formative to
Table 16. Distribution of Decorated Sherds.

<table>
<thead>
<tr>
<th>Area</th>
<th>E*</th>
<th>I</th>
<th>NB</th>
<th>P</th>
<th>A</th>
<th>B</th>
<th>RSP–R</th>
<th>RSP–NR</th>
<th>Totals</th>
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<td></td>
<td>5</td>
<td>6</td>
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N 66 10 1 10 7 1 10 21 126

* E=engraved; I=incised; NB=neck-banded; P=punctated; A=appliqued; B=brushed; RSP–R=red-slipped plain rims; RSP–NR=red-slipped plain non-rim

Table 17. Ceramic Temper Inclusions by Area, Decorated and Rim Sherds.

<table>
<thead>
<tr>
<th>Area</th>
<th>G*</th>
<th>GT</th>
<th>G/GT</th>
<th>G/B</th>
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</table>

N 42 20 46 4 17 18 14 11 172

* G=grog; GT=grit; G/GT=grog–grit; G/B=grog–bone; G/GT/B=grog–grit–bone; S=shell; S/Sh=shell or shale, leached; NT=no temper
other recognizable types are represented by single specimens. It is notable that three of the four examples of the Bonham points come from the upper 20 cm of deposits at Area C.

It is also the case that Area A produced arrow points that range in age from Formative Caddoan through Late Caddoan times, and that, additionally, two dart points—a Gary type and a Late Archaic/Early Ceramic period specimen—also were found in the deposits there. Other tools from Area A include a drill, three cores, two ground stone fragments, and a Bristol Biface.

**Historic Artifacts from the Fasken Site,**

*by Timothy K. Perttula and Nancy G. Reese*

A small historic archeological component(s) has also been identified at the Fasken Mounds site. Much of the historic archeological material recovered at the site includes late 19th to mid-20th century wire nails and bottle glass from structures that stood on the mounds, but there is evidence that the Fasken site was also settled during the mid-19th century, probably by Anglo-American farmers. Artifacts associated with this early settlement were found on the crest and eastern slopes of Mound B. They include an assortment (n=35) of decorated whitewares or refined earthenwares (including blue shell-edged sherds with scalloped and non-scallloped rims, black, blue, and red transfer-printed flatware, and hand-painted cups), cut nails (n=56), salt-glazed stoneware (n=1), yellowware (n=1), an 1847-1880 U.S. military button (Wyckoff 1984), two wound glass beads similar to those found on ca. 1830-1870 sites (DeVore 1992), a metal knife blade, olive and dark olive green wine bottle glass (n=6), a blade gunflint, and a bone button.

**Summary of the Archeological Investigations at the Fasken Site**

Based on the results of the two TAS Field School excavations seasons at the Fasken site, it appears that it was principally occupied during the Formative to Middle Caddoan periods. This assessment is based on the preponderance of ceramic sherds with grog and grit tempering (or various combinations of these temper agents), and the frequency of stemmed arrow point types (Bonham, Alba, Scollorn, and other mostly rectangular stemmed untyped fragments) (see Bruseth 1998:58).

Although absolute dates were not obtained from any of the features per se, it is probable that the construction of Mounds A, B, and C also date to the Formative to Middle Caddoan periods. At Mound B, evidence of three construction episodes was noted by yellowish-red clay lenses that appear to cap the first and second construction episodes. The approximately 30 cm deposit above the upper clay cap, representing the third construction episode, appears to have later become a habitation locale for Late Caddoan peoples who left behind shell-tempered pottery sherds. Two radiocarbon dates (Beta-91234 and Beta-91235) were obtained from Mound C, in levels associated with house floors under the clay cap, and at 1 sigma, the calibrated ages range from AD 1157-1242 (0.74 probability distribution) and AD 1043-1188 (1.00 probability distribution). These assays clearly indicate that the structures (and the overlying clay cap) were built in Middle Caddoan times. Even later in time, it appears that Anglo-American groups utilized the mound area from the mid-19th to the early 20th century.

The TAS Field School excavations also demonstrated that a slight 25 cm high rise at the north end of the site, known as Mound C, is an aboriginal Caddoan mound. Use of this feature area apparently began with the erection of a number of structures that had non-residential functions as very few ceramic and lithic artifacts occur in the levels representing the floors of these structures. Following the end of structure(s) use, a red clay cap averaging 10 cm in thickness was placed over the surface of this area. The small rise

<table>
<thead>
<tr>
<th>Area</th>
<th>Tools</th>
<th>Lithic Debris</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>15</td>
<td>709</td>
<td>724</td>
</tr>
<tr>
<td>B</td>
<td>11</td>
<td>282</td>
<td>293</td>
</tr>
<tr>
<td>C</td>
<td>12</td>
<td>211</td>
<td>223</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>132</td>
<td>136</td>
</tr>
<tr>
<td>NW Tests</td>
<td>21</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>NE Tests</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>SW Tests</td>
<td>113</td>
<td>113</td>
<td>113</td>
</tr>
<tr>
<td>SE Tests</td>
<td>2</td>
<td>21</td>
<td>23</td>
</tr>
<tr>
<td>Surface</td>
<td>1</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Totals</td>
<td>45</td>
<td>1503</td>
<td>1548</td>
</tr>
</tbody>
</table>
subsequently became a favored habitation place as numerous ceramic and lithic artifacts and daub were recovered from the 20 cm thick sandy loam that developed above the clay. Interestingly, many of these artifacts appear to be diagnostic of the Middle Caddoan period in the Mound Prairie area; Late Caddoan artifacts are also present there in low amounts.

The most intensive residential occupation, however, is along the terrace edge in the vicinity of Area A. The excavations there yielded the largest numbers of lithic and ceramic artifacts, and daub and fire-cracked rock are also more abundant. In particular, the diverse lithic artifacts provide evidence of an initial occupation dating to the Late Archaic and/or Early Ceramic periods, and repeated use from Formative to Late Caddoan period times. Smaller test units excavated across the site further confirm the hypothesis of an intensive residential occupation in the southwest quadrant of the site around Area A. The test units also suggest that the site covers an area measuring approximately 18 acres, with the area south of Area A remaining unexplored.

ARCHEOBOTANICAL REMAINS FROM THE PREHISTORIC SITES

The archeobotanical remains recovered from the 1991 TAS Field School were analyzed by Gayle J. Fritz (Washington University at St. Louis), and a short summary of her report (Fritz 1992) is provided herein (Fritz's complete report will be included in the final project volumes of investigations, see Perttula [1999a]). The analysis of the 1992 plant remain samples was completed by Eileen Goldborer (1995), and summary data of her findings are also integrated into this article.

Plant remains were obtained from Roitsch (41RR16), Ray (41LR135), Fasken (41RR14), Salt Well Slough (41RR204), and 41RR236 by the flotation of soil samples through the IDOT-type box method, using 1.0 mm on the box and a 0.42 mm wire mesh strainer. Carbonized plant remains caught in these fractions were then sorted, weighed, and identified to the most specific taxonomic category (Table 19).

Fritz (1992:1) identified wood charcoal; pine cone fragments from the Pine Cone site (41RR236) (see Table 19); cane stem; charred nutshell of hickory, pecan, walnut, and acorn; squash or pepo gourd rind from Roitsch; various seeds from the five sites; and maize kernels and cob fragments from each of the sites. A more limited variety of plant remains were identified by Goldborer (1995), mainly including wood charcoal, charred hickory nutshell, and maize from the Ray and Roitsch sites. The nutshell, squash/gourd, maize, and most of the seeds represent plant foods consumed by Early Ceramic/Early Caddoan to Late Caddoan period occupants of the sites, with maize and nutshells

<table>
<thead>
<tr>
<th>Site</th>
<th>Wood*</th>
<th>Cone*</th>
<th>Cane*</th>
<th>Nutshell*</th>
<th>Squash/Gourd*</th>
<th>Maize*</th>
<th>Seeds*</th>
</tr>
</thead>
<tbody>
<tr>
<td>41LR135</td>
<td>22.99</td>
<td>-</td>
<td>-</td>
<td>41.75</td>
<td>-</td>
<td>3.49</td>
<td>15</td>
</tr>
<tr>
<td>41RR16</td>
<td>10.55</td>
<td>-</td>
<td>0.62</td>
<td>8.00</td>
<td>0.02</td>
<td>1.18</td>
<td>71</td>
</tr>
<tr>
<td>41RR14</td>
<td>0.16</td>
<td>-</td>
<td>-</td>
<td>0.19</td>
<td>-</td>
<td>0.03</td>
<td>6</td>
</tr>
<tr>
<td>41RR204</td>
<td>1.62</td>
<td>-</td>
<td>0.05</td>
<td>0.40</td>
<td>-</td>
<td>0.31</td>
<td>14</td>
</tr>
<tr>
<td>41RR236</td>
<td>0.14</td>
<td>7.29</td>
<td>0.04</td>
<td>-</td>
<td>-</td>
<td>0.10</td>
<td>5</td>
</tr>
<tr>
<td>Totals</td>
<td>35.36</td>
<td>7.29</td>
<td>0.71</td>
<td>50.34</td>
<td>0.02</td>
<td>5.11</td>
<td>111</td>
</tr>
</tbody>
</table>

*Weight in grams
**Number

being the most common charred plant remains in the flotation samples; both types of remains preserve well in the soil when charred.

The sample of preserved plant remains is rather small, and Fritz (1992:13) concludes that "larger-scale recovery and more systematic sampling are needed before meaningful interpretations can be offered." Even so, new information has been obtained about the prehistoric use of plants in the region from the completed analyses, namely:

1. The maize from the Ray site was thought to be some of the earliest corn found to date in northeastern Texas (predating ca. A.D. 900). The corn cupule widths from Ray are about the same size as those found in Early and Late Caddoan contexts, however. Calibrated radiocarbon dates on the corn itself range from AD 990-1184, indicating its likely Early Caddoan age.

2. Maize is relatively common in the flotation samples, with a total of one complete kernel, more than 50 kernel fragments, 500 cupules or cupule fragments, and 49 glumes or glume fragments found in various midden and feature contexts. Charred nutshell, especially the thick-shelled hickory nut, are very common in the flotation samples from the excavated site (see Table 19), particularly from the Ray site.

3. The squash/gourd rind fragments came from domesticated plants (Cucurbita pepo) from Late Caddoan archaeological deposits in Block IV at Roitsch. Such plants would have been grown for seeds, for fleshy pulp, and as gourd containers (Fritz 1992:6).

4. Seeds recovered include small numbers of maygrass, little barley, chenopod, vetch-type, grape family, amaranth, bedstraw or cleavers, spurge, grass family, and purslane. Maygrass is the most common seed type at Roitsch and Ray, followed by chenopods. These types of seeds may represent cultivated plants, as they do in the Midwestern U.S., but their low numbers "make it seem increasingly unlikely that native seed plants were significant crops in this region" (Fritz 1992:9).

FAUNAL REMAINS FROM THE PREHISTORIC SITES

A wide variety of faunal remains were recovered from the 1991-1992 Field School sites, particularly from Roitsch (n=12,000) and Ray (n=4460), and with much smaller amounts from Fasken (n=121), Salt Well Slough (n=578), various prehistoric sites recorded during the survey (n=100), and from the prehistoric and historic deposits at Jonesborough (n=27). Analyses of the faunal remains were directed by Bonnie C. Yates (1991) and Bill McClure (1992), with the able assistance of Brian Shaffer and Lee Anna Schniebs. Our summary of the findings focuses on the faunal remains from the Roitsch and Ray sites, and is based on reports prepared by Yates (1992) and Yates and McClure (1992).

The Roitsch faunal assemblage is mostly from the Late Caddoan McCurtain phase village areas, although significant amounts have been recovered from earlier Caddoan deposits in the East Mound and along the terrace edge. The fauna is uniformly fragmented and weathered, and much of it has been burned; some specimens have also been rodent gnawed or show cut marks. A diverse range of animals are represented (Table 20), with woodland and edge habitat species such as deer, bear, raccoon, and turkey the dominant meat food and protein sources, along with fish, turtles, and a variety of small mammals (rabbits, squirrels, and rodents).

This type of faunal assemblage is broadly comparable with other Caddoan occupations along Red River, although the absence of large fishes, large aquatic turtles, water fowl, and common riparian mammals (such as beaver or muskrat) does contrast with contemporaneous riverine Caddo villages like Cedar Grove (Styles and Purdue 1984) and McLelland (Kelley 1994) farther down the Red River in southwestern Arkansas and northwestern Louisiana, respectively. Although sample sizes are not comparable between the different excavation areas at Roitsch, the range of species utilized during the lengthy Caddoan occupation is quite similar from the earlier to the Late Caddoan settlements.

Six domestic dogs from five burials were uncovered in the terrace and Late Caddoan village areas of the Roitsch site. Cranial measurements by Yates (1992) indicate their similarity with dogs found at other Caddo villages, as well as a general
Table 20. Vertebrates Identified at the Roltsch Site.

<table>
<thead>
<tr>
<th>Animal</th>
<th>Animal</th>
<th>Animal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catfish</td>
<td>Corn and rat snake</td>
<td>Wood rat</td>
</tr>
<tr>
<td>Gar</td>
<td>Rattlesnake</td>
<td>Vole</td>
</tr>
<tr>
<td>Bowfin</td>
<td>Pit viper</td>
<td>Raccoon</td>
</tr>
<tr>
<td>Large-mouth bass</td>
<td>Turkey</td>
<td>Dog, domestic</td>
</tr>
<tr>
<td>Drum</td>
<td>Bird, large</td>
<td>Coyote</td>
</tr>
<tr>
<td>Fish, medium</td>
<td>Bird, medium</td>
<td>Long-tailed weasel</td>
</tr>
<tr>
<td>Toad</td>
<td>Opossum</td>
<td>White-tailed Deer</td>
</tr>
<tr>
<td>Mud turtle</td>
<td>Eastern mole</td>
<td>Pig, domestic*</td>
</tr>
<tr>
<td>Slider turtle</td>
<td>Nine-banded armadillo*</td>
<td>skunk, spotted and striped</td>
</tr>
<tr>
<td>Water turtle</td>
<td>Swamp rabbit</td>
<td>Bear</td>
</tr>
<tr>
<td>Box turtle</td>
<td>Fox squirrel</td>
<td>Bovid, large</td>
</tr>
<tr>
<td>Painted turtle</td>
<td>Ground squirrel</td>
<td></td>
</tr>
<tr>
<td>Softshell turtle</td>
<td>Pocket gopher</td>
<td></td>
</tr>
<tr>
<td>Coachwhip snake</td>
<td>Hspid cotton rat</td>
<td></td>
</tr>
</tbody>
</table>

* Historic intrusive

identified in the Ray assemblage (Table 21).

A number of modified bone tools were recovered from the Ray site archaeological deposits. Two awls or hairpins made of deer metapodials were found in Area A; one closely resembles the hairpin from the Early Caddoan shaft tomb at the Bentsen-Clark site (Banks and Winter 1975:21). A third tool is a highly polished split deer astragalus, and another is a deer-sized fragment with high polish. The last tool is a bone needle (Yates and McClure 1992).

![Figure 47. Cranial metrics of Caddoan dogs.](image)

similarity with the coyote except they had slightly longer snouts and smaller braincases (Figure 47). Several 18th century Spanish missionaries commented on the cunning Caddo dogs with their "long, sharp-pointed snout" (Swanton 1942:137).

The fauna from Ray are well-preserved, but with much of the sample having been burned and weathered to some degree (Yates 1992:20). Faunal remains from the Ray site are equally diverse in species representation, with white-tailed deer providing the majority of the edible meat, but also including turtles, turkey, rabbits, squirrels, raccoon, weasel, and dog. No fish remains have been

**INVESTIGATIONS AT THE JONESBOROUGH SITE,**

*by Timothy K. Pertula and Nancy G. Reese*

While much of the archeological effort during the 1991 and 1992 Field Schools was concerned with the investigation of prehistoric and historic Caddoan sites, a group of about 20 Field School participants under the direction of Jacques Jacquier (1991) investigated the abandoned 19th century townsite of Jonesborough (41RR15). The findings of the historic archeological work are summarized in this section of the article (see also Reese 1998).
Table 21. Ray Site Vertebrates.

<table>
<thead>
<tr>
<th>Animal Type</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water and box turtle</td>
<td>Raccoon</td>
</tr>
<tr>
<td>Painted turtle</td>
<td>Long-tailed weasel</td>
</tr>
<tr>
<td>Turkey</td>
<td>Dog, domestic</td>
</tr>
<tr>
<td>Cottontail rabbit</td>
<td>White-tailed Deer</td>
</tr>
<tr>
<td>Squirrel</td>
<td>Bovid, large</td>
</tr>
<tr>
<td>Plains pocket gopher</td>
<td>Medium and large bird</td>
</tr>
</tbody>
</table>

According to Webb (1952, Volume I:928), Jonesborough was one of the earliest Anglo-American settlements in Texas, forming as a community about 1817 on Jonesborough Prairie (Steely n.d.). Located at a natural crossing of the Red River, the town grew up as a small mercantile center and river port (at its largest it had a population of ca. 500 people), and it survived as a community until the mid-1840s. Until 1836, it was part of Hempstead County in Arkansas Territory. After which:

the town’s use as a port dwindled. Then, a huge flood in 1844 probably covered the town, and when it subsided the river was to the north of the landing about a mile. Also, living conditions around there were not healthy, with mosquitoes unknowingly to the settlers causing various malaria and fever outbreaks. And, without a good water source, the town was doomed (Steely n.d.:6).

TAS investigations recovered quantities of early to mid-19th century artifacts from surface collections in the fields around the Jonesborough historical marker along FM 410, and near Mrs. Pool’s house, which suggested that the crews were working in the right area to identify specific locations of preserved historic archeological deposits associated with the town. Later 19th and 20th century remains from the community of Davenport were also present in surface contexts. However, while the excavations at the site did uncover the 1846 brick burial crypt of Jane Chandler Gill (see below), the wife of William Henry Gill (who purchased the Jonesborough townsite area in August 1844 as part of a 8,196 acre acquisition in Red River County [Steely n.d.]), no structural foundations or other clear indications of intact Jonesborough-era deposits were identified during the 1991 TAS Field School effort. A small, prehistoric (Late Caddoan period McCurtain phase) archeological deposit was also recognized within the boundaries of the Jonesborough site.

The first task of the TAS archeological effort was to conduct a systematic surface collection and pedestrian survey of cultivated fields and pasture areas around the Jonesborough marker. This was on land owned by the Roisch, Pool, Bagwell, and Clark families. Historic archeological materials were found in abundance across each of these land tracts, but early 19th century ceramics, wine bottle glass, and hand-made brick fragments were particularly common in the Pool A, Bagwell, and Roisch west areas (Figure 48).

After laying out a site grid, and acting on information provided by Mrs. Pool and Robert Williams about where they remembered the locations of historic foundations and features, excavations were initiated in Pool Area B where a large amount of hand-made brick fragments were noted in one or two 1 x 1 m units near a light pole. The brick fragments turned out to be from Feature 1 (see below), the 1846 Gill burial crypt mentioned above, shallowly buried in a cultivated soybean field west of Mrs. Pool’s house (Figure 49).

A small L-shaped trench was excavated on the Clark property where brick fragments were observed eroding out of the bank of a pasture dirt track. These fragments were part of a 20th century trash deposit dumped and/or bulldozed in this area, and the trench excavations were subsequently abandoned. Shovel testing and probing activities were then initiated in the vicinity of Feature 1 to try to locate other Jonesborough-era features, foundations, and intact archeological deposits. A 1 x 4 m trench and another 1 x 1 m unit in Mrs. Pool’s front yard were excavated because these areas seemed to have a potential to contain such deposits. Other than a disturbed pile of brick rubble in the Area D 1 x 1 m units (see Figure 49), and an occasional early 19th century artifact intermixed with more modern remains, no conclusive archeological deposits associated with the town of Jonesborough were identified at the conclusion of the 1991 Field School effort. The Late Caddoan period lithic and ceramic artifacts were collected from the Pool Area D trench to the north-northwest of the Pool residence.

The Feature 1 burial vault is approximately 4 x 4.8 m in size, and was constructed of several courses of hand-made bricks and cypress log bracers in an outer rectangle with a smaller brick structure of coursed brick on the inside of the rectangle. The
smaller brick structure is the brick crypt for Jane Chandler Gill (Figure 50). A four-inch chip of white marble, found on top of the southeast corner of the crypt, is part of the white marble tomb slab for Gill’s crypt that was moved some years ago to the FM 410 roadside park.

The burial chamber and vault is shallowly buried. The jumbled bricks along the west side of the burial chamber, and plow marks on the upper courses of the bricks, indicate that Feature 1 has been disturbed by plowing. Mrs. Pool, the landowner, plans to erect a fence around the burial chamber to protect it from future plow disturbances.

A diverse historic archaeological artifact assemblage of 19th and 20th century ceramics, glass containers and tableware, building-related, household-related, agricultural, personal, and armaments-related artifacts has been obtained from the surface collections and test excavations at the Jonesborough site (Table 22). Most of the historic artifacts were recovered from the Pool A, Pool B, and Pool D areas (see Figure 48), along with Roitsch West, but a sample of remains from both Jonesborough and Davenport (established in 1885 by James Johnson [Webb 1952, Volume I:467], whose house stood where Mrs. Pool’s residence is now) is seemingly represented in each of the site areas.

Most of the historic artifacts postdate 1885, and consist of a wide variety of discarded architectural, domestic, and agricultural goods from several structures and outbuildings that were present at 41RR15. Earlier 19th century artifacts, particularly those that may date as early as ca. 1820-1844, are present in the Bagwell, Pool A, B, and D, and the Roitsch West site areas (see Figure 48). These consist of a variety of decorated English whiteware sherds from ceramic plates, bowls, and cups, salt-glazed stoneware jugs and crocks, square nails, hand-made bricks, dark green wine bottle glass, gunflints, and thin window glass.
Prehistoric Caddoan archeological remains are widely dispersed at Jonesborough. The most intensive occupations have been identified in the Roitsch West, Pool B, and Pool D subareas (see Figure 48 and Table 23).

With the exception of the two Gary dart points from Pool B and Roitsch West and a few biface preform fragments that may relate to a Late Archaic/Early Ceramic component, the remainder of the prehistoric artifacts pertain to a Late Caddoan period McCurtain phase occupation with Maud arrow points and shell-tempered plain and decorated ceramics. The type of McCurtain phase occupation, or its integrity, has not been ascertained, but based on test excavations at the nearby Piae Cone site (41RR236) (see below), intact Late Caddoan archeological deposits from a residential occupation are likely present in the three subareas mentioned above.
ARCHEOLOGICAL SURVEY OF
THE ROITSCH FARM AND
ADJOINING LANDS,

by Timothy K. Perttula

About 2500 acres of farmland and pasture were surveyed for historic and prehistoric archeological sites during the 1991 and 1992 TAS Field Schools, most of the acreage being on the A. E. Roitsch Farm in immediate proximity to the Roitsch and Salt Well Slough sites, but including tracts on the Fasken, Tarrant, Wright, and Holdeman Farms near known prehistoric Caddoan villages and mound centers (Figure 51). A small portion of the survey was completed in the winter of 1993, after the Field School, by the Northeast Texas Archeological Society in cooperation with the Texas Historical Commission, on the Tarrant and Wright Farms. A total of 109 archeological sites were newly recorded or revisited during the course of these survey efforts.

The main purpose of the archeological survey was to identify and record prehistoric and historic sites in this Red River alluvial setting, assess the
Table 22. Jonesborough Site (41RR15) Artifact Type by Collection Area.

<table>
<thead>
<tr>
<th></th>
<th>No Provenience</th>
<th>Pool Area A</th>
<th>Pool Area B</th>
<th>Pool Area C</th>
<th>Pool Area D</th>
<th>Roitsch West</th>
<th>Bagwell</th>
<th>Clark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceramics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>yellowware</td>
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<td>whiteware</td>
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<td>200</td>
<td>137</td>
<td>2</td>
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<td>0</td>
<td>4</td>
<td>0</td>
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<td>0</td>
</tr>
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<td>porcelain</td>
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<td>9</td>
<td>12</td>
<td>0</td>
<td>8</td>
<td>2</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>stonewares</td>
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<td>54</td>
<td>23</td>
<td>0</td>
<td>29</td>
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<tr>
<td>Glass Containers</td>
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<td>73</td>
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<td>2</td>
</tr>
<tr>
<td>Glass Tableware</td>
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<td>8</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>7</td>
<td>0</td>
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<tr>
<td>Building Related¹</td>
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<td>118</td>
<td>186</td>
<td>24</td>
<td>25</td>
<td>19</td>
<td>8</td>
<td>92</td>
</tr>
<tr>
<td>Household Related²</td>
<td>84</td>
<td>24</td>
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<td>5</td>
<td>2</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Agricultural³</td>
<td>46</td>
<td>41</td>
<td>81</td>
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<td>8</td>
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</tr>
<tr>
<td>Armaments</td>
<td>7</td>
<td>13</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Personal⁴</td>
<td>3</td>
<td>6</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

¹Includes brick, nails, plate glass, and building hardware
²Includes kitchen items, glass lamp chimney, and other items commonly used inside the home
³All items relating to agriculture including wire, fence staples, blacksmithing materials, and farm machine parts
⁴Includes items related to clothing and entertainment

Table 23. Prehistoric Artifacts from the Jonesborough Site.

<table>
<thead>
<tr>
<th>Site Area</th>
<th>Pottery Sherds</th>
<th>Arrow point</th>
<th>Dart Point</th>
<th>Lithic Debris</th>
<th>Tools</th>
<th>Ground stone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bagwell</td>
<td>2</td>
<td>–</td>
<td>–</td>
<td>4</td>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>Clark</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Pool A</td>
<td>17</td>
<td>1</td>
<td>–</td>
<td>9</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Pool B</td>
<td>96</td>
<td>–</td>
<td>1</td>
<td>34</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pool C</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>1</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Pool D</td>
<td>109</td>
<td>1</td>
<td>–</td>
<td>24</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Roitsch West</td>
<td>223</td>
<td>–</td>
<td>1</td>
<td>25</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>Totals</td>
<td>449</td>
<td>2</td>
<td>2</td>
<td>97</td>
<td>19</td>
<td>4</td>
</tr>
</tbody>
</table>

contextual integrity and research potential of each of the sites in so far as feasible, and evaluate their temporal and cultural relationships, particularly their relationships to the Roitsch site or other nearby major

prehistoric or historic settlements and towns. It was expected when we began the project that the information gained from the archeological survey would allow us to address the following research problems
and projects goals (cf. Bruseth et al. 1991:17-26, Bruseth et al. 1992:19-28): (1) improve our understanding of the chronology of prehistoric Caddoan sites in the Mound Prairie area; (2) understand the village structure at the Roitsch site; (3) understand the village structure at the major excavated sites; (4) determine if the Caddo were processing salt near the Roitsch site, and when; as well as (5) examine early Anglo-American settlement and trade, including Anglo-American trade with Cherokee and Choctaw groups living nearby on the Red River. I will discuss our findings for each of these research problems following a short review of the survey methods employed during the Field School.

Chris Kneupper and Jay Hornsby served as Assistant Survey Supervisors to oversee the activities of the four or five survey crews used during the two seasons in Red River County, and to assist the Survey Supervisor in completing the work. Several different survey procedures were used to locate archaeological sites because of different ground surface visibility conditions encountered during the Field School. In the main, the TAS survey effort consisted of pedestrian survey by widely-spaced crew members who examined the ground surface (particularly eroded areas, gopher mounds, etc.) for prehistoric and historic artifactual materials, and then excavated 30 x 30 cm shovel tests on topographic features (knolls, pimple mounds, and alluvial terraces) to ascertain if subsurface archaeological deposits were present on these landforms. Additional shovel tests were excavated on the sites to better define their horizontal and vertical extent, and also obtain a controlled sample of artifacts. In plowed fields, survey consisted of walking up and down the crop rows searching for artifact concentrations, marking artifact areas with pin flags, then recording them as sites if more than 10 to 20 artifacts were visible in a 100 to 250 m² area. In a few cases, controlled surface collections of small areas (ca. 100-500 m²) were completed to obtain representative samples of the range and frequency of artifact types within selected sites (i.e., the Late Caddoan salt processing sites on Salt Well Slough).

As part of the TAS Field School survey effort in 1992, limited test excavations using 1 x 1 m units were conducted at several of the sites (41RR11, 41RR101, and 41RR236) to collect more
detailed information on prehistoric archeological sites in the vicinity of Roitsch that appeared to have significant Early Ceramic and Caddoan period deposits. Our interest was to assess the character of the sites, determine what types of features were present (if any), acquire samples of material culture (especially ceramics and lithic tools), and recover samples of charcoal to obtain radiocarbon dates.

A significant body of information on the Archaic, Early Ceramic, and Caddoan settlement and use of the Mound Prairie area was obtained during the course of the survey effort, but commensurably less on the historic Anglo- and African-American settlement because most of the historic sites and components date principally to the first and second quarters of the 20th century when large numbers of tenant farmers lived in the area. Nevertheless, information on settlement locations, the presence of cultural features at some sites, and the recovery of substantial samples of prehistoric and historic artifacts allows us to begin discerning diachronic and spatial changes in land use patterns along the Red River and Big Pine Creek.

Prehistoric archeological sites are thickly distributed along Big Pine Creek and Salt Well Slough (Figure 52), primarily in immediate proximity to the Caddoan-era Roitsch village. Most are situated on sandy loam soils on the edge of alluvial terraces, or are located on natural rises on such landforms. A few of the sites, almost exclusively Late Caddoan in age (such as the salt-making sites discussed below), occur on a band of dense clays that parallels Salt Well Slough and Big Pine Creek below its confluence with Salt Well Slough.

Of the 109 sites, 89 percent had evidence of at least one prehistoric occupation. The recovery of diagnostic projectile points and ceramics (especially decorated sherds) from surface collections, shovel tests, and a few 1 x 1 m units, suggests that there were two peaks in periods of settlement: from the Late Archaic (ca. 2000 B.C. to A.D. 200) through the Early Ceramic or Woodland (ca. A.D. 200-A.D. 900) period, and then again during the Late Caddoan period (ca. A.D. 1300-1700). However, finds from the sites in the TAS survey area indicate that it was utilized to some extent by Native Americans from Paleoindian times to about A.D. 1700 or later.

Many of the Late Archaic and Early Ceramic period sites probably represent small, seasonally occupied forager camps, although at least a few of the Early Ceramic period sites (such as 41RR101) have middens and dense occupational refuse. These types of sites are believed to be very similar to the Ray site (see above), and thus may be small homesteads occupied on a multi-seasonal or year-round basis; structures and cooking/storage features are probably preserved in the archeological deposits from these sites.

Only four (4.5 percent) of the prehistoric sites have identifiable Formative to Middle Caddoan period occupations. One such habitation site near Fasken, site 41RR206, has a clear midden deposit and an abundance of ceramics and stone tools. It probably represents one small part of the dispersed Caddoan community around this civic-ceremonial center. The Formative to Middle Caddoan component at the Holdeman site (41RR11), on a broad and low alluvial terrace of the Red River, is represented by at least one earthen mound that covered a circular house and a small Formative Caddoan cemetery (Perino 1995), as well as extensive village remains from a large settlement.
The Late Caddoan, McCurtain phase, settlement of the Big Pine Creek and Salt Well Slough areas was extensive. The habitation sites are characterized by shell-tempered ceramics, small triangular arrow points, and some quantities of daub or burned clay (as at 41RR236). The sites are presumed to represent dispersed farmsteads, or compounds of farmsteads, that are associated with the larger village community at the Roitsch site. The habitation sites are typically small in size, may or may not contain middens, and generally are not characterized by large quantities of material culture remains; this suggests short (perhaps a few years) occupations by Caddoan farmers. Some of these sites contain family cemeteries, as at 41RR10/104 (cf. Hampton and Moore 1936). Other Late Caddoan components include several salt-making sites on Salt Well Slough, as well as a few components that simply contain a few triangular arrow points from either hunting/refurbishing camps and/or from hunting losses.

A much larger Late Caddoan occupation was defined at the Holdeman site during our 1992 TAS investigations. Holdeman appears to have been a substantial village during Late Caddoan times, as it contains abundant artifacts and features, as well as numerous cemeteries, marking clusters of Caddoan houses of this age spread across a large alluvial terrace of the Red River. During deep plowing of one portion of the site in 1992, the landowner exposed considerable Late Caddoan habitation debris across a spring branch from the Formative Caddoan mound mentioned above, and Perino (1995) excavated some 30 burials from this area in the early 1980s before land-leveling activities; other cemeteries and structures were disturbed by pipeline construction before that in several other locales within the boundaries of the site (see Briscoe 1995). In most particulars, the archeological deposits at the Holdeman site during the Late Caddoan occupation are thought to be quite comparable to the village areas at Roitsch (Blocks III-IV), Bob Williams (Perino 1985), and Rowland Clark (41RR77), another contemporaneous Late Caddoan village a few km downstream from Holdeman on the Red River (Perino 1994).

Understanding the Village Structure of Caddoan Groups on Mound Prairie

Based upon the 1691 Domingo Teran de los Rios map of a Red River Caddoan community, and ethnographic descriptions of the dispersed nature of Caddoan settlement in East and Northeast Texas, it was expected that in addition to the larger Late Caddoan communities with mounds (as at Roitsch), the settlement system would also be comprised of individual farmsteads, hamlets, and small villages (Bruseth et al. 1992:10, 22). It was uncertain whether such a model of settlement would also be applicable to Formative-Middle Caddoan communities.

The archeological survey data from the Roitsch Farm does suggest that there are clusters of contemporaneous Late Caddoan farmsteads and ancillary sites located immediately to the south and west of the Roitsch site along old channels of the Red River (now used as channels by Big Pine Creek and Salt Well Slough). No evidence was recovered in the survey to indicate that larger Late Caddoan hamlets or villages occur away from the river itself, as all the non-salt-making sites along Big Pine Creek and Salt Well Slough seem to have been about the size to contain individual households, small trash middens, and a household cemetery. The dispersion of Late Caddoan remains at Holdeman suggests that a number of household compounds are present there, but the village lacked a mound.

The low number of Formative-Middle Caddoan sites in the survey areas argues against the same type of dispersed settlement system as characterized the Late Caddoan period in the Mound Prairie area. The few sites of this period that were identified during the TAS Field School occur only in immediate proximity to Roitsch, Fasken, and Holdeman, the large civic-ceremonial villages with mounds. This suggests that populations during Formative-Middle Caddoan times were mainly concentrated in a few optimal locales, and populations became more dispersed in Late Caddoan times.

Caddoan Salt Processing

In addition to the salt processing site at Salt Well Slough (41RR204, see Kenmotsu, this article), three other Late Caddoan salt making sites (41RR248, 41RR256, and 41RR257) have been identified immediately south of the Salt Well Slough site along Salt Well Slough below its confluence with Pond Creek. Known salt-making sites, on intractable clay soils, extend for at least 800 m along high ground immediately adjacent to the slough.
These sites contain abundant surface and buried deposits of large, shell-tempered Nash Neck-Banded and Emory Punctated-Incised sherds, substantial quantities of burned clay (and daub), and evidence from shovel testing of burned and oxidized soils; few chipped or ground stone tools or pieces of lithic debris have been found at these sites. Our inference that these are salt-making sites hinges on the fact that Salt Well Slough is fed by a salt spring, on the findings of features and burned areas from the Salt Well Slough site (see Kenmotsu, this paper), and comparisons with other salt-making sites in southwestern Arkansas (cf. Early 1993; Kenmotsu 1999).

Anglo-American Settlement and Trade

The recorded historic archeological sites are the remnants of homesteads and tenant farms occupied principally between 1860 and 1950. Of the 56 archeological sites that have historic archeological components, only 12.5 percent have occupations that predate 1900, while another 23 percent may have had 19th century occupations but the archeological material remains are equivocal. One late 19th century cemetery (41RR235) was recorded on the upper reaches of Salt Well Slough (Figure 53).

Early to mid-19th century artifacts (English transfer-printed and hand-painted ceramics, dark green bottle glass, square nails and metal implements, etc.) have been found in some quantity at Jonesborough (see Perttula and Reese, this article; see also Reese 1998, 1999), in several sites in the Tarrant Survey (Perttula 1999b), on Mound B at the Fasken site (see Prikryl, this article), and similar material remains have been documented in the R. K. Harris collection (at the Smithsonian Institution) from the Wright Plantation site (41RR7). However, clear Antebellum Anglo-American or early 19th century Native American sites were not identified in the TAS Field School survey.

The historic sites are widely dispersed across the Roitsch Farm, but they are especially common on high ground between Big Pine Creek and Pond Creek, but off of the Late Holocene alluvial terraces where the Roitsch site is situated. The few historic sites that were occupied only in the 19th century seem to have preferred settling along the tributaries of Red River, particularly Big Pine Creek (for example, site 41RR266, see Figure 53), rather than on the river itself.

These farmsteads cluster around the old and abandoned community of Blakeney (Hazlewood 1996:580), along the roads that ran from the late 19th-mid-20th century towns of Manchester and Davenport (near Jonesborough), and immediately north of Pond Creek where an unnamed community of tenant farmers lived. This community was reported to have had as many as 15 separate farmsteads and a blacksmith shop, and a general store was thought to have been in the area as well. The TAS survey of that area recorded six ca. 1900-1930 farmsteads (41RR215, 41RR222-41RR225, and 41RR227), and through systematic surface collections recovered a large sample of domestic artifacts associated with each of the farms.

CONCLUDING REMARKS

In this paper, we have discussed the results of two very successful Texas Archeological Society (TAS) Field Schools held in Northeast Texas in
1991 and 1992. During the field schools, considerable new and important information was obtained on the prehistoric Early Ceramic and Early, Middle, and Late Caddoan settlement and history of the middle reaches of the Red River with the aid of more than 600 Field School participants in 1991, and 500 more TAS members in 1992. The archeological work conducted by the TAS at the Arnold Roitsch (41RR16), Salt Well Slough (41RR204), Fasken (41RR14), and Ray (41LR135) sites constitutes the first substantial prehistoric archeological research conducted in both Red River and Lamar counties, Texas, since the late 1960s and early 1970s, and the Caddoan archeological record in these two counties was relatively poorly known at the time of the 1991 and 1992 TAS Field Schools. Our search for the early 19th century town of Jonesborough during the 1991 Field School discovered and documented the mid-1840s burial crypt of Jane Chandler Gill, the wife of an early resident and large landowner in the Jonesborough area. Several other 19th century farmsteads and a cemetery were recorded during the extensive archeological survey of the Roitsch, Tarrant, and Wright lands in the Mound Prairie area, and a mid-19th century component was also identified on the top of Mound B at the Fasken site. Prior to the TAS Field Schools, the 19th and early 20th century archeology of Red River County, Texas, was virtually unknown and unstudied.

With the able participation of the many TAS members during the two Field Schools, the Caddoan Native history of the middle reaches of the Red River has come into better focus, particularly with regard to their material culture, their use of cultivated plants such as maize and squash, their production of salt, the construction and use of their houses and extramural features, and their health and diet. The Mound Prairie area of the middle Red River had been the scene of permanent settlement by the Caddo peoples and their ancestors for at least one or two millennia, and the 1991 and 1992 TAS Field Schools has provided us with an unparalleled research opportunity to study the nature and character of prehistoric and historic Caddoan lifeways in this part of northeastern Texas. We hope that this summary of the findings of the 1991 and 1992 TAS Field School along the Red River will inspire and encourage others to undertake further studies of the rich prehistoric and historic heritage of this stretch of the Red River valley.

ACKNOWLEDGMENTS

We would first like to thank Arnold Roitsch and his family for permission to conduct archeological investigations at the Roitsch site (41RR16), as well as to conduct the archeological survey on his ranch. J. R. and Marlene Ray, Andrew Fasken, Richard Wright, and Linda Tarrant also were kind enough to grant us permission to work on their lands, and The Archeological Conservancy granted their permission to conduct investigations on their portion of the Fasken Mounds site.

The successful completion of the Field Schools (and they were successful beyond our wildest dreams!) could not have been completed without the dedication and hard work of many Texas Archeological Society (TAS) members, from the Youth Area children all the way to the senior TAS members, and we thank them all, more than 600 in number. While we cannot recognize each and every member of the 1991 and 1992 TAS Field Schools, we do want to specifically thank the following: Andy Cloud, Mike Davis, R. C. Harmon, Tom Middlebrook, Norman Flagg, Jimmie Smith, E. Mott Davis, Pam Wheat, Sallie Taylor, Stephanie Strickland, Pat Mercado-Allinger, Bob Turner, and Johnney Pollan; Karen Gardner and Jeanine McDonald (Lab Directors, 1991 Field Season); Chris Kneupper, Bo Nelson, Johnny Byers, Jay Hornsby, and Linda Lindsay (Crew Chiefs, Archeological Survey); Jaq Jacquier (Site Director, Jonesborough); Bonnie Yates (Bone Lab); and Jim Blanton. We also thank the TAS Board of Directors for their financial support of the Field School.

All the attendees of the TAS Field School were very pleased that members of the Caddo Indian Tribe of Oklahoma were able to visit the Field School. To then have them perform traditional Caddo dances during an evening program was a special event that TAS participants will not soon forget.

We are also grateful for the contributions of various consultants to the Field School: Bonnie Yates and Brian Shaffer (Faunal Analyses); Dr. Gayle Fritz and Eileen Goldborer (Paleobotanical Analyses); and Sharon M. Derrick, Gail Colby, and Dr. D. Gentry Steele (Bioarchaeology).

Roland Pantermuehl of the THC prepared the excellent maps and figures in this article. Lastly, we acknowledge the assistance, support, and patience provided by other THC staff (from the
Department of Antiquities Protection, now the Archeology Division) during the course of the Field School, and the long and subsequent period of analysis and report preparation. Seemingly, the truck load of TAS artifacts and boxes were always being moved and getting in the way, but everyone persevered, and lent a helping hand; we see the light at the end of the tunnel.

NOTES

1. The Salt Well Slough site crew deserves great kudos for their efforts despite conditions that, at best, were difficult, and, at worst, exhausting. Their ability to maintain levity throughout the field work is laudable.

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