

A Cultural Overview and Assessment of Balcones Canyonlands National Wildlife Refuge

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Abstract

This document summarizes the presently known prehistoric and historic archaeological resources of the Balcones Canyonlands National Wildlife Refuge. The bulk of the document consists of an overview of the archaeological investigations carried out to date within the Central Texas archaeological region and the three county area of the Refuge. It provides suggestions regarding specific steps necessary to identify the total number and types of prehistoric and historic cultural resources present within the Refuge boundaries. It proposes a 100 percent pedestrian survey of the Refuge properties to obtain a complete inventory of cultural resources. In addition, it offers insights into the types of archaeological sites that might be present and their likely distribution within the project area. The final section of the document addresses ways in which the Refuge can become a more integral part of the life of the region and its inhabitants.

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Chapter 1: A Cultural Overview and Assessment of Balcones Canyonlands National Wildlife Refuge

Steve A. Tomka and John Leffler

Introduction

In September 1998 the Center for Archaeological Research (CAR) at the University of Texas at San Antonio (UTSA) was contracted by the Albuquerque office of the U.S. Fish and Wildlife Service to produce a cultural overview and assessment of the 15,800-acre Balcones Canyonlands National Wildlife Refuge (BCNWR). The Refuge is located in northwest Travis, southeast Burnet, and southwest Williamson counties (Figure 1). The overview was to provide a review and synthesis of the existing archaeological, ethnohistoric, and historic information available for the Balcones Canyonlands, and to place this information within the broader context of the prehistory and history of Central Texas.

The Scope of Work

The scope of work outlined 11 specific deliverables paraphrased in order below:

- 1) A compilation of existing site records of the Refuge.
- 2) Copies of site forms for recorded sites.
- 3) 7.5-minute USGS topographic maps with site locations plotted.
- 4) A narrative discussion of past and current archaeological and ethnographic/ethnohistorical investigations at Balcones and the surrounding region.
- 5) A narrative section which presents the prehistoric and historic information available from

the Balcones region. This section shall constitute the major portion of the overview and assessment.

- 6) Recommendations for future cultural resource management options and research directions for the Balcones National Wildlife Refuge.
- 7) An Appendix listing titles of pertinent theses, dissertations, published works, and research projects that have contributed to the knowledge about the cultural resources of Balcones and the Balcones region. This listing shall be annotated.
- 8) A listing of cultural resource collections from the Balcones Canyonlands National Wildlife Refuge, if any.
- 9) Maps and graphics necessary to support the overview/assessment.
- 10) An "Executive Summary" of the Cultural Resource Overview/Assessment capsulizing the most significant points of the complete Overview/Assessment.
- 11) A bibliography.

The Existing Site Records for the Balcones Canyonlands National Wildlife Refuge

The compilation of the existing site records of the Refuge consisted of making copies of the existing site forms and re-plotting the sites on 7.5-minute USGS topographic quadrangle sheets. Records available at the Texas Archaeological Research Laboratory (TARL), the state repository, indicate that five prehistoric archaeological sites have been previously recorded within the Refuge (Figure 2). No historic period sites are recorded

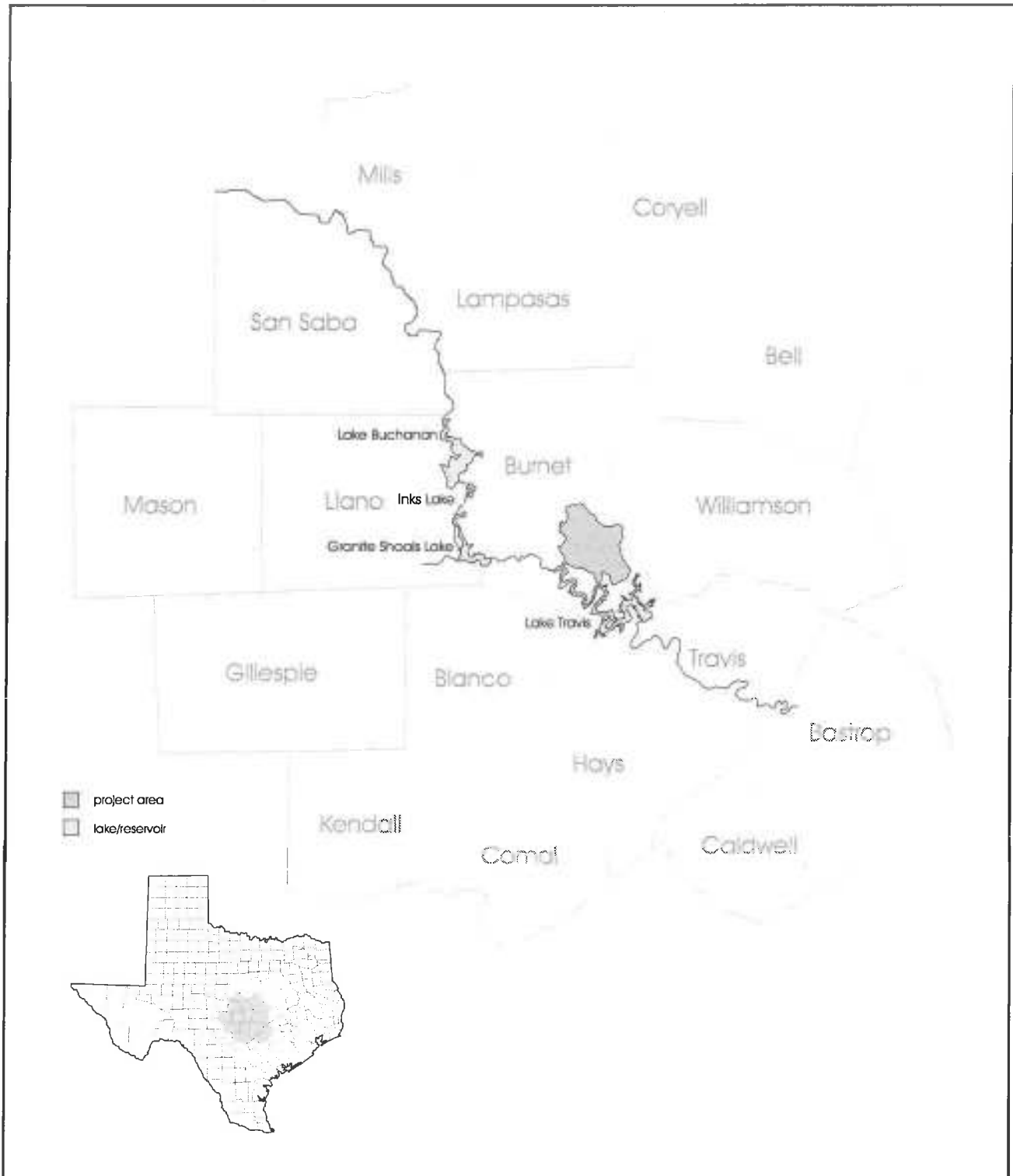


Figure 1. Location of Balcones Canyonlands National Wildlife Refuge in Central Texas.

within the project area. Two of the sites are in Travis County, two are in Burnet County, and the remaining site is in Williamson County. Table 1 provides the specific site numbers, the name of the 7.5-minute quad-

range sheet on which they are found, and the types of records available for each site. Only three of the sites have information available in addition to the site location. It is not known who recorded the two Travis County

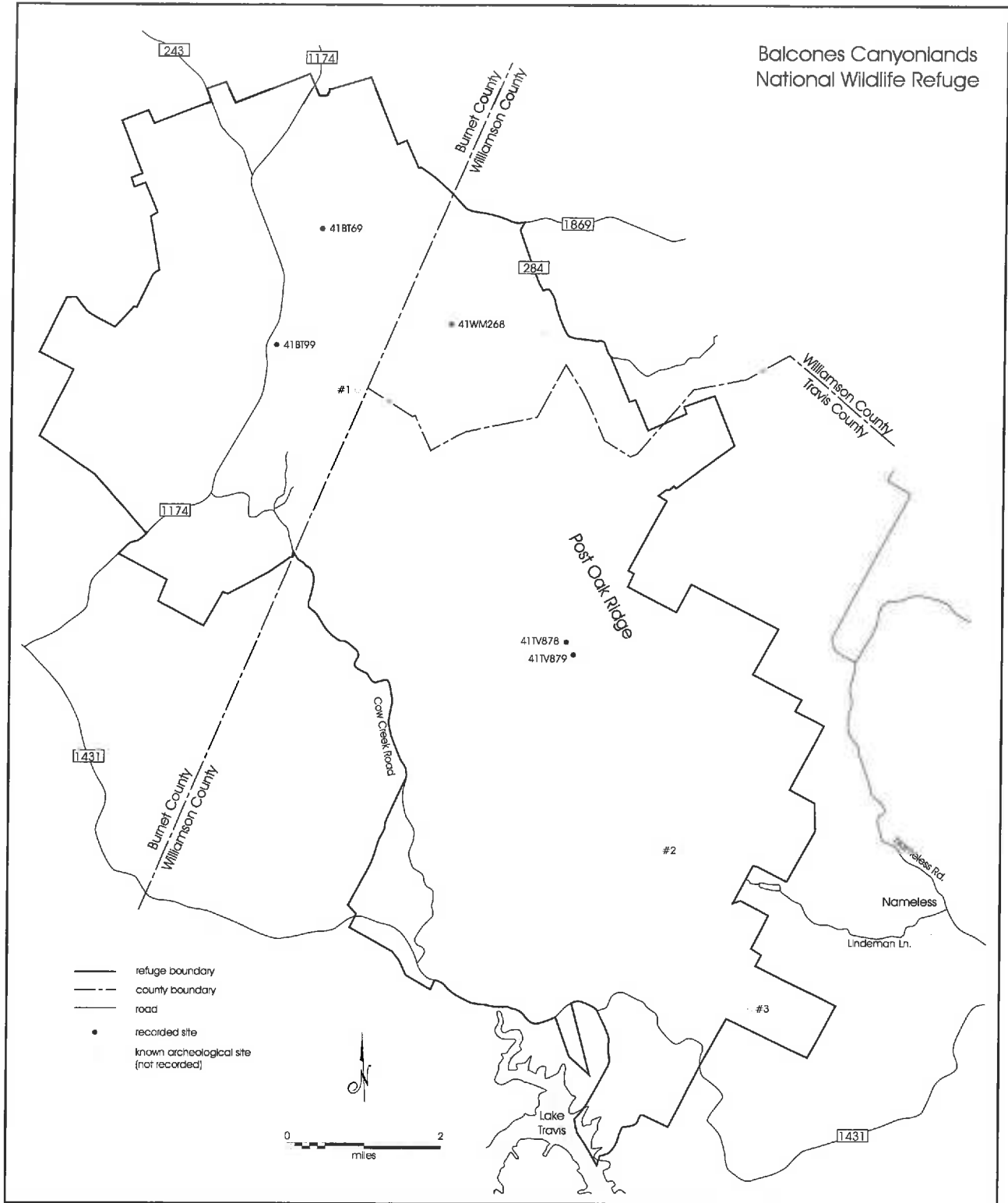


Figure 2. Location of known archaeological sites within the Balcones Canyonlands National Wildlife Refuge.

sites or when they were recorded. No site forms or key site cards exist for these sites.

The site records available for the two Burnet County sites and the single Williamson County site have been photocopied and are available at the Albuquerque of-

Table 1. Recorded Archaeological Sites within the BCNWR

Site Number	Quadrangle Sheet	Records Available
Travis County		
41TV878	Nameless Quad.	None
41TV879	Nameless Quad.	None
Burnet County		
41BT69	Bertram Quad.	Site form and map
41BT99	Bertram Quad.	Site form and sketch map
Williamson County		
41WM268	Bertram Quad.	Site form, sketch map, and list of artifacts examined

office of the U.S. Fish and Wildlife Service. The six 7.5-minute quadrangle sheets showing the project boundaries and the location of the five known archaeological sites are also housed at that office.

Past and Current Archaeological and Ethnographic/Ethnohistoric Investigations at the Refuge and in the Surrounding Region

This section summarizes the past and current archaeological and ethnographic/ethnohistoric investigations conducted within the area bounded by the Refuge and in its vicinity. Since no ethnographic or ethnohistoric investigations have been carried out within either region, the discussion focuses on archaeological investigations. The narrative is divided into two sections. The first discusses the characteristics of the archaeological sites recorded within the Refuge proper. The second section discusses the major archaeological investigations that have been carried out in the vicinity of the Refuge. Those projects that have particular relevance to defining the characteristics of the archaeological remains expected to be found within the Refuge itself are selected for discussion.

Recorded Archaeological Sites within the Balcones Canyonlands National Wildlife Refuge

The Allen-Wheeler site, 41BT69, is located at the headwaters of the Little Creek in the South San Gabriel River drainage. The site was recorded by Mr. Preston W. Millican, on March 18, 1969. A total of six burned rock concentrations (mounds) are shown on the de-

tailed topographic map produced by Millican during the site visit. Two of the middens had been disturbed, while the remaining four appeared undisturbed at the time. In addition, Millican inspected the land owner's artifact collection obtained from uncontrolled excavations in two of the burned-rock middens and noted the predominance of Middle Archaic Nolan projectile points. Based on the abundance of Nolan points, he speculated that these points might be coming out of the 5 to 6 ft. of deposits found below the burned-rock mounds. The middens themselves normally yield later (Late Archaic) point types.

The second site found in Burnet County, 41BT99, is on the west bank of an unnamed drainage immediately east of Flatrock Hollow, southwest of Post Oak Ridge. It was recorded by Mr. Joe Denton on June 26, 1975. The site consists of a single burned-rock midden and an unspecified number of isolated hearths located on a limestone bench. The site is described as measuring approximately 20 x 30 feet and having a maximum depth of 2 to 2.5 feet. A looter's pit has been noted in the midden, allowing the recorder to observe that the midden was relatively free of artifacts other than burned rock.

Site 42WM268, in Williamson County, was recorded by Dr. Grant Hall, of Texas Tech University, on January 30, 1975, on the Earl Heireman Ranch. The site is located on an unnamed south branch of Little Creek, near its headwaters and only slightly more than 0.5 miles east of the Burnet-Williamson County line. The site consists of a series of aboriginal burials in as many as five sinkholes. Two of the five sinkholes have been disturbed yielding projectile points, debitage, and

human and animal skeletal materials. The other three sinkholes remained undisturbed but it is assumed that they too contain burials. The projectile points encountered in the two disturbed sinkholes consist of Ensor and possibly Uvalde or Pedernales types. In addition, one of two projectile points collected from the site is reported to be either a Late Paleoindian or Early Archaic specimen. Additional material collected at the time of site recording consisted of five bags of faunal remains and 13 human skeletal remains belonging to two individuals. TARL records indicate that the non-human remains were returned to the landowner while the skeletal materials are currently housed at TARL (see note dated Dec. 22, 1985, in site records).

The two remaining archaeological sites, 41TV878 and 41TV879, are located near each other at the headwaters of Forty Acre Hollow along the western edge of the Nameless Quadrangle. The first site is above the headwaters of Forty Acre Hollow on Post Oak Ridge. Site 41TV879 is just inside the draw adjacent an intermittent spring. No key site cards or site records on these sites were discovered at the TARL or at the Texas Historical Commission.

Major Regional Archaeological Projects

Since only four archaeological sites have been recorded within the project area, to gain fuller perspective of the types of archaeological resources that might be expected within the project area, the archaeology of a broader area is reviewed below. This review focuses on the major archaeological projects carried out in the vicinity of the BCNWR in Burnet, Travis, and Williamson counties (Figure 3).

Burnet County

To date, 340 historic and prehistoric archaeological sites have been recorded in Burnet County. The majority have been found in various surveys along the Colorado River. Work conducted during the 1930s by the Works Progress Administration (WPA) and the University of Texas on Lake Buchanan accounts for much of what is known about the archaeology of Burnet County. Unfortunately, with the exception of the

report on the Fall Creek Sites (Jackson 1938) and the work at three additional sites reported by Woolsey (1938) the bulk of the excavation results have not been published and exist only as manuscripts at TARL.

During eight months in 1937 the Department of Anthropology of the University of Texas sponsored a WPA archaeological project in the Lake Buchanan basin (Llano, San Saba, and Burnet counties) on the Colorado River. The survey of the basin identified 73 archaeological sites (Jackson 1938, Map I). The majority of the sites (65) were identified as village or campsites, five were identified as burned-rock middens and/or mounds, two were quarry/workshop sites, and one was a rockshelter. Sites tended to be located on elevated land at the junction of the Colorado River and tributary creeks or on high terraces adjacent to the river. Jackson (1938) reports on excavations at two of these sites, while Woolsey (1938) discusses the results of excavations at three others. The sites (Nos. 2 and 3) reported by Jackson contained multiple burned-rock mounds and middens in association with multiple rockshelters. The distinction made by Jackson between mounds and middens does not appear to be a functional one in that both types appear to contain cultural refuse including debitage, chipped and ground stone tools, mussel shells, and bone fragments. The recovery of one adult burial and seven infant burials at Site 2, and three adult burials at Site 3, also is of significance. At least three of the four adults appear to be of Archaic age, while one is of Late Prehistoric affiliation judging from the Perdiz points associated with the skeleton. The infant burials may have all been made at about the same time. Work at the Chism site, 41BT10, described by Woolsey (1938) also uncovered a number of burials including one cremation and four semi-flexed inhumations. Remarkably, 53 rock-lined hearths were identified at the site that consisted of both Archaic and Late Prehistoric components.

Interestingly, some temporal differentiation can be noted between mounds based on their content of projectile point types. While some mounds are described as containing Late Prehistoric points (e.g., Perdiz type) others (e.g., Mound 3 at Site 3) contains only dart points. Some degree of spatial segregation (activity structure) may be notable even within a single mound such as the case of Mound 1 in Site 3, where the

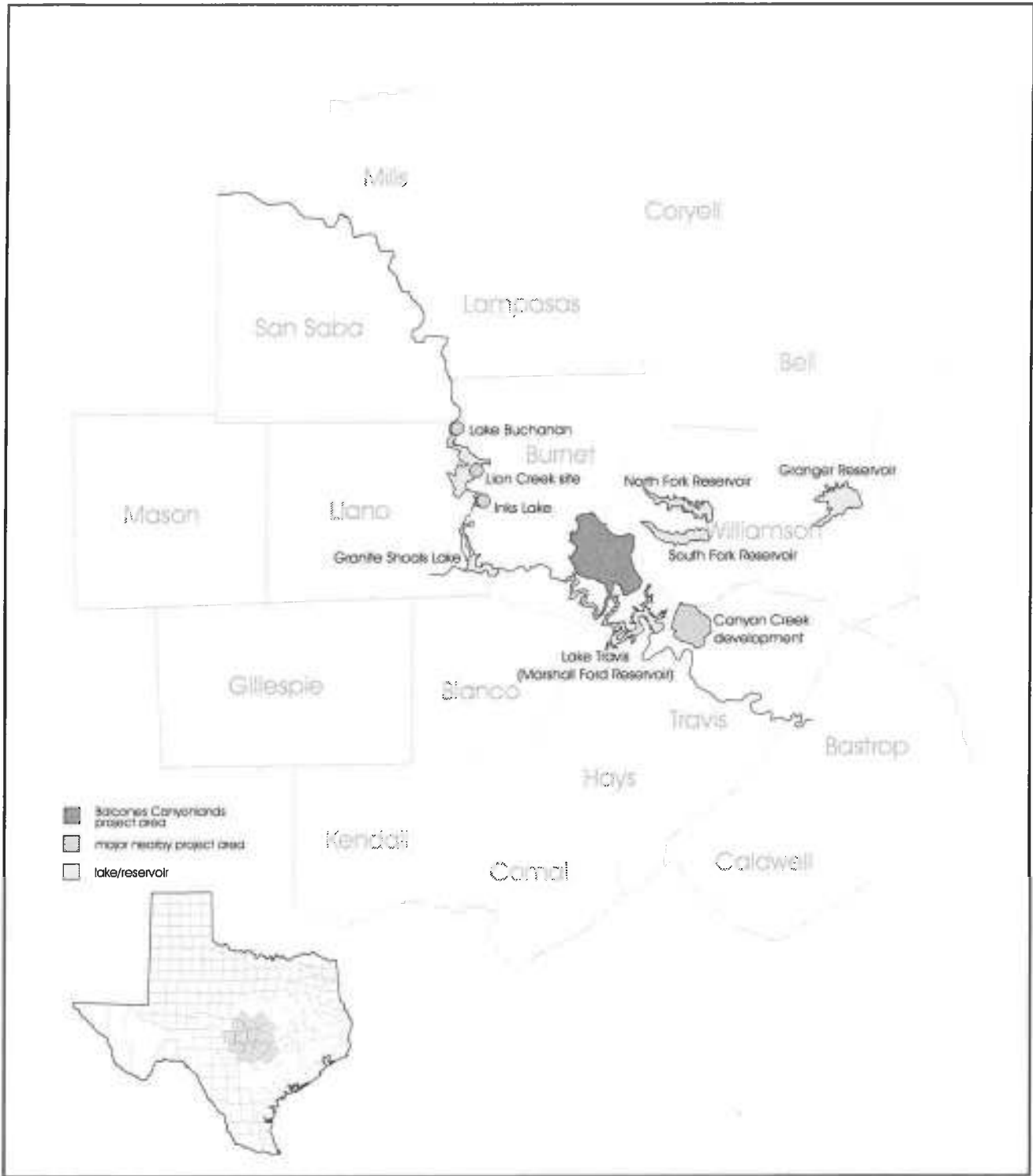


Figure 3. Major regional archaeological projects within the three-county area.

burned-rock midden portion of the mound contains dart points while the non-burned-rock portion contains arrow points. While no central stone-lined hearths

were identified in the “mounds,” isolated rock-lined hearths were common. For instance, eleven such features were identified in Mound 3 in Site 1. Some de-

gree of internal stratification, normally not noted in burned-rock middens, also was identifiable in these sites (see Midden 1, Site 2; Midden 2, Site 2).

Since the sites chosen for excavation were some of the largest of the group, large quantities of artifacts were recovered. The number of ground stone tools and fragments ranged in the 300–500 specimens, while chipped stone tools were equally common, including typed projectile points. While at the time the currently employed typology had not yet been developed, the illustrations and descriptions of the groups indicate that Pedernales, Marshall, Montell, and Ellis seemed to be common types, as were Perdiz arrow points and numerous pottery fragments in the more recent deposits. The recovery of a number of alternately beveled stemmed Nolan points indicates that some late Middle Archaic deposits, predating the peak of burned-rock midden accumulation, also may exist at the excavated sites. The presence of a small number of Folsom-like specimens indicates the possibility of even earlier occupations in the region. The recovery of eighteen obsidian flakes, together with an obsidian arrow point and a small side scraper suggest to the authors connections with the U.S. southwest.

The recovery of a number of large, medium, and small well worn manos indicates that plant procurement and subsequent processing was an important activity associated with the occupations of these sites. Pecans, walnuts, acorns, and hackberry seeds recovered from the shelters indicates the exploitation of a varied list of plants. The presence of bison, deer, rabbit, squirrel, beaver, raccoon, turkey, duck, vulture, fish, and turtle bones indicates the procurement of a wide range of animal species. Overall, the subsistence pattern is a mix of plants and animal resources, with somewhat of an emphasis perhaps on plant resources.

In addition, the survey conducted at Inks Lake State Park (Patterson 1975) identified a large number of sites found in a variety of settings including rockshelters, buried terrace sites, and valley margin lithic scatters. Sites such as 41BT59 and 41BT60 contain rich Early and Middle Archaic deposits, respectively. A number of the sites also contain reasonably undisturbed Late Prehistoric components.

One individual archaeological site is worth mentioning due to its significance to regional archaeological knowledge. It is the Lion Creek Site (41BT105) excavated by archaeologists from the Texas Department of Transportation and analyzed and reported by Johnson (1997). The relatively shallow site is located on a terrace of the Colorado River, in western Burnet County. The projectile points indicate that the site was reoccupied during the Middle and Late Archaic, as well as the Late Prehistoric Periods. The artifacts recovered consist of dart and arrow points, preforms, ground stone tools, and lithic debitage. Especially significant, are two circular depressions containing a number of “post-supporting” rock clusters interpreted by Johnson as Middle Archaic and Late Prehistoric structures, respectively (Johnson 1997:Figures 12, 18). Similar structural remains may exist at three other sites (41BT72, 41BT73, and 41BT74) found in the vicinity of the Lion Creek site on the banks of the Colorado River (Johnson 1997:24, based on field notes by E. M. Davis on file at TARL).

Travis County

To date, 1,863 prehistoric and historic archaeological sites have been recorded in Travis County. Two of the projects that have greatest relevance to the BCNWR within Travis County are the Marshall Ford Reservoir (Lake Travis) and the Canyon Creek development project.

Nearly three hundred archaeological sites are known to be present within the Lake Travis Basin, formerly known as the Marshall Ford Reservoir. While the largest portion of the reservoir is in Travis County, a portion also extends into Burnet County. The bulk of the archaeological sites were located during the WPA-sponsored surveys carried out by the University of Texas in the 1930s. Although a large amount of archaeology was conducted during the project, the results of the work remains unpublished. Howard (1983) provides one of the more comprehensive reviews of the archaeology of the basin. Of the 273 sites known in the region, as of the time of her thesis research, 75 contained burned-rock middens while the remaining 198 consist of a range of sites including artifact scatters, hearth fields, rockshelters, and historic sites. Sixty

of the burned-rock middens have been examined to a limited extent either through surface collection, testing, or extensive excavation. Many of the sites (e.g., 41BT37, 41BT53, 41BT63, 41BT78) contain single middens. However, sites with two or more middens, such as 41BT35 (Page Site), 41BT35, 41BT66, 41BT90, and 41BT125, are also present. Although the temporal affiliation of many of these middens is not well known, at 41BT53 a large number of Nolan and Bulverde dart points were encountered on the ground surface. These points, may, however, predate the construction of the middens. Fifteen of the 75 middens were excavated by WPA personnel between 1938 and 1940. Unfortunately, only unpublished drafts of these excavations exist in the TARL site records.

Overall, Howard's (1983) analyses indicate that the majority of burned-rock midden sites are located between 700 and 800 feet in elevation, on the upper terraces of the Colorado River. Slightly more than a quarter (n=21) of the sites are near springs or have springs on site. The majority of the sites contain single middens (70 percent), although 23 percent of the sites have two or three middens. One site contains 14 middens. The mean area of the middens is 7,040 sq. feet, with their depth averaging 19 inches. There is considerable range in these dimensions, from the smallest midden having a surface area of only 170 sq. feet while the largest covering 32,300 sq. feet. The depth of the middens ranges from a minimum of 7 to a maximum of 48 inches. The number of formal tools (extensively flaked tools rather than expedient tools and debitage), ranges from a minimum of 7 to a maximum of 4520, with an average of 853 tools per midden. However, the range suggests that potentially a number of functionally distinct burned-rock features are included in the sample of 75. Forty of the midden sites have been excavated. Howard (1983) also presents a discussion of the materials recovered from these middens. Her results indicate that 15 percent of the sites have burials, grinding stones (manos and metates) were encountered in all, Clear Fork gouges were found in half of the middens, as were net sinkers. Mussel shells were found in 65 percent of the middens, while bone and snail shells occurred in 35 and 15 percent respectively.

The Canyon Creek Development project consisted of the inventory and assessment of the cultural resources found on 1,810.5 acres of the upper Bull Creek Basin in Travis County (Howard and Freeman 1984). Bull Creek drains the eastern margin of the Edwards Plateau, and is located west of Austin, in north-central Travis County. It is approximately 20 miles southeast of the BCNWR in an upland environmental setting similar to that of the project area. The project consisted of a 100 percent pedestrian survey that identified 113 archaeological sites. Of these, 101 are prehistoric, 10 are historic, and 2 contain both historic and prehistoric components. In general, site distributions indicate that prehistoric sites are clustered around and within the heads of canyons, whereas historic sites are found on stream terraces within canyons or on upland slopes. About half of the sites produced temporal diagnostics. The relative frequency of these specimens suggests that the area was not utilized intensively from the late Paleoindian through the Middle Archaic period. The most intensive occupation occurred during the Late Archaic, only to drop again during the Late Prehistoric. The distribution of sites and/or components indicates that different parts of the landscape were utilized through time. During the Paleoindian and Early Archaic periods occupations tended to concentrate on upland slopes. During the Middle Archaic occupations moved closer to the main canyon heads, while during the Late Archaic stream terraces appeared to be the preferred location. During the Late Prehistoric Period, valley margins and uplands became the preferred site loci.

The breakdown of prehistoric sites by site type indicates that the majority are upland lithic scatters (n=65) reflecting lithic procurement and short-term occupation or special activity loci also containing a limited number of burned-rock features. The upland lithic scatters vary in size from up to .5 acres (n=41), to between .75 and 5 acres (n=19), and between 11 and 58 acres (n=5). Based on the types of temporal diagnostics, 24 appear to be single component, while 10 are multiple component. The remaining 31 lithic scatters yielded no temporal diagnostics. Rockshelters are the second most common (n=20) site type followed by terrace (n=7) and burned-rock midden sites (n=6). The majority of the rockshelters are small (1–20 sq. meters, n=11), five fall in the 21–80 sq. m size category, and four are between 100–500 sq. m in size.

The temporal affiliation of the rockshelter occupations is not well known. Five of the seven terrace sites are less than .5 acres suggesting that they may represent reasonably discrete occupations. Four of the six midden sites contain a single midden. The other two midden sites contain two and three middens each. The midden sites are generally located near water sources. The majority of the middens range from 50 to 100 sq. m, with only two measuring between 110 and 130 sq. m, and one having an area of approx. 220 sq. m.

Forty-five prehistoric sites in the Canyon Creek project area were judged to be eligible to the National Register of Historic Places. They include 13 lithic scatters, 20 rockshelters, four burned-rock midden sites, five terrace sites, 1 standing historic structure, and two historic artifact scatters.

Subsequent to these survey efforts, Coffman et al., (1986) undertook investigations at two of the eligible sites, a rockshelter (41TV742) and an upland lithic scatter (41TV743). In addition, a second previously recorded rockshelter (41TV747) was revisited and temporal diagnostic artifacts were collected from the surface. Finally, two previously undetected sites (41TV1105 and 41TV1106) were located and formally recorded in the vicinity of the investigated sites. The results of these investigations are at odds with some of the prehistoric land use reconstructions offered by Howard and Freeman's (1984) survey results. The inconsistencies derive primarily from the inherent limitations of survey-level efforts to yield data for detailed reconstructions of prehistoric behavior. For instance, the work at the five sites revealed that the section of the Bull Creek drainage where the sites are located was utilized throughout the entire sequence of Central Texas prehistory. Paleoindian groups used the rockshelters during a period when its floor surface area was much larger than following roof collapse. The shelter continued to be revisited throughout the Archaic and Late Prehistoric times. Paleoindian use of the Bull Creek drainage extended to both rockshelters and upland lithic resources as indicated by Paleoindian points in these lithic scatters. In addition to Early Archaic sites being limited to canyon rim locations, the work also identified Early Archaic materials in terrace contexts. Middle Archaic presence in the region may not be limited to burned-rock midden sites, as

earlier thought. The occurrence of numerous Late Archaic components in both shelters and upland lithic scatters suggest that these materials represent increased use of the Canyon Creek area during this period. The results also revealed dramatic differences in the preferred uses of different portions of the landscape between the Late Prehistoric Austin and Toyah Phases. Austin phase materials tend to be common in rockshelters (see also Kotter 1985, the Cherry Tree Shelter), while no Toyah phase materials were encountered in these contexts. The latter occurred predominantly in upland lithic scatters.

Williamson County

To date, 1,933 prehistoric and historic archaeological sites have been recorded in Williamson County. Three projects have particular relevance to the archaeology of the BCNWR: Blockhouse Creek, the North Fork Reservoir, and the Wilson-Leonard site excavations.

Blockhouse Creek is a residential housing development in Leander, in southwestern Williamson County. Since the mid-1980s archaeological work has been conducted in this 1,500-acre subdivision, first by Espey, Huston and Assoc., and since 1996 by Parsons Brinckerhoff.

A total of 46 sites (Voellinger and Gearhart 1987:ii), containing 85 burned-rock middens, have been identified (Voellinger, Gearhart, and Cargill 1997:31). Three of the Blockhouse Creek sites have been mitigated through controlled surface collection, and through mechanical and manual excavation. Five middens were excavated during this project (four out of 21 at 41WM312, and one out of four at 41WM632), and one midden (out of five) was investigated at 41WM640. A Master's thesis by Gearhart (1987) provides detailed results of these investigations, particularly as they relate to midden formation, function, and accumulation rates.

The results indicate that although no central pit features were noted within these middens, some vertical variations in the amount of burned rock by weight may be used to identify vertical stratigraphy within the deposits of Type I middens (i.e., mounds without vis-

ible internal central features [Weir 1976:34]). No direct evidence exists, other than the quantity of burned rock, to suggest that such Type I middens accumulated as a product of specialized food processing of acorns or other plant resources. The contents of the Type I middens are varied and indicate the consumption of a variety of food resources. No clear evidence was found to indicate that hearth pits were ever constructed into the surface of the midden. The growth of these middens appears to have resulted from burned-rock discard, the rock resulting from cooking activities that took place outside of the midden itself. And finally, three distinct burned-rock size classes may be present in the Type I middens, perhaps correlating with seasons of accumulation. Based on this information, Gearhart infers an accumulation rate of 7.6 cubic meters per season of occupation (Gearhart 1987:139–141).

In addition to these investigations focused on the three middens, 37 middens were mechanically trenched and sampled for various data types (e.g., charcoal for macrobotanical and radiocarbon dating; flotation samples, and archaeomagnetic samples for dating). In addition, six middens containing central features were manually excavated. The results of these investigations represent some of the more extensive and concentrated undertaken within the state (Voellinger, Gearhart, and Cargill 1997). The trenching results indicated that the majority of the middens contained central basin-shaped features excavated into the prehistoric surface. Many of the features were slab-lined. The few radiocarbon dates available indicate that the middens date primarily to the Late Archaic, but the use of many of them may also have extended into the Late Prehistoric period (Voellinger, Gearhart, and Cargill 1997:16). The detailed mapping of 70 of the middens indicates that 80 percent are distributed in a rather narrow band, within 100 m from drainage center, along either side of Block House Creek. The middens tend to occur in clusters, so for instance 32 middens occur in a total of 14 clusters. Although the analysis of the macrobotanical samples has not yet been concluded, the middens, based on excavation records, appear to contain an abundance of small thinning flakes and unidentifiable bone fragments. In addition, a variety of ground stone tool fragments have been found on surface adjacent to middens.

The North Fork Reservoir project is located on the north fork of the San Gabriel River in west-central Williamson County, north-northeast of the BCNWR. Archaeological work in the project area, including the South Fork of the San Gabriel River, began in 1963 with a reconnaissance conducted by Shafer and Corbin (1965). A total of 55 prehistoric sites were located during this survey. An additional survey in the early 1970s resulted in the recording of 47 new sites (Jackson 1974). Texas A&M University conducted an additional survey during the late 1970s (Patterson and Schafer 1980). The final survey efforts in the project area were carried out by North Texas State University (Hays 1982). Eighty new prehistoric and 100 new historic sites were recorded during this effort. As part of these projects a number of sites have been tested and/or have seen limited excavation, including work at the John Ischy site (41WM49), a burned-rock midden (Sorrow 1969), the Barker site (41WM71), an alluvial terrace site (Sorrow 1970), testing of four burned-rock midden sites (41WM57, 73, 88, and 115) and four alluvial terrace sites (41WM33, 34, 56, and 87; Sorrow 1973). Sullivan et al. (1976) also tested three alluvial terrace sites (41WM50, 52, and 53) and a burned-rock midden (41WM81). As part of the North Texas State University work, 15 prehistoric and four historic sites have been investigated.

The work conducted by North Texas State indicated that the occupation of the North Fork of the Guadalupe has been intermittently occupied from about 8,000 B.P. to about 150 B.P. The stratigraphic positions of some of the index markers, particularly the Early Archaic (San Geronimo Phase) and Middle Archaic (Clear Fork Phases), does not agree with earlier impressions. For instance, Wells points are part of the Early rather than Middle Archaic tool kits. Similarly, Hoxie points are also part of the Early Archaic material culture. The materials recovered indicate that between 4,000 and 5,000 B.P., during the Early to Middle Archaic transition, Bulverde and Nolan projectile points are the predominant type. Although other styles also occur (Travis, Tortugas), they are a small proportion, suggesting that there was less variability in blade/stem forms during the early portion of the Middle Archaic (Clear Fork Phase). In contrast to the southern margin of the Edwards Plateau, Pedernales points are not numerically dominant along the eastern margins of the plateau during the middle portion of the Middle Ar-

chaic (Round Rock Phase). A considerable amount of stylistic heterogeneity seems to be indicated by the variety of styles present in the region during the period. However, this lack of homogeneity may be the result of site formation processes and the mixing of distinct occupation surfaces. The Late Archaic and Late Prehistoric stratification of diagnostic points agrees with their vertical distribution noted in other parts of Central Texas. The authors note a remarkable consistency in the artifact assemblages utilized through time in the project area. While the exact frequencies of particular tool classes appears to have fluctuated somewhat through time, the overall diversity of tool types remained surprisingly constant. Tool production appears to have been a dominant activity at all sites in the project area. The small number of cores recovered at the sites implies that initial reduction may have been carried out elsewhere, suggesting some strategic land use systems (e.g., upland lithic scatters). Expedient tools represent a generalized tool kit for most of the prehistoric sequence. Ground stone tools and scrapers seem to increase in the early Middle Archaic (Clear Fork Phase) suggesting some narrowing of diet breadth. Overall, however, the generalized chipped stone tool kits suggest a broad-based foraging economy. The bow and arrow and the adoption of ceramics appear to have changed the nature of the subsistence economy; the sample of sites, however, is too small to understand exactly how.

The results also indicate that changes have occurred through time in the intensity of site occupations, the preferred land forms occupied, and the range of site types occupied through time. Early Archaic occupations of the region appear to have been relatively sparse based on the quantity of debitage and tools recovered from the components. Hearths are informal and the superposition of hearths indicates intermittent or regular reuse of the same location through time. The generalized tool kits and the diversity of subsistence resources encountered indicates a broad-based foraging land use rather than specialized hunting or concentration on a limited range of resources. Significant changes in land use appear to occur during the early part of the Middle Archaic with the formalization of basin-shaped burned-rock hearths and the appearance of massive accumulations of burned rock, which may represent both rock ovens and sheet refuse of discarded burned rock. Densities of lithic debitage and tools

appear to increase in many sites suggesting an increase in occupation intensity. Paradoxically, while the range of subsistence resources seems to remain quite broad, the presence of burned-rock thermal facilities suggests some degree of intensification of or specialization upon the extraction of most likely plant resources that require significant cooking times. The presence of sites with large burned-rock accumulations (e.g., 41WM57, 41WM73) vis-à-vis other camp sites without such features (41WM56) suggests some degree of differentiation in the use of the landscape. The pattern suggests relatively generalized foraging with perhaps some degree of seasonal specialization or focus on abundant high-yielding plant resources throughout the Middle Archaic. The relative increase in grassland species, such as pronghorn antelope and bison, may also indicate the presence of drier environmental conditions, supporting the assertion that the burned-rock thermal features were associated with the processing of xerophytic plant species. On the other hand, the exploitation of these higher ranked (i.e., optimal foraging) ungulate species suggests perhaps a sequential seasonal specialization on plant and animal resources during the annual round. The intensive pursuit of the ungulates should also contribute to a broadening of the site types generated by such a seasonal mix of plant and animal resource procurement.

The utilization of thermal features that produced the massive accumulations of burned rock continued during the Late Archaic although sites with such features are less numerous than in the previous period. Yet it appears that the processes responsible for these features declined in intensity during the Late Archaic. The greater use of stream terraces as preferred site locations may also be related to changes in resource procurement practiced during the period. Finally, the intensity of occupation at all sites seems to decline, suggesting perhaps a greater degree of mobility possibly associated with the increased importance of hunting medium to large game such as bison which return to the region during the early portion of the Late Archaic in particular.

The intensity of regional occupation further declines during the Late Prehistoric judging from the few components in the region. Interestingly, in contrast, occupation intensity appears greater in other portions of

Central Texas and surrounding regions (e.g., north-central Texas and southern Edwards Escarpment).

One additional site will play a significant role in providing data to reconstruct prehistoric lifeways and paleoclimatic conditions in Williamson County and neighboring Central Texas. The Wilson-Leonard site, 41WM235, is arguably the most significant archaeological site in Central Texas. Its significance, among other things, lies in the 11,000 years of human history that the artifacts and features excavated from the site

reveal. Although the six-volume report has not yet been published, preliminary drafts indicate that the results of the investigations will provide significant new data for a regional paleoenvironmental sequence. In addition, the earliest deposits from the site will provide a tight stratigraphic sequence for the Paleoindian and Early Archaic periods. Finally, in addition to documenting a newly identified Paleoindian culture, known as the Wilson, the excavations also provide a systematic documentation of the development of burned-rock thermal facility technology in Central Texas.

Chapter 2: Prehistoric and Historic Regional Overview

Steve A. Tomka and John Leffler

This section presents the prehistoric and historic information currently available for the Balcones Canyonlands and the broad region within which it is located. Because the Refuge is located within the Central Texas archaeological region (Figure 4; Weir 1976; Prewitt 1981; Ellis et al. 1995; Collins 1995), the prehistoric overview incorporates the entire Central Texas area. Given the wealth of information available, the historic overview focuses primarily on the three-county area of the Refuge. The overview is again split into two subsections, the first dealing with the prehistoric to early historic periods, while the second referring primarily to the historic period.

Prehistoric and Protohistoric Human Presence in Central Texas

The core of the Central Texas archaeological region is the Edwards Plateau. In defining the region, Prewitt (1981) intended to represent the approximate geographical extent of similar archaeological traits apparently influenced by roughly similar natural resources and therefore representing common adaptations. A number of archaeologists have disagreed with the boundaries of the archaeological region (Hester 1989:2) and the accuracy of the distribution of certain archaeological traits and biogeographical components (Ellis et al. 1995). In addition, Prewitt (personal communication 1996) himself has altered somewhat the originally conceived boundaries as more recent archaeological data have become available. Nonetheless, the Central Texas archaeological region continues to be the most widely used construct within which to discuss the prehistory of the region containing and surrounding the Refuge.

Archaeological work in the region extends back to the early 1930s when Pearce (1932) excavated a number of burned-rock midden sites near and west of Austin. Also during the 1930s the University of Texas in col-

laboration with the WPA carried out extensive surveys and excavations in the Marshall Ford Reservoir (now Lake Travis, Travis County), and at the Falls Creek sites in the upper portion of Buchanan Lake (Lampasas, Llano, and Burnet counties). In the 1940s, J. Charles Kelley excavated a deep terrace site along the Colorado River near Austin. Based on this work and the review of the WPA-sponsored excavations along Lake Travis, Kelley (1947a, b) defined the Edwards Plateau and Central Texas aspects to represent the Archaic and Late Prehistoric period remains of the region, respectively. By the late 1950s a large number of archaeological excavations have been carried out in the region. A comprehensive summary and syntheses of these efforts was produced by Story in the late 1950s and published in the *Bulletin of Texas Archaeology* (1960).

Numerous authors have since synthesized the regional archaeology, in part reflecting the rapid pace of archaeological work and the changing theoretical perspectives. As part of his Master's thesis, Weir (1976) provided a comprehensive review of the Central Texas Archaic period and divided it into four phases. From early to late they are the Clear Fork (5,000–4,000 B.P.), Round Rock (4,200–2,600 B.P.), San Marcos (2,800–1,800 B.P.), and Twin Sisters (2,000–700 B.P.). In addition, he summarized the data available on burned-rock middens and defined a typology of four categories to account for the morphological variability noted by various researchers in the past. Prewitt (1981, 1985) also synthesized the regional archaeology in an attempt to refine the cultural chronology of the region. In addition to defining the Central Texas Archaeological Region, in these publications Prewitt splits the Archaic into eleven phases and defines two phases for the Late Prehistoric Period (that he prefers to call the Neochaic Stage). Black's (1989) review of the archaeology of the region is useful particularly because he attempts to synthesize the information primarily from the perspective of cultural resource management.

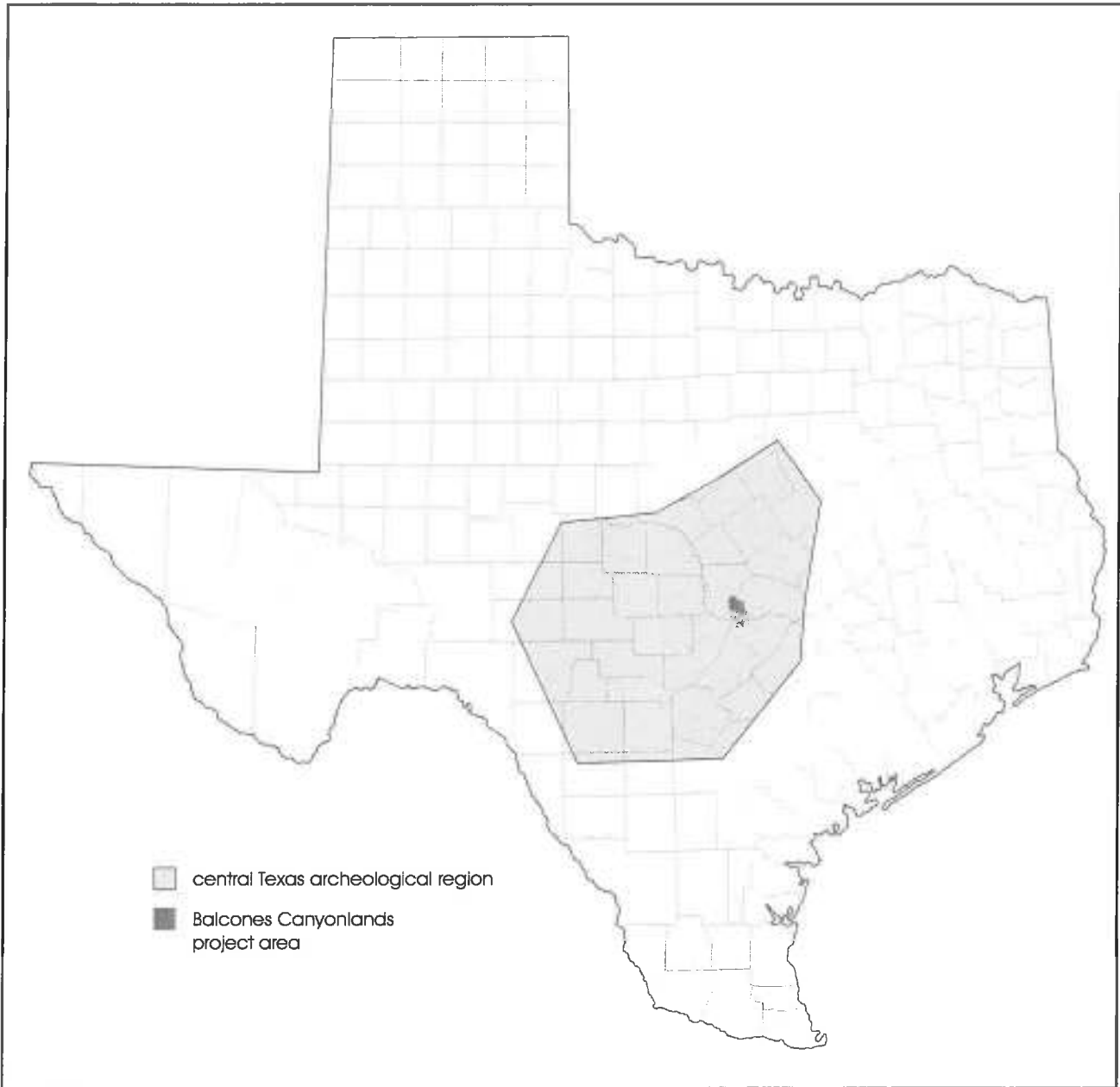


Figure 4. *The Balcones Canyonlands National Wildlife Refuge within the Central Texas archaeological region (Prewitt 1981).*

He addresses issues such as the concern with defining significance for archaeological sites, the need for adequate sampling archaeological remains, and the recovery of subsistence data. In addition, he provides a series of research topics which may be employed to focus and organize future research efforts. Johnson and Goode (1994, 1995) review the Holocene paleoclimatic information available for the eastern margins of the Edwards Plateau and critically evalu-

ate the archaeological periods employed. Based on perceived synchronicity between changes primarily in projectile-point styles and climatic conditions, they redefine the lengths of the Early, Middle, and Late Archaic periods and reconsider the affiliation of some of the index marker projectile points representative of particular archaeological eras. Johnson is critical of the use of phases, considering them inadequately defined and of little utility (Johnson and Goode 1994:18; see also Johnson 1987). The most recent re-

YEARS B.P. A.D./B.C.	CENTRAL TEXAS ARCHAEOLOGICAL PERIODS AND PHASES (Prewitt 1981, 1985)	CENTRAL TEXAS ARCHAEOLOGICAL ERAS, PERIODS, AND PROJECTILE POINT STYLE PATTERNS (Johnson & Goode 1994)	CENTRAL TEXAS ARCHAEOLOGICAL PERIODS, SUBPERIODS, & PROJECTILE POINT STYLE INTERVALS (Collins 1995)
	0	HISTORIC	
1000	NEOARCHAIC Toyah Austin	POST ARCHAIC ERA Triangular Perdiz Scallorn Edwards	LATE PREHISTORIC Perdiz Scallorn-Edwards
2000	LATE ARCHAIC Driftwood Twin Sisters Uvalde	LATE ARCHAIC PERIOD II Darl, Figueroa Ensor, Frio Marcos	LATE ARCHAIC Darl Ensor-Frio-Fairland
1000	MIDDLE ARCHAIC San Marcos Round Rock Marshall Ford Clear Fork		LATE ARCHAIC PERIOD I Castroville Montell Marshall Pedernales Bulverde
4000	EARLY ARCHAIC Oakalla Jarrell San Geronimo Circleville	MIDDLE ARCHAIC PERIOD Nolan, Travis La Jita Unnamed Styles Early Triangular Merrell Calf Creek/Bell	MIDDLE ARCHAIC Nolan-Travis Taylor Bell-Andice-Calf Creek
6000		EARLY ARCHAIC PERIOD (Martindale, Uvalde) Early Barbed Series Early Split-Stem Series (Hoxie)	EARLY ARCHAIC Martindale-Uvalde Early Split Stem Angostura
8000	PALEOINDIAN	PALEOINDIAN ERA	LATE PALEOINDIAN St. Mary's Hall Golondrina-Barber Wilson Plainview?
10000			EARLY PALEOINDIAN Folsom Clovis

Figure 5. Comparison of the three most commonly used prehistoric cultural sequences for the Central Texas archaeological region.

view of regional archaeology is by Collins (1995). He emphasizes the urgent need to infuse more systematic consideration of geomorphological contexts in considerations of the integrity of archaeological components. He also cautions about the necessity of focusing archaeological research on those sites that have discrete assemblages of material culture.

The prehistoric and early historic period summaries presented below represent yet another attempt to review the regional archaeology and synthesize the trends in adaptation and land use so far identified within the area. It is somewhat different from the works mentioned above in that it has a strong ecological and adaptationist perspective focusing less on culture historic reconstructions and more on patterns and processes of human interaction with their natural and cultural environment. The archaeological periods used are those proposed by Johnson and Goode (1994, 1995), primarily because they seem to most closely correlate with changes in paleoclimatic conditions which may have precipitated subsequent changes in land use and resource exploitation strategies (see Johnson and Goode 1995; Collins 1995). However, to assure some degree of comparability between some of the more influential regional reviews, Figure 5 presents a comparison of the prehistoric cultural sequences developed by Prewitt (1981), Collins (1995), and Johnson and Goode (1995).

Paleoindian Period

The Paleoindian Period is assumed to have lasted from about 11,200 B.P. to about 8,000 B.P. Although archaeological finds predating the arbitrary beginning of this period do exist in both North and South America, the Paleoindian period is the earliest well-documented cultural manifestation in North America. Climatic conditions during the Paleoindian period appear to have been somewhat transitional between the cooler and moister conditions of the later portion of the Pleistocene and the warmer and drier conditions that characterized the Holocene. Nordt et al. (1994) suggest that warm season C₃ grasses steadily increased throughout the period at the expense of woody arboreal vegetation communities. Toomey et al. (1993) see a similar trend of increases in summer temperatures accompanied by a decrease in effective moisture after about 10,500 B.P.

Collins (1995) has reviewed the archaeology of Central Texas and divides the Paleoindian period into two segments: the early and late Paleoindian periods. The index markers for the earliest portion are the Clovis and Folsom points (Figure 6; see also Turner and Hester 1993). In general, isolated Clovis and Folsom points are common throughout the state (see Largent et al. 1991; Meltzer and Beaver 1995). The quantity and nature of these finds, which often consist of use-broken or complete but heavily reworked specimens, suggests that they are hunting losses (Amick 1994).

Table 2. Archaeological Sites with Paleoindian Components within the Central Texas Archaeological Region

Booker Site	41TV627	Howard 1983
Granite Beach	41LL2	Crawford 1965
Horn Shelter	41BQ46	Watt 1978
Hoxie Bridge	41WM130, 41WM284	Bond 1978
Kincaid Shelter	No site number	Sellard 1952, Collins et al. 1988
Levi Rockshelter	41TV49	Alexander 1963
Loeve Site	41WM133	Eddy 1973; Prewitt 1982
Pavo Real	41BX52	Henderson and Goode 1991
Strohacker Site	41KR29	Sollberger and Hester 1972
Tombstone Bluff	41WM165	Prewitt 1982
Wilson-Leonard	41WM235	Bousman personal communication 1998
	41WM419	Hays 1982

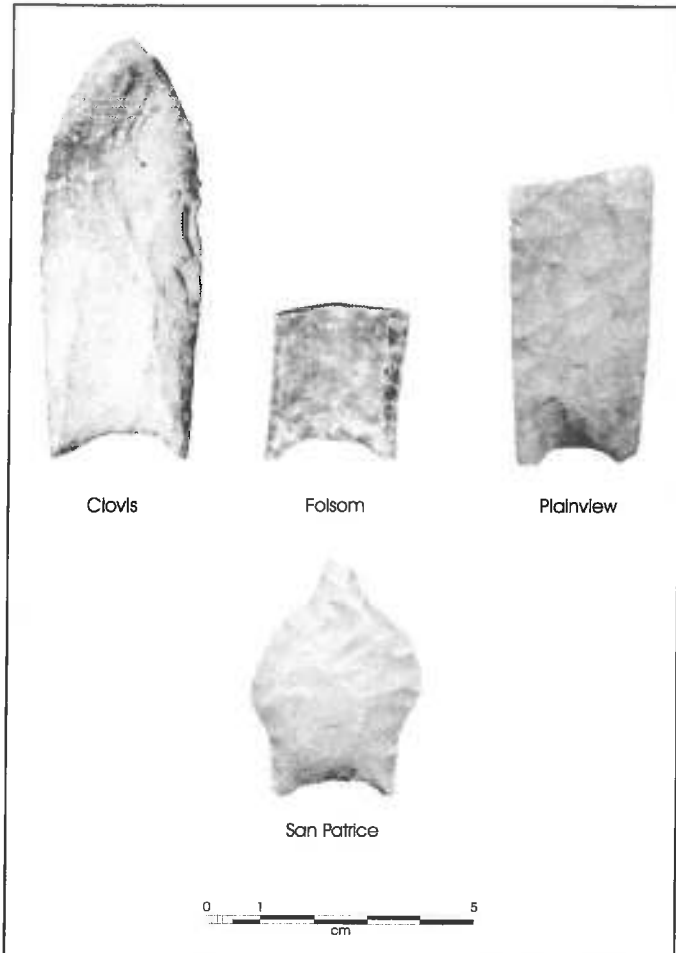


Figure 6. *Diagnostic Paleoindian projectile points of Central Texas.*

While such finds are common, and suggest a relatively mobile land use strategy perhaps related to game procurement, camp sites with Paleoindian components are much fewer. The few Clovis components that are known have been documented at Kincaid Shelter, Wilson-Leonard, Gault, Horn Shelter # 2, Pavo Real, and Crockett Gardens. Based mainly on knowledge regarding Clovis lifeways from other parts of the United States, it is assumed that subsistence was based on a diverse range of larger and smaller fauna (e.g., mammoth, bison, and horse; water and land turtles, alligator, mice, badger). Although little evidence exist regarding plant resources, it is assumed that this portion of the diet was equally varied. Clovis period site types include kill, quarry/lithic workshops, caches, camps, and burial locations. Overall, Clovis land use appears to have been little different from that of later period big game hunting groups. Diet appears to have

consisted of a mix of plant and animal resources with emphasis on high-yield big game when available. The presence of cached artifacts suggests some degree of regularity and patterning in mobility.

As in the case of Clovis finds, while isolated Folsom points have been found throughout the state, Folsom age components are less common. Sites with Folsom age components in Central Texas include Horn Shelter # 2, Pavo Real, Wilson-Leonard, and Kincaid Shelter. Camp sites, kill/butchering localities, and quarry sites are the documented site types identified. In addition, the Folsom period tool kit, composed of fluted and unfluted points, well-thinned bifacial knives, and spurred end scrapers and other scraping tools reminiscent of later bison hunting complexes.

The late Paleoindian subperiod is characterized by a series of index marker projectile points that share characteristics with later Early Archaic types or at least appear to be transitional between the two. Three projectile styles are included in this subperiod: Wilson, Golondrina-Barber, and St. Mary's Hall. The Wilson subperiod is best defined at the site of Wilson-Leonard (41WM235), where the corner-notched expanding stem Wilson points are associated with small, not well-formed burned-rock features, a burial, a variety of expedient artifact types, and a range of faunal remains. The large basin-shaped hearths, burned-rock scatters, and some degree of site structure at the Loeve site (41WM133) also date to this time period. The Golondrina-Barber and St. Mary's Hall components date roughly between 9,500 and 8,800 B.P., while the latest date for the Wilson component is 9,650 B.P. (Masson and Collins 1995). While all three of the components have small burned-rock thermal facilities, the two later point styles are more reminiscent of the leaf-shaped Paleoindian tradition than the Wilson type. However, in other traits, even the two later components appear to be transitional between the Paleoindian and Early Archaic periods.

In addition, a number of projectile point types assumed to be Paleoindian in age have been found in the state. Plainview points are relatively common throughout the central and south-central portion of the state. On

the other hand, San Patrice, and Dalton points are limited primarily to the eastern and northeastern half of Texas. The placement of all three point types along the early to late subperiods is uncertain (Collins 1995:382).

The Early Archaic Period

This period begins around 8,000–8,500 B.P. and lasts for approximately 3,000 years. It reflects the shift from Paleoindian lifeways based on high mobility and a subsistence pattern that was dominated by hunting, to regionalization of populations, land-use, and subsistence practices. On the Edwards Plateau, this shift

Table 3. Archaeological Sites with Early Archaic Components within the Central Texas Archaeological Region

Baylor	41ML35	Story and Shafer 1965
Booker Site	41TV627	Howard 1983
Cedar Park Mound	41WM8	Schuetz 1957
Cervenka	41WM267	Hays 1982
Crumley	41TV86	Kelly 1961
Gault Site	41WM10	TARL files
Granberg II	41BX271	Undescribed, UTSA files
Granite Beach	41LL2	Crawford 1965
Greenhaw	41HY29	Weir 1979
Haws	41WM56	Hays 1982
Hop Hill	41GL21	Gunn and Mahula 1977
Hoxie Bridge	41WM130	Bond 1978
Jetta Court	41TV151	Wesolowsky, Hester, and Brown 1976
John Ischy	41WM49	Sorrow 1969
Kyle Shelter	41HI1	Jelks 1962
La Jita	41UV21	Hester 1971
Landslide	41BL85	Sorrow, Shafer, and Ross 1967
Levi Shelter	41TV49	Alexander 1963; Prewitt 1982
Loeve Site	41WM133	Eddy 1973; Prewitt 1982
McCann	41LM3	Preston 1969
Merrell	41WM2	Campbell 1948
Panther Springs Creek	41BX228	Black and McGraw 1985
Richard Beene	41BX831	Thoms et al. 1996
San Gabriel Mound		Schuetz 1957
Scorpion Cave	41ME7	Highley et al. 1978
Sleeper Site	41BC65	Johnson 1991
Shep	41KR109	Luke 1980
Smith Shelter	41TV42	Suhm 1957
Strohacker Site	41KR29	Sollberger and Hester 1972
San Geronimo	41BX196	Weir 1976
Tombstone Bluff	41WM165	Prewitt 1982
Unnamed	41TV371	Espey, Huston and Assoc., in Johnson 1991
Wheatley	41BC114	Greer 1976
Wilson-Leonard	41WM235	Bousman personal communication 1998
Wounded Eye	41KR107	Luke 1980
Youngsport	41BL78	Shafer 1963

occurs some 1,500 years after the arrival of similar lifeways in the eastern United States (Johnson 1997:19). The climatological conditions prevalent during the period are not well understood. Based on pollenological evidence, Bousman (1998) reconstructs the period as beginning with relatively high moisture levels and vegetation communities dominated by arboreal species. By approximately 6,000 B.C. moisture levels begin to drop, reaching a low around 5,000 B.C. Moisture levels and arboreal canopy cover increases thereafter peaking at about 4,000 B.C. only to plummet to their lowest levels at about 3,000 B.C., during the early Middle Archaic. In contrast to this reconstruction, Johnson and Goode (1995:73) cite some geomorphological evidence from Fort Hood, Texas, in Bell and Coryell counties, and the Jonas Terrace site (41ME29), at the southern edge of the Edwards Plateau, of a short-lived drought episode sometime around 6,500–6,000 B.C. This is followed by high effective moisture conditions during much of the Early Archaic but peaking relatively early at around 5,500 B.C. Effective moisture levels gradually decrease thereafter but do not reach drought conditions until about 3,500 B.C. Yet another reconstruction is offered by Nordt et al. (1994) based on the isotopic composition of organic carbons. They interpret the data to indicate gradually changing conditions from about

6,500 B.C. on, finally culminating in the establishment of grasslands and arid climatic conditions by about 4,800 B.C. and potentially continuing until about 3,800 B.C. This reconstruction is more in line with that provided by Bousman (1998). Although the climatological profile of the Early Archaic has not yet been worked out, one aspect of the period on which there appears to be greater agreement is that this entire 3,000-year period represents a period of bison absence from the Edwards Plateau and Texas.

Early Archaic projectile points are generally divided into two groups, the Early Split-Stem and the Early Barbed traditions. More recently, Collins (1995) included the Angostura point, a type previously considered to be late-Paleoindian in age, as the first point that signals the arrival of Archaic life ways in Central Texas (see also Prewitt 1981:270). Angostura points are common throughout Central Texas and extend southward into South Texas and the Central Coastal Plains (Figure 7; see also Turner and Hester 1993). Although they have the characteristic leaf-shaped outline and well-ground bases and stem margins, based on their presence in deposits containing materials that suggest Archaic adaptations Collins (1995) considers them Early Archaic. The Early Split Stem group is characterized by relatively narrow parallel to slightly

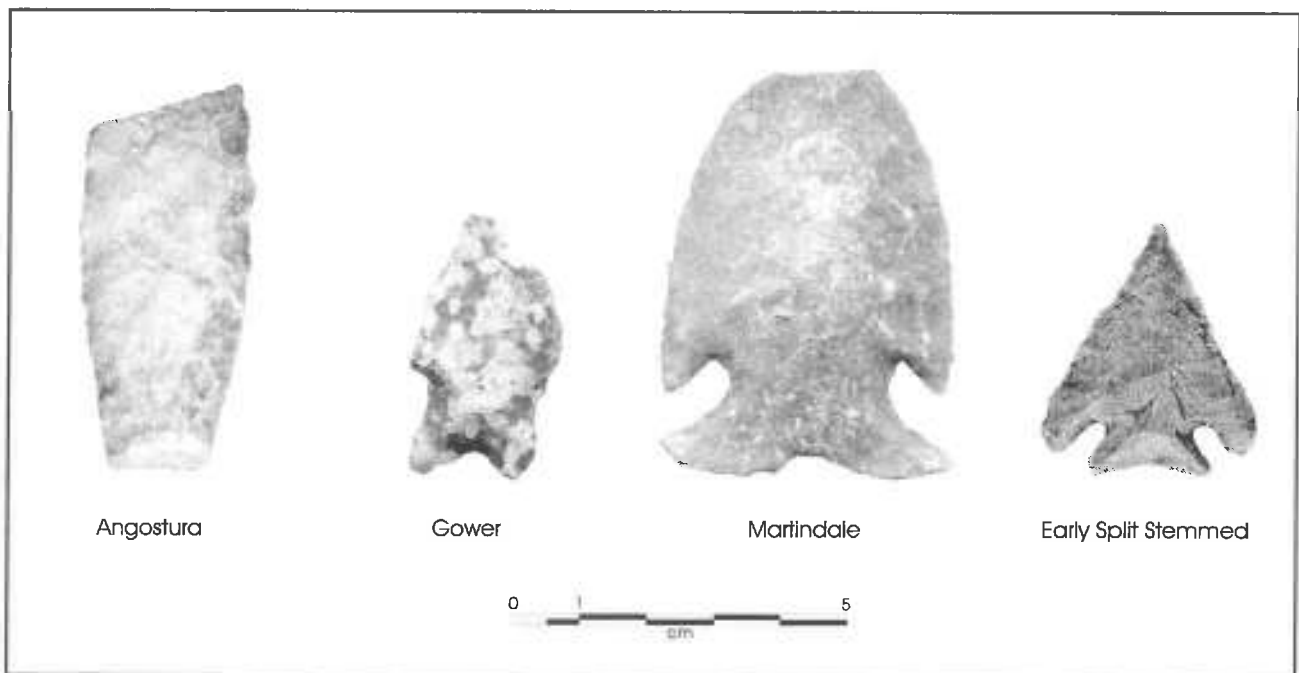


Figure 7. Diagnostic Early Archaic projectile points of Central Texas.

expanding stems that are moderate to deeply notched or concave. Named Central Texas point types that are included in this series are Gower, Hoxie, and Uvalde. The Early Barbed series includes points that have relatively wide blades and relatively short stems with concave bases that resemble a fish tail. The most common Central Texas point type included in this series is the Martindale, and a series of Martindale-like corner-notched points that are somewhat smaller than Martindale are well thinned and have expanding stems and straight to only slightly concave bases.

The spatial distribution of sites across the landscape suggests that at least during some portion of the Early Archaic site distributions tended to concentrate in areas that might have been better watered (e.g., canyonlands of the southern and eastern Edwards Escarpment; see McKinney 1981; Tomka, Perttula, and Hard 1997). This concentration into areas with greater, more dependable water resources corresponds expectations considering the drought conditions noted by Nordt et al., (1994) and Bousman (1998) for the region.

It is interesting that although small burned-rock features do appear in the preceding late Paleoindian period, both the size and variety of these thermal facilities increases in the Early Archaic. Medium and large stone-lined basin-shaped hearths. This pattern indicates a period of technological experimentation and innovation as well as perhaps an increased utilization of plant resources that require longer processing times. The tool kit appears to contain a variety of functional categories including grinding stones, Clear Fork gouges and Guadalupe tools used in woodworking, projectile points, and a variety of unifacial scrapers made on thin flakes, bifacially flaked drills, miscellaneous bifacial artifacts, and grooved stones. Although the subsistence pattern generally has been characterized as Archaic rather than Paleoindian in nature, data are lacking to provide anything beyond a very sketchy outline. Subsistence was characterized by a mix of medium-sized ungulate hunting and plant- and mussel shell-gathering. According to Johnson (1991:161) the majority of Early Archaic sites are small and highly varied in the range of activities that took place at them. Longer occupied and more frequently revisited open air camps may be found along stream channels and

rockshelters near water sources may have also served as base camps. Some differentiation in site types is noted with the presence of both hunting camps and milling localities (1991:161). The variety of projectile points and the presence of rather heterogeneous weakly standardized forms suggests the presence of distinct ethnic groups utilizing the area without well-defined territorial definition (Johnson 1991:163). Toward the end of the Early Archaic period and the very beginning of the Middle Archaic, a brief mesic period is experienced on the Llano Estacado (Holliday 1985a, 1985b) and on the eastern edge of Central Texas (Bousman 1998). This period is characterized by the return of bison into the region after a lengthy absence. Although Collins (1994) originally (Rickless and Collins 1994:94–95) considered this period of bison presence and exploitation as part of an Early Archaic adaptation, he later (Collins 1995) included it with the Middle Archaic period. Toward the end of this period, and particularly after the mesic conditions peak and drier conditions begin to set in, bison appear to again abandon the region. At the same time, rock-lined basin hearths and large flat rock-lined hearths become more common and rock ovens begin to be used.

The Middle Archaic Period

This period begins around 3,600 B.C. and lasts only about 1,200 years. Based on Bousman's (1998) reconstruction of paleoclimatic conditions from pollen data, the period is characterized by extreme drought conditions and a rather dramatic decrease in arboreal pollen suggesting a substantial increase in grassy vegetation cover. This is also the view of Nordt et al., (1994) who suggest that as much as 90 to 95 percent of the plant communities may have been dominated by warm-season C₃ grasses. Even if these percentages are only 60 to 70 percent, as suggested by Johnson's recalculations (Johnson 1995:86), the climatic picture is that of considerable drought. Johnson (1995:87) however, suggests that most of the Middle Archaic was moderately moist but drying and never really reached drought levels that could be considered Altithermal in degree. In light of this, it is interesting to note that although in South Texas there is a tendency for sites to again cluster in the Edwards Escarpment subregion during the Middle Archaic, the

Table 4. Archaeological Sites with Middle Archaic Components within the Central Texas Archaeological Region

Baylor	41ML35	Story and Shafer 1965
Boy Scout Shelter	41TV69	Pollard et al 1963
Cedar Park Mound	41WM8	Schuetz 1957
Collins	No site number	Suhm 1955
Crumley	41TV86	Kelly 1961
Evoe Terrace	41BL104	Sorrow et al 1967
Gault	41WM10	TARL Records
Greenhaw	41HY29	Weir 1979
Hawes	41WM56	Hays 1982
Hop Hill	41GL21	Gunn and Mahula 1977
Jetta Court	41TV151	Wesolowsky et al 1976
John Ischy	41WM49	Sorrow 1969
La Jita	41UV21	Hester 1971
Lake Thunderbird	41BP78	Duke 1977
Landslide	41BL85	Sorrow et al 1967
Loeve-Fox	41WM230	Prewitt 1982
McCann	41LM3	Preston 1969
Merrell	41WM2	Campbell 1948
Rogers Springs	41TV39	Prewitt n.d.
Scorpion Cave	41ME7	Highley et al., 1978
Shep	41KR109	Luke 1980
Tombstone Bluff	41WM165	Prewitt 1982
Williams	41TV75	Suhm 1959
Wounded Eye	41KR107	Luke 1980
Wunderlich	41CM3	Johnson et al 1962
Youngsport	41BL79	Shafer 1963

pattern is not sufficiently strong to be of statistical significance. The presence of drought conditions may have facilitated the northwestward expansion of Chihuahuan xerophytic plant communities onto the Edwards Escarpment. Furthermore, it may have also increased the extent of grasslands and may have generated more favorable habitats for open country grazers such as antelope.

The appearance of Calf Creek series basal notched Andice and Bell points marks the beginning of the Middle Archaic period (Figure 8). These points are broad bladed and very thin, exhibit deep basal notches that often exceed 15 mm in length, and result in large flat rather than pointed barbs. Although the presence of impact fractured specimens clearly indicates that these points were employed as projectile tips, their use histories also indicate a multifunctional use as

knives and projectile tips employed in, among other things, bison procurement and processing. Also of this age are the Early Triangular specimens (i.e., Baird and Taylor types) that may also have served multifunctional roles as both projectile points and knives. These points are characterized by triangular outlines and alternately beveled lateral margins. Finally, the latter portion of the Middle Archaic sees the proliferation of new projectile-point styles, including the La Jita, Travis, and Nolan. The difference in blade shape (narrow), stem shape, and knapping character clearly separates them from the earlier traditions. Johnson (1995:89) believes that the pattern of projectile-point styles during the later part of the Middle Archaic may represent considerable borrowing of styles from outside of the Central Texas region (e.g., Lower Pecos). Additionally, some outsider groups may have intermittently ventured onto the Edwards Plateau bringing

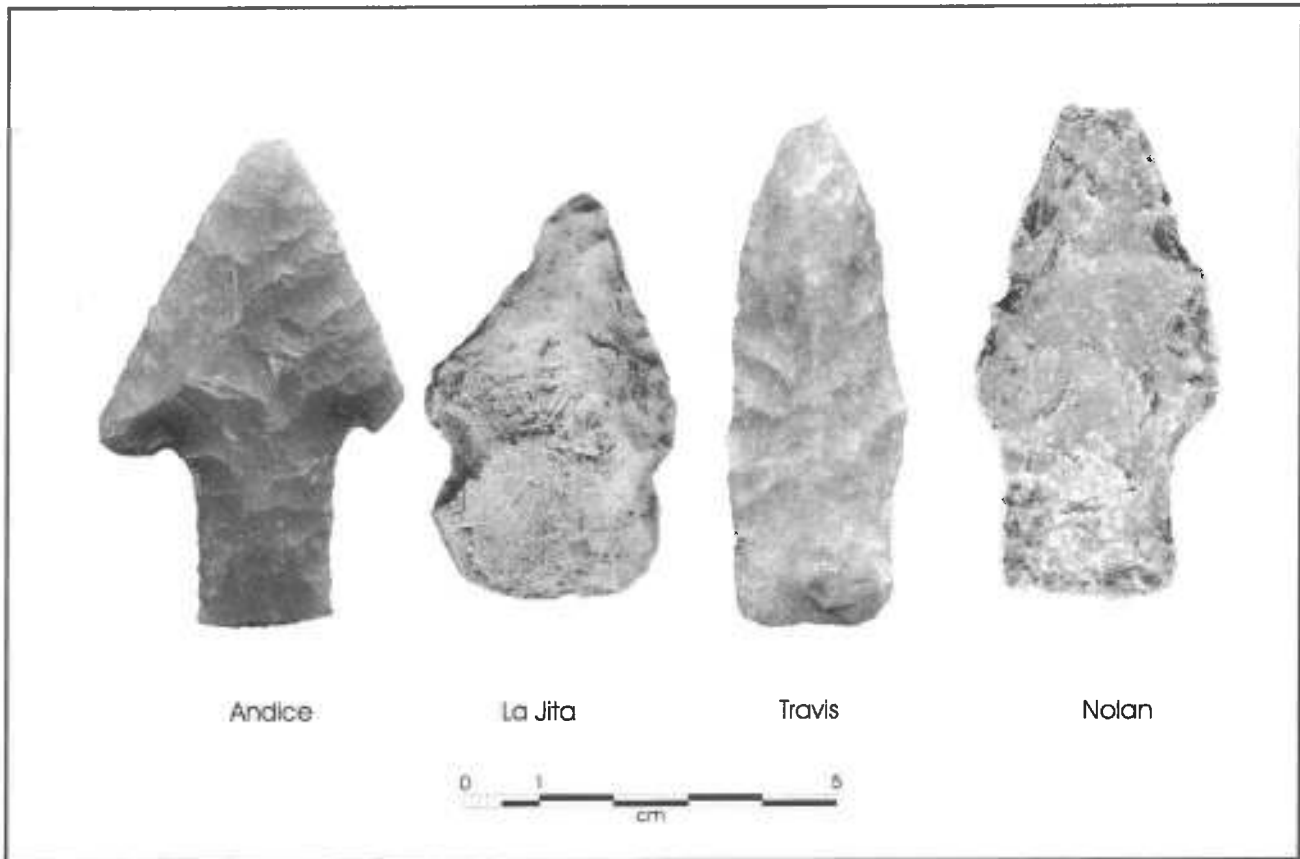


Figure 8. *Diagnostic Middle Archaic projectile points of Central Texas.*

with them styles hitherto foreign. Johnson and Goode (1994) suggest for instance that the Bell/Andice forms may have been brought in from the Southern Plains by bison-hunting groups that followed the southward migration of herds during the brief mesic period that occurred at the close of the Early Archaic and the beginning of the Middle Archaic. Similarly, Prewitt (cited in Johnson 1995:88) believes that the late Middle Archaic point styles characterized by beveled blade and stem edges may have been introduced from the Lowe Pecos and have their antecedents in the Pandale form common in the Lower Pecos.

The subsistence pattern that characterized the early half of the Middle Archaic in particular appears to have been one of mixed hunting and gathering. The live-oak savanna habitats of the Edwards Plateau, coupled with more wooded stream valleys, would have provided abundant and varied plant and animal resources. Foragers could have scheduled the utilization of these resources on a seasonal basis ensuring that few periods of shortages were experienced. The

presence of bison in the region during this early half may have facilitated seasonal emphasis on large ungulate populations that would have been common on the neighboring Blackland Prairie. It is possible that on a seasonal basis the hunter-gatherers of this region may have pursued a logistically organized collector resource extraction strategy reverting to the broad-based forager system during seasons of bison scarcity in the region. Such a land-use strategy may have created a range of site types that have not as yet been identified in the regional archaeological record (e.g., kill, kill/butchering, kill/butchering/residential site, base camps). The archaeological record in fact points to only a limited degree of variability within the Middle Archaic components excavated to date (Collins 1995:384).

The later part of the Middle Archaic is characterized by severe drought conditions and the likely spread of xerophytic plant communities onto the Edwards Plateau. The shift to the Nolan and Travis points is associated with the appearance of burned-rock middens.

The La Jita type, a possible local style, is common along the southern portion of the escarpment. This portion of the Middle Archaic may have witnessed a greater emphasis on the exploitation of plant resources complemented by the medium and small fauna inhabiting the grasslands and wooded riverine habitats. Although an emphasis on plant procurement may have also generated some specialized site types, it is also possible that the extraction of xerophytic plants may have been more conducive to the creation of sites where both processing and consumption occurred within the context of residential habitation. Although these plants would have been collected away from these processing sites, the actual collection loci would not be archaeologically identifiable.

The Late Archaic Period

Most archaeologists subdivide the Late Archaic Period into two subperiods. The entire period lasted approximately 3,000 years commencing about 2300 B.C. The first subperiod lasted about 1,700 years to about 500 B.C. Johnson and Goode (1995) characterize the climatological conditions of this subperiod as dry and hot, and define it as the Dry Edwards Interval. It coincides with a rapid rise in sea levels along the Gulf of Mexico (Ricklis 1993). More importantly for the eastern portion of the Edwards Plateau, the increased temperatures and reduced precipitation appear to have contributed to a northwesterly migration of Chihuahuan desert succulent vegetation communities onto the Edwards Plateau

Technologically a number of changes can be seen. Burned-rock ovens, thermal facilities used in food processing, increase in frequency compared to their initial appearance in the later part of the Middle Archaic. In addition, ground stone assemblages composed of one-handed manos and large slab metates also increase in frequency compared to earlier periods (e.g., Nolan-Travis). The occurrence of burned-rock middens tends to overlap with the occurrence of ground stone tools suggesting a functional relationship between the two. Lack of terminological and methodological rigor has contributed to interpretive confusion through the lack of differentiation and understanding about the formation processes of burned-

rock middens. This is beginning to be resolved through recent emphasis on burned-rock mound research. Similarly, prior emphasis on the recovery of macrobotanical remains, and the relative scarcity of such remains in middens has hindered the interpretation of the plant remains being processed. This has been further complicated by the confused categorization of some burned-rock secondary discard areas (middens) as burned-rock mounds. The recycling of these features through time, and the lack of understanding of the processes that go into oven use and how these may contribute to mixing of deposits from different occupations of the site, also have contributed to misunderstanding regarding thermal features.

The eastern Edwards Plateau populations apparently thrived on the desert succulent vegetation facilitated by the dry climatic conditions of the Edwards Interval. Burned-rock ovens came to be more common on the eastern Edwards Plateau during the early portion of the Late Archaic than in any other prior or subsequent time period.

There is no evidence that the Edwards Escarpment edge, with its common springs and seeps, served as a refuge for populations from other portions of the region that may have been more severely affected by the dry conditions. The Pedernales projectile points (Figure 9; see also Turner and Hester 1993) that are common within the region appear to be a local development but extend southwestward off the Edwards Plateau and eastward onto the Blackland Prairie. However, they are rare on the Llano Estacado and in the Oak Woodlands of East Texas. Associated with the presence of these basally thinned Pedernales projectile points are large well-thinned triangular bifaces that appear to have served as knives, although systematic use-wear analyses are, for the most part, lacking. Large plant processing features dominate the archaeological record of the period, yet the subsistence practices appear to have been characterized by a mix of hunting of medium-sized ungulates, plant collecting, and the exploitation of aquatic resources such as mussel shells. Site types continue to be relatively narrow with sites with burned-rock ovens being highly visible and probably representing in some cases specialized plant processing loci and multifunctional base camps. Lithic materials are procured at numerous locations across

Table 5. Archaeological Sites with Late Archaic Components within the Central Texas Archaeological Region

Adamek	41WM35	Eddy 1973
Baylor	41ML35	Story and Shafer 1965
Booker	41TV627	Howard 1983
Britton	41ML37	Story and Shafer 1965
Bryan Fox	41WM124	Hays 1982
Cedar Park Mound		Schuetz 1957
Cervenka	41WM267	Hays 1982
Collins		Suhm 1955
Crumley	41TV86	Kelly 1961
Dobias-Vitek	41WM118	Eddy 1973
Evoe Terrace	41BL104	Sorrow et al. 1967
Footbridge	41CM2	Johnson et al. 1962
Gault	41WM10	TARL Records
Greenhaw	41HY29	Weir 1979
Hawes	41WM56	Hays 1982
Hop Hill	41GL21	Gunn and Mahula 1977
Hoxie Bridge	41WM103	Bond 1978
Jetta Court	41TV151	Wesolowsky et al. 1976
John Ischy	41WM49	Sorrow 1969
Kyle Shelter	41HI1	Jelks 1962
La Jita	41UV21	Hester 1971
Landslide	41BL85	Sorrow et al. 1967
Loeve-Fox	41WM230	Prewitt 1974
McCann	41LM3	Preston 1969
Merrell	41WM2	Campbell 1948
Oblate	41CM1	Johnson et al. 1962
Pat Parker	41TV88	Greer and Benfer 1975
Penny Winkle	41BL23	Schafer et al., 1964
Rogers Springs	41TV39	Prewitt, n.d.
San Gabriel Mound		Schuetz 1957
Scorpion Cave	41ME7	Highley et al. 1978
Shep	41KR109	Luke 1980
Sheep Shelter		Stephenson 1970
Smith Rockshelter	41TV42	Suhm 1957
Steele		Stephenson 1970
Tombstone Bluff	41WM165	Prewitt ms.
Wheatley	41BC114	Greer 1976
Williams	41TV75	Suhm 1959
Wounded Eye	41KR107	Luke 1980
Wunderlich	41CM3	Johnson, Suhm, and Tunnell 1962
Youngsport	41BL78	Shafer 1963

the landscape contributing materials to numerous lithic procurement sites that have few diagnostics. Terraces, springs, valley margins, rockshelters, and uplands all

see occupation during the period even though non-water proximate areas may have remained relatively dry and occupied for short periods.

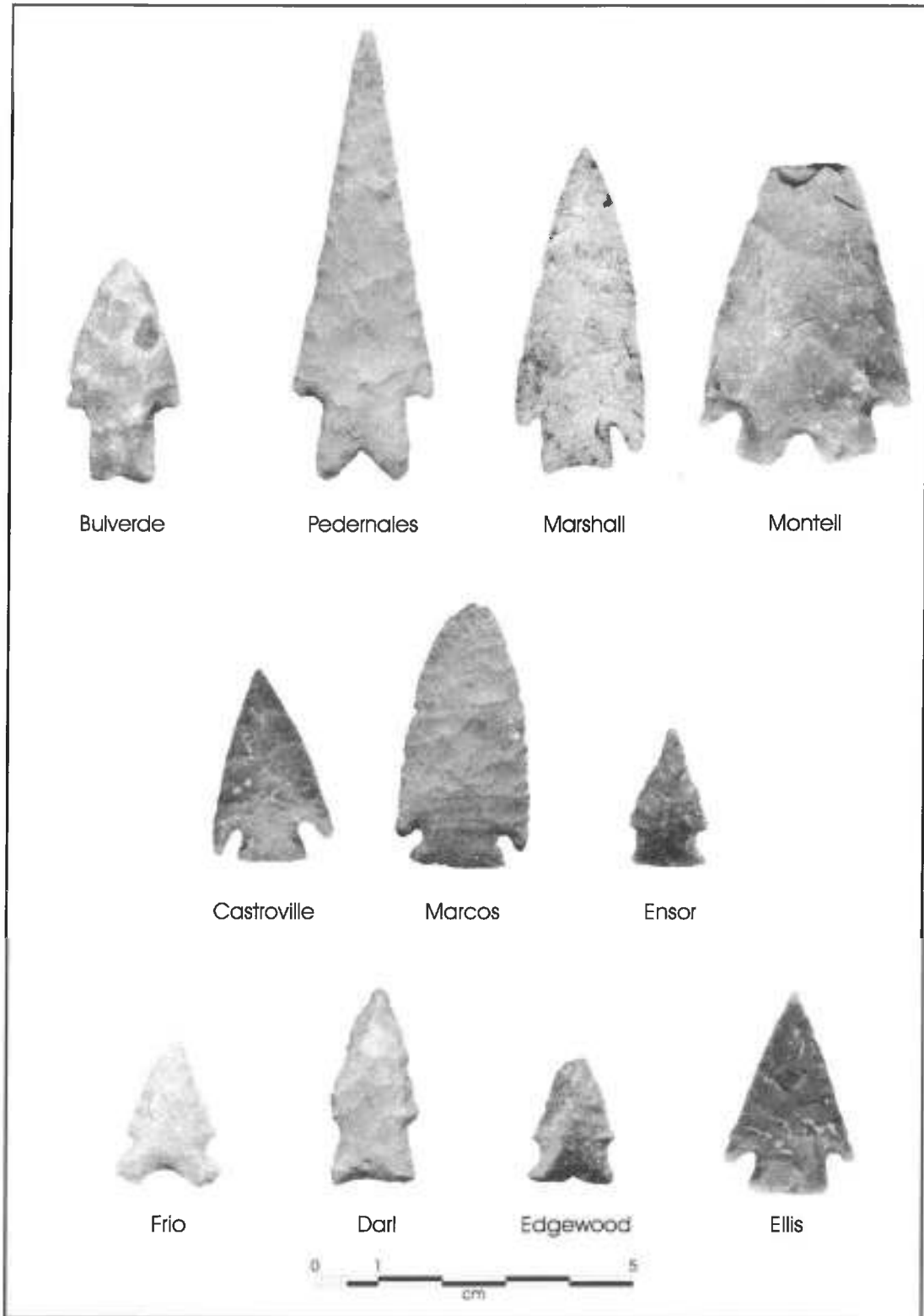


Figure 9. Diagnostic Late Archaic projectile points of Central Texas.

During the later part of Late Archaic I and the second portion of the Late Archaic, which lasted from about 600 B.C. to A.D. 600 (Johnson and Goode 1994:36), mesic conditions returned to the Edwards Plateau. However, data from the Fort Hood area in the northern portion of Central Texas suggests that a brief drying period may have occurred during the Late Archaic II sometime around 200 B.C. This is evidenced by an increase in C₃ grasses. However, the fact that the Edwards Interval⁴ is also not reflected in the Fort Hood data also suggests that this region is far enough north of the Central Texas Edwards Plateau that it was not subject to a climatic episode driven by Southern Oscillation climatic phenomena (see Johnson and Goode 1994:36). The amelioration of climatic conditions may have contributed to the return of bison into the region. The mesic conditions may have returned as early as the later part of the Late Archaic I period when Pedernales drops out and Marshall and Montell projectile points become the common type. Interestingly, the use of rock ovens and other rock thermal features does not end with wetter conditions and the return of buffalo. Nonetheless, the proliferation of rock ovens appears to slow and their use tends to retract primarily to the southern edge of the Edwards Plateau and deep southwestern Texas, the Lower Pecos region. A combination of hunting medium-sized ungulates and plant collecting seems to continue on the eastern margins of the Edwards Plateau, while buffalo is added to this mix along the western edge of the Plateau. Prewitt (1981) notes an imbalance between the two subsistence patterns, with plant food collecting slightly outweighing hunting in importance during the San Marcos Phase, when the Marshall points were common. These points have a somewhat broader distribution than the preceding Pedernales extending from the Lower Pecos to north-central Texas. Both Marshall and the later Montell points have roughly similar distributions although the latter never extended very far into north-central Texas. However, according to Johnson (1995:226) Marshall points have a great degree of technological similarity to the Pedernales type and may have been developed out of the Pedernales form or at least have existed close to each other in time (Johnson 1995:206). The broad-blade outline characteristic of Marshall points tends to continue in the Montell and later Castroville types; both of these later types, however are also characterized by noticeably corner-notched stems. While some variants of the Marshall

type appear corner-notched, in general the trait may represent a stylistic form or functional adjustment that may have been introduced from outside the Central Texas/Edwards Plateau region (Johnson 1995:226–228). On the other hand, while the stems shapes differ on these types, one common technological feature of the Pedernales, Marshall, and Montell points (Goode, in Johnson and Goode 1995:35), as well as Castroville points, is the extensive employment of billet flaking in the thinning of the blank. While this technological trait may indicate a common affiliation, and as such local or regional relationship between them, it may also simply be the effect of technological requirements. In other words, the manufacture of broad and thin bifaces can be most effectively accomplished with the use of billet rather than hard-hammer percussors. The presence of billet-produced flake scars on these points may simply indicate this technological requisite rather than a genealogical relationship between them.

Nevertheless, the appearance of these moderate to strongly corner-notched point types commonly mark the arrival of the Late Archaic II phase (Uvalde, Twin Sisters, and Driftwood Phases, Prewitt 1981:81–82). This portion of the Late Archaic is characterized by continued increase in moist conditions throughout the Edwards Plateau and an increased presence of bison throughout the region, in all but the last phase. The Castroville, Marcos, and Montell points tend to be as common on the Plateau as they are throughout South Texas and in the adjacent Lower Pecos. Prewitt (1981:81) interprets this broader distribution as evidence of a widespread adaptation. Johnson (in Johnson and Goode 1995:37) interprets the morphological similarity between Marcos points and some Southern Plains types as indicative of immigration into the Edwards Plateau. Clearer indications of inter-regional interaction are seen in the presence of later Late Archaic II Ensor and Frio points throughout the Edwards Plateau, South and East Texas. Johnson sees the presence of these types as indicative of a connection with the eastern United States. The distribution of Darl points, the index marker of the Driftwood phase, is more limited to the eastern Edwards Plateau (Prewitt 1995). This limited distribution suggests that the southwestern portion of the state may have been occupied by unaffiliated groups (Prewitt 1981:82).

The use of rock-oven technology appears to have slowed or entirely stopped during the later part of the Late Archaic. Cultural materials associated with this period occur primarily on top of or in the upper layer of burned-rock middens and are even more commonly associated with rock-lined hearths found away from middens. The decrease in rock-oven use implies either a technological shift in the manner by which plant resources were processed or perhaps a shift in the species of plants consumed. The slow but continuous increase in moist conditions was probably accompanied by a shrinkage in xerophytic plant species habitats, which may correlate well with the decreased use of rock ovens. Although oven use has also been posited as a necessary food preparation technique for acorn processing, increasingly moist conditions would not have resulted in a decrease in patch availability and acorn production suggesting perhaps that the postulated connection between the two did not exist. Rock ovens, however were used in acorn processing, but with increasingly damp conditions other higher-ranked resources became more prevalent and a shift in procurement patterns may have taken place.

Although bison appear to be present throughout the Edwards Plateau, according to Prewitt (1981) plant collecting continued to maintain at least as great an importance in the subsistence pattern as hunting. Manos and metates occur frequently, but chipped lithic artifacts are also common. Chipped-stone artifacts commonly found in Uvalde (Castroville, Marcos, and Montell points) and Twin Sister Phase (Ensor, Ellis, Frio, Fairland points) occupations consist of bifacial knives, unifacial scrapers, unifacial and bifacial gouges, perforators, and graters. With the exception of the dart points, these tool types also characterize the tool kits of Late Prehistoric bison-hunting groups suggesting perhaps that hunting was of a greater significance than assumed by Prewitt (1981:80).

While extra-regional traits are not common during the early portion of the Late Archaic II (e.g., Uvalde Phase), a series of new elements of material culture appear throughout East Texas and the Texas Gulf Coastal Plains, some of which reach in lower frequencies onto the eastern edge of the Edwards Plateau during the latter half of the period. These extra-regional traits include copper, elaborate bone ornaments, Gulf

shell and stone gorgets, freshwater pendants, boatstones, and atlatl weight made of exotic stones. The influx of these materials may be indicative of increased contact with the eastern United States, although some precedents are also evident in Late Archaic I burials from the Central Coastal Plains (Johnson and Goode 1994:37). This earlier occurrence of such traits may simply suggest that such inter-regional contacts may have occurred earlier in this part of the state.

An additional significant development in Central Texas and neighboring regions is the appearance of cemetery sites containing large numbers of burials and elaborate and numerous grave goods. While these cemetery sites are larger and more numerous along the Central Coastal Plains and in along the northern edge of South Texas, three burial sites do occur in some proximity to the eastern Edwards Plateau: the Bering Sinkhole (Bement 1994), Hitzfelder Cave (41BX26; Collins 1970, Givens 1968), and the Olmos Dam site (41BX1, Lukowski 1988); see the discussion in Johnson and Goode (1994:39)

The Late Prehistoric Period

This period tends to be defined by the occurrence of three new traits in the state: the bow and arrow, pottery, and agriculture. These traits, however, did not appear simultaneously, but rather the bow and arrow appeared first, followed by pottery, and finally agriculture (Collins 1995:385) in East Texas and perhaps the northern Panhandle. Although these new traits, whether adopted from neighboring regions or invented in situ, are normally assumed to have significant impact on prehistoric lifeways, little apparent change can be seen in land use and overall subsistence patterns between the Late Archaic II and the early portion of the Late Prehistoric. This period is commonly broken into two subperiods: the Austin and Toyah Phases. Among other significant traits, the two are distinguished in terms of changes in projectile-point types. Corner notched and parallel stemmed points (e.g., Sabinal, Edwards, Scallorn, Granbury; Figure 10; see also Turner and Hester 1993) occur exclusively during the early phase while contracting stemmed points are the index markers of the later stage (e.g., Perdiz).

Table 6. Archaeological Sites with Late Prehistoric Components within the Central Texas Archaeological Region

Baylor	41ML35	Story and Shafer 1965
Barker	41WM71	Sorrow 1970
Bigou-Kubala	41WM258	Hays 1982
Boy Scout Shelter	41TV69	Pollard et al. 1963
Dobias-Vitek	41WM118	Eddy 1973
Evoe Terrace	41BL104	Sorrow et al. 1967
Footbridge	41CM2	Johnson et al. 1962
Happy Patch	No site number	Green 1971
Hawes	41WM56	Hays 1982
Hop hill	41GL21	Gunn and Mahula 1977
Hoxie Bridge	41WM130	Bond 1978
Jetta Court	41TV151	Wesolowsky et al. 1976
Kyle Shelter	41HI1	Jelks 1962
La Jita	41UV21	Hester 1971
Lehmann		Kelley 1947a
Loeve	41WM133	Eddy 1973
Loeve-Fox	41WM230	Prewitt 1982
Oblate	41CM1	Johnson et al. 1962
Pat Parker	41TV88	Greer and Benfer 1975
Penny Winkle	41BL23	Schafer et al., 1964
Rogers Springs	41TV39	Prewitt, ms.
Scorpion Cave	41ME7	Highley et al., 1978
Smith Rockshelter	41TV42	Suhm 1957
Wheatley	41BC114	Greer 1976
Wunderlich	41CM3	Johnson et al. 1962

In addition to the bow and arrow, the tool kit includes miscellaneous bifacial knives, unifacial scrapers, gouges, and grinding stones. While Prewitt (1981) interprets the increased number of arrow points and deer bone frequencies as an indicator of the increased importance of hunting compared to earlier periods, the overall subsistence pattern continues to be based on a mix of hunting and gathering. The collection of freshwater mussels is an added component of the subsistence pattern. It is interesting that the apparent intensification of hunting focuses on deer, a medium-sized ungulate. The pattern suggests that the new technology may have significantly increased hunting efficiency resulting in greater returns. The other possibility is that the increase is due simply to increased availability of deer, since given its high ranking it would be pursued rather consistently (see Simms 1982). This explanation is also supported by Johnson

(1995:40) who suggests that the mesic climate of the period would have been quite favorable to mast production and therefore may have resulted in increased deer densities.

Most people view this shift as a full-scale replacement of atlatl propelled darts with the bow and arrow. Few individuals allow for the possibility that there may have been at least a temporary coexistence of the two weapon systems, either as complementary elements of the technology or as specialized subsets of the weaponry. Similarly, addressing the same topic, Johnson and Goode (1995:40) also allow for the possibility that arrow points may have occurred during the later portion of the Late Archaic, namely that the Darl and Figueroa point types may represent arrow rather than dart points. Such a possibility may place the appearance of arrow points as early as A.D. 400,

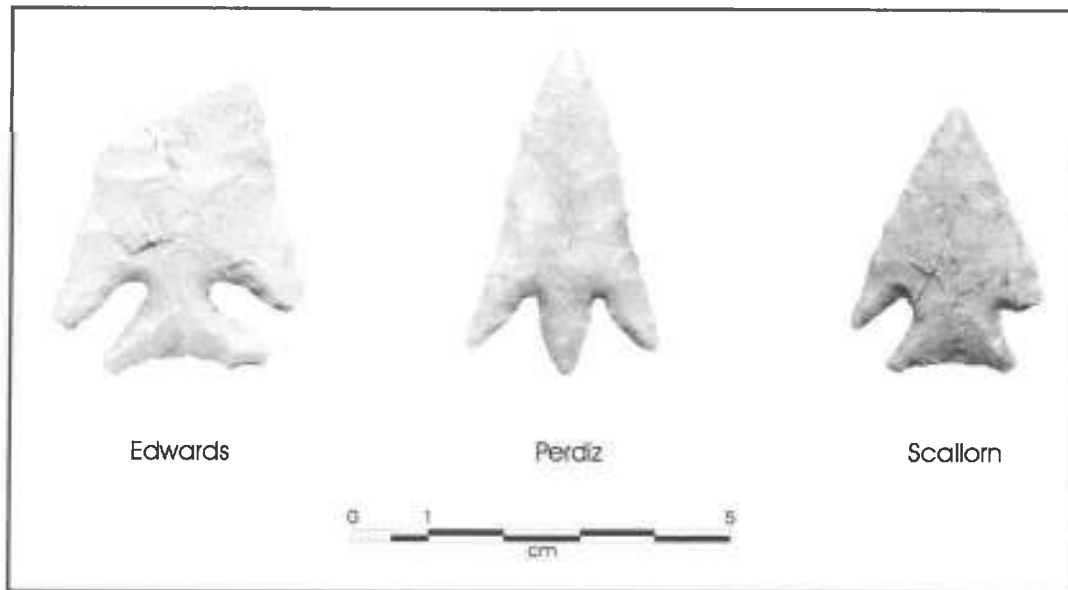


Figure 10. *Diagnostic Late Prehistoric projectile points of Central Texas*

and may coincide with the appearance of similar small projectile-point styles in northern Central Texas along the Trinity River (Prikryl 1990). While hunting appears to increase in importance, interestingly, the use of rock ovens appears to continue in both western and northern Central Texas as indicated by midden sites containing arrow point (Goode 1994; Voellinger, Gearhart and Cargill 1997 in Williamson County). While climatic conditions may have been somewhat drier and warmer than during the preceding Late Archaic II, period the continued use of the rock-oven cooking technology suggests either a return of xerophytic plant communities into the region or the innovative use of these facilities for the cooking of new plant types.

Not surprisingly the increased number of arrow points appears to be complemented by an increase in population densities across Central Texas (Johnson and Goode 1995:40). This increase may have resulted in some degree of population packing and perhaps some inter-regional conflict between prehistoric groups. This is indicated by the relatively large number of human burials encountered with arrow points imbedded in their skeletal elements (see Prewitt 1982). Prewitt (1981), based on the wide distribution of Scallorn points, suggests that the early part of the Late Prehistoric in Central Texas represents a localized variant within a broad pattern of adaptation that may have extended from the Central Coastal Plains to the

Southern Plains region. The frequent and extensive occurrence of engraved shell artifacts supports the existence of wide reaching regional interaction spheres.

The second phase of the Late Prehistoric period begins around A.D. 1200 with the onset of a 100–200-year drought. Drought conditions apparently favored the return of bison into Central Texas and with it a new lifeway focused primarily on buffalo hunting. Perdiz and Clifton arrow points are the index markers of the Toyah phase and are part of a tool kit that includes a broad array of chipped stone tools including two- and four-beveled bifacial knives, end and side scrapers, drills, expedient cutting and scraping tools, arrow shaft straighteners, pottery, and digging sticks. An additional element of subsistence is the sporadic occurrence of corn cobs and seeds. These may have been acquired directly from Caddoan groups inhabiting East Texas or may have been part of a mixed horticultural land use pattern.

Technologically speaking, one trait previously not present that occurs with the influx of Toyah materials is a new raw material reduction strategy. For the first time since the Paleoindian period, a blade technology reappears in the technological repertoire. Although, it is likely that the majority of the Perdiz point were made on flake blanks, a fair number also exhibit the

indisputable evidence that the blanks were bladelets rather than flakes. Together with the plainware pottery vessels that have shapes reminiscent of southwestern forms, it is possible that the presence of the blade industry reflects some southwestern influences or origins.

The Protohistoric Period

Ethnohistoric accounts of Native American groups and lifeways south and east of the Edwards Escarpment are relatively common since these areas were often visited by Spanish explorers determined to convert the numerous groups roaming these areas. But few of these expeditions ventured onto the Edwards Plateau, or Lomera Grande, as the southern rim of the escarpment was known. One reason was purely logistical, given the easily traversed flat Blackland Prairie to its east, there was little incentive to tackle the more rugged hill country of the Edwards Plateau. In addition, by the mid to late seventeenth century, Apache groups had moved onto the Edwards Plateau and were harassing neighboring groups living south and east of the escarpment.

One of the more important aboriginal Indian group to inhabit central Texas was the Tonkawa, who roamed the eastern and southern portions of the region in pursuit of buffalo (Sjoberg 1953a). The Tonkawa consisted of a number of economically and politically independent groups that spoke a common language and had roughly similar subsistence and land-use practices. Although Tomkawa groups such as the Mayeye, Yojuane, and Ervipiame depended heavily on bison, they also hunted deer and small game and gathered prickly pear tunas, acorns, pecans, and various edible roots. During the mid to late 1700s the Tonkawa groups had been pushed off the lush grasslands of the Blackland Prairie into marginal areas with fewer game. By 1885 the traditional lifeways of the Tonkawa had been so dramatically influenced that they were settled into northeastern Oklahoma. Clear archaeological indications of Tonkawa presence in Central Texas has not been identified.

The Jumano Indians are the second group to have been present in parts of Central Texas. The Jumano engaged

in widespread trading from the Trans-Pecos to East Texas. They relied heavily on bison and as a result may have been relatively mobile. While they wintered together with the Patarabueye in the La Junta region of the Rio Grande, it is difficult to delineate a home range for the group (Kelley 1955). By the early 1700s they apparently became closely associated with the southern Apache and are no longer mentioned by name in later ethnohistoric accounts. Kelley (1947a, 1955) has suggested that the Toyah phase remains of Texas, characterized by contracting stem arrow points, may represent the archaeological manifestations of the Jumano. However, according to Story (1960:66), sites that contain historic material remains that could be unequivocally linked to the Jumano have not been identified.

With the exception of the Tonkawa and Jumano, all other indigenous groups (e.g., Tawakoni, Apache, and Comanche) reported to have occupied Central Texas arrived there during the latter part of the seventeenth century. The Tawakoni were a Wichita group driven southward from the central Plains into north-central Texas and even as far as Central Texas. Wichita groups such as the Kichai, Waco, and the Tawakoni occupied and exploited large portions of north-central Texas (Berlandier 1969:126). The rich material culture recovered during the excavation of the Stansbury Site, in the Whitney Reservoir basin (River Basin Surveys; Suhm et al. 1954:95), bears strong resemblance to historically documented Wichita sites and artifact assemblages from the Red River (Story 1960:66–67).

One of the first indications that Apache groups were present on the Plateau comes from the accounts of the Bosque-Larios expedition into South Texas between 1674 and 1675 (Bolton 1959). Upon crossing the Rio Grande out of Mexico, the expedition traveled northward perhaps as far as present-day Edwards County on the southwestern edge of the Plateau. The Coahuiltecan groups they encountered along the way related the existence of “barbarian” tribes farther to the north who constantly warred with them. By the early 1700s Apaches had established rancherias as far south as La Junta de Los Rios along the Rio Grande River (Kenmotsu 1994). By the late 1700s, Lipan, the Mescalero Apaches, are reported to have ranged across West Texas and made incursions onto the Blackland

Prairie joining the Llaneros on seasonal buffalo hunts (John and Wheat 1991:162–163). Who the Llaneros were is still under debate. Some believe that the term referred to all native Indian groups who participated in buffalo hunts on the plains (Opler 1983). Others believe that the Llaneros were a group of Jicarilla Apaches pushed southward into Texas by advancing Comanches (Tiller 1983).

The Lipan Apaches were the easternmost of the Apache groups present in Texas. By the late 1500s they were occupying much of the area between northeastern Mexico and southwestern Texas (John and Wheat 1991:159). By the late 1600s and early 1700s they had been pushed eastward into the Coahuiltecan South Texas area by advancing Comanches. Bartlett (1965:81), however, reports them to occupy the entire area between Zacatecas in northern Mexico and the Colorado River in central Texas. Sjoberg (1953b) reports that in 1732 the Lipan were present in the vicinity of the San Saba River. They were a highly mobile group. Part of the reason for their mobility,

however may have been their search of food while at other times they may have been forced to escape Comanche raiders. To date, there are no known archaeological remains that can be unequivocally associated with the Lipan Apache.

As a result of their southward migration the Comanche arrived into northwest Texas sometime during the early 1720s. Aided by horses and guns, they spread over the western portion of the area and the Edwards Plateau so quickly that by the mid-1700s they already displaced most Apache groups onto the Coastal Plains and the mountains of northeastern Mexico (Tiller 1983:447–449). The high mobility afforded them by the horse, however, generated settlements with very low archaeological visibility. As a result, no Comanche camp sites have been identified and archaeologically investigated. Furthermore, the only likely Comanche sites encountered to date may be isolated crevice burials encountered along the Caprock Canyonlands (Yellowhouse Canyon, Lubbock County; Newcomb 1955).

Chapter 3: The History of the Balcones Canyonlands National Wildlife Refuge and Its Environs, 1830–1960: An Overview

John Leffler

The Balcones Canyonlands National Wildlife Refuge encompasses 15,800 acres, a huge jagged oval stretching northwest from the hilly upland lakes region in northwestern Travis County and southwestern Williamson County into rolling sections of the Edwards Plateau in southeastern Burnet County. Most of the area, particularly in the uplands lakes sections dominated by Post Oak Ridge, is characterized by hilly, broken, cedar-covered terrain with soils too thin to sustain crops. Although the southernmost tip of the Refuge touches the Colorado River (Lake Travis), the area has little water; its largest stream is Cow Creek, which defines part of the area's western border and flows through its northern and southern sections. Devoted almost entirely to ranching in the late twentieth century, the area is thinly populated and does not contain any towns or villages of any size.

As desolate as the area appears to the modern eye, however, during the late nineteenth and early twentieth centuries several small communities, sustained by pockets of arable land and the cedar business, existed in the area or in its immediate vicinity. Within the boundaries of the Refuge itself, during this period the area's agricultural economy supported two small rural schools—the Travis Peak school, in Travis County along Cow Creek, and the Doeskin school, in Burnet County about a mile north of Cow Creek. For many years the area's limited agricultural potential and its poor roads kept it largely isolated from the developing areas surrounding it and helped to perpetuate the unique culture of the “cedar cutters” who lived there.

By the late 1940s, however, the combined effects of the Great Depression, the decline of cotton cultivation in Central Texas, the automobile, and the construction of dams along the Colorado River had undercut the area's isolation and its traditional way of life. Its small communities withered, its schools were consolidated, and the “cedar cutters” either moved

away or were integrated into the wider culture surrounding them. By the late 1950s the area was almost entirely devoted to ranching, and paved roads were beginning to open it to visitors interested primarily in the lakes that the dams had formed.

Early Vegetation in the Balcones Canyonlands Area

The landscape of the Texas Hill Country, including the Balcones Canyonlands, appeared different to early settlers than it does today, although it is difficult to ascertain exactly what it did look like. One school of thought holds that, before settlement, overgrazing, erosion, and the proliferation of Ashe juniper (“cedar”) trees, much of the area was a savannah covered primarily by tall native grasses, particularly bluestem and hairy grama, interspersed with clumps of trees which tended to concentrate in the river valleys and creek beds.¹ According to this view, as one writer has put it, the original Hill Country was “an immense ocean of grass.”²

Yet as Dale Weniger has demonstrated, early travelers through the region often noted the existence of extensive stands of oak and cedar trees. In 1837, for example, Jacob Harrell traveled about thirty miles up the Colorado River from the present site of Austin and found

¹ See, for example, the discussion in C. A. Rechenthin and James Henson, “Evaluation and Recommendations for Conservation of Pedernales Falls State Park (U.S. Department of Agriculture, Soil Conservation Service, 1970), p. 1. Typescript in Pedernales Falls State Park file, USDA Natural Resources Conservation Service office, Johnson City, Texas.

² Quote from Jill Senior Nokes in *Austin American-Statesman*, quoted in Del Weniger, *The Explorers' Texas* (Austin: Eakin Publications, 1984), 76.

the mountains “covered with cedar.” Describing the terrain northwest of Austin, George W. Bonnell wrote in 1841 that “Some portions of the hills are very well timbered—others are prairie.” In 1847, Victor Bracht saw “dark, steep, cedar-covered mountains” begin to rise about five miles north of Austin (Weniger 1984:74). Areas more distant from Austin, but still fairly close to the Balcones Canyonlands, were described in much the same way. In 1858, for example, J. de Cordova wrote that in Blanco County, “many of the hills are covered with a dense forest of ‘Mountain Cedar.’ The valleys are about half covered with timber; the remainder are small prairies” (Weniger 1984:69).

When Noah Smithwick acquired the old Mormon Mill on Hamilton Creek in the 1850s, he noted that there was “no good milling timber in the vicinity,” but he also wrote about the area’s “vast cedar brakes, the abode of wild animals innumerable” (Smithwick 1900:303, 308). From such evidence Weniger plausibly concludes that 150 years ago the vegetative patterns in the Hill County typically combined tall grasses, post oaks, and cedars: “The testimony of the explorers is that originally the trees and the tall thin grass coexisted,” he writes. In fact, he argues that the trees helped to protect and feed the grasses (Weniger 1984:71, 77–78).

Without any specific observations of the Balcones Canyonlands before settlement (according to Weniger, the area around the middle stretches of the Colorado was one of the least traveled areas in the region), it seems likely that Weniger’s general description of Hill County vegetative patterns probably fits the Refuge area. Although there may have been extensive grasslands, evidence exists that at least parts of the area were originally wooded with post oak and cedar. As early as 1884, the exportation of cedar posts was an important component of the area’s local economy (Texas State Gazeteer and Business Directory 1884: entry for Nameless, Texas). Since cedar originally almost never grew in the bottomlands surrounding creeks and rivers, mature trees cut during this period must have grown on the slopes of the hills. And the very name of the Refuge’s most dominant physical feature—Post Oak Ridge, which appears on maps as early as 1902—also suggests that the hills in the area were originally wooded to some appreciable extent (USGS map 1902/1909).

Early Land Grants in the Balcones Canyonlands Area

During the late seventeenth and early eighteenth centuries, when the Spanish first began traveling through what is now Central Texas, the region that now encompasses Williamson, Travis, and Burnet counties was primarily inhabited by the Tonkawa Indians, although Apaches also roamed there and the Comanches were beginning to move in.³ While the Spanish did not mount any major expeditions through what is now the Balcones Canyonlands Refuge, some did pass nearby. In 1716 Captain Domingo Ramon, leading an expedition north, crossed the Colorado River just south of Austin; in 1721, another large northbound expedition led by Governor Marques de San Miguel de Aguayo camped on the San Xavier River (now known as the San Gabriel) a few miles east of present-day Georgetown.⁴ As they traveled through the region the Spanish became familiar with a number of other streams in the general vicinity of the Balcones Canyonlands, including Brushy Creek (which they called Arroyo de las Animas Benedictas) and the Pedernales River. The name of the Balcones Canyonlands area derives from the Spanish word for “balcony,” used by a Spanish traveler to describe cliffs that run along the Balcones Fault, which runs north to south through Central Texas about twenty miles east of the present Refuge. Although the Spanish traveled extensively along the San Gabriel and through the area between the Guadalupe and Colorado rivers, there is no evidence that they ever entered present-day Burnet County.⁵ No Spanish land grants were issued for the area now encompassed by Travis, Williamson, or Burnet counties, and the region would not be settled until the 1830s (Figure 11).

³ Darrell Debo, *Burnet County History: A Pioneer History, 1847–1979* (Burnet: Eakin Press, 1979), 1:3; Clara Stearns Scarbrough, *Land of Good Water: A Williamson County, Texas, History*. (Georgetown: Williamson County Sun Publishers, 1973), 25-33.

⁴ William C. Foster, *Spanish Expeditions in Texas, 1689–1768*. (Austin: University of Texas Press, 1995), 109–111, 145–147.

⁵ Scarborough, *Land of Good Water*, 53-55-69; John Moursund, *Blanco County History* (Burnet: Nortex Press, 1979), 2-3; Vivian Elizabeth Smyrl, “Burnet County,” in Ron Tyler et al., eds., *The New Handbook of Texas* (6 vols. Austin: Texas State Historical Association, 1996), 1:852.

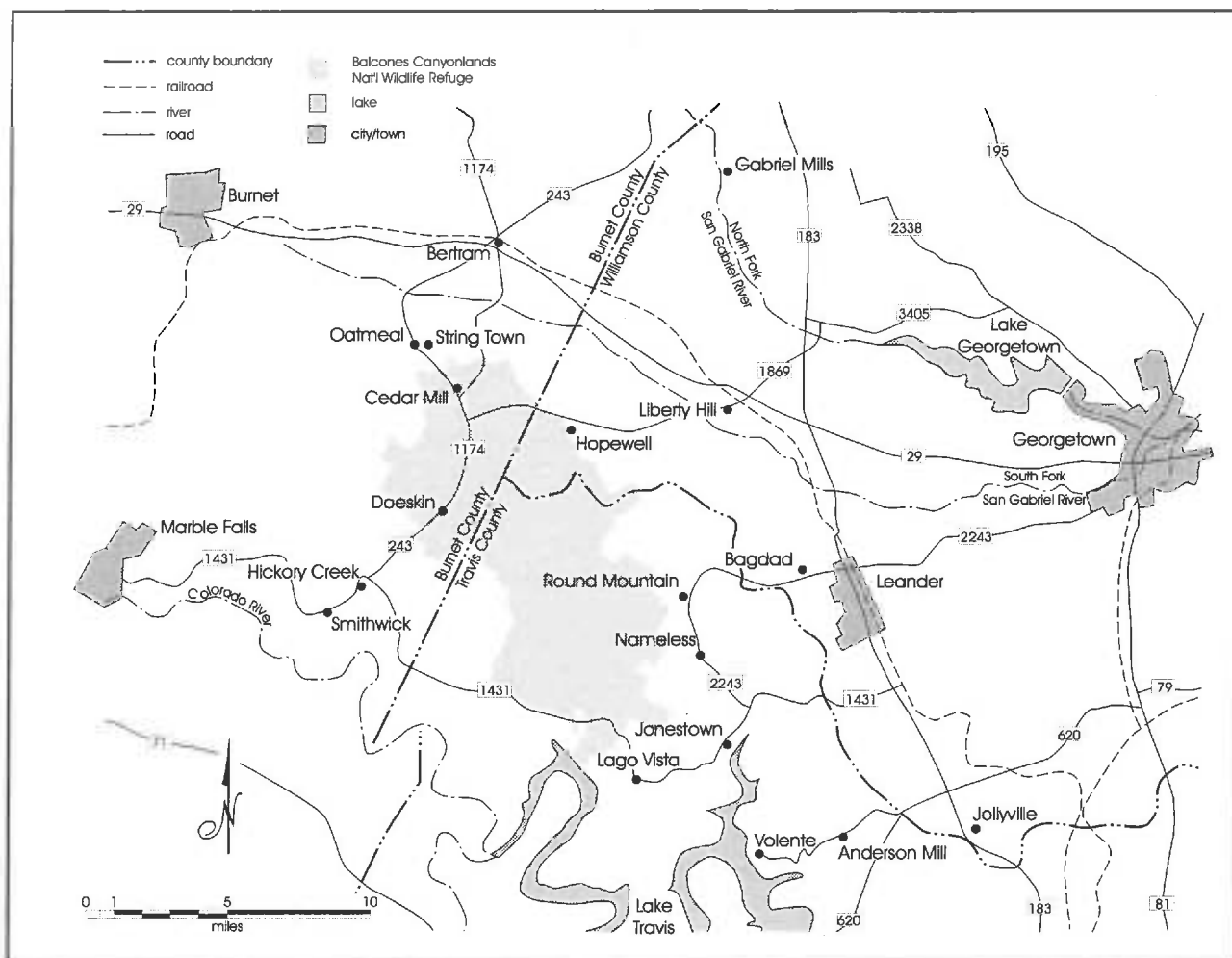


Figure 11. Balcones Canyonlands National Wildlife Refuge and surrounding area.

In 1825 the Mexican state of Coahuila and Texas approved a colonization contract with Robert Leftwich, an American empresario from Tennessee. The huge tract opened to settlement by this agreement included present-day Williamson County, Burnet County, and parts of western Travis County, including the land now covered by the Refuge. Later that year, Leftwich transferred his right to colonize the area to a group from Nashville, Tennessee, called the Texas Association. The tract became known as “Robertson’s Colony,” after Sterling Clack Robertson, the leader of the Nashville group. In 1827 Stephen F. Austin was awarded his third empresarios contract, which for the first time granted him the right to establish settlers north of the San Antonio Road. This tract, known as “the Little Colony,” included much of present-day Travis County, including the future site of the city of Austin, but not the land now covered by the Refuge, as that area had

already been awarded in the contract with the Nashville group. By 1831, however, Austin had managed to have the Robertson’s Colony contract transferred to him and his secretary, Samuel May Williams; between 1831 and 1834, the area was known as Austin’s “Upper Colony.”⁶

Settlement in the region began slowly because of the constant threat of Indian attacks. By this time the Comanches, a fierce, nomadic people unsurpassed in horseback warfare, had thoroughly intimidated the

⁶ Malcolm D. McLean, “Robertson’s Colony,” in Tyler et al., eds., *The New Handbook of Texas*, 5:623–624; Malcolm D. McLean, “Robertson, Sterling Clack,” *ibid.*, 5:620; Joan Kilpatrick, Galen Greaser, et al, “Austin’s Colony” a map prepared for Texas General Land Office, 1993; John Leffler, “Williamson County, 1848–1998,” in *Williamson County Sesquicentennial Commemorative Edition* (Austin: *American-Statesman*, September 27, 1998), 8.

Tonkawa and regularly raided Austin's settlements in the Bastrop area. From their western strongholds, Comanche raiding parties often descended the Colorado on their way to the settlements, and almost certainly passed through portions of the present Balcones Canyonlands Refuge en route to their targets and returning from them.⁷ Companies of settlers intent on revenge or reprisal also quite probably traveled through the Refuge on their way up or down the Colorado in search of Comanches. In late 1829, for example, after two companies of men commanded by Captain Abner Kuykendall "scoured the area between the Brazos and the Colorado" in search of Comanches, one of the companies, led by Henry S. Brown, followed the north bank of the Colorado from present-day Llano County down to the mouth of Shoal Creek in present-day Austin.⁸

In the early 1830s settlers began to move into Austin's "Little Colony," and by the mid-1830s they were also pushing north into the "Upper Colony," establishing settlements along Brushy Creek and the San Gabriel River. Perhaps the first Anglo-American settler to move into the immediate vicinity of the present Refuge was Captain Cal Putnam, who reportedly built a blockhouse in the early 1830s near present-day Liberty Hill; at about the same time, another "fort" was established along Walnut Creek in what is now Travis County. By 1835 teams of surveyors were already at work along the San Gabriel and the Colorado. It was dangerous work: two surveyors were killed by Indians near the San Gabriel in late 1835, and another along Brushy Creek the next year. A number of land grants were issued in the Travis and Williamson county areas between 1831 and 1835, but only two of them—the A. B. Spear and D. F. Owen surveys, both approved in December 1835, were in or near the Refuge. The titles to these grants were not confirmed until 1856, and it is not clear if either Spear or Owen ever occupied these lands (Travis, Williamson, and Burnet county land grant maps; Debo 1979:1:5).⁹

⁷ Mary Starr Barkley, *History of Travis County and Austin, 1839–1899* (Waco: Texian Press, 1963), 31–32; John Salmon Ford, with Stephen B. Oates, ed., *Rip Ford's Texas* (Austin: University of Texas Press, 1990 [1963]), 139.

⁸ Debo, *Burnet County*, 1:7.

⁹ Leffler, "Williamson County," 10; Debo, *Burnet County*, 1:7; Land Grant Maps, Williamson County and Travis County, Texas General Land Office.

To help protect frontier areas, in late 1835 the newly established Provisional Government of Texas created three companies of Rangers and ordered a fort built on the western reaches of Brushy Creek. In January of the next year, Captain John Tumlinson led 60 mounted men, including Noah Smithwick, to a site about four miles south of present-day Leander (about five miles east of the Refuge), and built a blockhouse and a stockade. Tumlinson's Fort, as the outpost came to be known, was abandoned in March 1836 when the Ranger company was withdrawn, but its creation was a sign of the growing interest in the region.¹⁰

After the Texas Revolution the new Republic of Texas offered generous land grants to new settlers, revolutionary veterans, and others. Thousands of immigrants traveled to Texas, while Texans from older, more established settlements also began to look west for new lands. As the demand for land intensified, the frontier moved west. Texas Rangers attacked Indians in Central Texas and elsewhere, attempting to push them out of the path of the pioneers and to ensure the safety of existing settlements. Although more and more land was being surveyed along the frontier, the Comanche threat was still strong enough to deter settlement in the western sections of present-day Travis and Williamson counties. In 1839, John Webster led a group of 16 men toward land he had bought in what is now eastern Burnet County. Not long after their wagons had crossed the south fork of the San Gabriel, the group spotted a band of Comanches and turned back south. When they arrived at Brushy Creek at sunrise, the Comanches attacked. In the fight that followed, all of Webster's 14 men were killed: his wife and children survived, but were captured by the Indians. At about the same time, other families who tried to settle along the San Gabriel were forced to leave because of Indian attacks (Leffler 1998:10).

In an attempt to punish the Comanches for their depredations and to deter future attacks, in October 1840 Texas President Mirabeau Lamar commanded Colonel John Moore to lead a force from Walnut Creek up

¹⁰ Scarbrough, *Land of Good Water*; Noah Smithwick, with Nana Smithwick Donaldson, comp., *The Evolution of a State: or Recollections of Old Texas Days* (Austin: Gammel Book Co., 1900), 118; John Cotter, "Williamson County, 1848–1998," map in Williamson County Sesquicentennial Commemorative Edition, 50–51.

the Colorado River deep into Comanche territory; Moore's men almost certainly passed through or near the southern reaches of the present Refuge. Nevertheless, the Comanche threat continued to deter settlement in the region for many years. Although the first surveys of land within the Balcones Canyonlands Refuge were conducted in 1838, there is no evidence that anybody settled there until the 1850s.

Much of the land in the Balcones Canyonlands Refuge was claimed and surveyed between 1838 and 1846, before the area began to be settled (see Figure 12). Eight 4,605-acre tracts were laid out in the area during this period, including the Rebecca Burleson survey (surveyed 1838), the Mary Biggar survey (1838), the Thomas Gray survey (1838), the John C. Payne survey (1839), the Nathan Davis survey (1839), the William M. Brandon Survey (1846), the Joshua English survey (1846), and the Martha G. Morrow survey (1846).

The circumstances surrounding the land grants issued for several of these tracts strongly suggest that the claims and surveys of these properties were orchestrated by land speculators. It is interesting, for example, that the land grants involving the John Payne, Mary Biggar, William Brandon, and Joshua English surveys were all based on headright certificates issued by the Shelby County land commission, and that all of these certificates were approved by the commission on the same day: February 3, 1838.¹¹ Moreover, all of these properties were ultimately patented—by various people—on the same day: May 20, 1846 (Texas General Land Office, Land Grant Records [hereafter TGLO-LG], files Travis 1–30, 1–31, 1–32, 1–77).

One possible explanation for this coincidence is that Payne, Biggar, Brandon, and English were actually legitimate claimants, and that an enterprising land speculator encouraged them to apply simultaneously for their certificates and then (as often occurred) paid them for their headrights. If so, the land speculator in

question may well have been George Washington Glasscock. Glasscock, a Kentucky native, had once been partners with Abraham Lincoln on an Illinois flatboat. (Hyman 1996:182) By the mid-1830s he was involved in a wide-ranging land speculation partnership, and, partly by buying up headrights, had already acquired the rights to tens of thousands of acres in what is now Williamson County (Scarborough 1973:87; Leffler 1998:10). By 1838, his activities had extended into what is now the Balcones Canyonlands Refuge: that year he obtained the headright of Thomas F. Gray, and used it to claim and survey the 4,605-acre area that appears on the Burnet County land grant map under Gray's name, just north of the Rebecca Burleson survey (TGLO-LG file Burnet 1–524)

While the transactions involving the Biggar, English, Brandon, and Payne surveys may have been legitimate, it is also possible that some sort of land fraud was at work. This is suggested by the almost uncanny coordination of the headright certificates and of the surveying and patenting of the tracts involved; the fact that the certificates were originally obtained in Shelby County (which borders on Louisiana) makes the transactions seem even more suspect, since people living along the Louisiana border had been notoriously involved in land fraud schemes for years (Smithwick 1900:90–92). Suspicion is heightened because of the case of Nathan Davis, Jr. Davis obtained a similar headright certificate (issued in San Augustine County, which also bordered Louisiana) in 1838, and in 1839 used it to obtain the rights to 4,605 acres of land in the present Balcones Canyonlands Refuge (see Figure 12). The validity of his certificate was later questioned, however, and in 1842 he was tried in the San Augustine County District Court for allegedly using a “fraudulent land certificate” to obtain the property (TGLO-LG file Bastrop 1–530).

It is unlikely that any of the original grantees of these large tracts ever settled on them, if in fact they ever even saw them. Aside from the apparently speculative nature of these grants, the Comanche threat continued to deter settlement in the area until the end of the Mexican War in 1848.

After Texas was annexed by the United States in 1845, the federal government began to take responsibility

¹¹ To obtain their certificates, Payne, Biggar, Brandon, and English each testified that he or she had been a resident of Texas since before the beginning of the Texas Revolution, which according to law at that time entitled each of them to a league and labor of land. A league was equivalent to 4428.4 acres; a labor measured 177.1 acres.

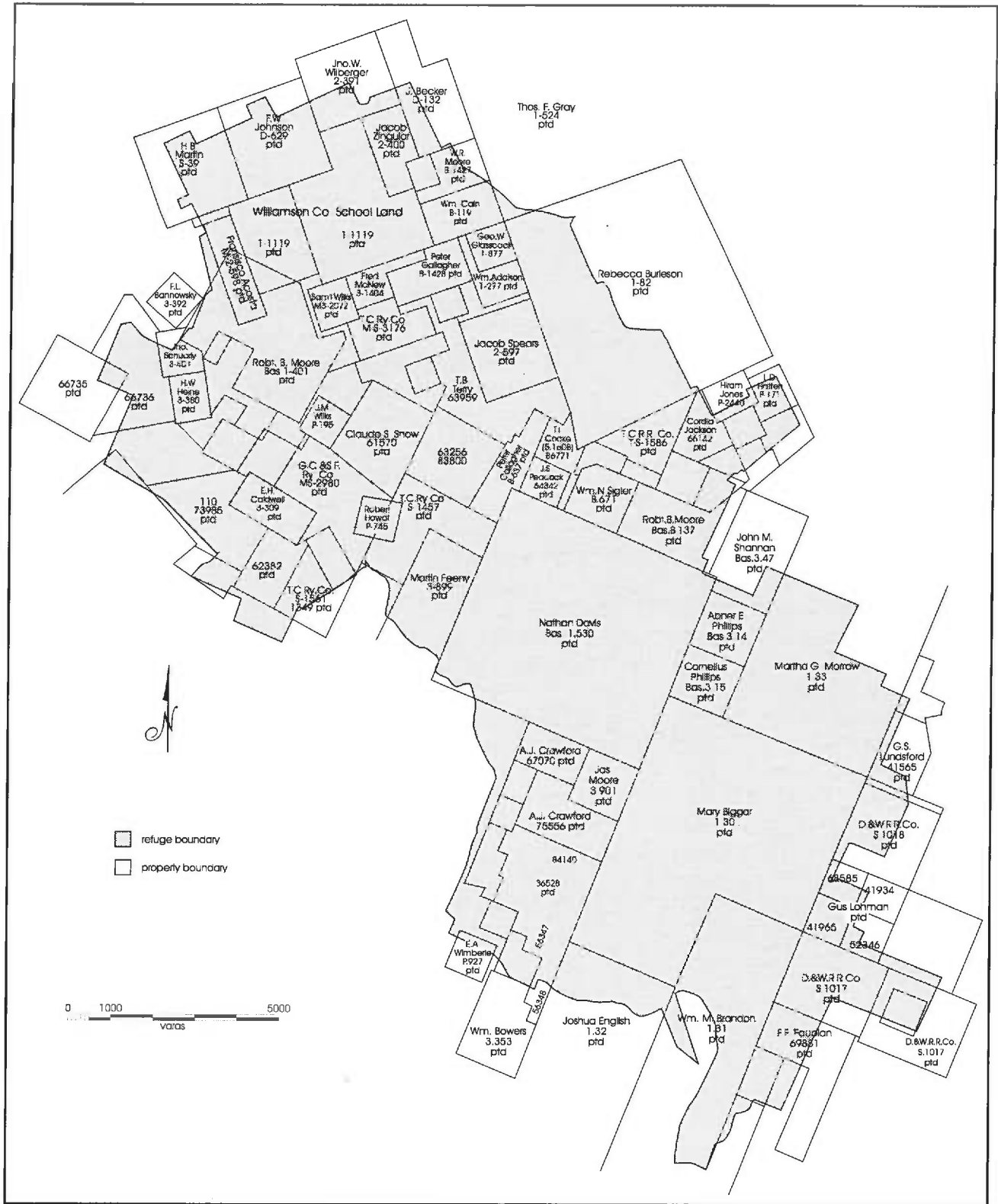


Figure 12. Land grants in the Balcones Canyonlands National Wildlife Refuge.

for protecting settlers along the frontier. Although Texas Rangers and federal troops were diverted away from the region during the Mexican War, by 1847 special detachments of Rangers were assigned to frontier areas. One such company, led by Capt. Henry McCulloch, was stationed about three miles south of present-day Burnet. In late 1848, after the war was over, federal troops established a line of eight forts along the Texas frontier. One of these, Ft. Croghan, was built on Hamilton Creek where the city of Burnet now stands (Debo 1979:1:9–11).

Meanwhile, the area just east of Burnet County was beginning to fill with settlers. In 1844, Thomas Hornsby—whose family had earlier established the Hornsby's Bend settlement in Travis County—built a cabin just a few miles east of the present Refuge area, near what soon became the town of Bagdad; by 1848 a number of other families, including Greenleaf Fisk, the noted Texas pioneer, had also moved into the vicinity (Wiley and Henry, n.d.:1–2). In 1848 the Texas legislature created Williamson County, and the new settlement of Georgetown (named after George Washington Glasscock, who donated land for the town site) was established as its seat of government (Scarborough 1973:124). Fort Croghan, which offered more protection for settlers in the area than ever before, had been built just as the end of the Mexican War encouraged thousands of people to migrate to Texas. A small community, originally called Hamilton, began to grow near the fort in 1849; by the early 1850s, with the Indian threat in the area gradually diminishing, settlers began to push beyond the western reaches of Williamson County and into the borders of the Balcones Canyonlands area (Debo 1979:1:9–11, 15, 77).

The Development of the Balcones Canyonlands and Environs, 1850–1900

As immigrants from eastern Texas, other southern states, and Germany moved into central Texas in increasing numbers during the late 1840s and the 1850s, the frontier moved west. By the early 1850s, the Indian threat had diminished enough that Fort Croghan was closed in 1853; renewed attacks occurred during the Civil War, however, when federal troops were withdrawn from the frontier. But by the late 1860s

settlers in this area no longer had to contend with that problem. In the interim new communities had emerged in western Williamson County, eastern Burnet County, and northern Travis County. Most of these continued to exist into the 1870s and 1880s, when railroads were extended into the counties, opening the region to a new era of intensive commercial cotton farming; by the 1890s cotton was by far the most important crop in the area. Meanwhile, settlers had moved into the boundaries of what is now the Balcones Canyonlands Refuge and formed small communities along Cow Creek and the town of Cedar Mill.

During the second half of the nineteenth century many small towns and communities, including Gabriel Mills, Hopewell, Bagdad, Bertram, Oatmeal, Stringtown, Hickory Creek, Smithwick Mills, Travis Peak, Nameless, and Anderson Mill, grew within a few miles' radius of what is now the Balcones Canyonlands Refuge. Another small town, Cedar Mill, existed briefly in the northern section of the Refuge. The following descriptions of some of these communities, beginning in Williamson County and working roughly counterclockwise around the periphery of the Refuge, provide a general idea of the character of the area as it existed by the late nineteenth century.

Bagdad, located in southwestern Williamson County some four miles west of the Refuge (about a mile from the center of present-day Leander), began to grow in 1844 after Thomas Hornsby moved into the area. The town site was surveyed in 1854 by Charles Babcock, who operated an inn, and a post office was opened there the next year. Situated on the stage line between Austin and Lampasas, the town grew quickly during the 1860s and 1870s, and in 1882 it included two schools, three churches, two blacksmith shops, and several stores; by that time, the town even had telephone service. After the Austin and Northwestern Railway bypassed the town when it built a narrow-gauge line from Austin to Burnet in 1882, however, Bagdad soon began to disintegrate. The railroad established a new town site (called Leander, after Leander "Catfish" Brown, a railroad official) on the tracks about a mile to the west of Bagdad, and within a few months most of the area's businesses had moved to the new town. (Odintz 1996a:333–334; Scarborough 1973:415, 318–319)

Hopewell, originally known as Burleson Springs, was located on the Rebecca Burleson survey in western Williamson County about one mile east of the Refuge. Established in the early 1850s, it remained a tiny community for many years; before a Presbyterian church was built there in 1869, church services were conducted under a brush arbor. Its inhabitants suffered through a number of Comanche attacks, the most serious in August 1863, when Mr. and Mrs. Wofford Johnson and their three children were attacked a short distance from their home. Two daughters escaped, but Mr. and Mrs. Johnson and their daughter, Mary Jane, were killed. Their graves are in the Hopewell cemetery. According to local tradition, another family, the Renicks, who lived about three miles southwest of Hopewell, were also killed by Comanches¹² (Holle 1998). By the late 1870s, when the threat of Comanche attacks had passed and Williamson County began to experience a cotton boom, Hopewell began to grow; in the 1880s it included the church, a school, a Masonic Lodge, a post office, and a general store (Varan n.d.:1; Scarbrough 1973:429–430; Odintz 1996c:691–692)

Gabriel Mills, located in western Williamson County about ten miles northeast of the present Refuge, was established in 1849, when Samuel Mather, a Scottish immigrant born in 1812, settled along the north fork of the San Gabriel River. By 1852 he had built a water-powered gristmill on the site, which for years served area farmers. A trained blacksmith, Mather also opened a blacksmith shop, and the little settlement became an important center of trade and social activities for people in western Williamson and eastern Burnet counties. By 1858 the town had grown to include at least two stores, a post office, and a large two-story building that served as a church, school, and Masonic Lodge; by 1884 about seventy-five people lived there, and the town had grown to include a cotton gin and two churches (Odintz 1996b:39; Leffler 1998:20–21; Scarbrough 1973:425–426).

Oatmeal, located in eastern Burnet County about one mile northwest of the Refuge, was—after Hamilton, now called Burnet—the second town established in

the county. Its first settlers, a German family named Habermill, moved to the area in an oxcart in 1849 and soon thereafter established a gristmill. In 1852, when the Texas legislature created Burnet County, Oatmeal and Hamilton competed to become the seat of government; Hamilton won. Oatmeal had a post office by 1853, and its first school house was built in 1858. After the Civil War, a number of freed blacks settled in the eastern part of the town and built a church and school there. Since the town was built along a straight line, it became known as Stringtown (it was also known as “Negrotown”). During the 1870s, as cotton cultivation spread into the Burnet County area, a cotton gin was built in Oatmeal to serve local farmers (Anonymous n.d.:1; Debo 1979:1:126–127; Glimp 1996:4:1095).

Cedar Mill (also called Cedar Mills), the only town that ever grew within the boundaries of the Balcones Canyonlands Refuge, was located in eastern Burnet County near the intersection of Farm Road 243 and Ranch Road 1174. The small town was settled in 1854, as immigrants from South Carolina, Missouri, and Illinois moved into the area; Alexander Barton established a sawmill, a gristmill, and a flour mill there on the south fork of Oatmeal Creek. At one time, the town also included a cotton gin and a store. For a few years Cedar Mill was on the original Burnet-to-Austin road, but in the 1860s the road was moved to “more favorable terrain” along the south fork of the San Gabriel. By 1871, this led the town’s citizens to relocate along the new road; Cedar Mill disappeared, and a new town, South Gabriel (first called Lewiston), was formed about two miles away on the north bank on the south San Gabriel (Glimp 1996:2:7; Price, Bertram n.d.:5). By 1882 South Gabriel included a school (which also served as a multidemoninational church), two grocery stores, a wagon shop, a blacksmith shop, a saddle shop, a hotel, a saloon, a Grange building, and a cotton gin; hack service connected the town with Burnet and Liberty Hill. Like Bagdad, this prospering little town died soon after it was bypassed by the Austin and Northwestern Railroad, which extended its tracks through the area in 1882. Within months, most of the town’s businesses, its post office, and much of its population had moved to the new town of Bertram, about two miles away (Price, South Gabriel, n.d.:1–7;). Bertram prospered for many years as a trading center for local ranchers and cotton farmers. By 1891 the town had a

¹² According to the story, the Renicks were thrown down a well after being killed, but are now buried in the Hopewell cemetery. If the story is true, the incident is not mentioned in any of the sources reviewed for this essay, including Irene Varan’s essay on the history of the Hopewell cemetery.

cotton gin and gristmill, a blacksmith, two general stores, two wagon makers, and a population of about 150 (Price, Bertram, 1–8; Potts 1996:1:506).

Hickory Creek, in Burnet County about two miles west of the Refuge near the intersection of highways 1431 and 1174, was settled in the 1850s by migrants from Alabama, Arkansas, Tennessee, Missouri, Illinois, and Pennsylvania. By 1865 the community had a school, a church, and a Masonic Lodge; some time later, it also had a post office, a cotton gin, a blacksmith shop, and a general store (Debo 1979:1:131). Smithwick Mills, about two miles west of Hickory Creek, grew around the mill built on the Colorado River by Noah Smithwick in the mid-1850s. When the town reached its peak in the mid-1880s, about 150 people lived there, and it had a water-powered gristmill, a post office, a church, and a school. Cotton was the principal product shipped by local farmers. The town began to decline after 1889, when the Austin and Northwestern Railroad extended its line from Burnet to Marble Falls. In 1892, however, about 25 people still lived there (Smyrl 1996d:5:1120; Debo 1979:1:131).

Travis Peak, which straddled the southwestern boundary of the Refuge where Cow Creek now intersects Route 1431, was settled in the early 1850s by Herman Hensel. Hensel purchased 80 acres in the area, built a stone home and a grist mill, and donated money to establish a school across Cow Creek from his land. The community had a post office by 1876 (Hensel was the postmaster) and by 1884 about 50 people were living in the town, which had a steam-powered grist mill and cotton gin, a post office, two churches, and a school. At that time, cotton was the principal shipment from the area (Barkley 1963:19, 154; Smyrl 1996f:6:556; Texas State Gazetteer and Business Directory

1884:Travis Peak entry). Travis Peak was almost certainly the main trading point for the settlers who began to settle along Cow Creek (and in the present confines of the Refuge) in the 1850s. While Post Oak Ridge, which dominates this area, may have provided good grass for livestock during the nineteenth century, it was surely the good water and bottomlands along Cow Creek that attracted the first settlers to this area; and during the late nineteenth century, probably most if not all of them were taking cotton to the Travis Peak gin. Families who first settled in the area include the Henrys, the Varners, the Wilkses, the Singletons, and the Blessings, all originally from southern states (C. Lewis:1998). By the early twentieth century, nine dwellings, about a mile apart (probably farmsteads) had been established on the road along Cow Creek (USGS map 1902/1909). Although no informants have been developed to definitively establish that cotton was being grown here during the late nineteenth century, it is quite likely that it was. We do know that this was cotton land during the early twentieth century. (D. Lewis 1998) More information concerning the settlement and development of this area needs to be collected. For the time being, we can reasonably assert that Travis Peak was probably the social and marketing center for a number of farms established along Cow Creek during the late nineteenth century, and that



Figure 13. Old log cabin on G. C. Turner property, ca. 1850s, on the northern edge of Cow Creek, .6 miles south of Route 1174



Figure 14. View of farmland along Cow Creek north of Travis Peak, with old barn (ca. 1910) in the distance.

the cotton culture that dominated the surrounding countryside had entered this pocket of the Balcones Canyonlands Refuge (See Figures 13, 14, and 15).

Some eight miles up the Cow Creek road from Travis Peak, and about a mile east of the present intersection of the creek and highway 1149, was the Doe-skin school, the center of another rural community that emerged during this period within the confines of the Refuge. The school, established in the early 1870s, operated well into the twentieth century. (Debo 182:C. Lewis 1998) Very little has been written about the school or the community it symbolized. Like the Travis Peak school, however, its very existence is evidence of a community of farmers and ranchers that has since faded away. Again, more fieldwork should be done soon to learn more about this community.

The area around the town called Nameless, which once existed on Sandy Creek at the southwestern edge of the Refuge, was settled about 1868. Robert Ware Turner, from Tennessee, was one of the first to settle in the vicinity. The town allegedly took its name after postal authorities rejected six suggestions

submitted by residents. Finally, according to tradition, one disgusted citizen wrote Washington: "Let the post office be nameless, and be damned!" Nameless it became. By 1880 the town had its post office, and by 1884 it also included a church (that also served as a school; Figure 16) and a general store (Figure 17); about 50 people lived in the vicinity then, and cedar posts and cotton were the area's most important products (Smyrl 1996c:4:932-933; Owens 1971:102-103; Texas State Gazetteer and Business Directory 1884).



Figure 15. View of Cow Creek north of Travis Peak.



Figure 16. *Photograph of the Nameless cemetery and church/schoolhouse, 1998.*

Anderson Mill, about five miles from the southeastern corner of the Refuge, was established by Thomas Anderson, from Virginia, in the early 1860s when he built a mill to make gunpowder for the Confederate cause. After the war, he converted the machinery to create a gristmill that became so much in demand that farmers sometimes had to camp out in the surrounding hills while waiting to have their grain processed. By the early 1870s Anderson added a gin to his operation, and a post office was opened there in 1876. By 1884, there were about 30 people living in the vicinity, but the post office was closed that year. In 1894, when Anderson died, his family sold off the mill's machinery and left for Austin (Smyrl, 1996a:1:173).

By the late nineteenth century about a dozen communities, comprising hundreds of people, ringed and entered the present Balcones Canyonlands Refuge. While stockraising was a significant part of the local economy, most of these communities and towns drew their sustenance from cotton or from the local cedar industry. The Balcones Canyonlands, which never had much arable land and was never very well integrated into the surrounding area, nevertheless was shaped by the cotton boom that swept through the area during the late nineteenth century. Even its limited resources allowed communities like Hickory Creek, Travis Peak, Nameless, and Doeskin to grow and briefly flourish

within the canyonlands or along its boundaries during the boom.

Almost all of the communities that grew in and around the Refuge persisted into the twentieth century, although several of them were already in decline by the early 1930s. The Travis Peak community, for example, seems to have lost its focus during the early twentieth century. At some point, its school was moved away from its original location at the Hensel crossroads; by the 1930s, another

schoolhouse had been built on the Cow Creek road, about a mile and a half north of present Route 1431 (Figure 18). During the 1930s, only about ten children attended the school (Texas State Department of Highways and Public Transportation Map 1936, 1948; C. Lewis 1998) (Figure 19).

A description of the area in the 1920s captured the region's rather bleak economic prospects: "The hilly lands to the west are difficult to adapt to agricultural uses. There are very few farms and the population is scarce. Stock raising, and the hauling of [char]coal, wood, and cedar posts are the chief economic occupations" (Malden 1924:5). Although Travis, Williamson, and Burnet counties had experienced a great deal of economic development during the late nineteenth and early twentieth centuries, the Balcones Canyonlands remained relatively isolated and primitive. The area remained beyond the reach of electric lines, and although Travis County had one of the best road systems in Texas at that time, the area still could be reached only on poor dirt roads impassable in bad weather (Malden 1923:5, 17; Travis County Highway Engineer map 1923; C. Lewis 1998). But while "sophisticated" observers often found little of interest in the area, there was nevertheless more depth and texture to life in the small farming communities and the

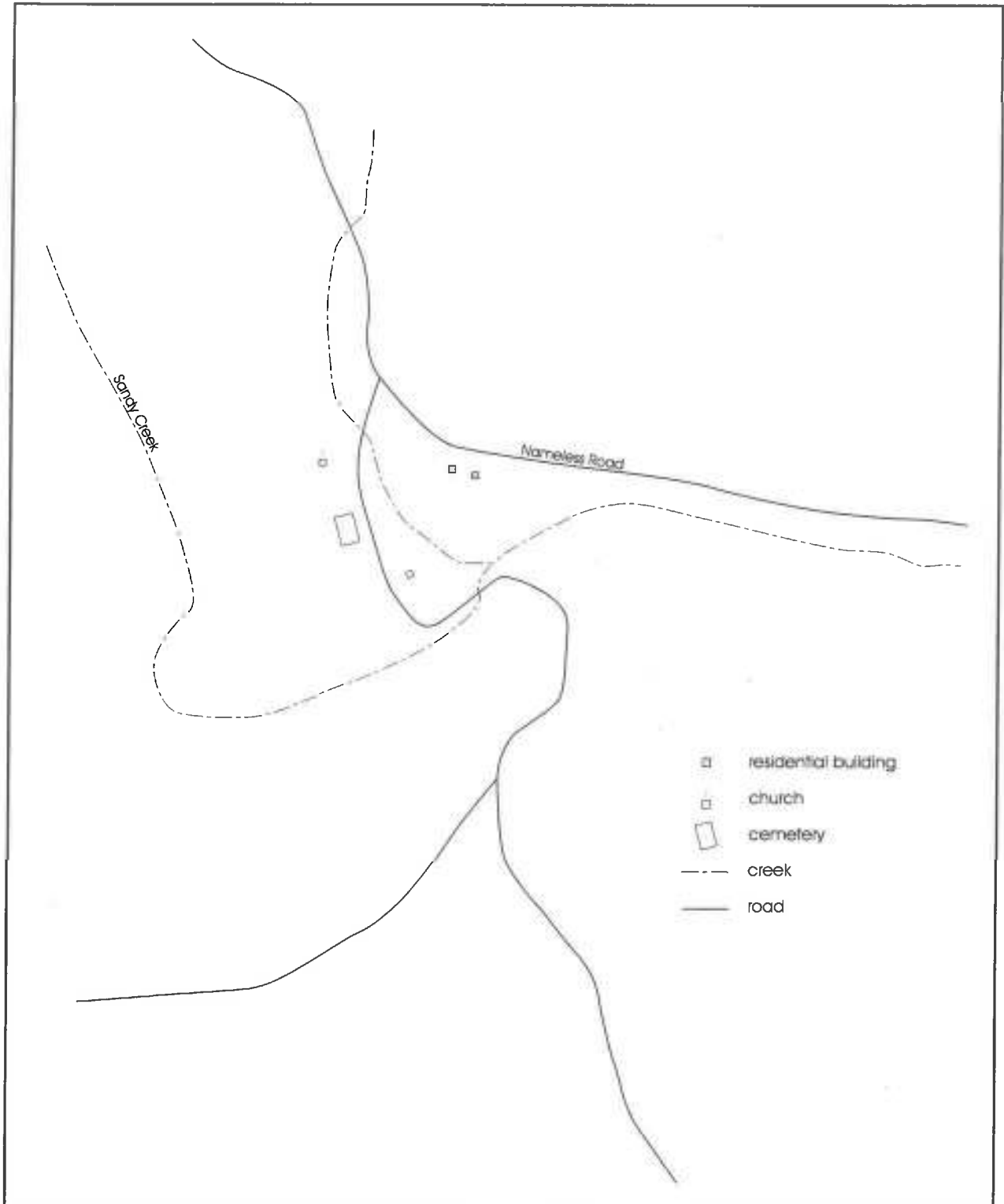


Figure 17. *The cemetery and buildings at the Nameless community.* (After Texas State Department of Highways and Public Transportation Map, 1936, 1948.)



Figure 18. *Photograph of Travis Peak schoolhouse, 1998.*

area's cedar industry than this assessment would indicate.

The "Cedar Choppers"

While cotton sustained many rural communities in the region during the late nineteenth and early twentieth centuries, "almost everybody" who farmed or ranched in the Balcones Canyonlands area cut cedar for money (D. Lewis 1998). For many years the area also harbored a particular group of people who derived almost all of their income from harvesting cedar. The "cedar choppers" who inhabited the Balcones Canyonlands area during the late nineteenth and early twentieth centuries were descended from the "raw-boned Anglo-Saxons" who moved to Central Texas from Kentucky, Tennessee, and western Virginia during the mid-1850s (Preece 1932:1; Langham n.d., 1–2). Highly independent and proud, suspicious of outsiders and careful to perpetuate their traditions, these people lived even into the 1930s much as their ancestors had more than a hundred years earlier. Harold Preece, who had been raised in the area and knew its people well, wrote in 1932 that western Travis County, including the Travis Peak area, was a place that "equals in primitiveness the Cumberland region

of Kentucky, [and] where the quaint idioms of a bygone day are still heard on the lips of the inhabitants" (Preece 1932:1) (Figure 20).

According to Preece and other observers, the culture of the "cedar choppers" was an example of an older, more primitive way of life somehow preserved and frozen in time (Preece 1932:1; Langham n.d.:5; Bode 1959:2). They sang old Scottish and English folk ballads, and used words and sentence constructions harking back to

Elizabethan England; their crude but somehow romantically simple life seemed completely out of place in the twentieth century. As Preece put it:

here exists a certain flavor of life, a pastoral freshness and innocence not to be found in those mechanized incongruities we call cities. One detects this flavor when he sees giant men playing marbles with the enthusiastic naiveté of 12-year-old boys. . . . Still more vividly, he realizes the unspoiled charm of their lives when he listens to them speaking in their homely, yet rich, vernacular (Preece 1932:1).

Cedar choppers and their families were itinerants, moving from place to place in search of work, with their belongings and children piled into their wagons (or, later, their Model-T's). "At campsites near water," C. W. Wimberley recalled, "they stopped to throw up their rag houses or shanties of tin and scrap lumber and brush—to chop select timber into posts" (Langham n.d.:5). According to Preece and other sources, many of their social customs seemed rooted in ancient rituals, practices, and beliefs: Preece, for example, met a number of cedar cutters who believed they had personally encountered Satan in the flesh (Langham n.d.:5; Preece 1932:1). Faye Crumley, who often visited the Nameless area with her parents, re-

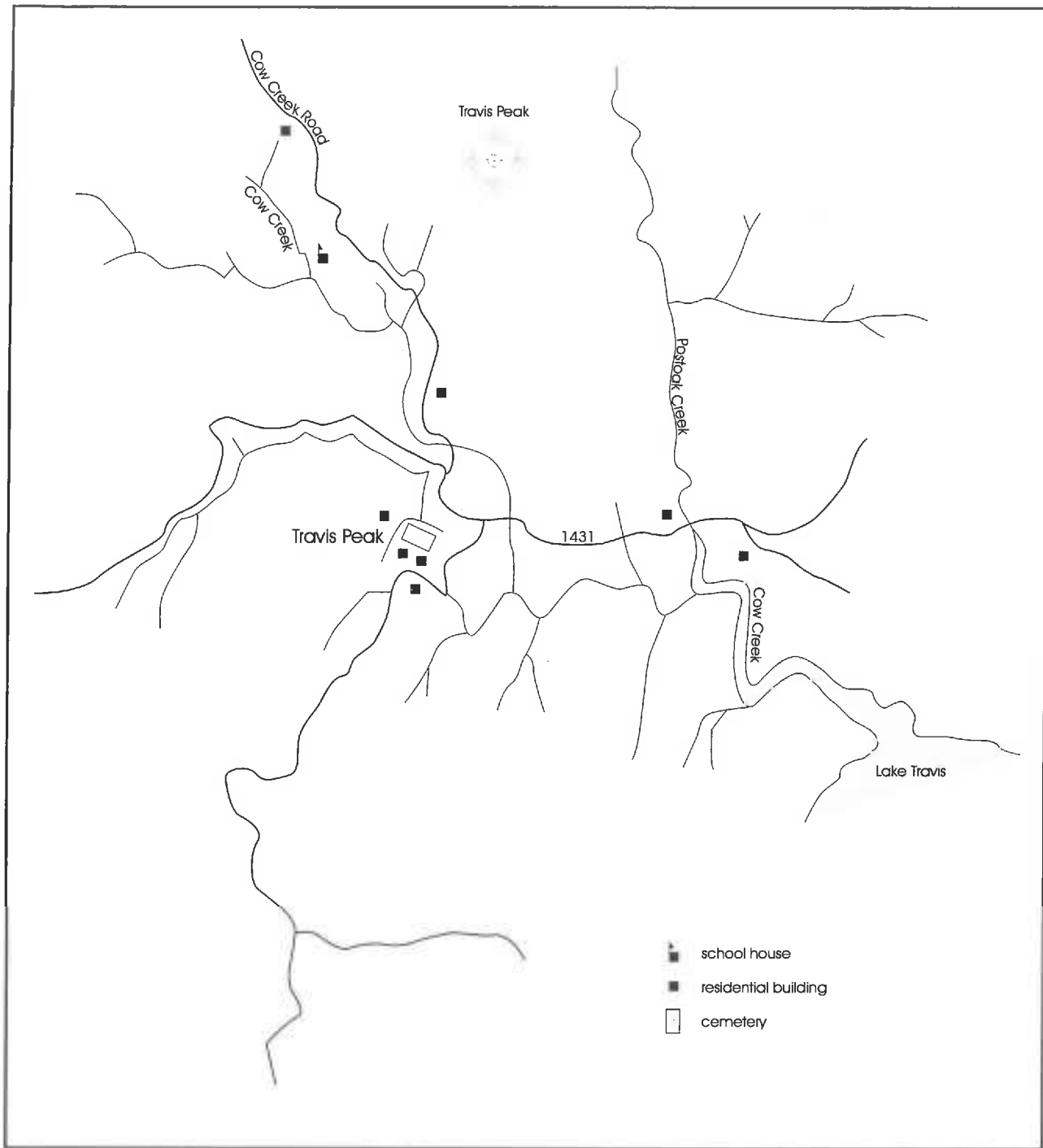


Figure 19. Cemetery and buildings at the Travis Peak community and along Cow Creek Road. (After Texas State Department of Highways and Public Transportation Map, 1936, 1948.)

membered that the “cedar choppers” there were “very religious” people but did not attend religious services until her father, Perry L. Moore, “took the word to them” sometime in the 1920s or 1930s (Crumley 1998).

Moore, a “country preacher” who later affiliated with the Pentecostal Assembly of God, began his work in the area by holding revivals in a brush arbor he built near the Nameless schoolhouse. Mrs. Crumley remembered the area as extremely isolated and primitive: “It

was really in the sticks,” she recalled. The people who lived there earned money by cutting cedar posts and making charcoal, but many of them seemed very poor: they lived in tents pitched around the area, getting their water from the creek. As Moore’s ministrations became more regular, he baptized children and conducted weddings; his wife, who sometimes accompanied him in his buggy into the area, often served as a midwife for women having children (Crumley 1998). Doris Lewis, who became familiar with the Travis Peak and Cow Creek vicinity during the 1930s, remembered cedar choppers living in tents around that area while they chopped cedar; in the late fall, people would sometimes camp for months along Cow Creek while they gathered pecans (D. Lewis 1998). As difficult as their lives must have been, these “illiterate people of the hills,” as one write rather contemptuously described them (Malden 1924:44), were living reminders of a way of life that was quickly fading away.

The Decline of Traditional Culture in the Balcones Canyonlands Area

By the late 1940s, the combined effects of the Great Depression, the decline of cotton cultivation in Central Texas, the automobile, and the construction of dams along the Colorado River undercut the isolated, traditional way of life that had persisted in the small communities around the Balcones Canyonlands area, and had all but eliminated the old culture of the cedar cutters who lived there. By the late 1950s the area was almost entirely devoted to ranching, and paved roads were opening it to visitors interested primarily in the lakes that the dams had formed.

Although much of the rough, hilly Balcones Canyonlands Refuge area was unsuitable for cultivation and was devoted to livestock raising, there were, as previously discussed, pockets of good land lining the creeks, and in the early twentieth century farms in the area continued to support a number of small towns and communities there. During World War I, the agricultural economy of the entire region experienced a boom, and even marginal lands in eastern Burnet County were tilled, usually to produce cotton, which at the time was “the best money crop for farmers” in the area (Price n.d.:19).

The boom helped to shape land use and production patterns in the Cow Creek area, where cotton was grown at about this time (C. Lewis 1998). Although it is not known whether Travis Peak’s cotton gin was still operating, the cotton grown on the farms along Cow Creek almost certainly continued to support the town. After 1920, even as the area’s agricultural economy struggled through a series of intense droughts and falling cotton prices, cotton farmers in the region responded by planting still more cotton to try to keep up; the gins at Bertram, for example, processed about 5,000 bales in 1920 and almost 12,000 bales in 1928. During the fall harvest season, the town’s streets were filled with long lines of cotton-filled wagons waiting for their turns at the gin (Bailey 1981:80–81; Leffler 1998:61; Price n.d.:19).

The area’s cotton economy, which supported many small farmers and the small communities they had created, was devastated during the Great Depression of the 1930s. In 1928, a decent year for local farmers, cotton sold for 28 cents a pound; after the New York Stock Exchange crashed in October 1929, cotton plunged to 16 cents, and by 1931 it had fallen to only 5 cents a pound. As the Depression ground on, farmers were hammered by droughts, low prices, and the evaporation of credit. Many hundreds of farmers in the region were forced to leave the land or were reduced to becoming farm laborers. New planting restrictions created by the federal government’s Agricultural Adjustment Administration that went into effect during this period contributed to the trend. There had been 1,548 farms in Burnet County in 1930, but by 1940 only 1,294 remained; during the same period Williamson County lost almost 20 percent of its farms, and Travis County lost more than 1,000 farms (Leffler 1998:61, 66; Smyrl 1996b:1:852; Smyrl 1996e:6:554). The Cow Creek area likely was depopulated during this period. A map of the Cow Creek area showed nine dwellings in that vicinity in 1909; by 1936 only five remained.(USGS 1902/1909; Texas State Department of Highways and Public Transportation 1936/48).

Cotton production in the three counties plunged during the 1930s and never recovered. Almost 47,000 acres had been planted in cotton in Burnet County in 1930; by 1940, only about 17,000 acres were. In

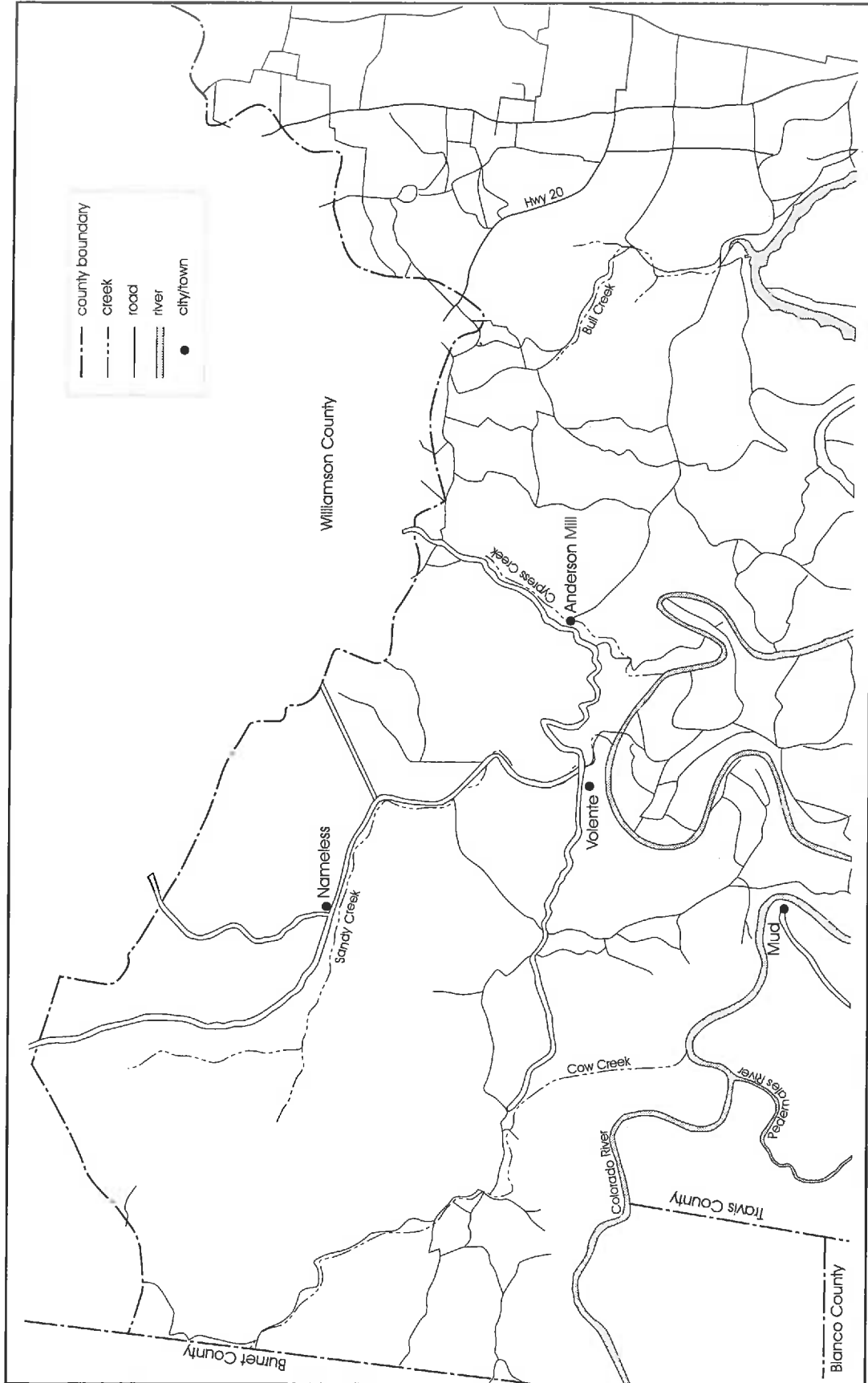


Figure 20. Map of northwest Travis County, 1917, before the construction of Marshall Ford Reservoir (Lake Travis).

Williamson County, cotton covered over 268,000 acres in 1930, but only about 139,000 acres by 1930 (Smyrl 1996b:1:852; Leffler 1998:66). In southeastern Burnett County, most of the old cotton land reverted to pasture, and by the late 1940s cotton production had become “a thing of the past” in that area (Price n.d.:25).

Meanwhile, massive public works projects transformed the area’s landscape and its demographic patterns. Hundreds of men from the area were hired by New Deal agencies to construct the new Inks and Buchanan dams along the Colorado River, while many more worked to build Highways 29 and 281 (both completed in 1939) and other roads in the region. All of these developments encouraged people to leave the countryside and move to the area’s larger cities and towns. The beginning of World War II in 1941 also helped to depopulate the countryside, as many people found new opportunities outside the area and never returned (Bailey 1981:86–87; Bowden 1939:152–157, 164–165; Price n.d.:25)

As a result of all of these developments, the small communities in the region, including those in and around the Balcones Canyonlands, began to wither away, and traditional patterns of life dissolved. Weakened by population loss, many towns and communities lost their schools, the centers of life in the communities and the central symbols of their existence. As Darrell Debo writes, after Smithwick’s school was consolidated with the Marble Falls district in

1946, “the former days of an active community lived only in the memories of those who made up the neighborhood in years gone by” (Debo 1979:131). The Hopewell and Nameless schools were consolidated in 1945, soon followed by Doeskin (1948), Oatmeal (1948), and Travis Peak (1952).

By the 1960s not much was left of the old communities and the traditional culture of the area now encompassed by the BCNWR. As late as 1947 only dirt roads led to the area, but by the late 1950s paved roads had been built and the region was frequented by people from outside the area in search of recreation. By the early 1960s, many of the area’s old communities had faded away or were losing their identities. The cedar choppers, a “dying breed,” had all but disappeared. And by 1970 nothing remained of the once-thriving Nameless community except the old abandoned schoolhouse and the cemetery (Lower Colorado River Authority map 1947; C. Lewis 1998; Debo 1979:182, 181; Barkley 1963:18; Bode 1959:2; Smyrl 1996f:6:556).

Chapter 4: Recommendations for Future Cultural Resource Management

Steve A. Tomka and John Leffler

Resource Management Needs and Strategies

Although a great deal of archaeological work has been carried out in the central Texas archaeological region, answers to many of the research questions asked years ago are still missing and new research questions based on new, nonculture historic paradigms are just beginning to be asked. Much archaeological research throughout the 1960s and 1970s has been preoccupied with establishing and refining the culture history and defining projectile point sequences. During the late 1980s and through the 1990s researchers have moved beyond the culture historic phase and begun focusing on understanding the adaptive strategies employed by hunter-gatherers through time within the diverse and rich environment of Central Texas.

The discussion of the cultural resource management options for the BCNWR depends on two factors: 1) the range of prehistoric and historic resources present; and 2) the gaps in our knowledge about the prehistory and history of the region.

As discussed earlier, only six archaeological sites have been recorded within the 15,800-acre project area. Based on the archaeological investigations carried out within the vicinity of the Refuge and in greater Central Texas, it is clear that a large number of additional archaeological sites are likely to exist within the boundaries of the Refuge. Although the locations of six recorded sites are known, and some unrecorded sites have already been found (see below), the first step in addressing the issues of cultural resource management is locating all other prehistoric and historic sites within the project area. Only when the full range of cultural resources present on the refuge is known will it be possible to develop plans for their proper management. To this end, it is recommended that a 100 percent pedestrian survey be conducted of the 15,800 acres.

While all 15,800 acres of the refuge need to be surveyed eventually, at the present time only about half of the proposed refuge has been acquired. Although this could, under normal circumstances, present a problem, it may actually provide an important learning opportunity and a means by which overall project costs might be kept low. Since some portions of the proposed refuge have been acquired while others are yet to be, it is recommended that, as soon as possible, archaeological surveys be undertaken of those sections of the refuge that are already U.S. Fish and Wildlife property. There are three reasons for this strategy. First, the public can access these lands and the cultural resources present on them are subject to looting, while cultural resources on private lands are under the protection of individual land owners. Second, a survey of existing portions of the refuge will allow the development of predictive models for site locations on other portions of the refuge not yet acquired. Such modeling may not only contribute to improvements in archaeological research techniques but will also allow archaeological crews to more efficiently target for survey those portions of the project area that are likely to contain archaeological remains, leading to a more cost-effective survey and site discovery. As new areas are acquired and surveyed the results can be incorporated into the model to refine its predictive accuracy and to further focus the expenditure of archaeological efforts and available funds. Finally, a third reason to begin an archaeological survey in the near future is the negative impact of repeated vegetation burnings on surface archaeological remains. The use of controlled burns is a necessary natural means of returning the native plant communities to the project area. While we do not advocate the discontinuation of this practice, it does present both an advantage and a disadvantage to archaeological research. On the one hand, burns eliminate the dense grass that significantly limits surface visibility, therefore increasing the number of sites that would be found and recorded during

survey. On the other hand, however, the repeated exposure of chipped lithic artifacts to fire destroys these specimens through heat spalling and fracturing. Therefore, it is recommended that pedestrian surveys be conducted in those areas slated for controlled burning, and that these surveys be scheduled soon after the burn to aid in surface visibility.

The survey of the canyons and canyon walls, as well as escarpment slopes characterized by heavy cedar cover, presents yet another logistical challenge since these areas are prime nesting habitat for the two endangered bird species that use the refuge. To avoid disturbing the two species during the early nesting cycle (mid-March through mid-April) it is recommended that pedestrian surveys of these habitats occur during the winter months or in the late spring and through the summer. The in-field recording of archaeological sites found within these habitat areas should be limited to a maximum of two to three hours to minimize presence of archaeological personnel in the vicinity of nests. Testing of such sites should be limited to hand-excavated shovel tests; mechanical testing with backhoes should be limited to the winter months when the two species are not present in the refuge.

Even before conducting the full-scale pedestrian survey, however, a number of propositions can be made, based on our knowledge of regional prehistory, regarding the nature of the archaeological resources likely to be found. The BCNWR is likely to include a large number of lithic procurement sites, burned-rock midden sites, some rockshelters, sink holes, and open-air camps in the uplands and on terraces along Cow Creek and smaller streams.

A quick visit of some known, but as yet unrecorded, sites within the Refuge supports the impression that burned-rock midden and lithic procurement sites should be two of the more common site types found in the Refuge. Based on the location of the two midden sites visited (see Figure 2) and in conjunction with the site distribution patterns derived from nearby areas (Block House Creek and Canyon Creek), some predictions can be made regarding the likely location of these two site types. With a few exceptions midden sites tend to be located on the tops of the escarpment or ridges immediately adjacent the rims of the can-

yons or just below the rims of the canyons adjacent springs. It is also possible that some buried midden sites may be present in upper terraces (T2, T3) of Cow Creek. Lithic procurement locations are expected to occur in nearly all locations where knappable chert resources are exposed on surface. Known locations include the tops of ridges and stream beds such as Cow Creek.

Additional locations that have the potential of containing significant archaeological remains, including Paleoindian materials, are rockshelters. Some of the rockshelters excavated in the Canyon Creek development indicate the possibility that early remains and possibly long cultural sequences may have been preserved within such locations. The canyonlands that ring the Balcones Escarpment in the project area are prime locations for the formation of rockshelters. Discussions with refuge personnel indicate that a number of small rock overhangs do exist on the refuge. Although these might have been too small for human occupation, it is likely that at one time they were larger and their roofs have collapsed sealing earlier deposits. Because rockshelters were one of the more frequently occupied locations by prehistoric populations, it is recommended that the pedestrian survey concentrate in particular on locating shelters with cultural remains.

Sink holes are yet another type of location that often contains archaeological remains, particularly human burials. Such is the example of site 41WM268 found within the present boundaries of the refuge. The scientific investigation of prehistoric human remains is a politically charged and highly sensitive undertaking. Although the end result of finding such sink holes may be that they remain undisturbed at the request of Native American groups, the location of such burial sites is in itself a significant step allowing their protection from the general public (e.g., hunters). The identification of sink holes with human burials may allow refuge managers the option of restricting access to such areas of the refuge. This is, however, a difficult decision since such restrictions often serve only to attract attention to the area rather than restricting access.

In addition to a variety of prehistoric property types, a number of historic sites should also be present on the Balcones Canyonlands National Wildlife Refuge. Such historic properties have already been encountered as exemplified by the Travis Peak schoolhouse located about 75 yards northwest of the Cow Creek road and some 1.25 miles north of its intersection with FM 1431. The former schoolhouse at Doeskin, located within the Refuge, also represents a similar property type. Although, its approximate former location is known, the area needs to be visited to ascertain whether anything remains of the building. Similarly, the former location of the small mid-nineteenth-century community of Cedar Mill(s) needs to be visited to establish the nature of the historic cultural remains, if any, still present.

Other historic property types likely to be found within the Refuge are exemplified by the ca. 1850's log cabin found on the Turner property. Similar homestead sites should be present throughout the project area, and especially along the broad expanses of Cow Creek which provided prime farmland and ample water for both farming and livestock. An additional historic property type that almost certainly existed within the Refuge is the "cedar-chopper" camp. The identification of these camps, however, may present somewhat of a challenge given their low archaeological visibility. Since individuals within these camps lived in tents rather than more substantial structures, the identification of these property types has to rely primarily on activity areas (hearths) and historic material culture (cans, bottles, nails, etc.).

The Contribution of the Balcones Canyonlands to Significant Research Issues

The summary of the culture historic sequences presented earlier illustrates the fact that we do have some understanding of the broad changes in paleoclimatic conditions and hunter-gatherer adaptations within Central Texas. What is lacking, however, is the details. For instance, while a number of paleoclimatic models have been employed in discussing the Balcones Canyonlands region (Bousman 1998; Nordt et al. 1994; Toomey et al. 1993), the reconstructions rely on data derived from neighboring regions. As such, it

is difficult to know how applicable the reconstructions are to the eastern edge of the Edwards Escarpment. Are the hunter-gatherer land use changes noted in the region responses to broad regional climatic and environmental conditions, or are they micro-regional processes?

The excavations conducted at the site of Wilson-Leonard, a deeply stratified site found on the banks of a small intermittent creek, suggest that other comparable sites might exist in similar geomorphological settings. While archaeologists have noted the scarcity of Paleoindian components in terrace settings associated with large rivers, it is possible that these sites may be more common along small streams. Such streams may have not "flushed out" the sediments that may contain such early deposits. It is likely that within the project area streams such as Cow Creek and possibly even some of its tributaries and smaller streams may contain pockets of Pleistocene sediments with significant archaeological deposits. Such deeply stratified sites may provide both paleoclimatic data as well as much needed archaeological remains for a better understanding of human adaptations during the earliest known occupations of the region.

The general impression of archaeologists working in Central Texas is that the intensity of regional occupations was relatively light during the Early Archaic and the early portion of the Middle Archaic. The more systematic consideration of geomorphological factors and contexts suggests that this impression might be due at least in part to preservation bias. Given this possibility, archaeological research in previously unexplored portions of Central Texas, particularly areas not dominated by large river valleys (e.g., the Colorado River), may yield a new perspective on regional land use, particularly during the Early and Middle Archaic.

An additional significant contribution of the Balcones Canyonlands project lies in its regional coverage, both in terms of its ecotonal setting and areal coverage. The location of the project area at the boundary between the Edwards Plateau and the Blackland Prairie make it an important setting for prehistoric groups particularly during periods of bison presence in central Texas. In particular, the canyonlands provided an

environment with ample medium-sized ungulates and smaller prey, a rich and diverse range of edible plant species, and dependable surface water resources (e.g., springs) for extended human occupation. In addition, the region provides an overview of and ready access to the neighboring Blackland Prairie, the prime habitat of large bison herds. The 15,800-acre project area contains portions of both major ecological settings, the Edwards Plateau and the Blackland Prairie. As such, for the first time an archaeological research effort has the potential to document the exploitation of both areas by prehistoric groups. It is suggested that when archaeological testing and mitigation of sites occurs, an effort should be made to sample sites in distinct environmental settings, in particular the escarpment edge and the prairie. A systematic stratified sampling strategy, within which sites in ecologically distinct settings are tested and mitigated, can demonstrate regional-scale patterns while at the same time controlling costs and allowing the preservation of other sites for future research.

One of the more common archaeological properties on the refuge is expected to be burned-rock middens. Since the previous 40 years of archaeology in burned-rock middens have not yielded greater understanding of the nature of these features, researchers are beginning to focus on new techniques (e.g., archeomagnetic studies, residue analysis) and the study of formation processes to shed new light on old research questions (see Collins 1994). Another aspect of research on burned-rock midden sites that is just coming into focus is the need to investigate not only the midden itself but also attempt to understand both the midden as well as the site by excavating areas that are off-midden. While the content and morphology of middens (rock ovens) is reasonably well documented, we have very little understanding of what the range of human behaviors was that took place at the site. As such, we still cannot answer very convincingly whether burned-rock midden sites represent relatively lengthy occupations with residential structures erected away from the feature (e.g., oven) or whether the use of the site was focused primarily on specialized plant processing without subsequent residential stays. A redirection of archaeological efforts away from the rock mounds themselves to surrounding portions of the site may provide answers to these questions. It is suggested that when disturbances to sites with burned-rock ov-

ens cannot be avoided, archaeologists focus as much attention off midden as on the midden itself.

Archaeological research both on and off the midden should focus on the recovery of, among other data types, subsistence remains. The focus of mitigation efforts on middens alone has probably biased our reconstructions of prehistoric diets, particularly if the assumption that these features are rather specialized cooking facilities (e.g., in terms of both content and function) is correct. The recovery of subsistence remains (e.g., animal bones) from off midden portions of sites may actually provide us with a list of species that may not have been present in the refuse associated with the rock ovens unless these features were later the locations of secondary dumps. Detailed faunal analyses as well as ethnobotanical research can provide us with a more complete profile of hunter-gatherer diets than we have at the present, in addition to also providing more solid paleoenvironmental reconstructions. It is recommended, however, that both zooarchaeological and ethnobotanical research be conducted in close cooperation with Refuge biologists (e.g., Chuck Sexton) in order to better understand the distribution of various species across the landscape and provide reciprocal information regarding possible changes in the landscape and plant and animal community distributions compared to the present situation. Given the capacity to obtain detailed information regarding on-Refuge distributions of modern plant and animal communities (through on-site biologists), this information needs to be integrated with archaeological reconstructions of prehistoric landscapes and edible resources distributions. Such collaboration can greatly benefit both archaeologists and biologists and also lead to better understanding of prehistoric land-use strategies.

In addition to burned-rock middens, lithic procurement sites (e.g., quarry sites) should be a relatively common archaeological site found on the Refuge. The reconstruction of lithic procurement behavior takes on an even greater significance given the overall scarcity of lithic resources on the Blackland Prairie. Any bison-hunting group that ranged onto the prairie would have had to "gear up" for seasonal hunts and therefore the detailed investigation of lithic procurement behavior may actually allow us to connect the two

regions on the basis of raw material procurement strategies.

Although a large number of chipped lithic artifacts are normally recovered from each archaeological site we know relatively little about lithic procurement strategies because often only a small proportion of the artifacts are subjected to detailed analyses, and because specialized lithic procurement sites are usually not even investigated. Although a number of states have developed systematic protocols in dealing with these property types, Texas has no such protocol in place. As a result, the general approach of the regulatory and many contracting agencies is to a priori write off lithic procurement sites as insignificant and ineligible. While lithic procurement sites are often large and found on the surface, closer inspection often has revealed smaller concentrations of artifacts that seem to represent technologically related clusters of artifacts (e.g., flakes from a single core) and may even contain discarded (e.g., exhausted) diagnostic specimens. Such patternings suggest that portions of lithic procurement sites may have associational integrity and can be temporally assigned if researchers are willing to not dismiss them. Such clusters of artifacts can provide significant information regarding technological approaches to raw material reduction, raw material procurement strategies, and even inter-regional mobility patterns if discarded artifacts made of nonlocal raw materials are encountered.

A related issue is the manner in which lithic procurement sites are defined. Too often the discussion of an archaeological site with usable raw materials present will not consider the fact that the site occupation also included a lithic procurement aspect. Rather, the term "lithic procurement" site will be used exclusively for those sites used exclusively for the procurement of raw materials. Such classification schemes severely limit archaeological reconstructions and understandings of regional lithic procurement practices and strategies. It is therefore recommended that any archaeological site with on-site, naturally occurring lithic materials also be denoted as having a lithic procurement component.

An additional aspect of prehistoric behavior of which we have very little understanding is the overall vari-

ability in site types utilized by hunter-gatherers during the annual round and as resource acquisition practices shifted between foraging and collecting. As a result it has been very difficult to define the overall settlement pattern and to speak about changes in land-use strategies through time and space. As mentioned before, the project area with its large size and varied microenvironments probably provided a number of locations that were sequentially occupied by prehistoric populations during the year. As a result, systematic archaeological work within the Refuge may allow us the rare opportunity to document the full range (or a large portion) of site types utilized by prehistoric populations.

To a large extent, research into the historic period occupation of the Refuge represents the natural progression of interest in documenting and understanding the continuities and discontinuities in human occupation and settlement of the region. The preliminary and limited historical investigations performed for this project indicate that, for all of its isolation, the area encompassed by the Balcones Canyonlands National Wildlife Refuge has a rich human history that is in many ways interconnected with event and developments in the surrounding area. To more fully understand the development of the area, however, additional and deeper research will be required. More work needs to be done to identify and possibly preserve "pioneer" sites within the Refuge, and to find and examine areas known to have been inhabited within the last 150 years to help us understand the patterns of life in the area.

More research also is necessary to obtain a better, more concrete understanding of how the Refuge area was settled and how the land has been used over time. In particular, the role of cotton and ranching within the settlement of the region needs to be fully explored. Similarly, the extent of ranching within the region and the potential impact of over-grazing on the early historic landscape and vegetation communities needs to be systematically documented. Detailed documentation and understanding of the anthropogenic (e.g., suppression of natural fires, over-grazing) factors that may have led to the development of the modern vegetation communities is very important. It can have significant effects on the management options pursued

to return the landscape to a savanna/prairie appearance yet still maintain the necessary habitats for the two endangered species that nest within the Refuge.

A great deal of information almost certainly lies buried in the deeds, other land records, and manuscript censuses pertaining to properties in the area. Careful and comprehensive examination of these records can provide us with the necessary information to reconstruct the history of regional settlement and identify the economic pursuits engaged in by its inhabitants. In addition and with some degree of urgency, extensive interviews with more people familiar with the area ought to be conducted as quickly as possible. The area's "old-timers" carry with them a great deal of precious information, but many of these people are now octogenarians, and before too long they will not be able to share what they know.

Public Relations and the Balcones Canyonlands National Wildlife Refuge

The management of what we anticipate to be the rich inventory of prehistoric and historic cultural resources of the refuge that are likely to be identified during a systematic survey of the project area should provide a valuable opportunity to draw the public into the process of natural and cultural resource protection and preservation. Speaking specifically of the management of cultural resources, many of the local ranchers and residents have collections of projectile points obtained from the general vicinity. It is clear that public interest in the prehistory of the region exists, even if it is narrowly focused on point collecting. In addition, since some of the inhabitants of the area are descendants of the original settlers of the region, there also is strong interest in learning about and documenting the historic period occupation of the region.

These interests can be further cultivated by establishing an interpretive center at the BCNWR. The results of prehistoric investigations on the refuge can be incorporated into interpretive panoramas of life in the region prior to the arrival of European settlers. Artifacts obtained from surveys and/or excavations, or even donated collections, may be integrated into interpretations to illustrate the connections between ar-

tifacts and archaeological reconstructions of prehistoric lifeways. Information derived from oral histories gathered from long-time residents in the region can provide a strong connection between local inhabitants and the Refuge since it is helping preserve glimpses of their own history.

Related to these efforts is the need to actively encourage the preservation of some of the early twentieth-century schoolhouses still standing in the area. These buildings represent important examples of a particular architectural style common during the early 1900s, yet few of these schools still remain in good condition. The Travis Peak schoolhouse, located along Cow Creek Road, is a fine example of a structure that still is in exceptionally good condition but that could easily fall into disrepair through neglect. Such buildings could be refurbished into magnificent Civic Centers and/or libraries to again serve as focal points of social and civic activity within the region.

Finally, it is possible that through close relationships with educational centers such as universities, scholars and students may be able to use the prehistoric and historic cultural resources of the Refuge for research and educational purposes. When and if disturbances to cultural resources cannot be avoided, it is possible that archaeology graduate or even undergraduate students may undertake the mitigation of sites for projects such as Honors' and Master's theses or dissertations, or even research papers. Such undertakings, when carried out in a timely fashion, can benefit both the refuge and the educational institutions. Similar interrelationships may be established with university biology and ecology departments for the training of their students. These types of collaborations can substantially increase the tangible benefits of the Refuge to the local community.

Executive Summary

The Center for Archaeological Research at the University of Texas at San Antonio has been contracted by the U.S. Fish and Wildlife Service to prepare a Cultural Resources Overview and Assessment of the 15,800 acre Balcones Canyonlands National Wildlife Refuge located in portions of Travis, Burnet, and

Williamson Counties. The following is a summary of the most significant findings of this overview and assessment.

- A total of five (5) previously recorded prehistoric archaeological sites are found within the project area: 41BT69; 41BT99; 41TV878; 41TV879; and 41WM268 (see Attachment 1). No previously recorded historic sites are present. The Texas Archeological Research Laboratory (TARL), the state repository, has site records on only three of the sites: 41BT69, 41BT99, and 41WM268. The project boundaries and the locations of the five sites are shown on the accompanying 7.5-minute quadrangle sheets (see Figure 2, Attachment 2). No collections of archaeological materials exist from these sites at TARL.
- During a brief trip to the Refuge three (3) additional, unrecorded, sites were visited. They consist of two multiple-midden sites and a lithic procurement locality. Their locations are also plotted on the attached quad sheets. Two historic properties, a former town site (Cedar Mills) and a schoolhouse (Travis Peak), were also located within the present boundaries of the Balcones Canyonlands National Wildlife Refuge. None of the prehistoric sites have been previously recorded although Refuge personnel are aware of their existence and are monitoring their condition. Both properties are on private land and the small community of Cedar Mill(s) appears to have been abandoned by the 1870's and it is not known whether the former buildings were relocated or abandoned.
- The prehistoric overview of the archaeological investigations conducted in the vicinity of the project area and in the central Texas archaeological region indicates that human populations have utilized the region from the Paleoindian to the Late Prehistoric period. Although the most intensive occupation of the region may have occurred during the Late Archaic period, this perspective may be biased by the differential preservation of older components.
- At the present time a complete inventory of the prehistoric and historic properties present on the Refuge does not exist. It is recommended that a 100 percent pedestrian survey be conducted of the project area. Rather than waiting until all of the approved-for-acquisition properties are purchased, the survey of the existing Refuge lands should begin as soon as feasible. The survey(s) should be timed in concert with vegetation burning efforts to increase surface visibility and should be conducted during periods when the two endangered bird species are not disturbed in their nesting territories.
- Based on the overview of the investigations in the central Texas archaeological region, some of the most common sites (property types) found within the Refuge should be burned rock middens and lithic procurement sites. Midden sites should be found on the rims of the uplands adjacent canyon heads while lithic procurement sites may be present in all locations with naturally occurring cherts. All rockshelters and sinkholes should be explored for signs of human habitation, including human burials. Prehistoric habitation sites may also be found buried in the terraces of Cow Creek. Historic properties related to farming and ranching may be concentrated along the fertile Cow Creek valley although some ranching facilities may be expected throughout the Refuge.
- The investigations of both prehistoric and historic cultural resources within the project area should result in significant contributions to regional archaeological knowledge because of the regional coverage it affords and the ecotonal setting of the Refuge between the Edwards Plateau and the Blackland Prairie. Data from potential prehistoric and historic sites on the Refuge can contribute to refinements of paleoenvironmental conditions, a more complete understanding of diachronic changes in regional land-use strategies, and the nature of the historic period occupations of the area.
- Efforts to identify, preserve, and/or mitigate adverse impact to prehistoric and historic properties found within the refuge should consider the

involvement of members from surrounding communities (e.g., Nameless, Travis Peak, etc.). The goal of these efforts should be to involve the inhabitants of the region in the preservation of resources that represent their cultural and natural heritage. The establishment of an interpretive center that familiarizes visitors to the Refuge with

the prehistoric and historic cultural resources and biota of the region is strongly encouraged. Contacts with universities and colleges is also suggested to encourage research opportunities within the context of cultural and natural resource management.

Appendix I: Balcones Canyonlands Annotated Bibliography

Steve A. Tomka and John Leffler

Barkley, Mary Starr

1967 [1963] *History of Travis County and Austin, 1839–1899*. The Steck Company. Austin.

Contains useful information about the settlement of the county, and about communities in the Highland Lakes area, but focuses mostly on the eastern part of the county. Nothing about Spanish or Mexican era, and discussion is often disorganized.

Barkley, Mary Starr

1970 *A History of Central Texas*. Austin Printing Co., Austin.

More a tour of the area than an actual history, this book offers some information about local communities but is poorly organized and its discussions are not developed in much depth.

Bailey, Elizabeth

1984 *History of Leander*. Leander Texas Sesquicentennial Committee, Leander.

Based on a University of Texas at Austin thesis by the same author, this book contains useful information about Leander drawn from a number of different sources. Story ends with the Great Depression.

Black, S. L., L.W. Ellis, D. G. Creel, and G. T. Goode (editors)

1997 *Hot Rock Cooking on the Greater Edwards Plateau: Four Burned-rock Midden Sites in West Central Texas, Volumes 1 and 2. Studies in Archeology 22*, Texas Archeological Laboratory, The University of Texas, Texas Department of Transportation Environmental Affairs Department, *Archeology Studies Program Report 2*, Austin.

These two volumes contain a wealth of information on burned-rock midden sites and this type of thermal facility technology. Volume 1 contains 12 chapters ranging from introductions to the study topic and region (Chapters 1–2), to discussions of the technology (Chapters 3, 9, 10), midden formation processes (Chapter 4), and regional burned-rock midden distribution studies (Chapter 5). Also included are detailed reports on four burned-rock midden sites: The Honey Creek Site (41MS32), two Corn Creek sites (41MK8, 41MK9), and the Heard Schoolhouse Site (41UV86). The volume closes with a critical reconsideration of the function of burned-rock midden sites in Central Texas (Chapter 11) and presents arguments as to why burned-rock midden investigations should continue (Chapter 12). Volume 2 contains 15 appendices presenting the artifact and features descriptions, and the results of special studies on midden-related materials. Of particular utility is Appendix J, which presents comparative data from a number of excavated and reported burned-rock middens in greater Central Texas.

Bond, Clell. L.

1978 *Three Archeological Sites at Hoxie Bridge, Williamson County, Texas*. Anthropology Laboratory, *Report No. 43*, Texas A&M University, College Station.

Discusses the results of investigations at three archaeological sites: 42WM130 (The Hoxie Bridge Site), 41WM284, and 41WM294. The Hoxie Bridge Site is located on the south side of the San Gabriel River. Materials were recovered in surface collection, shovel testing, and controlled excavation of a block dug in 2-x-2 meter units. Forty-seven features were excavated. All but one of these are unlined or rock-lined basin hearths. One of the hearths (Feature 16) contained a Darl projectile point. A sample of charcoal from the features was dated at 1740±100 B.P. Feature 5, also identified as a hearth contained a Scallorn arrow point. Associated charcoal was dated to 800±70 B.P. Similarly, Feature 7, also a fire pit, contained an Alba arrow

point. An associated charcoal sample was dated to 700±60 B.P. An earlier date on Alba points was obtained from Feature 26 which contained an Alba point. The charcoal sample from this feature was dated to 1360±640 B.P. although some questions may be raised about the association of the point with the feature. A number of additional features contained Alba points and arrow point-size fragments. However, none had sufficient charcoal for dating.

Overall 20 Alba, 5 Perdiz, 11 Scallorn, 10 Darl, 1 Fairland, and 4 Ensor points were recovered from the site, in addition to 15 sherds. Also recovered were four triangular arrow points similar to Fresno specimens, and a number of Perdiz preforms the author calls Clifftons. Little stratigraphic separation was noted between the Austin and Toyah materials, although these were found above the Archaic points. The purpose of the deep basin-shaped hearths is not known precisely, nor is the purpose of the food items being prepared within them. A large number of bones were recovered but the majority were too small to be identifiable. Deer and bison-sized fragments were common among the identifiable specimens, although other species were also well represented (rabbits, cotton rat, opossum).

Site 41WM284 is located on the escarpment bordering the southern edge of the San Gabriel Valley. The work at the site included surface collection and testing. The artifacts recovered include a Plainview and Meserve specimens and nine polyhedral cone-shaped blade cores. The site appears to date to the Paleoindian period and at least some of the on-site activities included lithic procurement. Site 41WM294 is located in the San Gabriel Valley and probably represents a lithic procurement location.

Bowden, M.G.

1939 "History of Burnet County." M.A. Thesis, University of Texas at Austin.

Overview of Burnet County history, most useful for its discussion of Depression-era road development, dams, and rural electrification in the area.

Bradle, M. R., W. E. Moore, F. D. Kent, and A. D. Meyers

1996 An Archaeological Survey of the Proposed Galloway-Hammond Recreational Facility, Burnet County, Texas, American Archaeology Group, *Report of Investigations II*, Lampasas.

Discusses the results of a comprehensive survey of 34,068 acres located approximately one mile south of the City of Burnet, on both sides of Hamilton Creek. One archaeological site, 41BT286, was encountered. It contains both prehistoric and historic components. The prehistoric component contains Middle, Transitional Archaic, and Late Prehistoric materials. The historic component of the site is a farmstead, outbuildings, and associated Flippin Cemetery that dates from the middle of the nineteenth century through the middle of the twentieth century.

Bryson, J. Gordon

1964 *The Culture of Shin Oak Ridge Folk*. Firm Foundation Publishing, Bastrop.

Once hailed as a Texas "classic," this work does not seem to have worn well; its discussion is haphazard and not developed in much depth. Still, it is a valuable source of information and insight about a unique region located just north of the project area.

Debo, Darrell

1979 *Burnet County History: A Pioneer History, 1847-1979*. 2 vols. Eakin Press, Burnet.

One of the better Texas county histories. Generally well researched and well organized. First volume covers general history of the area and its communities, and contains alphabetized synopses of the 1860 and 1870 manuscript census returns for the county; the second volume contains historical and genealogical information about various families who settled in the county, although none apparently in the project area.

Drake, D.

1996 Testing of 41BT60, A Granite Midden in Inks Lake State Park Burnet County, Texas. Texas Parks and Wildlife Department, Cultural Resource Program, *Report 96-3*, Austin.

Describes the results of surface collection, shovel testing, backhoe trenching, and limited excavations at 41BT60 located on a terrace at the confluence of Spring Creek and the Colorado River. The site contains materials spanning from the Paleoindian to the Late Prehistoric. In addition to Plainview and Angostura stem fragments, the site also yielded thirteen manos and mano fragments (10 sandstone, 3 granite). Much mixing of the remains is evident. However, a granite midden and two pit features appear to be Late Archaic.

Drake, D., D. K. Utley, and C.A. Medlar

1996 Archeological Survey of a 320-Acre Tract in Inks lake State Park, Burnet County, Texas. Texas Parks and Wildlife Department, Cultural Resources Program, *Report 96-2*, Austin.

Nine new sites (41BT276-282) were recorded and two known sites (41BT284-285) were reassessed. The sites are lithic scatters that represent the remains of open-air camps. 41BT277, 41BT280, and 41BT281 may contain some buried deposits. Site 41BT60 was recommended for testing. The historic components were of low value.

Eddy, F. W.

1973 *Salvage Archeology in the Laneport Reservoir District Central Texas*. Texas Archeological Survey, The University of Texas, Austin.

The report describes the results of archaeological investigations at three sites (41WM118, Dobias-Vitek; 41WM135, Adamek Site; 41WM133, Loeve Site). It also reviews the analysis results of the vertebral fauna recovered from 41WM118, presents paleoecological reconstructions based on land snails recovered from the site, and describes the vertebral faunal remains from 41WM133 and 41WM135. Dobias-Vitek contains Late Archaic and Late Prehistoric components. Five cultural features were excavated dating to these two occupation components. The lithic technology and subsistence patterns are well documented. The Adamek Site contains Middle and Late Archaic materials judging from the Pedernales, Castroville, and Marcos, Ensor, Fairland, and Figueroa point types recovered. Despite their temporal differences, the two sites appear to have had similar lifeways. The Loeve Site investigations identified three components: a Late Prehistoric midden, seven deeply buried hearths that appear to be Late Archaic in age, and a single Middle Archaic hearth and dart point. Both Toyah and Austin Phase components are indicated by the arrow points. In closing Eddy proposes two principles to account for the archaeological materials investigated: 1) the proximity of a site to a resource is directly proportional to the intensity of its use, and 2) the degree of total resource exploitation is inversely proportional to the radial distance measured from the site location. Of course these principle are similar to later optimal foraging principles commonly used in recent hunter-gatherer archaeology.

Ford, John Salmon, with Stephen F. Oates, ed.

1987 [1963] *Rip Ford's Texas*. University of Texas Press, Austin.

An old "Texas classic" where one can sometimes find surprisingly useful information.

Gay, Edward Alexander

1939 "An Administrative Survey of the Schools of Burnet County, Texas." M.A. thesis, Southwest Texas State University, San Marcos.

One of hundreds of county school surveys conducted during the 1920s and 1930s. For the purposes of the present study, the thesis is most useful for information it provides concerning Doeskin school.

Goethe, Otilie Fuchs, with Irma Goethe, trans. and ed.

1982 [1915] *Memoirs of a Texas Pioneer Grandmother (Was Gros Mutter Erzählt)*. Eakin Press, Austin.

A very interesting and detailed account of German settlements in the Burnet and Blanco County area during the period from the Civil War to the early twentieth century. Only indirectly related to the project area, but anyone wanting to know more about German settlement and culture in the Hill Country should read it.

Hester, T. R. (editor)

1994 *The Burned Rock Middens of Texas: An Archeological Symposium. Studies in Archeology 13*, Texas Archeological Research Laboratory, The University of Texas, Austin.

Although this is not a site report per se, it is worth including in the appendix because the volume contains five contributions (M. B. Collins, E. R. Prewitt, D. G. Creel, M. A. Howard, and G. T. Goode, with a preface by T. R. Hester) that were considered state-of-the-art reflective overviews of burned-rock midden research in the Spring of 1988, when the symposium was held. Collins's (1994:1–24) contribution addresses future investigative directions in burned-rock midden research. Prewitt (1994:25–32) presents a summary of previous burned-rock midden investigations. Creel (1994:33–44) assesses the relationship between the distribution of burned-rock midden sites and live oak savannas and sotol plant communities. Howard (1994:45–70) summarizes the botanical remains hitherto recovered from burned-rock middens and hearths to shed light on the function of the thermal facilities. Goode's contribution debunks the impression that the use of burned-rock thermal facilities did not continue into the Late Prehistoric period.

Kelley, J. C.

1940–41 *Report on Excavations in Burnet County, Site 51D3–2, August W. Grelle Place, 1941. Work Project 15311. WPA, University of Texas at Austin. Ms. on file at TARL.*

The WPA study in Burnet County is that of the Grelle (Grellie) Site, 41BT1 (Kelley 1940–41, 1947; Chelf 1941) It is located in the southern part of the county along the Colorado River and was impacted by the upper portion of the Marshall Ford reservoir construction. The site was first stripped and then trenched and a number of small to large block areas were excavated. A large quantity of cultural materials were recovered including ground stone tools, projectile points, and "Waco sinkers." Even more importantly, six burials were uncovered in flexed or semi-flexed position. Three were juvenile or young adults, and the remaining three were infants. A number of burned tree stumps were found at various levels during the excavations suggesting that the area was forested at one time.

Kotter, S. M.

1985 *Cherry Tree Shelter: Excavations of a Stratified Late Archaic and Neoarchaic Rockshelter, Travis County, Texas. Texas Archeological Survey, Research Report 92*, The University of Texas, Austin.

The report discusses the results of a survey of a 240-acre tract, the site of a City of Austin wastewater treatment plant. Four prehistoric sites were found in addition to Cherry Tree Shelter. Three of the four are lithic scatters, the fourth also contains scattered burned rock and appears to be a short-term camp site. Cherry Tree Shelter (41TV933) is the only site that was extensively investigated. It is located in north-central Travis County, on the south bank of an unnamed tributary of Bull Creek. Excavations of the shelter identified 26 cultural features concentrated near the front of the shelter. The features, consisting of burned-rock clusters and a single pit, were stratigraphically separable into six groups that represent distinct occupation episodes of the site. A range of cultural materials were recovered including chipped and ground stone tools, bone and mussel shell tools, faunal and floral materials. The most recent site occupation dates to the Austin Phase and is represented by Scallorn (9), Alba, and Granbury points. Although the earliest occupation of the shelter appears to have occurred during the late Middle Archaic (San Marcos Phase, Marshall point), the most intense occupation probably occurred during the middle portion of the Late Archaic (Twin Sisters Phase) and during the early portion of the Late Prehistoric. Good discussion is provided about the

organization of site structure and changes in it through the history of site occupations. The results of the work suggest that rather than a decrease in Austin Phase occupations of the Bull Creek watershed, as suggested by Howard and Freeman (1984), occupation intensity remains strong but concentrated into rockshelters rather than open air sites.

Kotter, S., D. K. Utley, and B. A. Nightengale

- 1996 Canyon of the Eagles: An Intensive Cultural Resource Survey along the Colorado River at Lake Buchanan, Burnet County, Texas. Lower Colorado River Authority, Environmental Protection Services, *Cultural Resources Report No. 7*, Austin.

Reports the results of a cultural resources survey of a 940-acre tract located along the east shore near the upper end of Lake Buchanan. Twenty-seven archaeological sites were documented; 23 (41BT287–309) are prehistoric, and four (41BT310–313) are historic. The prehistoric sites date from the Early Archaic to the Late Archaic and late Prehistoric. The sites consist of camp sites with burned-rock hearths and lithic scatters. The sites occur in the valley bottoms (6), and on upland margins adjacent to springs at tributary heads. The historic sites represent the remains of the agricultural exploitation of the tracts by two known families who owned portions of the tract (the Faris family—41BT310, 41BT312–13; and the Peacock family—41BT311). Seven prehistoric sites were recommended for avoidance and preservation: two ridge crest sites (41BT300 and 41BT301), and five bottomland sites (41BT303–307). In addition, a standing structure, a log crib and possible root cellar dating between the late 1800s and early 1900s, on site 41BT313, was to be avoided if possible.

Leffler, John J.

- 1998 "Williamson County, 1848–1998," in *Williamson County Sesquicentennial Commemorative Edition*. Austin American-Statesman, Sept. 27, 1998:4–74.

An extended overview of the county's economic and social development. Focuses especially on the rise and fall of the area's cotton culture and its connection to the communities of the area.

Malden, Leon G.

- 1924 "Administrative Reorganization of Public Schools in Travis County." M.A. thesis, University of Texas at Austin.

Another county school survey thesis, useful for its limited descriptions of the Highland Lakes area and information about Travis Peak and Nameless (Fairview) schools.

Moore, G. L.

- 1976 An Archeological Assessment of Sites 41WM21 (The Centerline Site), 41WM124 (Bryan Fox Site), 41WM133 (The Loeve Site) in Granger Reservoir Williamson County, Texas. Anthropology Laboratory, *Report No. 32*, Texas A&M University, College Station.

This is an initial assessment of these three sites conducted by Texas A&M University. Many individual and well-stratified cultural lenses were noted in the exposed profile cuts to a depth of seven meters below surface. The reference also mentions the results of emergence testing at the remaining two sites. Three site components were identified at 41WM124 but not dated. Also three components were identified at 41WM133. The uppermost contained Late Prehistoric and Transitional Archaic materials. A middle but minor component was identified as Middle Archaic. The deepest component, dated to 5,000 B.C. shows the greatest potential.

Moore, G. . (revised by H. J. Shafer, E. P. Baxter, J. Ippolito, and C. L. Bond)

- 1978 Archeological Test Excavations at 41WM21 in Granger Reservoir Williamson County, Texas. Anthropology Department, *Report No. 37*, Texas A&M University, College Station.

The report documents archaeological investigations at the Centerline Site. Three occupation components were identified, consisting of an Early, a Middle, and a Late Archaic sites. A total of 57 circular pavements or concentrations of burned river cobble hearths were documented. In addition, a deer skull and a chipping debris concentration were also identified. The skull retained antlers and the flake concentration contained tertiary flakes most likely removed from the same core. Only six projectile points were recovered: Bell, Bulverde, Lange, and Ensor. The other two are distal fragments. Deer bones were common.

Moore, G. L., H. J. Shafer, and C. S. Weed

1978 Archeological Survey of Granger and North Fork Reservoirs, Volume 1, The Granger Report. Anthropology Laboratory, *Report No. 38a*, Texas A&M University, College Station.

The volume reports the results of intensive archaeological survey at Granger Reservoir. The survey found or relocated a total of 58 archaeological sites that were to be adversely affected by impoundment. The relocated sites are described and a brief history of work performed at them can be formed. For the most part, no new information is provided on the sites. However, two alternate models (prairie-centered and prairie ecotonal) are put forth to explain the form of adaptation land-use strategies employed by groups inhabiting the region.

Nash, M. A., E. Roemer Jr., E. R. Foster, S. C. Caran, and E. A. Skokan

1995 Excavations at the Kingsland Site 41BT215 Burnet County, Texas. *Cultural Resource Report No. 2*, Lower Colorado River Authority, Environmental Protection Division.

It reports on three phases of excavations conducted by Lower Colorado River Authority at 41BT215. A total of 267 M2 were excavated, and 171,451 artifacts were recovered. The site is heavily disturbed by pothunting activities and erosion. Forty cultural features, consisting primarily of burned-rock hearths, have been excavated. A detailed lithic analysis was conducted on the 505 projectile points (complete and fragmentary), large number of bifaces (657a), cores (355), modified flakes (1,695). The assemblage contains diagnostics ranging from the Early Archaic to the Late Prehistoric with the possibility of a Paleoindian component indicated by two reworked Plainview specimens. Contains one of the more complete lithic analyses available.

Odintz, Mark

1996d "Williamson County," in *The New Handbook of Texas* edited by Ron Tyler et al., 6:992-995. Texas State Historical Association, Austin.

A very good brief overview of the county's history, focusing on its economic development. Should be consulted by anyone interested in the area.

Patterson, P. E., and G. L. Moore

1976 An Archeological Study of North Fork and Granger Reservoirs A Preliminary Report. Anthropology Laboratory, Texas A&M University, College Station.

The two sections of the report serve as justification for nominating the Granger Lake and North Fork reservoir to the National Register as archaeological districts. At North Fork Reservoir, Patterson's 3,200 acre survey identified 84 archaeological sites. The sites can be grouped into five types: open lithic scatters, burned-rock middens, terrace sites, lithic procurement areas, rockshelters. Very brief descriptions of each site are provided. Section II discusses the results of the survey at Granger Reservoir. Sixty-one prehistoric and historic archaeological sites were identified. Sites are briefly described but no assessments are provided.

Patterson, P., and H. J. Shafer

1980 Archeological Surveys of Granger and North Fork Reservoirs, Volume II, The North Fork Report. Anthropology Laboratory, *Report No. 38b*, Texas A&M University, College Station.

The volume discusses the results of intensive survey at North Fork Reservoir. A total of 82 prehistoric archaeological sites were determined to be or had been adversely affected. Forty-five sites had been previously recorded and all but two were relocated. Thirty-seven new sites were identified. Open lithic scatters constitute the largest group of sites in the inventory (42 [51 percent]). Most of these occur on the floodplain, against a bluff or slope or at the edge of the valley. Burned-rock middens sites and terrace camp sites are not very common (16 burned-rock middens, 12 terrace sites), while only 7 sites have been identified as being lithic procurement sites. Four rockshelters were identified. The scarcity of temporal diagnostics recovered made it impossible to test the settlement pattern models proposed by Eddy (1973), Prewitt (1976). Eddy argues that vegetation food distribution determined settlement location. Prewitt suggests that the proximity of unequally valued resources was a key factor.

Preece, Harold

1932 "Where a Dance Still Means the Virginia Reel." *Dallas Morning News*, August 14.

A wonderful essay written by someone intimately acquainted with the Travis Peak–Nameless area.

Prewitt, E. R.

1974 Archeological Investigations at the Loeve-Fox Site, Williamson County, Texas. Texas Archeological Survey, *Research Report No. 49*, The University of Texas, Austin.

The results of test excavations at 41WM230 are described. It is located within the confines of the Laneport Reservoir. The site contains a Late Archaic component with a median age of 1,500 B.P., and a Late Prehistoric Austin phase occupation with a median age of 900 B.P. An Austin phase cemetery containing 25 individual skeletons is one of the significant finds of the excavation. The cemetery has a circular shape and measures about 10 feet in diameter. Nineteen of the 25 are single interments. Two interments contain three individuals each. The lower—apparently earlier—interments are semi-flexed, while the higher ones are tightly flexed. Both multiple burials contain one individual with a Scallorn arrow point protruding from the vertebra.

Thirty-six features were excavated in addition to the cemetery. They consists of a variety of types including hearths (17), burned clay concentrations (6), ash pits (4), and lenses (2). A total of 43 arrow points (Scallorn, Perdiz, Granbury, and Clifton) were recovered in addition to 120 dart points, of which Darl specimens were the most numerous (57), followed by Ensor specimens (34). A small number of ground stone tool fragments (13) were recovered in addition to one sandy paste sherd, two mussel shell pendants, and two conch shell pendants. The shell artifacts show clear relationship (indirect trade or direct contact) with the Gulf Coastal Plains region and groups.

Price, Willie Mae,

n.d. "Bertram, 1882–1982." Unpublished typescript in Bertram Historical Marker File, Texas Historical Commission, Austin.

Both this and Price's other essay (see References Cited, below) are developed in depth and contain much information about their subjects not available anywhere else.

Scarborough, Clara Stearns

1973 *Land of Good Water: A Williamson County History*. Williamson County Sun Publishers, Georgetown. One of the very best Texas county histories. Contains a wealth of information about the county and communities in the area. The discussion is sometimes not organized very well, however, and the book must be used with caution on some points, especially for the prehistory and the Spanish exploration of the area.

Shafer, H. J., and J. E. Corbin

1965 *An Appraisal of the Archeological Resources of North Fork, South Fork and Laneport Reservoirs, Williamson County, Texas.* Texas Archeological Salvage Project, The University of Texas, Austin.

The North and South forks of the San Gabriel River head in Burnet County and flow in an easterly direction merging at Georgetown, in south-central Williamson county. The north fork Dam is located approximately three miles west of Georgetown, while the South Fork Dam is about the same distance on the South Fork of the river. The Laneport Dam, since renamed Granger Lake, is located about eight miles east of Granger in eastern Williamson County. Forty-four sites were located in the North Fork Reservoir, 30 in the South Fork Reservoir, and 22 in the Granger Lake Reservoir. Thirteen additional sites adjacent to, but not within the reservoirs were also recorded. Both Archaic and Late Prehistoric components are well represented among the sites. Two leaf-shaped point mid-sections recovered from 41WM44 and 41WM117, also suggest the presence of Paleoindian remains. An obsidian flake was also recovered from 41WM56, a site that is described as Archaic in age. Eight archaeological sites were recommended for extensive excavation: three in the North Fork (41WM52, 41WM53, 41WM71), three in the South Fork (41WM94, 41WM96, 41WM108), and two in the Laneport Reservoir (41WM122 and 41WM133).

Smithwick, Noah, with Nanna Smithwick Donaldson, comp.

1900 *The Evolution of a State: Recollections of Old Texas Days.* Gammel Book Co., Austin.

A very readable, compelling account written by one of Texas's first citizens. Contains a number of useful details about the vicinity of the project area and about the life of Smithwick, who lived in the area for several years.

Smyrl, Vivian Elizabeth

1996b "Burnet County," in *The New Handbook of Texas*, edited by Ron Tyler et al. 1:850-853. Texas State Historical Association, Austin.

A very good brief overview of the county's history, focusing on its economic development. It should be consulted by those wishing to learn more about the area.

Sorrow, William M.

1969 *Archeological Investigations at the John Ischy Site: A Burned Rock Midden in Williamson County, Texas. Papers of the Texas Archeological Salvage Project No. 18,* Austin.

The report describes the artifacts recovered from a midden site with occupations ranging from 4,000 to about 500 B.C. The most recent site occupation is represented by only seven arrow points. The bulk of the projectile points are Archaic in age. The earliest of the point styles is late Middle Archaic (Nolan). The most intensive site occupation occurred during the Late Archaic period and resulted in the discard of a large number of dart points including a number of Pedernales, Castroville, Montell, and Marshall points. With the exception of changes in point styles there is substantial continuity in other artifact types within the site. Nonetheless, the large accumulation of burned rock as part of the midden does suggest that some aspect of the subsistence pattern, or perhaps just the food processing segment of the technology has undergone some changes.

Sorrow, William M.

1973 *Test Excavations in the North Fork Reservoir Area.* Texas Archeological Survey, The University of Texas, Austin.

Results of test excavations are described at eight sites: 41WM33, 41WM34, 41WM56, 41WM57, 41WM73, 41WM87, 41WM88, and 41WM115. The sites appear to have been occupied between 3,500 B.C. to A.D.1.,

and contain Nolan, Bulverde, Pedernales, Montell, Marcos, Marshall, Castroville, Fairland and Frio points. Site 41WM57 contains a Lerma point suggesting perhaps an earlier occupation at this site. Three sites, 41WM33, 41WM56, and 41WM73 are identified as having the greatest archaeological potential to yield meaningful information. The first is identified as a short-term specialized site, such as a very temporary hunting camp. The second site is Late Archaic in age and appears to be a residential site. It contains scraping and grinding tools. The last site is a burned-rock midden site that appears to have formed during a short occupation span. A limestone gorget was encountered at this site.

Suhm, Dee Ann

1955 Excavations at the Collins Site, Travis County, Texas. *Bulletin of the Texas Archeological Society* 26:7-54.

The report focuses on the description of the artifacts recovered from the site. The Collins site is situated on the south bank of Onion Creek some six miles south of Austin. The site was excavated as a student project. Once the artifact analyses were initiated two components could be discerned based on the projectile points present, but during the initial excavations these two zones were not differentiated. A look at the list of projectile points indicates that they range from Late Archaic to the later part of the Middle Archaic (Nolan points). The Late Prehistoric occupation contained 70 arrow points consisting of Scallorn, Starr, Fresno, Alba, Perdiz, and Cuney points. Scallorn points were the most numerous (n=21), followed by Fresno and Perdiz (8, each). A total of 849 sherds were also recovered, with 234 classified as Leon Plain. The Boothe Brushed ceramic type is defined on the basis of ceramic sherds from at least seven vessels. The arrow points were restricted to the upper 18 inches of deposits. A total of 287 dart points was recovered. Ensor (n=39) and Pedernales (n=33) were the most common, although Darl, Castroville, Bulverde, and Travis, also occur in reasonable numbers. They ranged from surface to a depth of 66 inches bs. The majority occurred between 6-18 inches bs. A large number of other chipped stone artifacts were also recovered.

Suhm, D. A.

1957 Excavations at the Smith Rockshelter, Travis County, Texas. *The Texas Journal of Science* IX(1):26-58

The report describes the excavation methods, the stratigraphy of the site, and the artifacts recovered. The Smith rockshelter is located southeast of Austin on the Onion Creek. Six distinct occupation layers were recognized. The Toyah and Austin Phase components constitute the bulk of the materials. Late Archaic specimens consisting of Darl (17), Pedernales (5), Castroville (2), Ensor (2), Tortugas, Abasolo, Bulverde, and Uvalde (two each) were also recovered. Three Angostura indicate that the earliest occupation of the site occurred during the Early Archaic. In addition to the projectile points, a large number of bifaces, drills, and scrapers were also recovered from the two Late Prehistoric occupations. An in situ boatstone was encountered in the Toyah phase occupation zone, and a number of bone miscellaneous bone artifacts. The Smith Rockshelter excavations confirmed the superposition of Perdiz and Clifton points over Scallorn (also found at Blum shelter).

Suhm, D. A.

1959 The Williams Site and Central Texas Archeology. *The Texas Journal of Science* XI(2):218-250

The report describes the excavation methods, stratigraphy, and artifacts recovered. The Williams site is located on a high terrace of the upper Bull Creek, northwest of Austin. The site contains two middens with only the larger having been excavated. The site consists of three Archaic components and an Austin Phase occupation. The Austin Phase points consist of Scallorn, Eddy, Fresno, and Young types, while a total of 21 different types of Late Archaic specimens are present within the underlying components. The presence of Travis and Nolan points indicates the existence of a late Middle Archaic occupation of the site. Some of the projectile points occur in isolated clusters suggesting some degree of spatial structure on the site.

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