

A COMPENDIUM OF RADIOCARBON AND OXIDIZABLE CARBON RATIO DATES FROM ARCHAEOLOGICAL SITES IN EAST TEXAS, WITH A DISCUSSION OF THE AGE AND DATING OF SELECT COMPONENTS AND PHASES

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ABSTRACT. This paper presents a compilation of the >520 radiocarbon and oxidizable carbon ratio dates obtained since the early 1950s from archaeological sites in East Texas. Many of the dates are from difficult-to-obtain sources, such as archaeological sites investigated during the course of cultural resource management projects. An analysis of the age ranges in the dates indicate that most pertain to prehistoric and protohistoric Caddoan Indian occupations, particularly the Early (AD 1000–1200) and Middle Caddoan (AD 1200–1400) periods when prehistoric Caddoan settlements were widely distributed throughout the region.

INTRODUCTION

More than 520 radiocarbon and oxidizable carbon ratio (OCR) dates have been obtained from archaeological sites in East Texas in the last 40 years or so (the OCR dates have only been obtained since 1996, however). This constitutes a large and important chronological database on prehistoric and historic Native American occupations in the region, but it has been difficult to use because much of the information on the dates, and the archaeological sites from which the dates were obtained, has not been widely accessible until now. In this paper, I present a compendium of all available ^{14}C and OCR dates from East Texas, current as of July 1, 1997 (Tables 1 and 2, Appendix).

This compendium is based on both published and unpublished information from East Texas archaeological investigations, particularly cultural resource management excavations conducted under the auspices of the Antiquities Code of Texas and Section 106 of the National Historic Preservation Act. Dee Ann Story's (1990a) published compilation was the one key resource utilized to build the database presented here, along with the extensive ^{14}C database from investigations at Cooper Lake in the Sulphur River basin (Fields *et al.* 1997: Appendix B). The results of the many additional samples included here were gathered from draft and final archaeological technical reports on file at the Division of Archeology at the Texas Historical Commission (Austin, Texas), or provided by researchers working in East Texas (see Acknowledgments).

Data on the ^{14}C assays are included in Table 1, namely the assay number, the provenience, the raw ^{14}C age, the $\delta^{13}\text{C}$ values, the corrected ^{14}C age, the calibrated age range, and the relative area under the probability distribution for 1- σ calibrated ages. The ^{14}C assays are uniformly corrected (for isotopic fractionation) and calibrated at a 20-yr interval scale for calendric dates using CALIB 3.03c, Test 10 (Stuiver and Reimer 1993a, 1993b). With a few exceptions noted in Table 1, assays that lacked $\delta^{13}\text{C}$ values use the value estimates for fractionation correction suggested by Stuiver and Reimer (1993b: Table 1): -25‰ for nutshells and charcoal, and -10‰ for charred maize.

As of the writing of this paper, only five archaeological sites in East Texas have OCR dates: 41BW553, Knight's Bluff (41CS14), 41TT670, Tom Moore (41PN149), and Camp Joy Mound (41UR144) (Largent *et al.* 1997; Perttula *et al.* 1997a, 1997b; Mark Walters, personal communication 1997). OCR dating is a new dating procedure developed by the Archaeology Consulting Team, Inc. (Essex Junction, Vermont) for obtaining absolute dates on charcoal and soil humic materials from features. The procedure measures the relationship between the total carbon and the readily oxidizable carbon in a soil sample, with the ratio between the two—the oxidizable carbon ratio—apparently following a linear progression through time. Frink (1992, 1994, 1995; see also Kindall 1997)

discusses the OCR dating procedure in detail. Table 2 provides data on the 23 available OCR dates in East Texas, with information on assay number, the provenience, the calculated OCR date in years before present, the confidence interval, and the final, rounded date as suggested by Frink (1996 personal communication). As OCR dating is a new dating method, its reliability and validity (in the sense of Ramenofsky and Steffen 1998: 8–10) as an absolute estimate of time has not been fully established, and more OCR samples are warranted (particularly from contexts where ^{14}C dates have also been obtained) to assess how the factors of sample depth, mean temperature, average annual rainfall, mean soil texture, soil acidity, and percent of carbon (Frink 1994) are influencing the OCR dates from East Texas.

DATABASE

Currently, there are 503 ^{14}C dates and 23 OCR dates from 102 prehistoric archaeological sites in 22 East Texas counties (Table 3). However, most of the archaeological sites only have between one and three dates (Tables 1 and 2), with very few of the sites having more than a total of 15 ^{14}C and/or OCR assays. The latter sites include George C. Davis (41CE19, $n=130$; Story 1990a, 1997, 1998; Story and Valastro 1977); Spider Knoll (41DT11, $n=23$; Fields *et al.* 1994a); Arnold (41HP102, $n=18$; Doechner and Larson 1978); Hurricane Hill (41HP106, $n=18$; Perttula 1998); and Mockingbird (41TT550, $n=17$; Perttula *et al.* 1998); three of the sites are in the Cooper Lake project area in Delta and Hopkins counties (Fields *et al.* 1997).

TABLE 3. County Statistics on Sites with Dates and Number of Dates

County	No. of sites with ^{14}C dates	No. of ^{14}C dates	No. of sites with OCR dates	No. of OCR dates
Anderson	3	5	--	--
Bowie	3	10	1	9
Camp	2	3	--	--
Cass	5	12	1	3
Cherokee	1	130	--	--
Delta	15	84	--	--
Harrison	3	6	--	--
Henderson	4	11	--	--
Hopkins	10	65	--	--
Jasper	1	3	--	--
Lamar	2	20	--	--
Morris	1	5	--	--
Nacogdoches	3	15	--	--
Panola	--	--	1	2
Red River	5	23	--	--
Rusk	4	15	--	--
Sabine	2	2	--	--
Shelby	3	6	--	--
Smith	1	1	--	--
Titus	13	48	1	7
Upshur	8	17	1	2
Wood	9	22	--	--

The counties with the highest numbers of sites with ^{14}C dates (Delta, Titus and Hopkins) all have been the scene of intensive cultural resource management-related archaeological investigations in the 1980s and 1990s. The same situation basically exists for the counties with the highest numbers of ^{14}C (and OCR) dates, with the exception of Cherokee County, where the 130 dates from the George C. Davis site were obtained principally from intensive investigations of mound and village areas in 1968–1970 (Story 1997, 1998).

The great majority of the East Texas ^{14}C dates have been obtained from Late Archaic, Woodland, and Formative-Late Caddoan period sites (Fig. 1). Less than 1.5% of the dates are associated with either Paleoindian (*ca.* 10,000–6000 BC) or Early/Middle Archaic (*ca.* 6000–2000 BC) period occupations, and <0.5% may be associated with the post-AD 1680 Caddoan occupation of the region. The largest number of ^{14}C dates ($n=128$) fall in the Middle Caddoan period (*ca.* AD 1200–1400), followed by the Early Caddoan period (*ca.* AD 1000–1200) ($n=101$; Fig. 1).

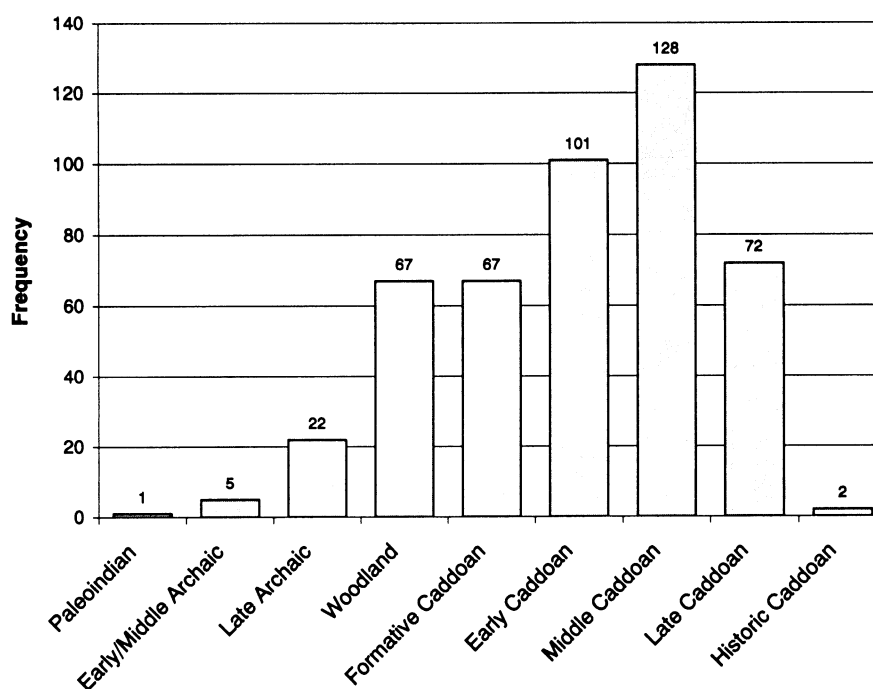


Fig. 1. Number of ^{14}C dates for the Paleoindian, Early/Middle Archaic, Late Archaic, Woodland, Formative Caddoan, Early Caddoan, Middle Caddoan, Late Caddoan and Historic Caddoan periods

Almost 80% of the ^{14}C dates pertain to occupations at prehistoric and protohistoric Caddoan sites in East Texas (Fig. 1). Relative to the 200-yr periods defined by Story (1990b: 334) for the Caddoan tradition, ^{14}C dates associated with the Early and Middle Caddoan periods comprise 62% of the total ^{14}C date sample, followed by those falling in the Late Caddoan (AD 1400–1680) (19.5%) and Formative Caddoan (AD 800–1000) (18.1%) periods (Fig. 2).

At a slightly finer scale, using calibrated ages and age mid-points of 1- σ calibrated age ranges, the largest number of Caddoan ^{14}C dates fall within the AD 1201–1300 interval (Fig. 3). While the number of dates in this period of time is probably inflated to some degree by the extensive series of dates from the George C. Davis site (Table 1), nevertheless it does appear to be the case that Middle Caddoan

period occupations are rather commonplace throughout much of East Texas (Middlebrook and Perttula 1997). In fact, this period probably represents the major peak in the region's occupational history. As such, the available ^{14}C data support as a whole the broad findings of archaeological research from East Texas (Story 1990b; Middlebrook and Perttula 1997). Other 100-yr intervals with large numbers of ^{14}C dates are (in decreasing frequency) AD 1001–1100, AD 1401–1500, AD 901–1000 and AD 1301–1400. ^{14}C dates are particularly rare for the AD 1601–1700 and AD 1701–1800 intervals.

Again using calibrated ages and mid-points of 1- σ age ranges, but looking at 25-yr intervals, there are interesting fluctuations in the number of ^{14}C dates for the Caddoan period sites in East Texas (Fig. 4). The 25-yr intervals between AD 1201–1225 and AD 1226–1250—the early part of the Middle Caddoan period—have the most ^{14}C dates, followed by the interval between AD 1351–1375 and the two 25-yr intervals between AD 1076–1125.

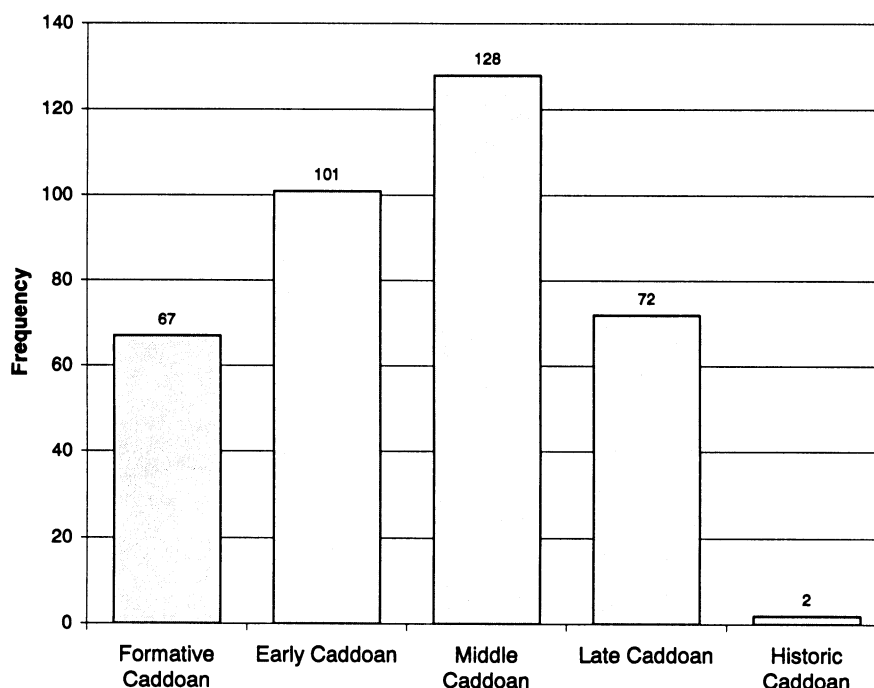


Fig. 2. Number of ^{14}C dates for the Formative Caddoan through Historic Caddoan periods

DISCUSSION

The single possible ^{14}C date from a Paleoindian context in East Texas is from charcoal in a probable hearth buried in Late Pleistocene alluvium at the Delta Bone Quarry 5 (41DT86) on the North Sulphur River (Slaughter and Hoover 1963, 1965). While the context of the materials (including an antler tool) from the site are not unequivocal, the calibrated 1- σ date of 8082–9170 BC is broadly contemporaneous with Clovis, Folsom and Dalton complexes in the region.

Two sites in East Texas, both in the Sulphur River basin, have archaeological components dated by ^{14}C to pre-3000 BC contexts. A single burned rock feature at the Unionville site (41CS151) has a calibrated date of 4040–4161 BC (Cliff *et al.* 1996), while extensive excavations at the Finley Fan site (41HP159) exposed portions of two buried and stratigraphically discrete Middle Archaic components that date between 3152–4410 BC (Fields *et al.* 1997: 42).

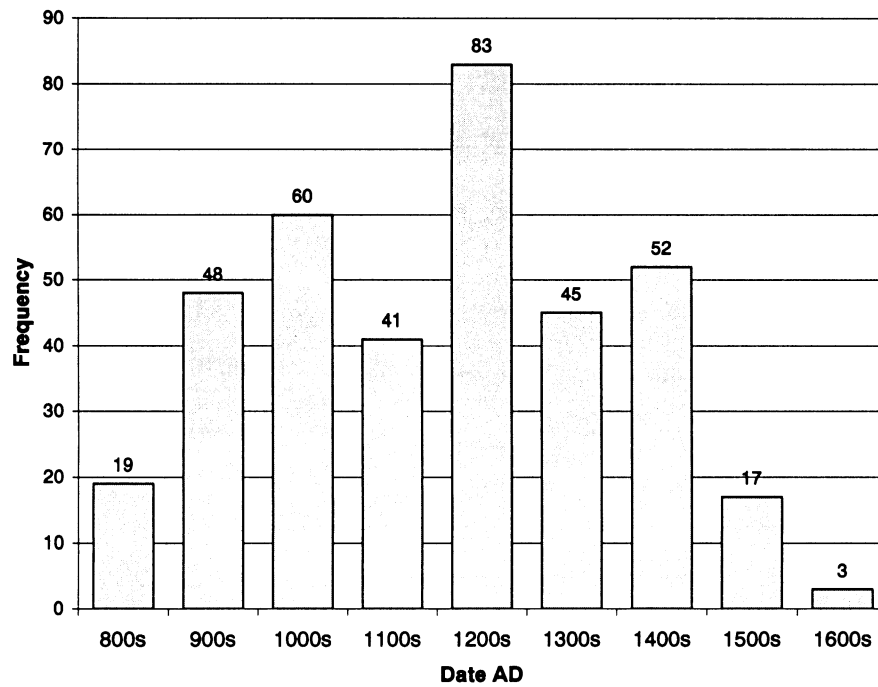


Fig. 3. Number of calibrated ^{14}C dates at 100-yr intervals, AD 800–1750

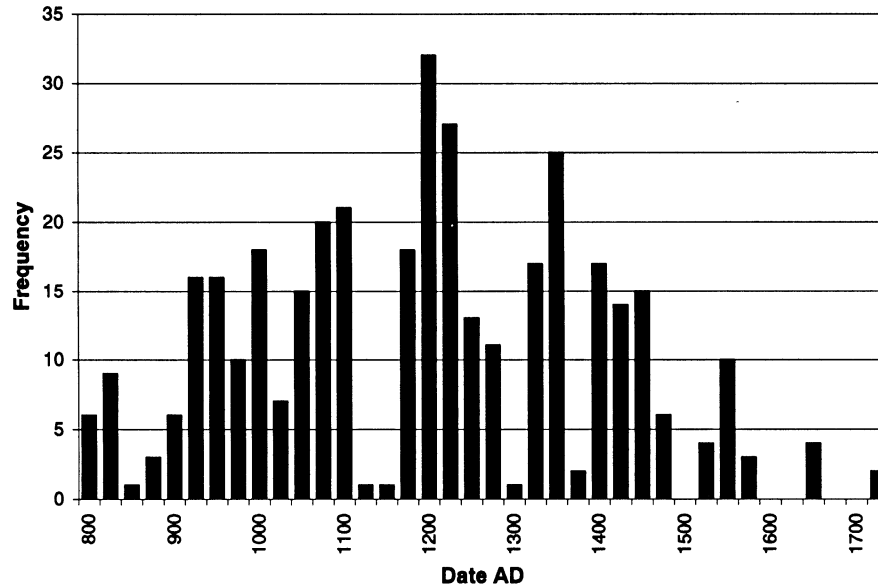


Fig. 4. Number of calibrated ^{14}C dates at 25-yr intervals, AD 800–1675

For the Late Archaic period, there are still few well-dated archaeological components, although occupations of this period are apparently abundant throughout all East Texas river valleys and hinterland areas (*cf.* Fields 1995; Pertulla 1995). Fairly well-dated Late Archaic components include

buried shell lens that date from 766 to 1084 BC at the Winston site (41HE245) on the Trinity River (Richner and Bagot 1978); a buried scatter of burned rocks and lithic artifacts at the W. S. Long #3 site (41HP118) in the South Sulphur River floodplain that dates from 924 to 1222 BC (McGregor and Martin 1997); and a small concentration of tools and burned rocks at the Mockingbird site (41TT550) that date between 408 and 828 BC (Table 1).

The best-dated Woodland period components in East Texas were investigated prior to the construction of Cooper Lake on the South Sulphur River (Fields *et al.* 1997). These include the Tick (41DT6), Spike (41DT16), Hurricane Hill (41HP106), and 41HP137 sites. The Tick and Spike sites have thick (60–100 cm) middens, with calibrated age spans for the Woodland occupations of AD 192–896 and BC 195–AD 891, respectively (Table 1). The six calibrated dates from Woodland period contexts at Hurricane Hill range from AD 59–449, and they are from features associated with a small midden and a cemetery of cremations and bundle burials (Perttula 1998). At 41HP137, the Woodland component dates from BC 122–AD 652, the ^{14}C dates being obtained from small pit features, one of which contained charred cultivated squash seeds (McGregor 1997).

Certainly the most thoroughly dated Formative and Early Caddoan period site in East Texas is the George C. Davis site (41CE19), a large village and mound center on the Neches River (Story 1997). Calibrated ^{14}C dates from village contexts establish that the site was occupied beginning in the ninth century AD, and then continuously settled through the end of the 13th century AD. A late series of calibrated dates from a few village contexts (such as Units 11, 43, and 109; Story 1998: Table 2-1) suggest that the site was inhabited to some degree as late as *ca.* AD 1350 (Table 1). While there are fewer dates from the three mounds at George C. Davis, and there are inconsistencies between several of the dates from the same general contexts, it does appear to be the case that Mound A (a large flat-topped platform) and Mound C (a burial mound) were built in the latter part of the Formative Caddoan period (Story 1997, 1998), and Mound B (flat-topped platform) was constructed *ca.* AD 1200 or slightly earlier.

There are several well-dated Early Caddoan period habitation sites at Cooper Lake, including the upper component at Spike, Doctors Creek (41DT124; Martin 1997), and 41DT63 (Fields *et al.* 1997). In the upper Sabine River basin, Early Caddoan habitation sites with consistent ^{14}C dates have been investigated at Taddlock (41WD482) and Spoonbill (41WD109) (Bruseth and Perttula 1981), as well as the Hudnall-Pirtle (41RK4) mound center and village in the middle stretches of the Sabine River basin (Bruseth 1991). Two calibrated dates from one of the eight mounds at Hudnall-Pirtle range between AD 1152–1250. In the Red River, dated Early Caddoan period components are best known from the Roitsch or Sam Kaufman (41RR16) and Ray (41LR135) sites, both investigated during the 1991–1992 Texas Archeological Society field schools under the direction of Dr. James E. Bruseth. At Roitsch-Sam Kaufman, four calibrated dates from a structure near the East Mound (Skinner *et al.* 1969) range between AD 982 and 1250 (Table 1).

Two of the archaeological sites at Cooper Lake have fairly well-dated components that document settlements that extend from the Early Caddoan period into the Middle Caddoan period, Spider Knoll (41DT11) and Arnold (41HP102). At Spider Knoll, the many dates (Table 1) suggest the site was used a number of times over a period of *ca.* 400 yr (Fields *et al.* 1997: 61), with the majority of the calibrated dates ranging from AD 880–1287 (Table 1). With a few exceptions, the ^{14}C dates from the Arnold site fall into this same calibrated age range.

There are several Middle Caddoan period components in East Texas that appear to be well-dated by ^{14}C and/or OCR assays. At site 41TT670 (Largent *et al.* 1997) on White Oak Creek, one calibrated ^{14}C date and an OCR date (Table 2) suggest the Middle Caddoan component dates *ca.* AD 1150–1280,

while two ^{14}C dates from Knight's Bluff (41CS14) pertain to a late Middle Caddoan phase that dates from *ca.* AD 1300 to 1400 (Cliff 1997: Table 1).

A residential Middle Caddoan period component at the Hurricane Hill site (41HP106) in the Cooper Lake area dates from a number of calibrated ^{14}C assays from features on the South rise to between AD 1248 and 1394 (Perttula 1998; Fields *et al.* 1997). An archeomagnetic date of AD 1300 $\pm$ 50 has also been obtained from this Middle Caddoan component.

In the middle and upper Sabine River basin, the best dated Middle Caddoan components include McKenzie (41WD55), a substructural mound site (Granberry 1995), the Oak Hill Village (41RK214), and Spoonbill (41WD109) (Table 1). The calibrated dates from the McKenzie mound range between AD 1298 and 1470, while the three from Middle Caddoan features at the Spoonbill site are slightly earlier (AD 1228–1393). The available ^{14}C dates from the Oak Hill Village suggest the occupation there dates between *ca.* AD 1150–1400, but several other ^{14}C dates on structures now being obtained may alter estimates of the site's temporal range (Robert Rogers, personal communication 1997).

The Washington Square site (41NA49) in the Neches-Angelina River basin is another well-dated mound complex (Corbin and Hart 1998). Pooled ^{14}C dates on charcoal, hardwood nutshells, and charred corn range between cal AD 1268 and 1302 (Corbin and Hart 1998: 74 and Table 4). Finally, four calibrated ^{14}C assays from the Tyson site (41SY92) date this important Middle Caddoan period settlement in the Attoyac River basin (Middlebrook 1994) to between AD 1336 and 1490 (Table 1). One of the dates was on mussel shells included as grave goods with Feature 14, the burial of a 3- to 4-yr-old child accompanied by many grave goods (Middlebrook 1994: 16).

None of the Late Caddoan archaeological phases in East Texas (Story 1990b: Table 43) is well-dated by either ^{14}C or OCR methods. This is particularly the case for the Frankston and Allen phases, although several late 17th–early 18th century archeomagnetic dates have been obtained from the Allen phase component at the Deshazo site (Story 1995), and two ^{14}C dates from a midden deposit at the Alcoa No. 1 site (41AN87) date the Frankston phase occupation between AD 1386 and 1488 (Amick *et al.* 1991).

The Titus and McCurtain phases have become better dated by absolute means over the last few years (*cf.* Perttula *et al.* 1997a, 1998; Bruseth 1998). For the Titus phase, ^{14}C and OCR dates from sites such as Tuck Carpenter (41CP5), Sam Roberts (41CP8), 41TT182, Mockingbird (41TT550), 41UR118 and 41UR133 at proposed Lake Gilmer, the Camp Joy Mound (41UR144) at Lake O' the Pines, and Steck (41WD529) suggest that the Titus phase dates between *ca.* AD 1430 and 1680. Significantly, four OCR and ^{14}C dates from a burned house lens at the Camp Joy Mound (Tables 1 and 2) have convincingly documented the use of the platform mound at the site between *ca.* AD 1500 and 1650.

^{14}C dates from McCurtain phase contexts at the Roitsch-Sam Kaufman, Holdeman (41RR11; Perino 1995), and Rowland Clark (41RR77; Perino 1994) sites indicate that the McCurtain phase can be divided into early (*ca.* AD 1300/1350–1500) and late (*ca.* AD 1500–1700) contexts (*cf.* Bruseth 1998), with corresponding changes in ceramic decorative styles and the shape of arrow points. The early McCurtain phase features at the Holdeman site date to AD 1392–1478 at 1- σ and AD 1332–1513 at Roitsch-Sam Kaufman (Table 1), while calibrated dates from ceramically later features at the Rowland Clark site range from AD 1502–1603. Interestingly, calibrated ^{14}C dates from the Peerless Bottoms site (41HP175) in the upper Sulphur River basin, having virtually the same variety of Caddoan ceramics as early McCurtain phase sites on the Red River, range between AD 1330 and 1524 (Fields *et al.* 1994b).

CONCLUSION

Given the possibility of sampling biases (*i.e.*, based on the selective collection of samples from the better preserved sedentary Caddoan occupation of the region, and the highly concentrated nature of cultural resource management excavation projects in East Texas; see the discussion in Bruseth (1998:49)), and calibration curve effects (*e.g.*, Miller 1996: 55–69) on such a series of calibrated ^{14}C dates, there are clear peaks and valleys in the number of ^{14}C dates from prehistoric archaeological sites in East Texas (Figs. 1 and 2). Most notably, the analysis of the age ranges in the calibrated dates indicate that most pertain to prehistoric and protohistoric Caddoan Indian occupations, particularly the Early (AD 1000–1200) and Middle Caddoan (AD 1200–1400) periods when prehistoric Caddoan settlements were widely distributed throughout the region. Surely, future analyses of age trends based on a much larger and spatially expansive ^{14}C and OCR database will help to clarify and enrich these findings.

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REFERENCES

- Amick, C., Furman, E., Perttula, T. K., Bruseth, J. E. and Yates, B. C. 1991 ALCOA #1 (41AN87): A Frankston phase settlement along Mound Prairie Creek, Anderson County, Texas. *Caddoan Archeological Newsletter* II (2): 11–15.
- Bruseth, J. E. 1991 Hudnall-Pirtle site (41RK4): An Early Caddoan mound complex in northeast Texas. *Caddoan Archeology Newsletter* II (3): 9–15.
- _____. 1998 The development of Caddoan Politics along the middle Red River Valley of Eastern Texas and Oklahoma. In Perttula, T. K. and Bruseth, J. E., eds., *The Native History of the Caddo: Their Place in Southeastern Archeology and Ethnohistory*. Texas Archeological Research Laboratory, The University of Texas at Austin. *Studies in Archeology* 30: 47–68.
- Bruseth, J. E. and Perttula, T. K. 1981 *Prehistoric Settlement Patterns at Lake Fork Reservoir*. Texas Antiquities Permit Series, Report No. 2. Texas Antiquities Committee, Austin, and Southern Methodist University, Dallas.
- Cliff, M. B. 1997 The Middle Caddoan Period in the Lower Sulphur River Area. *Journal of Northeast Texas Archaeology* 9: 9–16.
- Cliff, M. B., Green, M. M., Hunt, S. M., Shanabrook, D. and Peter, D. E. 1996 *Excavations in Area C of the Unionville Site (41CS151), White Oak Creek Mitigation Area (WOCMA), Cass County, Texas*. Report of Investigations No. 4, White Oak Creek Mitigation Area Archeological Technical Series. Geo-Marine, Inc., Plano.
- Corbin, J. E. and Hart, J. P. 1998 The Washington Square Mound site: A Middle Caddo mound complex in South Central East Texas. *Bulletin of the Texas Archeological Society* 69: 47–78.
- Doehner, K. and Larson, R. E. 1978 *Archaeological Research at the Proposed Cooper Lake, Northeast Texas, 1974–1975*. Research Report 108. Archaeology Research Program, Southern Methodist University, Dallas.
- Fields, R. C. 1995 The Archeology of the Post Oak Savannah of East-Central Texas. *Bulletin of the Texas Archeological Society* 66: 301–330.
- Fields, R. C., Gadus, E. F., Klement, L. W. and Gardner, K. M. 1994a *Excavations at the Spider Knoll Site, Cooper Lake Project, Delta County, Texas*. Reports of Investigations No. 96. Prewitt and Associates, Inc., Austin.
- Fields, R. C., Gadus, E. F. and Klement, L. W. 1994b The Peerless Bottoms site: A Late Caddoan component at Cooper Lake, Hopkins County, Texas. *Bulletin of the Texas Archeological Society* 65: 55–114.
- Fields, R. C., Blake, M. E. and Kibler, K. W. 1997 *Synthesis of the Prehistoric and Historic Archeology of Cooper Lake, Delta and Hopkins Counties, Texas*. Reports of Investigations No. 104. Prewitt and Associates, Inc., Austin.
- Frink, D. S. 1992 The chemical variability of carbonized organic matter through time. *Archaeology of Eastern*

- North America 20: 67–79.
- _____. 1994 The oxidizable carbon ratio (OCR): A proposed solution to some of the problems encountered with radiocarbon data. *North American Archaeologist* 15(1): 17–29.
- _____. 1995 Application of the oxidizable carbon ratio dating procedure and its implications for pedogenic research. In *Pedological Perspectives in Archaeological Research*. SSSA Special Publication 44. Soil Science Society of America, Madison, Wisconsin: 95–106.
- Granberry, D. 1995 William T. McKenzie Mound. *The Record* 46(1): 1–18. Dallas Archeological Society, Dallas.
- Kindall, S. 1997 The oxidizable carbon ratio (OCR) technique: A new, low-cost dating method. *The Steward, Collected Papers on Texas Archeology* 4: 91–94. Office of the State Archeologist, Texas Historical Commission, Austin.
- Kromer, B. and Becker, B. 1993 German oak and pine ^{14}C calibration, 7200–9439 BC. In Stuiver, M., Long, A. and Kra, R. S., eds., Calibration 1993. *Radiocarbon* 35(1): 125–135.
- Largent, F. B., Beene, D. L., Cliff, M. B. and Hunt, S. M. 1997 *Cultural Resources Testing of Two Sites within the White Oak Creek Wildlife Management Area (WOCMA), Bowie and Titus Counties, Texas*. White Oak Creek Wildlife Management Area Archeological Technical Series, Report of Investigations No. 6. Geo-Marine, Inc., Plano.
- Martin, W. A. 1997 Archaeological Investigations at 41DT124: The Doctors Creek site. In McGregor, D. E., Green, M. M., Journey, D. H., Martin, W. A., Moir, R. W. and Saunders, J. W., *Archaeological Investigations at Cooper Lake, Delivery Order Numbers 2, 3, & 4, 1987: Cultural Resource Studies for Cooper Lake, Hopkins and Delta Counties, Texas*. Archaeology Research Program, Department of Anthropology, Southern Methodist University, Dallas: 271–340.
- McGregor, D. E. 1997 Archaeological investigations at 41HP137. In McGregor, D. E., Green, M. M., Journey, D. H., Martin, W. A., Moir, R. W. and Saunders, J. W., *Archaeological Investigations at Cooper Lake, Delivery Order Numbers 2, 3, & 4, 1987: Cultural Resource Studies for Cooper Lake, Hopkins and Delta Counties, Texas*. Archaeology Research Program, Department of Anthropology, Southern Methodist University, Dallas: 341–361.
- McGregor, D. E. and W. A. Martin 1997 Site descriptions of tested prehistoric sites. In McGregor, D. E., Green, M. M., Journey, D. H., Martin, W. A., Moir, R. W. and Saunders, J. W., *Archaeological Investigations at Cooper Lake, Delivery Order Numbers 2, 3, & 4, 1987: Cultural Resource Studies for Cooper Lake, Hopkins and Delta Counties, Texas*. Archaeology Research Program, Department of Anthropology, Southern Methodist University, Dallas: 31–126.
- Middlebrook, T. 1994 An update of archaeological investigations at the Tyson site (41SY92). *Journal of Northeast Texas Archaeology* 3: 1–36.
- Middlebrook, T. and Perttula, T. K. 1997 The Middle Caddoan period in East Texas: A summary of the findings of the East Texas Caddoan Research Group. *Journal of Northeast Texas Archaeology* 9: 1–8.
- Miller, M. R., III 1996 *The Chronometric and Relative Chronology Project*. Archaeological Technical Report No. 5. Anthropology Research Center, Department of Sociology and Anthropology, University of Texas at El Paso.
- Perino, G. 1994 Archaeological research at the Rowland Clark site (41RR77), Red River County, Texas. *Journal of Northeast Texas Archaeology* 4: 3–42.
- _____. 1995 The Dan Holdeman site (41RR11), Red River County, Texas. *Journal of Northeast Texas Archaeology* 6: 3–65.
- Perttula, T. K. 1995 The Archeology of the Pineywoods and Post Oak Savanna of Northeast Texas. *Bulletin of the Texas Archeological Society* 66:331–359.
- _____, ed. 1998 *The Hurricane Hill Site (41HP106): The Archaeology of a Late Archaic/Early Ceramic and Early-Middle Caddoan Settlement in Northeast Texas*. Special Publication No. 4. Friends of Northeast Texas Archaeology, Austin and Pittsburg. In preparation.
- Perttula, T. K., Turner, M. and Nelson, B. 1997a Radiocarbon and oxidizable carbon ratio dates from the Camp Joy mound (41UR144) in Northeast Texas. *Caddoan Archeology* 7 (4): 10–16.
- Perttula, T. K., Prikryl, D. J. and Nelson, B. 1997b *Archaeological Evaluation of a Proposed Sewer Line in the Knight's Bluff Campground at Atlanta State Park, and Delineation of the Knight's Bluff Site (41CS14) Cemetery/Midden Areas*. Texas Archeological Research Laboratory, The University of Texas at Austin.
- Perttula, T. K., Tate, M., Neff, H., Cogswell, J. W., Glasscock, M. D., Skokan, E., Mulholland, S., Rogers, R. and Nelson, B. 1998 *Analysis of the Titus Phase Mortuary Assemblage at the Mockingbird or "Kahbakayammaahin" Site (41TT550)*. Document No. 970849. Espey, Huston & Associates, Inc., Austin.
- Ramenofsky, A. F. and Steffen, A. 1998 Units as tools of measurement. In Ramenofsky, A. F. and Steffen, A., eds., *Unit Issues in Archaeology: Measuring Time, Space, and Material*. Salt Lake City, University of Utah Press: 3–17.
- Richner, J. J. and Bagot, J. T. (assemblers) 1978 *A Reconnaissance Survey of the Trinity River Basin, 1976–1977*. Research Report 113. Archaeology Research Program, Southern Methodist University, Dallas.
- Skinner, S. A., Harris, R. K. and Anderson, K. M., eds. 1969 *Archaeological Investigations at the Sam Kaufman Site, Red River County, Texas*. Contributions in Anthropology No. 5. Department of Anthropology, Southern Methodist University, Dallas.
- Slaughter, B. H. and Hoover, B. R. 1963 Sulphur River formation and the Pleistocene mammals of the Ben

- Franklin local fauna. *Journal of the Graduate Research Center* 31(3): 132–148. Southern Methodist University, Dallas.
- _____. 1965 An antler artifact from the Late Pleistocene of northeastern Texas. *American Antiquity* 30(3): 351–352.
- Story, D. A. 1990a Radiocarbon Assays. In Story, D. A., Guy, J. A., Burnett, B. A., Freeman, M. D., Rose, J. C., Steele, D. G., Olive, B. W. and Reinhard, K. J. *The Archeology and Bioarcheology of the Gulf Coastal Plain*. Research Series 38. Fayetteville, Arkansas Archeological Survey: 658–735.
- _____. 1990b Cultural History of the Native Americans. In Story, D. A., Guy, J. A., Burnett, B. A., Freeman, M. D., Rose, J. C., Steele, D. G., Olive, B. W. and Reinhard, K. J. *The Archeology and Bioarcheology of the Gulf Coastal Plain*. Research Series 38. Fayetteville, Arkansas Archeological Survey: 163–366.
- _____. 1995 General summary and synthesis. In Story, D. A., ed., *The Deshazo Site, Nacogdoches County, Texas*. Volume 2. *Artifacts of Native Manufacture*. Studies in Archeology 21. Texas Archeological Research Laboratory, The University of Texas at Austin: 233–247.
- _____. 1997 1968–1970 archeological investigations at the George C. Davis site, Cherokee County, Texas. *Bulletin of the Texas Archeological Society* 68: 1–110.
- _____. 1998 The George C. Davis site mounds, structures, and burials: Glimpses into Early Caddoan symbolism and ideology. In Perttula, T. K. and Bruseth, J. E., eds., *The Native History of the Caddo: Their Place in Southeastern Archeology and Ethnohistory*. Studies in Archeology 30. Texas Archeological Research Laboratory, The University of Texas at Austin: 9–43.
- Story, D. A. and Valastro, S. Jr. 1977 Radiocarbon dating and the George C. Davis site, Texas. *Journal of Field Archaeology* 4(1): 63–89.
- Stuiver, M. and Reimer, P. J. 1993a Extended ^{14}C data base and revised CALIB 3.0 ^{14}C age calibration program. In Stuiver, M., Long, A. and Kra, R. S., eds., *Calibration 1993*. *Radiocarbon* 35(1): 215–230.
- _____. 1993b *CALIB User's Guide Rev 3.0.3A for Macintosh computers*. Quaternary Research Center, University of Washington, Seattle.

APPENDIX

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Ferguson (41AN67)						
Tx-1275	Post fragment capped by midden	230 ± 70	--	230 ± 81	AD 1722–1817 AD 1630–1698 AD 1523–1563	.42 .31 .12
Tx-1276	Same sample as Tx-1275	360 ± 70	--	360 ± 81	AD 1536–1635 AD 1473–1530	.63 .37
Alcoa No. 1 (41AN87)						
Beta-43537	Unit lv. 4	490 ± 60	--	490 ± 72	AD 1393–1488 AD 1321–1340	.91 .08
Beta-43538	Unit 1, lv. 6	550 ± 60	--	550 ± 72	AD 1386–1438 AD 1310–1353	.60 .40
41AN 120						
SMU-669	Mussel shell lens #1	1744 ± 64	--	1744 ± 76	AD 231–404	1.00
Hatchel (41BW3)						
Tx-1903	Floor K, mound	1250 ± 70	--	1250 ± 81	AD 695–869	1.00
Tx-1904	Floor H, mound	810 ± 40	--	810 ± 57	AD 1193–1282	1.00
Tx-1905	Fea. 18, Floor H, mound	1000 ± 40	--	1000 ± 57	AD 988–1055 AD 1083–1122 AD 1138–1157	.59 .28 .13
Tx-1906	Fea. 4, Floor B, mound	660 ± 40	--	660 ± 57	AD 1342–1392 AD 1291–1319	.64 .36
Cranfill (41BW171)						
Beta-92920	Midden, deer bone	680 ± 110	–22.67‰	710 ± 110	AD 1229–1328 AD 1332–1396	.62 .38

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Beta-92921	Midden, charred nutshells	510 ± 50	-25.9‰	490 ± 50	AD 1405–1453	1.00
41BW553						
Beta-94626‡	Midden, below Fea. 6	920 ± 80	-27.4‰	880 ± 80	AD 1152–1230 AD 1045–1100 AD 1114–1146	.50 .32 .18
Beta-94627‡	Fea. 3	930 ± 70	-27.1‰	890 ± 70	AD 1153–1222 AD 1046–1098 AD 1115–1145	.47 .34 .19
Beta-94628‡	Fea. 1	450 ± 70	-26.0‰	430 ± 70	AD 1424–1517 AD 1585–1623	.76 .24
Beta-94629‡	Fea. 6	580 ± 90	-26.9‰	550 ± 90	AD 1378–1441 AD 1307–1361	.57 .43
George C. Davis (41CE19)						
C-153	Md. A, Fea. 31 pit, pre-mound (maize)	1553 ± 175	--	1794 ± 180	AD 52–434 AD 25–44	.97 .03
M-1168	Md. A, Fea. 31 pit, pre-mound (maize)	655 ± 75	--	896 ± 85	AD 1151–1219 AD 1044–1105 AD 1112–1147	.41 .37 .21
Tx-105	Md. A, Fea. 31 pit, pre-mound (maize)	1120 ± 90	--	1361 ± 99	AD 598–787	1.00
Tx-674	Md. B, Fea. 108, under md.	1420 ± 100	--	1396 ± 108	AD 552–727 AD 733–772	.85 .15
Tx-675	Md. B, midden under md.	1010 ± 80	--	986 ± 90	AD 986–1166	1.00
Tx-676	Md. B, midden under md., probably below Fea. 112 floor	1120 ± 80	--	1096 ± 90	AD 860–1028 AD 822–839	.94 .06
Tx-677	Md. B, midden under md., west of F112 and upper part of Zone 1	1070 ± 70	--	1046 ± 81	AD 890–1046 AD 1098–1115	.91 .06
Tx-678	Unit 4, midden	1430 ± 160	--	1406 ± 165	AD 444–789	1.00
Tx-905	Md. B, Fea. 111, pre-mound structure	850 ± 100	--	826 ± 108	AD 1155–1288 AD 1050–1087 AD 1120–1140	.76 .15 .09
Tx-906a	Unit 6, Fea. 110-1 (maize)	710 ± 60	--	951 ± 72	AD 1023–1164	1.00
Tx-906b	Unit 6, Fea. 110-1	1130 ± 160	--	1106 ± 165	AD 768–1049 AD 1089–1119 AD 721–738	.87 .06 .04
Tx-907	Unit 6, Fea. 110-2	960 ± 70	--	936 ± 81	AD 1024–1180	1.00
Tx-908	Unit 6, Feas. 110-7 & 110-17	1230 ± 100	--	1206 ± 108	AD 757–897 AD 910–959 AD 712–745	.67 .20 .13
Tx-909	Unit 6, Fea. 110-7	1170 ± 120	--	1146 ± 127	AD 772–1017	.98

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Tx-910	Md. B, Fea. 114, pre-mound pit or post trench	830 ± 70	--	806 ± 81	AD 1160–1294	.99
Tx-911	Md. B, Fea. 111-20 post, pre-mound	870 ± 160	--	846 ± 165	AD 1026–1292	1.00
Tx-912	Md. B, Fea. 111, pre-mound struc- ture beam	870 ± 70	--	846 ± 81	AD 1157–1278 AD 1058–1080 AD 1124–1136	.82 .11 .07
Tx-913	Md. C, Fea. 119, Stage II	1150 ± 80	--	1126 ± 90	AD 855–1011 AD 817–845	.88 .12
Tx-914a	Md. B, Fea. 120-2, struc- ture under Md. B wash (maize)	790 ± 70	--	1031 ± 81	AD 951–1056 AD 1082–1123 AD 894–918 AD 1137–1157	.64 .17 .10 .08
Tx-914b	Md. B, Fea. 120-2	1060 ± 60	--	1036 ± 72	AD 947–1048 AD 894–920 AD 1091–1118	.72 .12 .11
Tx-915	Md. B, Fea. 118 midden above floor of structure under Md. B fill	830 ± 70	--	806 ± 81	AD 1160–1294	.99
Tx-916	Md. B, Fea. 108, midden under Md. B wash	900 ± 70	--	876 ± 81	AD 1153–1239 AD 1046–1096 AD 1115–1144	.55 .29 .17
Tx-917	Md. B, Fea. 111-3 posts, pre-mound structure	980 ± 70	--	956 ± 81	AD 1015–1169	1.00
Tx-918	Md. B, Fea. 111, pre-mound struc- ture beam	810 ± 70	--	786 ± 81	AD 1168–1297	1.00
Tx-919	Md. B, Fea. 112- 10, post, pre- mound	1310 ± 80	--	1286 ± 90	AD 665–821 AD 841–859	.91 .09
Tx-920	Md. B, Fea. 115 midden under floor, under mound fill & wash	1150 ± 70	--	1126 ± 81	AD 861–1010 AD 822–839	.93 .07
Tx-921	Md. B, Fea. 111, pre-mound struc- ture	950 ± 70	--	926 ± 81	AD 1029–1185	1.00
Tx-922	Unit 6, Fea. 110-2	1070 ± 70	--	1046 ± 81	AD 890–1046 AD 1098–1115	.91 .06
Tx-923	Md. B, Fea. 115 posts 1–2, under Md. B fill & wash	1020 ± 100	--	996 ± 108	AD 964–1182	.99
Tx-924	Md. B, Fea. 112, posts 5–13, pre- mound structure	940 ± 70	--	916 ± 81	AD 1036–1194	1.00

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Tx-925	Md. B, Fea. 120 posts 1–6, under Md. B wash	1150 $\pm$ 70	--	1126 $\pm$ 81	AD 861–1010 AD 822–839	.93 .07
Tx-926	Unit 6, Fea. 110-1	1000 $\pm$ 60	--	976 $\pm$ 72	AD 1012–1069 AD 1071–1129 AD 1131–1160	.41 .39 .20
Tx-1201	Unit 10, Fea. 125- 1, 3rd hearth	920 $\pm$ 80	--	896 $\pm$ 90	AD 1151–1219 AD 1043–1107 AD 1111–1148	.41 .37 .21
Tx-1202	Unit 10, Fea. 125-82	1080 $\pm$ 80	--	1056 $\pm$ 90	AD 884–1048 AD 1093–1117	.89 .08
Tx-1203	Md. C, fill of pre- mound pit overlain by Stage V fill	910 $\pm$ 80	--	886 $\pm$ 90	AD 1151–1227 AD 1044–1105 AD 1112–1147	.46 .35 .20
Tx-1204	Unit 10, Fea. 125-1	1110 $\pm$ 80	--	1086 $\pm$ 90	AD 861–1035	.96
Tx-1206	Md. C, Fea. 134, Stage I, pre-mound burial	1010 $\pm$ 80	--	986 $\pm$ 90	AD 986–1166	1.00
Tx-1207	Borrow pit, upper- most stratum	410 $\pm$ 70	--	386 $\pm$ 81	AD 1446–1524 AD 1559–1631	.54 .46
Tx-1208	Unit 14, Fea. 137-16B	1070 $\pm$ 70	--	1046 $\pm$ 81	AD 890–1046 AD 1098–1115	.91 .06
Tx-1209	Unit 14, Fea. 137-15	860 $\pm$ 80	--	836 $\pm$ 90	AD 1157–1283 AD 1057–1081	.82 .12
Tx-1210	Unit 11, Fea. 160-54	890 $\pm$ 80	--	866 $\pm$ 90	AD 1154–1257 AD 1048–1092 AD 1117–1143	.63 .24 .13
Tx-1211	Unit 11, Fea. 139-21	860 $\pm$ 80	--	836 $\pm$ 90	AD 1157–1283 AD 1057–1081	.82 .12
Tx-1212	Unit 11, Fea. 139-1	1160 $\pm$ 90	--	1136 $\pm$ 99	AD 673–1048	.98§
Tx-1213	Unit 11, Fea. 139- 83, post of Str. F139	950 $\pm$ 80	--	926 $\pm$ 90	AD 1028–1195	1.00
Tx-1214	Unit 13, Fea. 126-2	790 $\pm$ 80	--	766 $\pm$ 90	AD 1168–1307 AD 1362–1377	.94 .06
Tx-1215	Unit 13, Fea. 126-8	850 $\pm$ 90	--	826 $\pm$ 99	AD 1157–1287 AD 1055–1083 AD 1122–1138	.80 .13 .07
Tx-1216	Unit 16S, Fea. 165-1	780 $\pm$ 70	--	756 $\pm$ 81	AD 1192–1307 AD 1361–1378	.92 .08
Tx-1217	Unit 16S, Fea. 165-63	1020 $\pm$ 70	--	996 $\pm$ 81	AD 986–1069 AD 1071–1129 AD 1131–1160	.51 .33 .16
Tx-1221	Unit 15, Fea. 146- 69 in structure F146	1000 $\pm$ 80	--	976 $\pm$ 90	AD 993–1169	1.00
Tx-1222	Unit 15, Fea. 146-71	1100 $\pm$ 80	--	1076 $\pm$ 90	AD 865–1043 AD 827–833	.96 .02

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Tx-1223	Unit 15, Fea. 146-164, interior post in structure F146	1290 $\pm$ 80	--	1266 $\pm$ 90	AD 678–827 AD 833–865	.84 .16
Tx-1224	Unit 15, Fea. 146-62	980 $\pm$ 70	--	956 $\pm$ 81	AD 1015–1169	1.00
Tx-1225	Md. B, fill, earliest construction phase	910 $\pm$ 140	--	886 $\pm$ 146	AD 1027–1266	1.00
Tx-1226	Md. B, fill, earliest construction phase	700 $\pm$ 80	--	676 $\pm$ 90	AD 1331–1396 AD 1281–1329	.57 .43
Tx-1227	Same as Tx-1225 & Tx-1226	1100 $\pm$ 70	--	1076 $\pm$ 81	AD 879–1038	1.00
Tx-1228	Borrow pit, 140–160 cm	850 $\pm$ 60	--	826 $\pm$ 72	AD 1160–1285	.98
Tx-1229	Borrow pit, 140–160 cm	790 $\pm$ 240	--	766 $\pm$ 243	AD 1020–1419	1.00
Tx-1231	Md. C, Fea. 118, Stage IV burial	770 $\pm$ 80	--	746 $\pm$ 90	AD 1201–1313 AD 1349–1389	.81 .19
Tx-1294	Md. C, Fea. 155, Stage II burial	1260 $\pm$ 70	--	1236 $\pm$ 81	AD 751–884 AD 704–749	.76 .24
Tx-1295	Md. C, Stage III burial (Fea. 161)	1240 $\pm$ 100	--	1216 $\pm$ 108	AD 700–894 AD 920–946	.90 .10
Tx-1307	Unit 10, Fea. 125-1, same context as Tx-1308	1030 $\pm$ 70	--	1006 $\pm$ 81	AD 976–1067 AD 1073–1128 AD 1132–1160	.56 .29 .15
Tx-1308	Unit 10, Fea. 125-1, 2nd of 3 superimposed hearths (maize)	800 $\pm$ 70	--	1041 $\pm$ 81	AD 892–1047 AD 1096–1116	.88 .08
Tx-1310	Unit 11, Fea. 139-62 (cane)	670 $\pm$ 90	--	911 $\pm$ 99	AD 1036–1214	1.00
Tx-1311	Unit 11, Fea. 136-13	880 $\pm$ 80	--	856 $\pm$ 90	AD 1156–1274 AD 1052–1085 AD 1121–1139	.73 .17 .10
Tx-1312	Unit 11, Fea. 136-6	750 $\pm$ 90	--	726 $\pm$ 99	AD 1220–1322 AD 1339–1393	.69 .31
Tx-1313	Unit 11, Fea. 139-62	850 $\pm$ 70	--	826 $\pm$ 81	AD 1159–1286 AD 1064–1075	.92 .05
Tx-1314	Unit 11, Fea. 139-84	700 $\pm$ 70	--	676 $\pm$ 81	AD 1335–1395 AD 1282–1326	.58 .42
Tx-1315	Unit 11, Fea. 139-50, post or pit inside structure F139	910 $\pm$ 60	--	886 $\pm$ 72	AD 1153–1225 AD 1046–1098 AD 1115–1145	.49 .32 .18
Tx-1316	Unit 11, Fea. 139-7	810 $\pm$ 70	--	786 $\pm$ 81	AD 1168–1297	1.00
Tx-1317	Unit 11, Fea. 139-30	760 $\pm$ 100	--	736 $\pm$ 108	AD 1205–1325 AD 1336–1394	.71 .29
Tx-1318	Unit 11, Fea. 139-90	740 $\pm$ 110	--	716 $\pm$ 117	AD 1221–1398	1.00
Tx-1319	Unit 11, Fea. 139-3	690 $\pm$ 70	--	666 $\pm$ 81	AD 1335–1395 AD 1286–1326	.60 .40

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (Continued)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Tx-1320	Unit 11, Fea. 160-52	740 ± 60	--	716 ± 72	AD 1245-1314 AD 1348-1389	.67 .33
Tx-1395	Md. A, Sec. 13, apparently struc- ture F. 31, pre- mound	830 ± 80	--	806 ± 90	AD 1159-1295 AD 1063-1076	.92 .05
Tx-1396	Md. A, Sec. 17R13, 21.2, above Fea. 9 floor	710 ± 70	--	686 ± 81	AD 1335-1395 AD 1278-1326	.54 .46
Tx-1397	Md. A, Sec. 20R13, 26-39 cm, Fea. 9	890 ± 60	--	866 ± 72	AD 1155-1253 AD 1050-1087 AD 1120-1140	.68 .21 .11
Tx-1398	Md. A, above floor of Fea. 35	1050 ± 70	--	1026 ± 81	AD 956-1059 AD 1079-1124 AD 1136-1158	.63 .20 .10
Tx-1399	Md. A, Sec. 13, Fea. 31, pre- mound	1130 ± 60	--	1106 ± 72	AD 882-1015	1.00
Tx-1405	Unit 11, Fea. 139-30 (cane)	570 ± 80	--	811 ± 90	AD 1158-1293 AD 1062-1077	.91 .06
Tx-3267	Unit 43, Fea. 184- 3 (maize)	560 ± 60	--	801 ± 72	AD 1175-1288	1.00
Tx-3268	Unit 45, Fea. 185-4	1040 ± 230	--	1016 ± 233	AD 811-1236	1.00
Tx-3269	Unit 44, Fea. 186-1	740 ± 70	--	716 ± 81	AD 1238-1316 AD 1346-1391	.67 .33
Tx-3270	Unit 44, Fea. 186-1 (maize)	770 ± 70	--	1011 ± 81	AD 971-1066 AD 1073-1128 AD 1132-1160	.59 .28 .14
Tx-3271	Unit 46, Fea. 187-3	790 ± 80	-26.94‰	759 ± 90	AD 1175-1308 AD 1359-1380	.91 .09
Tx-3272	Unit 46, Fea. 187-5	780 ± 100	-25.17‰	777 ± 108	AD 1159-1309 AD 1356-1383 AD 1064-1075	.85 .09 .04
Tx-3273	Unit 48, Fea. 189-6	950 ± 80	-26.39‰	928 ± 90	AD 1027-1194	1.00
Tx-3274	Unit 48, Fea. 189-6 (maize)	440 ± 90	--	681 ± 99	AD 1271-1401	1.00
Tx-3275	Unit 45, Fea. 185-11	910 ± 90	--	886 ± 99	AD 1151-1227 AD 1043-1108 AD 1111-1149	.44 .35 .21
Tx-3276	Unit 45, Fea. 185-11 (maize)	550 ± 60	--	791 ± 72	AD 1182-1291	1.00
Tx-3307	Unit 48, Fea. 189-1 (maize)	880 ± 110	--	1121 ± 117	AD 783-1021	1.00
Tx-3308	Unit 43, Fea. 184-4	620 ± 100	-25.64‰	610 ± 108	AD 1294-1418	1.00

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Tx-3309	Unit 45, Fea. 185-8	1170 $\pm$ 100	--	1170 $\pm$ 108	AD 773-989	.99
Tx-3310	Unit 45, Fea. 185-1 (maize)	610 $\pm$ 100	--	851 $\pm$ 108	AD 1154-1278 AD 1048-1090 AD 1118-1142	.69 .20 .11
Tx-3311	Unit 46, Fea. 187-3 (cane)	1140 $\pm$ 160	--	1381 $\pm$ 165	AD 536-875	1.00
Tx-3312	Unit 43, Fea. 184-4 (cane)	1190 $\pm$ 80	--	1431 $\pm$ 90	AD 536-699	1.00
Tx-3399	Unit 62, Fea. 193-1, Zone 4	990 $\pm$ 60	--	966 $\pm$ 72	AD 1017-1130 AD 1130-1161	.79 .21
Tx-3400	Unit 62, Fea. 193- 1, Zone 5	1020 $\pm$ 60	--	996 $\pm$ 72	AD 988-1064 AD 1075-1127 AD 1133-1159	.52 .32 .15
Tx-3401	Unit 62, Fea. 193- 1, Zone 10	800 $\pm$ 40	--	776 $\pm$ 57	AD 1221-1290	1.00
Tx-3692	Unit 65, Fea. 195-137	960 $\pm$ 60	--	936 $\pm$ 72	AD 1026-1170	1.00
Tx-3693	Unit 65, Fea. 195- 137 (maize)	1400 $\pm$ 150	--	1641 $\pm$ 155	AD 311-566 AD 251-308	.81 .16
Tx-3694	Unit 65, Fea. 195-133 (maize)	820 $\pm$ 60	--	1061 $\pm$ 72	AD 891-1030	1.00
Tx-3695	Unit 65, Fea. 195- 149 (maize)	1400 $\pm$ 60	--	1641 $\pm$ 72	AD 373-534 AD 346-362	.92 .08
Tx-3697	Unit 65, Fea. 195-128	820 $\pm$ 60	--	796 $\pm$ 72	AD 1178-1289	1.00
Tx-4185	Unit 64, Fea. 196-10	750 $\pm$ 70	--	726 $\pm$ 81	AD 1226-1313 AD 1349-1389	.74 .26
Tx-4186	Unit 65, Fea. 195-22	980 $\pm$ 40	--	956 $\pm$ 57	AD 1074-1127 AD 1024-1065 AD 1133-1159	.44 .34 .22
Tx-4187	Unit 65, Fea. 195-145	990 $\pm$ 40	--	966 $\pm$ 57	AD 1075-1126 AD 1019-1064 AD 1134-1159	.42 .37 .21
Tx-4188	Unit 65, Fea. 195-166	1200 $\pm$ 50	--	1176 $\pm$ 64	AD 787-896 AD 912-957	.72 .28
Tx-4189	Unit 65, Fea. 195-183	1220 $\pm$ 60	--	1196 $\pm$ 72	AD 773-897 AD 910-958	.77 .22
Tx-4190	Unit 65, Fea. 195-189	790 $\pm$ 80	--	766 $\pm$ 90	AD 1168-1306 AD 1363-1377	.94 .06
Tx-4192	Unit 65, Fea. 195-190	860 $\pm$ 90	--	836 $\pm$ 99	AD 1156-1283 AD 1053-1085 AD 1121-1139	.77 .15 .08
Tx-4193	Unit 65, Fea. 195-191	930 $\pm$ 70	--	906 $\pm$ 81	AD 1043-1108 AD 1151-1208 AD 1111-1148	.41 .36 .23

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Tx-4194	Unit 65, Fea. 195-196	1030 $\pm$ 70	--	1006 $\pm$ 81	AD 976-1067 AD 1073-1128 AD 1132-1160	.56 .29 .15
Tx-4195	Unit 109, Fea. 220-27	1270 $\pm$ 70	--	1246 $\pm$ 81	AD 700-875	1.00
Tx-4196	Unit 109, Fea. 220-42	1020 $\pm$ 80	--	996 $\pm$ 90	AD 979-1164	1.00
Tx-4197	Unit 109, Fea. 220-25	760 $\pm$ 80	--	736 $\pm$ 90	AD 1216-1316 AD 1346-1391	.75 .25
Tx-4198	Unit 109, Fea. 220-23	1030 $\pm$ 70	--	1006 $\pm$ 81	AD 976-1067 AD 1073-1128 AD 1132-1160	.56 .29 .15
Tx-4199	Unit 65, Fea. 195-197	830 $\pm$ 110	--	806 $\pm$ 117	AD 1155-1298 AD 1049-1089 AD 1119-1141	.77 .14 .09
Tx-4200	Unit 65, Fea. 195-198	1240 $\pm$ 90	--	1216 $\pm$ 99	AD 750-894 AD 701-750 AD 927-944	.72 .21 .07
Tx-4201	Unit 64, Fea. 196-11	1020 $\pm$ 110	--	996 $\pm$ 117	AD 961-1191	.97
Tx-4340	Unit 65, Fea. 195-191 (maize)	520 $\pm$ 90	--	761 $\pm$ 99	AD 1168-1309 AD 1355-1384	.88 .12
Tx-4616	Unit 109, Fea. 220-30	780 $\pm$ 50	--	756 $\pm$ 64	AD 1218-1302	1.00
Tx-4617	Unit 109, Fea. 220-59	560 $\pm$ 120	--	536 $\pm$ 127	AD 1293-1485	1.00
Tx-4618	Unit 109, Fea. 220-56	880 $\pm$ 60	--	856 $\pm$ 72	AD 1157-1269 AD 1056-1082 AD 1123-1137	.79 .14 .08
Tx-4619	Unit 109, Fea. 220-62	770 $\pm$ 130	--	746 $\pm$ 136	AD 1167-1329 AD 1332-1396	.74 .26
Tx-4620	Unit 109, Fea. 220-61	750 $\pm$ 220	--	726 $\pm$ 224	AD 1151-1427 AD 1044-1105 AD 1112-1147	.79 .14 .08
Tx-4621	Unit 109, Fea. 220-79	730 $\pm$ 150	--	706 $\pm$ 155	AD 1174-1414	1.00
Tx-4622	Unit 109, Fea. 220-97	930 $\pm$ 70	--	906 $\pm$ 81	AD 1043-1108 AD 1151-1208 AD 1111-1148	.41 .36 .23
Tx-4623	Unit 109, Fea. 220-64	1020 $\pm$ 60	--	996 $\pm$ 72	AD 988-1064 AD 1075-1127 AD 1133-1159	.52 .32 .15
Tx-4624	Unit 109, Fea. 220-30 (maize)	1010 $\pm$ 60	--	1251 $\pm$ 72	AD 697-828 AD 833-865	.81 .19
Tx-4625	Unit 109, Fea. 220-113	1000 $\pm$ 170	--	976 $\pm$ 175	AD 944-1237 AD 894-927	.92 .08
Tuck Carpenter (41CP5)						
Tx-666	Burial 10	360 $\pm$ 70	--	360 $\pm$ 81	AD 1536-1635 AD 1473-1530	.63 .37

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (Continued)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Beta-51366	Flotation Column 2, lv. 2	1300 ± 80	-25.0‰	1300 ± 80	AD 658-813	1.00
Beta-51367	Flotation Column 2, lv. 3	1370 ± 80	-25.5‰	1370 ± 80	AD 613-724 AD 735-771	.80 .20
Beta-51368	Flotation Column 2, lv. 4	1470 ± 80	-25.8‰	1460 ± 80	AD 536-667	1.00
Beta-52240	Units 6 and 12-14, lv. 5	1120 ± 70	-25.8‰	1110 ± 70	AD 882-1012	1.00
Spider Knoll (41DT11)						
Beta-46858	Unit 10, lv. 8	1030 ± 60	-24.8‰	1040 ± 60	AD 952-1044 AD 894-918	.83 .12
Beta-46859	Unit 10, lv. 5	840 ± 60	-26.4‰	810 ± 60	AD 1189-1282	1.00
Beta-46860‡	Fea. 5	--	--	960 ± 50	AD 1077-1125 AD 1023-1062 AD 1134-1158	.44 .35 .21
Beta-48768	Fea. 1	1060 ± 80	-26.5‰	1040 ± 80	AD 893-1046 AD 1097-1115	.88 .08
Beta-48769	Fea. 2	1140 ± 90	-26.7‰	1120 ± 90	AD 856-1014 AD 818-844	.90 .10
Beta-63297‡	Unit 6, lv. 1	--	--	940 ± 50	AD 1072-1128 AD 1036-1067 AD 1132-1160	.49 .27 .24
Beta-63298	Unit 9, lv. 5	590 ± 80	-25.6‰	580 ± 80	AD 1307-1362 AD 1377-1422	.56 .44
Beta-63299‡	Unit 9, lv. 9	--	--	770 ± 50	AD 1231-1288	1.00
Beta-63300‡	Unit 13, lv. 1	--	--	925 ± 50	AD 1042-1110 AD 1110-1149 AD 1150-1165	.56 .32 .11
Beta-63301	Unit 13, lv. 4	1020 ± 60	-25.5‰	1010 ± 60	AD 978-1054 AD 1084-1122 AD 1138-1156	.66 .23 .11
Beta-63302‡	Unit 14, lv. 9	--	--	920 ± 55	AD 1040-1169	1.00
Beta-63303	Fea. 135	930 ± 50	-25.2‰	930 ± 50	AD 1042-1149 AD 1150-1162	.91 .09
Beta-63304	Fea. 136	850 ± 70	-26.1‰	830 ± 70	AD 1160-1283	.98
Beta-63305	Fea. 147	1010 ± 70	-24.9‰	1010 ± 70	AD 975-1060 AD 1078-1125 AD 1135-1158	.61 .26 .13
Beta-65796‡	Fea. 129	1080 ± 55	-24.1‰	1095 ± 55	AD 943-1003 AD 894-931	.63 .37
Beta-65797‡	Fea. 51	725 ± 55	-20.9‰	790 ± 55	AD 1216-1287	1.00
Beta-65798‡	Fea. 73	985 ± 55	-19.8‰	1065 ± 55	AD 952-1024 AD 894-918	.81 .19
Beta-65799‡	Fea. 117	1095 ± 55	-24.7‰	1100 ± 55	AD 941-996 AD 893-937	.57 .43
Beta-65800	Fea. 22	1400 ± 170	-26.5‰	1380 ± 170	AD 533-882	1.00
Beta-65801	Fea. 35	880 ± 90	-26.4‰	850 ± 90	AD 1156-1277 AD 1053-1084 AD 1121-1138	.76 .16 .09

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Beta-65802‡	Fea. 75	890 ± 55	-23.9‰	910 ± 55	AD 1043-1106 AD 1112-1148 AD 1151-1186	.47 .27 .26
Beta-65803	Fea. 125	1120 ± 80	-27.4‰	1080 ± 80	AD 880-1033	1.00
Beta-65804	Fea. 137	850 ± 80	-26.4‰	830 ± 80	AD 1159-1284 AD 1063-1076	.91 .06
Spike (41DT16)						
SMU-398	Unit 14, 45-50 cm	200 ± 80	--	200 ± 90	AD 1715-1820 AD 1646-1705 AD 1915-1955* AD 1839-1870	.47 .25 .17 .10
SMU-401	Unit 10, 45-50 cm	1060 ± 70	--	1060 ± 81	AD 885-1043 AD 1106-1112	.97 .02
Beta-51369	Fea. 3	1060 ± 90	-25.2‰	1060 ± 90	AD 883-1047 AD 1094-1116	.90 .07
Beta-51370	Fea. 8	1140 ± 70	-25.9‰	1130 ± 70	AD 864-1002 AD 826-834	.96 .04
Beta-51371	Fea. 17	2090 ± 90	-25.7‰	2080 ± 90	BC 195-AD 24	.99
Beta-51372	Unit 9, lv. 6	1300 ± 80	-26.0‰	1290 ± 80	AD 664-815	.97
Beta-51373	Unit 13, lv. 3	800 ± 70	-26.8‰	770 ± 70	AD 1199-1300	1.00
Beta-51374	Unit 25, lv. 6	1090 ± 70	-26.5‰	1070 ± 70	AD 940-1022 AD 893-939	.69 .31
Beta-51375	Unit 28, lv. 3	930 ± 80	-25.5‰	930 ± 80	AD 1027-1182	1.00
Beta-52241	Units 8 & 9, lv. 8	1300 ± 60	-25.5‰	1290 ± 60	AD 667-787	1.00
Beta-52242	Units 13&19, lv. 8	1330 ± 70	-25.9‰	1310 ± 70	AD 658-785	1.00
Beta-52243	Units 17&18, lv. 9	1230 ± 80	-25.7‰	1220 ± 80	AD 752-891 AD 705-749	.80 .20
Beta-52244	Units 19 & 26, lv. 10	1550 ± 90	-24.8‰	1560 ± 90	AD 425-598	1.00
Beta-52245	Units 26&27, lv. 8	1520 ± 60	-24.8‰	1530 ± 60	AD 530-606 AD 450-484 AD 500-525	.63 .22 .16
L. O. Ray (41DT21)						
Beta-46861	Fea. 2	1320 ± 80	-27.6‰	1270 ± 80	AD 676-821 AD 840-860	.89 .11
Beta-46862‡	Unit 6, lv. 4	--	--	1045 ± 50	AD 960-1033 AD 898-908	.93 .07
Beta-46863‡	Unit 8, lv. 3	--	--	170 ± 50	AD 1719-1789 AD 1667-1701 AD 1918-1951 AD 1790-1818	.43 .20 .19 .17
Ranger (41DT37)						
SMU-363	Unit 46, 10-15 cm	270 ± 60	--	270 ± 72	AD 1510-1602 AD 1615-1678 AD 1771-1802	.43 .36 .14
41DT42						
SMU-477	Unit 7, 20-25 cm	1060 ± 120	--	1060 ± 127	AD 868-1068 AD 1072-1128 AD 1132-1160	.76 .16 .08

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
41DT50						
Beta-46857	Unit 1	660 ± 80	-26.2‰	640 ± 80	AD 1332-1396 AD 1297-1328	.68 .32
Luna (41DT52)						
SMU-396	Fea. 21A	920 ± 40	--	920 ± 57	AD 1039-1170	1.00
SMU-404	Unit 30, 30-40 cm	660 ± 70	--	660 ± 81	AD 1334-1395 AD 1289-1326	.62 .38
SMU-417	Fea. 31A	160 ± 45	--	160 ± 60	AD 1716-1782 AD 1671-1704 AD 1916-1947 AD 1795-1820	.37 .18 .17 .14
SMU-471	Unit 19, 20-30 cm	280 ± 70	--	280 ± 81	AD 1489-1607 AD 1612-1674 AD 1778-1797	.55 .33 .08
SMU-476	Fea. 15A	1300 ± 150	--	1300 ± 155	AD 616-894 AD 927-944	.96 .04
41DT59						
Beta-81670‡	Unit 31, lv. 5	2660 ± 50	-26.2‰	2640 ± 50	839-782 BC	1.00
Johns Creek (41DT62)						
Beta-51379	Unit 9, lv. 3	1790 ± 140	-25.2‰	1790 ± 140	AD 113-408 AD 86-102	.96 .04
Beta-52602	Units 2, 5-7, 11 and 14, lv. 7	1240 ± 70	-25.9‰	1220 ± 70	AD 757-890 AD 712-745	.84 .16
Beta-52603	Units 7, 8, 11, 15, 17 and 19, lv. 5	1020 ± 80	-26.0‰	1000 ± 80	AD 982-1068 AD 1072-1128 AD 1132-1160	.53 .31 .16
Beta-52604	Units 7, 8 and 20, lv. 4	870 ± 130	-27.3‰	830 ± 130	AD 1153-1288 AD 1046-1098 AD 1115-1145	.67 .21 .12
Beta-52605	Units 2, 7, 12 and 13, lvs. 6-7	1370 ± 110	-24.8‰	1380 ± 110	AD 590-780 AD 561-589	.91 .09
41DT63						
Beta-46864	Unit 1, lv. 5	1080 ± 100	-24.1‰	1090 ± 100	AD 852-1034 AD 815-848	.90 .10
Beta-46865	Unit 2, lv. 4	1020 ± 90	-25.2‰	1010 ± 90	AD 967-1162	1.00
Beta-46866	Unit 2, lv. 7	940 ± 60	-25.6‰	930 ± 60	AD 1036-1166	1.00
Thomas (41DT80)						
SMU-1903	Fea. 2	--	-25.8‰	920 ± 30	AD 1046-1099 AD 1115-1145 AD 1153-1165	.56 .31 .13
SMU-1959	Fea. 48	--	-25.0‰	960 ± 4	AD 1030-1043 AD 1106-1112 AD 1148-1151	.70 .16 .13
SMU-1967	Fea. 3	--	-25.3‰	1020 ± 60	AD 968-1051 AD 1086-1120 AD 1139-1156	.73 .18 .09
SMU-1968	Fea. 12	--	-25.7‰	920 ± 110	AD 1025-1218	1.00
SMU-2025	Fea. 23	--	--	860 ± 30	AD 1166-1227	1.00

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Tx-1958	Unit 88, 25–30 cm	1220 $\pm$ 350	--	1220 $\pm$ 352	AD 534–1198	1.00
Tx-1959	Unit 88, 85–92 cm	1180 $\pm$ 220	--	1180 $\pm$ 224	AD 648–1045 AD 1100–1114	.97 .02
Delta Bone Quarry 5 (41DT86)						
SM-532	Possible hearth in Late Pleistocene alluvium	9550 $\pm$ 375	--	9550 $\pm$ 377	BC 9170–8082 BC 9260–9227	.97 .02
Doctors Creek (41DT124)						
SMU-1936	Unit 65, lv. 4	--	–25.4‰	1090 $\pm$ 190	AD 774–1068 AD 1072–1128	.81 .13
SMU-1946	Unit 66, lv. 9	--	–25.8‰	1510 $\pm$ 200	AD 331–715 AD 743–761	.95 .03
SMU-1947	Fea. 4	--	–25.5‰	1050 $\pm$ 30	AD 983–1017	1.00
SMU-1948	Fea. 5	--	–25.7‰	960 $\pm$ 30	AD 1084–1121 AD 1025–1053 AD 1139–1156	.44 .35 .21
SMU-1957	Fea. 9	--	–25.7‰	1020 $\pm$ 30	AD 997–1028	1.00
SMU-2009	Fea. 2	--	--	860 $\pm$ 30	AD 1166–1227	1.00
SMU-2026	Fea. 14	--	--	860 $\pm$ 30	AD 1166–1227	1.00
41DT141						
Beta-17399	BHT 15, 2AB horizon, humates	1100 $\pm$ 70	--	1100 $\pm$ 81	AD 867–1024	1.00
Beta-17400	BHT 15, 4Ab1 horizon, humates	2100 $\pm$ 70	--	2100 $\pm$ 81	199 BC–AD 6	1.00
Beta-17401	Profile 20, 4Ab2 horizon, humates	2350 $\pm$ 70	--	2350 $\pm$ 81	533–356 BC 753–696 BC 289–245 BC	.73 .15 .12
Beta-41774	Profile 1, 3Ab1 horizon, humates	1110 $\pm$ 80	–21.8‰	1160 $\pm$ 80	AD 696–1015	1.00§
Beta-41776	Unit 1, lv. 14	1560 $\pm$ 130	–24.5‰	1570 $\pm$ 130	AD 382–635	1.00
Bazette (41HE57)						
SMU-516	Unit E, hearth 1	423 $\pm$ 58	--	423 $\pm$ 71	AD 1430–1518 AD 1579–1624	.71 .29
Woldert (41HE80)						
Tx-1279	Fea. 1 (?), 20–30 cm	640 $\pm$ 70	--	640 $\pm$ 81	AD 1331–1396 AD 1297–1329	.68 .32
Tx-1280	Fea. 4 (?), 30–40 cm	1590 $\pm$ 450	--	1590 $\pm$ 452	37 BC–AD 894 AD 926–944	.98 .02
Tomato Patch (41HE188)						
Tx-1273	Fea. 11	120 $\pm$ 140	--	120 $\pm$ 146	AD 1799–1942 AD 1676–1775	.59 .41
Winston (41HE245)						
SMU-624	Unit 1, lens 1	216 $\pm$ 104	--	216 $\pm$ 111	AD 1711–1822 AD 1634–1709 AD 1834–1881	.41 .27 .13
SMU-625	Unit 1, lens 1	456 $\pm$ 91	--	456 $\pm$ 99	AD 1402–1521 AD 1568–1627	.73 .27

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (Continued)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
SMU-656	Unit 2, lens 10	2635 ± 49	--	2635 ± 63	862–766 BC 896–873 BC	.90 .10
SMU-657	Unit 2, lens 10	2669 ± 50	--	2669 ± 64	862–795 BC 896–873 BC	.80 .20
SMU-660	Unit 2, lens 10	2853 ± 57	--	2853 ± 70	1084–917 BC 1114–1092 BC	.91 .09
SMU-684	Unit 2, lens 10	2821 ± 59	--	2821 ± 71	1045–894 BC 880–849 BC	.88 .12
SMU-686	Unit 1, lens 1	1205 ± 56	--	1205 ± 69	AD 770–894 AD 918–952	.80 .15
Lawson (41HP78)						
SMU-1954	Posthole 1	--	–27.3‰	990 ± 40	AD 1007–1050 AD 1088–1119 AD 1140–1155	.57 .29 .14
SMU-1958	Posthole 3	--	–26.7‰	960 ± 40	AD 1080–1124 AD 1024–1058 AD 1136–1157	.44 .35 .21
SMU-1978	Fea. 1	--	–26.4‰	1810 ± 110	AD 115–346 AD 362–373	.94 .04
Tx-1961	Hearth No. 2	2080 ± 60	--	2080 ± 72	175 BC–AD 0	1.00
Arnold (41HP102)						
SMU-310	Fea. 112A, 30–35 cm in feature zone	870 ± 50	--	870 ± 64	AD 1155–1246 AD 1050–1087 AD 1120–1140	.67 .21 .12
SMU-316	Fea. 112A, basal zone	950 ± 60	--	950 ± 72	AD 1023–1164	1.00
SMU-325	Fea. 97A, 41 cm, basal zone	950 ± 50	--	950 ± 64	AD 1070–1129 AD 1027–1070 AD 1131–1160	.45 .32 .23
SMU-328	Fea. 112A, 49 cm in feature zone	850 ± 60	--	850 ± 72	AD 1158–1276 AD 1060–1078	.85 .09
SMU-335	Unit 52, 40–45 cm, basal zone	1360 ± 140	--	1360 ± 146	AD 560–826 AD 835–864	.92 .08
SMU-338	Unit 109, 40–45 cm, feature zone	1070 ± 160	--	1070 ± 165	AD 1062–1077 AD 1125–1134	.53 .32
SMU-339	Unit 155, 61 cm, basal zone	1410 ± 120	--	1410 ± 127	AD 532–782	.98
SMU-341	Unit 127, 35–40 cm, basal zone	860 ± 60	--	860 ± 72	AD 1156–1261 AD 1053–1084	.74 .17
SMU-346	Unit 113, 54–56 cm, basal zone	1090 ± 100	--	1090 ± 108	AD 791–1036	1.00
Tx-2041	Unit 130, 43 cm, basal zone	970 ± 90	--	970 ± 99	AD 993–1184	1.00
Tx-2042	Unit 161, 31 cm, feature zone	1410 ± 920	--	1410 ± 921	370 BC–AD 1406	1.00
Tx-2043	Fea. 115B, 50 cm, basal zone	1010 ± 90	--	1010 ± 99	AD 961–1165 AD 898–906	.97 .03
Tx-2044	Unit 219, 27 cm, near burial, feature zone	680 ± 100	--	680 ± 108	AD 1261–1403	1.00

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Tx-2045	Unit 177, 20–25 cm, near Fea. 177A	730 $\pm$ 210	--	730 $\pm$ 214	AD 1152–1422 AD 1045–1100 AD 1114–1146	.81 .12 .07
Tx-2046	Unit 72, 24 cm, feature zone	1690 $\pm$ 160	--	1690 $\pm$ 165	AD 204–547 AD 148–164	.97 .03
Tx-2047	Unit 145, 52 cm, basal zone	1040 $\pm$ 360	--	1040 $\pm$ 362	AD 662–1290	1.00
Tx-2048	Unit 177, 26 cm, feature zone	830 $\pm$ 110	--	830 $\pm$ 117	AD 1154–1287 AD 1048–1091 AD 1118–1142	.71 .18 .11
Tx-2049	Unit 129, 35 cm, feature zone	510 $\pm$ 90	--	510 $\pm$ 99	AD 1376–1485 AD 1306–1364	.71 .29
Cox (41HP105)						
Tx-1962	Unit 145, 12–19 cm	1110 $\pm$ 120	--	1110 $\pm$ 127	AD 774–1039	1.00
Hurricane Hill (41HP106)						
Beta-82909‡	Fea. 83B	630 $\pm$ 50	–26.4‰	610 $\pm$ 50	AD 1307–1360 AD 1379–1400	.71 .29
Beta-82910	Fea. 89	620 $\pm$ 70	–25.7‰	610 $\pm$ 70	AD 1306–1365 AD 1374–1402	.69 .31
Beta-82911‡	Fea. 2	1050 $\pm$ 50	–25.4‰	1050 $\pm$ 50	AD 959–1029 AD 897–909	.91 .09
Beta-82912	Fea. 36	750 $\pm$ 80	–27.6‰	710 $\pm$ 80	AD 1248–1319 AD 1342–1392	.62 .38
Beta-82913	U. 75, lv. 6A–6B	1730 $\pm$ 100	–27.6‰	1710 $\pm$ 100	AD 218–449 AD 488–493	.99 .01
Beta-82914	U. 87, lv. 3B–4A	1820 $\pm$ 90	–25.4‰	1810 $\pm$ 90	AD 123–269 AD 272–337	.72 .28
Beta-82915‡	U. 94, lv. 4A	1820 $\pm$ 50	–24.1‰	1840 $\pm$ 50	AD 127–242	1.00
Beta-82916	U. 247/259, lv. 4B–5A	930 $\pm$ 50	–26.5‰	900 $\pm$ 50	AD 1154–1213 AD 1048–1093 AD 1117–1143	.45 .35 .20
Beta-82917	U. 242, lv. 4B–5A	1880 $\pm$ 90	–25.9‰	1870 $\pm$ 90	AD 59–253 AD 303–314	.96 .04
Beta-82918	U. 257, lv. 4A	1070 $\pm$ 80	–25.4‰	1070 $\pm$ 80	AD 882–1039	1.00
Beta-82919	U. 142–145, lv. 3A	620 $\pm$ 60	–25.4‰	610 $\pm$ 60	AD 1306–1363 AD 1376–1401	.70 .30
Beta-82920	U. 68, lv. 3A–3B	690 $\pm$ 80	–25.6‰	680 $\pm$ 80	AD 1335–1394 AD 1280–1325	.56 .44
Beta-82921	U. 187, lv. 4A	870 $\pm$ 60	–25.9‰	850 $\pm$ 60	AD 1159–1275 AD 1065–1074 AD 1127–1133	.93 .04 .03
Beta-82922	U. 57, lv. 3B	940 $\pm$ 100	–25.4‰	930 $\pm$ 100	AD 1024–1205	1.00
Beta-83089	Fea. 64	2830 $\pm$ 70	–27.2‰	2800 $\pm$ 70	1007–890 BC 889–845 BC	.77 .23
Beta-85866‡	Fea. 91	1860 $\pm$ 50	–24.6‰	1860 $\pm$ 50	AD 118–232	1.00
Beta-85867‡	Fea. 71	2270 $\pm$ 50	–26.7‰	2250 $\pm$ 50	307–207 BC 377–352 BC	.79 .21

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (Continued)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Beta-85868‡	Fea. 62	1910 ± 50	-26.2‰	1890 ± 50	AD 78–148 AD 161–210	.64 .36
41HP116						
Beta-18512	Zone III, 28–56 cm, humates	520 ± 70	--	520 ± 81	AD 1385–1463 AD 1310–1354	.72 .28
41HP118						
SMU-1883	BHT 5A, 220 cm	--	-25‰	2860 ± 70	1090–924 BC 1114–1090 BC	.89 .11
SMU-1970	BHT 5A, 2A2b horizon, humates	--	-21.5‰	2980 ± 30	1222–1157 BC 1257–1236 BC 1146–1133 BC	.66 .22 .12
41HP137						
SMU-1917	Fea. 2	--	-25.7‰	2090 ± 30	122–46 BC 154–142 BC	.90 .10
SMU-1966	Fea. 1	--	-25.2‰	1460 ± 60	AD 560–652	1.00
41HP155						
Beta-42427	Unit 1, lv. 13	900 ± 130	-27.7‰	860 ± 130	AD 1152–1276 AD 1044–1103 AD 1113–1147	.60 .26 .15
Finley Fan (41HP159)						
SMU-2222	Fea. 1	--	-25.8‰	4800 ± 90	3668–3504 BC 3414–3384 BC	.85 .12
GX-15877	Fea. 4	--	--	100.5 ± 2.8% of modern	N/A	
GX-15878‡	Fea. 12	--	-24.1‰	4490 ± 70	3334–3152 BC 3144–3090 BC	.74 .21
GX-15879‡	Unit 31, 60–70 cm	--	-26.3‰	530 ± 50	AD 1395–1441 AD 1326–1334	.92 .08
GX-15880‡	Unit 43, 170–180 cm	--	-26.0‰	4990 ± 70	3808–3698 BC 3930–3875 BC	.72 .28
GX-15881‡	Unit 45, 180–190 cm	--	-25.5‰	5540 ± 70	4410–4339 BC 4456–4410 BC	.61 .39
Peerless Bottoms (41HP175)						
Beta-51382	Fea. 1	780 ± 50	-25.1‰	780 ± 50	AD 1227–1285	1.00
Beta-51383	Fea. 3	400 ± 70	-25.7‰	390 ± 70	AD 1446–1521 AD 1567–1628	.57 .43
Beta-51385	Fea. 8	890 ± 70	-26.8‰	860 ± 70	AD 1156–1261 AD 1054–1084 AD 1122–1138	.74 .17 .09
Beta-51386	Unit 22, lv. 2	500 ± 60	-27.2‰	470 ± 60	AD 1404–1486	1.00
Beta-51387	Unit 33, lv. 2	560 ± 70	-26.6‰	540 ± 70	AD 1388–1442 AD 1312–1350	.66 .34
Beta-51388	Unit 36, lv. 2	510 ± 70	-25.9‰	490 ± 70	AD 1393–1487 AD 1323–1338	.93 .07
Beta-51389	Unit 43, lv. 3	400 ± 70	-26.5‰	380 ± 70	AD 1450–1523 AD 1563–1630	.52 .48
Beta-51390	Unit 74, lv. 2	520 ± 80	-26.9‰	490 ± 80	AD 1391–1497 AD 1318–1344	.85 .11

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Beta-51391	Unit 70, lv. 2	410 $\pm$ 80	-26.4‰	390 $\pm$ 80	AD 1444-1524 AD 1562-1630	.55 .45
Beta-51392	Unit 83, lv. 3	480 $\pm$ 70	-26.2‰	470 $\pm$ 70	AD 1401-1505 AD 1603-1614	.94 .06
Beta-52246	Fea. 1	640 $\pm$ 80	-25.8‰	630 $\pm$ 80	AD 1330-1396 AD 1302-1330	.70 .30
SMU-2326	Trackhoe Trench, backdirt	--	-26.8‰	210 $\pm$ 60	AD 1730-1814 AD 1646-1690 AD 1924-1955*	.53 .28
Resch (41HS16)						
Tx-481	Level 6, various squares	2150 $\pm$ 100	--	2150 $\pm$ 108	250-49 BC 357-288 BC	.75 .25
Tx-482	Levels 3 & 4, vari- ous squares	2250 $\pm$ 140	--	2250 $\pm$ 146	419-51 BC	.97
Tx-483	Levels 7 & 8, vari- ous squares	1850 $\pm$ 90	--	1850 $\pm$ 99	AD 71-261 AD 287-325	.87 .13
Tx-484	Level 5, various squares	2360 $\pm$ 130	--	2360 $\pm$ 136	555-354 BC 760-674 BC 299-208 BC	.55 .20 .19
41HS74						
Tx-5618	Burial 1	630 $\pm$ 240	--	630 $\pm$ 243	AD 1159-1520	.87
Gray's Pasture (41HS524)						
Beta-92922‡	Fea. 2, Unit 10, 50-70 cm	2570 $\pm$ 50	-29.1‰	2510 $\pm$ 50	703-531 BC 780-752 BC	.87 .13
41JP50						
Beta-61644	Stratum 3, central test unit, 37-40 cm bs	1020 $\pm$ 60	-26.4‰	1000 $\pm$ 60	AD 987-1056 AD 1082-1123 AD 1137-1157	.58 .28 .14
Beta-61645	Profile 1, Stratum 2	570 $\pm$ 90	-26.3‰	550 $\pm$ 90	AD 1378-1441 AD 1307-1361	.57 .43
Beta-61646	Profile 1, Stratum 3	250 $\pm$ 60	-25.6‰	240 $\pm$ 60	AD 1741-1808 AD 1633-1685 AD 1931-1955* AD 1527-1554	.39 .36 .15 .10
Mackin (41LR39)						
Tx-2167	Md. B, N259E462, Fea. VIIb	710 $\pm$ 40	--	710 $\pm$ 57	AD 1259-1310 AD 1352-1386	.67 .33
Tx-2170	Md. B, N259E462, Fea. VIIc	1320 $\pm$ 170	--	1320 $\pm$ 175	AD 593-894 AD 918-952	.92 .07
Tx-2171	Md. A, Trench 1, Units 2 & 3, contact Zones A-4 & A-8	890 $\pm$ 60	--	890 $\pm$ 72	AD 1153-1222 AD 1046-1099 AD 1114-1145	.47 .34 .19
Tx-2172	Md. A, Trench 1, Unit 2, Zone A-8	1000 $\pm$ 70	--	1000 $\pm$ 81	AD 982-1068 AD 1072-1128 AD 1131-1160	.53 .32 .15

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Tx-2173	Md. A, Trench 1, Unit 6, Zone 3, pre-mound humus	740 ± 340	--	740 ± 342	AD 953–1516	.93
Tx-2174	Md. A, Trench 1, Fea. 1, Component 5, Unit 2, pre-mound	1100 ± 70	--	1100 ± 81	AD 867–1024	1.00
Tx-2175	Md. A, Trench 1, Unit 2, below Component 6 of Fea. 1	940 ± 40	--	940 ± 57	AD 1070–1129 AD 1035–1070 AD 1131–1160	.48 .28 .24
Tx-2176	Md. A., Trench 1, Unit 2, Fea. 1	970 ± 40	--	970 ± 57	AD 1076–1126 AD 1017–1063 AD 1134–1159	.41 .39 .20
Tx-2177	Md. A, Trench 1, Unit 1, Fea. IIIa	770 ± 180	--	770 ± 184	AD 1335–1395 AD 1047–1093 AD 1117–1143	.44 .31 .18
Tx-2178	Md. B, N255E463, Zone B-4, pre- mound	1410 ± 150	--	1410 ± 155	AD 497–784 AD 449–486	.92 .08
Tx-2179	Md. A, Trench 1, Unit 4, Fea. IIIe, component D-6	1010 ± 80	--	1010 ± 90	AD 967–1162	1.00
Ray (41LR135)						
Beta-46264	Fea. 1	1210 ± 90	–25.0‰	1210 ± 90	AD 759–895 AD 917–953 AD 714–744	.73 .14 .13
Beta-46265	Level 4, lot 46	1070 ± 70	–25.6‰	1060 ± 70	AD 893–1028	1.00
Beta-46266	Level 4, lots 52 & 113	850 ± 60	–27.9‰	800 ± 60	AD 1198–1286	1.00
Beta-88418‡	Fea. 2 (maize)	780 ± 50	–11.8‰	1000 ± 50	AD 990–1050 AD 1087–1120 AD 1140–1156	.63 .25 .12
Beta-88419‡	Fea. 2 (maize)	700 ± 50	–12.1‰	910 ± 50	AD 1044–1104 AD 1112–1147 AD 1151–1184	.48 .27 .25
Beta-88420	Fea. 1, 40–50 cm	890 ± 80	–27.9‰	850 ± 80	AD 1157–1277 AD 1057–1081	.80 .13
Beta-88421	Fea. 1, 40–50 cm	1250 ± 80	–26.1‰	1230 ± 80	AD 752–886 AD 705–749	.78 .22
Beta-88422	Fea. 60	760 ± 80	–26.6‰	740 ± 80	AD 1217–1310 AD 1352–1386	.81 .19
Beta-88423‡	Fea. 37 (maize)	670 ± 50	–11.6‰	890 ± 50	AD 1154–1220 AD 1049–1090 AD 1118–1142	.53 .30 .17
41MX5						
Beta-52709	W32N0, level 3	1790 ± 90	--	1790 ± 99	AD 134–348 AD 358–375	.94 .06

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Beta-52710	Unit 2, level 4, Burial 2	990 $\pm$ 100	--	990 $\pm$ 108	AD 969–1188	1.00
Beta-55922‡	Burial 3, Vessel E	240 $\pm$ 70	--	240 $\pm$ 70	AD 1734–1812 AD 1628–1688 AD 1522–1566	.38 .33 .15
Beta-62513	Lot 24-D, possible posthole fill	470 $\pm$ 100	?	470 $\pm$ 100	AD 1396–1520 AD 1571–1626	.75 .23
Beta-62514‡	Lot 24-D, possible posthole fill	450 $\pm$ 60	?	450 $\pm$ 60	AD 1411–1502 AD 1603–1614	.93 .07
Etoile (41NA11)						
Beta-97894	N450 Profile, Pit Sample	380 $\pm$ 70	–28.7‰	320 $\pm$ 70	AD 1492–1605 AD 1613–1649	.76 .24
Chayah (41NA44)						
Tx-2639	N62-W197, 30–40 cm	1110 $\pm$ 70	--	1110 $\pm$ 81	AD 865–1018 AD 827–833	.98 .02
Tx-2640	N62-W195, 30–40 cm	420 $\pm$ 80	--	420 $\pm$ 90	AD 1429–1522 AD 1564–1629	.62 .38
Tx-2799	N60-W195, 40–50 cm	630 $\pm$ 50	--	630 $\pm$ 64	AD 1335–1395 AD 1303–1326	.72 .28
Tx-2800	N62-W197, 30–40 cm	670 $\pm$ 140	--	670 $\pm$ 146	AD 1222–1430	1.00
Washington Square (41NA49)						
Tx-3943	Fea. 18	710 $\pm$ 70	--	710 $\pm$ 81	AD 1248–1319 AD 1342–1392	.62 .38
Tx-3944	Fea. 30	1150 $\pm$ 140	--	1150 $\pm$ 146	AD 761–1018 AD 715–743	.93 .07
Tx-3945	Fea. 9	790 $\pm$ 200	--	790 $\pm$ 204	AD 1034–1319 AD 1342–1392	.87 .13
Tx-4257	Fea. 75	620 $\pm$ 70	--	620 $\pm$ 81	AD 1304–1399	1.00
Tx-4258	Fea. 30, maize	360 $\pm$ 70	--	601 $\pm$ 81	AD 1305–1367 AD 1373–1407	.65 .35
Tx-4872	Fea. 75, maize, charcoal & nutshells	830 $\pm$ 110	--	1071 $\pm$ 117	AD 858–1051 AD 1086–1120 AD 820–842	.80 .10 .06
Tx-4873	Fea. 199, maize	840 $\pm$ 50	--	1081 $\pm$ 64	AD 942–1016 AD 893–933	.68 .32
Tx-4874	Fea. 199	980 $\pm$ 60	--	980 $\pm$ 72	AD 1009–1069 AD 1071–1129 AD 1131–1160	.42 .39 .19
Tx-4875	Fea. 9, maize	630 $\pm$ 60	--	871 $\pm$ 72	AD 1155–1246 AD 1049–1089 AD 1119–1141	.63 .23 .13
Tx-4876	Fea. 80	1280 $\pm$ 100	--	1280 $\pm$ 108	AD 666–869	1.00
Hudnall-Pirtle (41RK4)						
Beta-43539	Md. F, Unit 11, lv. 12/13	890 $\pm$ 70	--	890 $\pm$ 81	AD 1152–1223 AD 1045–1102 AD 1113–1146	.45 .35 .20

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Beta-43540	Md. F, Unit 3, lv. 13A	870 $\pm$ 70	--	870 $\pm$ 81	AD 1154–1250 AD 1048–1092 AD 1117–1142	.61 .25 .14
Oak Hill Village (41RK214)						
Beta-60088	N455E466, lv. 5	570 $\pm$ 80	–20.8‰	640 $\pm$ 80	AD 1332–1396 AD 1297–1328	.68 .32
Beta-73936	Fea. 65, Midden A	610 $\pm$ 60	–27.9‰	560 $\pm$ 60	AD 1388–1432 AD 1312–1350	.57 .43
Beta-73938	Fea. 81, N469.9 E494.3	620 $\pm$ 140	–28.3‰	570 $\pm$ 140	AD 1280–1481	1.00
Beta-73939	Fea. 85, Structure 2 (maize)	610 $\pm$ 100	–12.8‰	810 $\pm$ 100	AD 1157–1294 AD 1057–1081	.85 .10
Beta-73940	Fea. 86, Structure 2 (maize)	400 $\pm$ 80	–12.3‰	610 $\pm$ 80	AD 1305–1368 AD 1372–1403	.68 .32
Beta-73941	Fea. 95, Structure 1	570 $\pm$ 60	–26.1‰	550 $\pm$ 60	AD 1390–1436 AD 1314–1348	.65 .35
Beta-81486	Structure 39, PM 3	820 $\pm$ 60	–26.2‰	800 $\pm$ 60	AD 1198–1286	1.00
Beta-81680	Structure 37, PM 11	1810 $\pm$ 60	–23.4‰	1830 $\pm$ 60	AD 123–254 AD 302–315	.93 .07
Beta-81681	Structure 39, PM 1	900 $\pm$ 60	–25.8‰	880 $\pm$ 60	AD 1154–1228 AD 1048–1092 AD 1117–1142	.56 .28 .16
41RK215						
Beta-60089	Unit N465 E481, lv. 6, humates	3100 $\pm$ 90	–26.0‰	3090 $\pm$ 90	1440–1252 BC 1246–1208 BC	.88 .12
Beta-60090	Unit 465, E481, lv. 8, humates	3560 $\pm$ 90	–25.3‰	3560 $\pm$ 90	1978–1750 BC 2014–2006 BC	.97 .03
41RK222						
Beta-60093	Unit N486, E510, lv. 5, humates	1400 $\pm$ 70	–24.3‰	1410 $\pm$ 70	AD 591–685	.89
Beta-60094	Unit 486, E510, lv. 7, humates	1840 $\pm$ 100	–24.8‰	1840 $\pm$ 100	AD 77–263 AD 283–327	.84 .16
Holdeman (41RR11)						
Beta-75059	Burial 11	330 $\pm$ 50	–16.9‰	460 $\pm$ 50	AD 1415–1478	1.00
Beta-75060	Burial 14	310 $\pm$ 60	–14.5‰	480 $\pm$ 60	AD 1402–1478	1.00
Beta-75061	Burial 23	790 $\pm$ 60	–20.2‰	870 $\pm$ 60	AD 1156–1245 AD 1052–1085 AD 1121–1139	.69 .20 .11
Beta-79446	Burial 21	350 $\pm$ 70	–15.5‰	510 $\pm$ 70	AD 1392–1469 AD 1319–1343	.85 .15
Fasken (41RR14)						
Beta-91234‡	N692E451, lv. 4 (lot 369)	850 $\pm$ 50	–24.0‰	870 $\pm$ 50	AD 1157–1242 AD 1055–1083 AD 1122–1138	.74 .17 .09
Beta-91235‡	N693E451 lv. 7 (lot 539)	850 $\pm$ 60	–21.5‰	910 $\pm$ 60	AD 1043–1107 AD 1111–1148 AD 1151–1188	.47 .27 .26

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Roitsch/Sam Kaufman (41RR16)						
Beta-46267‡	Fea. 101, level 9	705 ± 45	--	705 ± 45	AD 1275–1309 AD 1355–1383	.67 .33
Beta-46957	Fea. 601	840 ± 120	–26.8‰	810 ± 120	AD 1154–1296 AD 1048–1091 AD 1118–1142	.75 .16 .09
Tx-882	House 3	870 ± 70	--	870 ± 81	AD 1154–1250 AD 1048–1092 AD 1117–1142	.61 .25 .14
Tx-883	House 3	1000 ± 70	--	1000 ± 81	AD 982–1068 AD 1072–1128 AD 1131–1160	.53 .32 .15
Tx-884	House 3	910 ± 70	--	910 ± 81	AD 1040–1200	1.00
Tx-885	House 3	900 ± 70	--	900 ± 81	AD 1151–1216 AD 1044–1105 AD 1112–1147	.40 .38 .22
Tx-8074	Burial 15 (SMU), Shaft tomb	170 ± 63 (apatite)	–8.0‰	448 ± 65	AD 1412–1511 AD 1600–1616	.91 .09
Tx-8075	Burial 17 (SMU)	151 ± 53 (apatite)	–8.2‰	426 ± 55	AD 1431–1513 AD 1596–1619	.83 .17
Tx-8076	Burial 19 (TAS)	404 ± 84 (apatite)	–8.2‰	679 ± 86	AD 1332–1396 AD 1280–1328	.56 .44
Tx-8077	Burial 20 (TAS)	220 ± 273 (apatite)	–8.0‰	497 ± 282	AD 1231–1678 AD 1770–1802	.93 .04
Rowland Clark (41RR77)						
Beta-75053	Burial 2	150 ± 70	–17.0‰	280 ± 70	AD 1502–1603 AD 1614–1673 AD 1780–1796	.53 .35 .08
Beta-79447	Burial 7	410 ± 60	–14.5‰	580 ± 60	AD 1309–1357 AD 1382–1418	.58 .42
Beta-79448	Burial 21	80 ± 70	–14.0‰	260 ± 70	AD 1515–1591 AD 1621–1680 AD 1752–1804	.34 .34 .23
Beta-79449	Burial 33	320 ± 60	–11.5‰	540 ± 60	AD 1391–1440 AD 1317–1345	.72 .28
Saltwell Slough (41RR204)						
Beta-46269	N116E90, level 3	640 ± 100	–27.4‰	600 ± 100	AD 1300–1415	1.00
Beta-46958	Fea. 11	780 ± 160	–25.6‰	770 ± 160	AD 1156–1322 AD 1339–1393 AD 1052–1085	.67 .17 .10
Beta-92199‡	N116E90, lv. 3 (lot 98)	380 ± 60	–24.3‰	390 ± 60	AD 1447–1519 AD 1572–1626	.60 .40
Sawmill (41SA89)						
Beta-97892	N180E4, coll 10-15-57	950 ± 70	–27.3‰	920 ± 70	AD 1035–1181	1.00
Blount (41SA123)						
Beta-97893	N495E560, 0.5–1.0 foot level	480 ± 70	–26.3‰	460 ± 70	AD 1405–1510 AD 1601–1615	.92 .08

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (Continued)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Redwine (41SM193)						
Beta-91341	Unit 2, 20–30 cm	570 $\pm$ 50	–25.0‰	570 $\pm$ 50	AD 1312–1350 AD 1388–1423	.49 .51
Robert Griffin (41SY41)						
Beta-97897	Burial 3, mussel shell	960 $\pm$ 70	–6.0‰	1270 $\pm$ 70	AD 677–818 AD 844–856	.94 .06
Buddy Hancock (41SY45)						
Beta-97896	Trash pit, mussel shells	650 $\pm$ 60	–6.0‰	960 $\pm$ 60	AD 1073–1127 AD 1022–1066 AD 1132–1159	.43 .35 .21
Tyson (41SY92)						
Tx-7612	Fea. 3, 15–30 cm	490 $\pm$ 60	–24.0‰	510 $\pm$ 60	AD 1390–1442 AD 1327–1351	.73 .27
Tx-7625	Fea. 3, 16.5–20 cm	500 $\pm$ 60	--	500 $\pm$ 60	AD 1394–1441 AD 1332–1342	.87 .13
Tx-7626	Fea. 3, 20–70 cm	440 $\pm$ 60	–24.0‰	460 $\pm$ 60	AD 1403–1490 AD 1334–1338	.97 .03
Beta-97895	Fea. 14, mussel shells	320 $\pm$ 60	–6.0‰	630 $\pm$ 60	AD 1336–1394 AD 1303–1325	.73 .27
Keith (41TT11)						
Tx-1306	Mound fill, ca. 102.6–106 m elevation	540 $\pm$ 70	--	540 $\pm$ 81	AD 1383–1445 AD 1309–1356	.62 .38
41TT154						
Beta-48880	Trench 7, lv. 6, humates	840 $\pm$ 80	--	840 $\pm$ 80	AD 1158–1280 AD 1060–1078 AD 1125–1135	.86 .09 .05
41TT182						
Beta-44786	Fea. C1	220 $\pm$ 80	--	220 $\pm$ 80	AD 1717–1819 AD 1634–1703 AD 1529–1543 AD 1851–1863	.46 .30 .03 .03
Beta-44787	Fea. C5	290 $\pm$ 120	--	290 $\pm$ 120	AD 1465–1680 AD 1759–1803	.81 .14
Beta-44789	Zone 2, humates	320 $\pm$ 120	--	320 $\pm$ 70	AD 1492–1605 AD 1613–1649	.76 .24
41TT370						
Beta-48882	N101W93, lv. 8, humates	2140 $\pm$ 100	--	2140 $\pm$ 100	210–42 BC 356–290 BC 239–215 BC	.69 .23 .07
41TT372						
Beta-70993‡	N103W101, lv. 2	670 $\pm$ 60	–27.1‰	640 $\pm$ 60	AD 1337–1394 AD 1299–1324	.70 .30
Beta-70994‡	N103W101, lv. 3	1290 $\pm$ 50	–26.4‰	1270 $\pm$ 50	AD 680–790 AD 791–810	.89 .11
Beta-70995‡	N103W101, lv. 4	1800 $\pm$ 60	–25.3‰	1800 $\pm$ 60	AD 143–262 AD 285–326	.74 .26

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Beta-70996‡	N106W117, lv. 2	280 ± 60	-26.7‰	250 ± 60	AD 1629-1682 AD 1747-1805 AD 1522-1564	.38 .32 .19
Beta-70997‡	N106W117, lv. 3	250 ± 60	-26.8‰	220 ± 60	AD 1732-1813 AD 1641-1689 AD 1925-1955+	.50 .31 .19
Beta-70998‡	N106W117, lv. 4	190 ± 60	-25.8‰	180 ± 60	AD 1719-1818 AD 1660-1701 AD 1918-1955+	.57 .22 .21
Beta-70999‡	N106W117, lv. 5	800 ± 50	-25.0‰	800 ± 50	AD 1216-1283	1.00
Beta-71000‡	N105W114, Fea. 5	1420 ± 60	-26.8‰	1390 ± 60	AD 603-698	1.00
Beta-71001‡	N105W114, Fea. 5, humates	119.9 ± 0.9% modern	-20.7‰	118.8 ± 0.9% modern	N/A	
Beta-71002‡	N105W123, Fea. 7	1280 ± 60	-27.2‰	1240 ± 60	AD 759-879 AD 714-744	.81 .19
Beta-71003‡	N105W120, Fea. 8	1040 ± 60	-29.9‰	960 ± 60	AD 1073-1127 AD 1022-1066 AD 1132-1159	.43 .35 .21
Beta-71004‡	N106W113, Fea. 9, humates	113.4 ± 0.7% modern	-24.3‰	113.2 ± 0.7% modern	N/A	
Beta-71005‡	N106W113, Fea. 9	660 ± 60	-27.4‰	620 ± 60	AD 1306-1365 AD 1375-1397	.73 .27
Beta-71006‡	Fea. 12	1330 ± 60	-26.1‰	1310 ± 60	AD 666-774	1.00
41TT373						
Beta-48886	N155W86, lv. 5, humates	440 ± 80	--	440 ± 90	AD 1411-1519 AD 1574-1625	.72 .28
41TT392						
Beta-64977	N501E476, lv. 3, humates	320 ± 80	-26.1‰	300 ± 80	AD 1483-1666	1.00
Beta-64978‡	N501E476, lv. 6, humates	3440 ± 60	-32.2‰	3320 ± 60	1643-1522 BC 1672-1658 BC	.91 .09
41TT396						
Beta-64979‡	N500E521, lv. 3, humates	3690 ± 70	-29.4‰	3620 ± 70	2041-1882 BC 2118-2085 BC	.87 .13
41TT406						
Beta-64982	N522E505, lv. 4, humates	470 ± 60	-25.3‰	470 ± 60	AD 1404-1486	1.00
41TT409						
Beta-64983‡	N339.5, E521, lv. 4, humates	1080 ± 60	-31.9‰	970 ± 60	AD 1075-1127 AD 1017-1064 AD 1133-1159	.41 .39 .20
Beta-64984‡	E521, lv. 6, humates	1730 ± 60	-30.4‰	1640 ± 60	AD 378-533	1.00
Beta-64985‡	N530E481, Fea. 1	1710 ± 60	-25.5‰	1700 ± 60	AD 320-418 AD 258-294	.76 .24
Mockingbird (41TT550)						
Beta-48888	N111W82, lv. 7, humates	740 ± 80	--	740 ± 80	AD 1217-1310 AD 1352-1386	.81 .19

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Beta-48889	Burial fill, Trench 4, humates	70 ± 70	--	70 ± 70	AD 1815–1922 AD 1693–1727	.78 .22
Beta-70987‡	N114W84, lv. 3	1150 ± 60	–27.3‰	1110 ± 60	AD 888–997	1.00
Beta-70988‡	N114W84, lv. 4	320 ± 60	–28.2‰	270 ± 60	AD 1515–1592 AD 1621–1675 AD 1776–1798	.42 .39 .12
Beta-70989‡	N114W84, lv. 5	2080 ± 60	–27.0‰	2050 ± 60	120 BC–AD 23 153–144 BC	.95 .05
Beta-70990‡	N114W84, lv. 6	2470 ± 70	–26.0‰	2450 ± 70	551–408 BC 759–676 BC 658–640 BC	.59 .34 .06
Beta-70991‡	N114W84, lv. 7	2570 ± 60	–27.3‰	2530 ± 60	693–535 BC 794–754 BC	.79 .21
Beta-70992‡	N114W84, lv. 8	2620 ± 60	–26.5‰	2600 ± 60	828–760 BC 634–591 BC 588–558 BC	.64 .20 .12
Beta-71230‡	N114W84, lv. 9	2650 ± 60	–28.5‰	2590 ± 60	820–759 BC 637–554 BC 675–660 BC	.54 .40 .06
Beta-99688‡	Fea. 4, Vessel 1	350 ± 60	–27.8‰	310 ± 60	AD 1507–1602 AD 1615–1654	.71 .29
Beta-99689‡	Fea. 4, Vessel 3	460 ± 60	–27.3‰	420 ± 60	AD 1433–1516 AD 1589–1622	.77 .23
Beta-99690‡	Fea. 5, Elbow pipe	390 ± 50	–28.6‰	330 ± 50	AD 1509–1602 AD 1614–1642	.78 .22
Beta-99691‡	Fea. 7, Elbow pipe	960 ± 60	–27.4‰	920 ± 60	AD 1038–1172	1.00
Beta-99692‡	Fea. 8, Vessel 1	330 ± 60	–27.6‰	290 ± 60	AD 1508–1602 AD 1615–1667	.62 .37
Beta-99693‡	Fea. 10, Vessel 9	450 ± 60	–27.0‰	410 ± 60	AD 1437–1517 AD 1583–1623	.71 .29
Beta-101172‡	Fea. 1, Vessel 7	1080 ± 60	–29.9‰	1000 ± 60	AD 987–1056 AD 1082–1123 AD 1137–1157	.58 .28 .14
Beta-101173‡	Fea. 7	980 ± 50	–28.7‰	920 ± 50	AD 1042–1110 AD 1110–1149 AD 1150–1167	.55 .32 .14
41TT670						
Beta-94630‡	Top of Fea. 3	280 ± 70	–27.8‰	240 ± 70	AD 1734–1812 AD 1628–1688 AD 1522–1566 AD 1927–1955*	.38 .33 .15
Beta-94631‡	Base of Fea. 2	860 ± 100	–26.1‰	840 ± 100	AD 1156–1282 AD 1052–1086 AD 1121–1139	.75 .16 .09
41TT672						
Beta-80432‡	Fea. 1, Unit 1, Level 2	430 ± 50	–25.9‰	430 ± 50	AD 1431–1510 AD 1602–1615	.90 .10

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Harroun (41UR10)						
Tx-84	Md. D, structure under mound	490 ± 100	--	490 ± 108	AD 1386–1515 AD 1311–1352 AD 1593–1620	.72 .17 .10
Tx-238	Md. B	265 ± 65	--	265 ± 76	AD 1511–1599 AD 1616–1680 AD 1756–1804	.39 .34 .20
Tx-239	Md. C	330 ± 110	--	330 ± 117	AD 1444–1668	.98
Tx-240	Md. C	555 ± 70	--	555 ± 81	AD 1382–1437 AD 1308–1357	.56 .44
Tx-241	Md. D, beam above House 4 floor	345 ± 75	--	345 ± 85	AD 1479–1641	1.00
Dalton Mound (41UR11)						
Tx-83	Latest of two structures under mound	480 ± 110	--	480 ± 117	AD 1391–1520 AD 1571–1626 AD 1316–1346	.68 .21 .11
41UR105						
Tx-7991	Unit N178-179E200, levels 7 & 8	1107 ± 51	–22.1‰	1154 ± 51	AD 862–973 AD 823–838	.92 .08
41UR118						
Beta-72372‡	BHT 46, organic material on pottery sherd	300 ± 60	–27.3‰	260 ± 60	AD 1624–1679 AD 1518–1591 AD 1766–1803	.40 .32 .20
Beta-90532	N123/E143 N118/E131	440 ± 40	–25.0‰	440 ± 40	AD 1430–1483	1.00
41UR129						
Tx-7990	N198E211, soil humate	403 ± 41	–21.6‰	458 ± 41	AD 1425–1470	1.00
Beta-90533	Lots 1294, 1121-A-, 1121-C and 1121-4	1220 ± 60	–25.0‰	1220 ± 60	AD 763–889 AD 717–741	.88 .12
41UR133						
Tx-7989	N184E402, lv. 4	578 ± 118	–26.5‰	554 ± 118	AD 1295–1455	1.00
Tx-7994	BHT 21, Zone 3, soil humate	266 ± 42	–23.6‰	243 ± 42	AD 1638–1679	.52
Beta-90534	BS6, Lots 2162, 2158 & Sample 3; BS 7, Lots 2146–2147	360 ± 40	–25.0‰	360 ± 40	AD 1562–1630 AD 1480–1523	.61 .39
Griffin Mound (41UR142)						
Beta-65018	Fea. 1, 110–130 cm	820 ± 80	–25.5‰	810 ± 80	AD 1160–1292	.98
Camp Joy (41UR144)						
Beta-84435	Fea. 1, top charcoal lens	390 ± 60	–28.3‰	340 ± 60	AD 1495–1605 AD 1613–1636	.83 .17

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Beta-84436	Fea. 1, top charcoal lens	310 ± 60	-27.4‰	270 ± 60	AD 1515–1592 AD 1621–1675 AD 1776–1798	.42 .39 .12
Carlisle (41WD46)						
Beta-17494	Midden, Fea. 1, 25–35 cm	540 ± 60	--	540 ± 72	AD 1387–1443 AD 1311–1351	.65 .35
McKenzie (41WD55)						
Tx-4096	Unit A-2NE, 1.30 m bd; structure covered by low md.	660 ± 80	--	660 ± 90	AD 1331–1396 AD 1288–1329	.61 .39
Tx-4097	Unit A-2NE, 1.22 m bd; struc- ture capped by low md.	630 ± 80	--	630 ± 90	AD 1298–1400	1.00
Tx-4098	Unit A-2SE, 1.19 m bd	630 ± 80	--	630 ± 90	AD 1298–1400	1.00
Tx-4099	Unit A-3 (?), SE, 1.37 m bd	520 ± 80	--	520 ± 90	AD 1381–1470 AD 1308–1358	.70 .30
Tx-4956	Structure covered by low md.	680 ± 40	--	680 ± 57	AD 1346–1391 AD 1284–1316	.56 .44
Tx-4957	Structure associ- ated (under?) low md.	560 ± 60	--	560 ± 72	AD 1384–1433 AD 1310–1354	.55 .45
Tx-4958	Structure associ- ated (under?) low md.	570 ± 50	--	570 ± 64	AD 1310–1354 AD 1385–1426	.50 .50
Tx-4959	Structure associ- ated with low md.	670 ± 70	--	670 ± 81	AD 1335–1395 AD 1285–1326	.59 .41
Osborn (41WD73)						
Tx-3049	Fea. 4	1190 ± 50	--	1190 ± 64	AD 779–895 AD 915–955	.79 .21
Spoonbill (41WD109)						
Tx-3570	Fea. 1	1010 ± 80	--	1010 ± 90	AD 967–1162	1.00
Tx-3571	Fea. 2, upper layer	950 ± 50	--	950 ± 64	AD 1070–1129 AD 1027–1070 AD 1131–1160	.45 .32 .23
Tx-3572	Fea. 2, middle layer	720 ± 80	--	720 ± 90	AD 1228–1318 AD 1344–1391	.68 .32
Tx-3573	Fea. 5	690 ± 70	--	690 ± 81	AD 1334–1395 AD 1276–1326	.53 .47
Tx-3574	Fea. 9	690 ± 60	--	690 ± 72	AD 1339–1393 AD 1277–1322	.53 .47
41WD382						
Beta-96373‡	ST 65	770 ± 50	-22.8‰	810 ± 50	AD 1206–1281	1.00
Hines (41WD450)						
Tx-3043	Fea. 1, large rectangular structure	910 ± 50	--	910 ± 64	AD 1042–1109 AD 1111–1149 AD 1151–1189	.42 .27 .27

TABLE 1. ^{14}C Assays from Prehistoric Archaeological Sites in Eastern Texas (*Continued*)

Assay no.	Provenience	Raw age	$\delta^{13}\text{C}$	Corrected ^{14}C age	Calibrated age range*	RA†
Taddlock (41WD482)						
Tx-3046	Midden A, Unit 25, 30–40 cm	950 ± 50	--	950 ± 64	AD 1070–1129	.45
					AD 1027–1070	.32
					AD 1131–1160	.23
Tx-3047	Midden A, Unit 25, 30–40 cm	970 ± 40	--	970 ± 57	AD 1076–1126	.41
					AD 1017–1063	.39
					AD 1134–1159	.20
Tx-3048	Midden A, Unit 31, 20–30 cm	1010 ± 60	--	1010 ± 72	AD 974–1061	.60
					AD 1078–1125	.26
					AD 1135–1158	.13
Tx-3050	Midden A, Unit 18, 40–50 cm, same context as Tx-3047	490 ± 60	--	490 ± 72	AD 1393–1488	.91
					AD 1321–1340	.08
Killabrew (41WD495)						
Tx-3045	Fea. 3	1760 ± 50	--	1760 ± 64	AD 228–384	1.00
Steck (41WD529)						
Tx-3473	Trash Midden	480 ± 80	--	480 ± 90	AD 1393–1515	.82
					AD 1592–1621	.12
					AD 1322–1339	.06

Calibrated dates ending in 1955 denote the influence of atomic bomb ^{14}C .

†RA = relative area under probability distribution

‡AMS assays

§2- σ calibrated ages

Note: ^{14}C assays with $\delta^{13}\text{C}$ are corrected (for isotopic fractionation) and calibrated at a 20-yr interval scale for calendric dates using CALIB 3.03c, Test 10 (Stuiver and Reimer 1993a, 1993b). One assay (SM-532) from 41DT86 was calibrated using Kromer and Becker (1993). Assays on nutshell and wood charcoal lacking $\delta^{13}\text{C}$ values use the value estimates for fractionation correction suggested by Stuiver and Reimer (1993b: Table 1), namely –25‰ for nutshells and charcoal, and –10‰ for charred maize. These assays have standard deviations that include an error in the estimated $\delta^{13}\text{C}$. In the case of ^{14}C assays from the George C. Davis site (41CE19), an average $\delta^{13}\text{C}$ value of –26.48‰ was employed (Story 1998: Table 1), except for those on maize, or on the four assays where the isotopic values were known (Tx-3271, Tx-3272, Tx-3273 and Tx-3308).

TABLE 2. Oxidizable Carbon Ratio Dates from East Texas Sites

Assay no.	Provenience	Calculated OCR date*	Confidence interval	Rounded date (AD)
41BW553				
ACT 1981	Unit 69, 34–36 cm, 2A horizon	411	±12	1540 ± 10
ACT 1982	Unit 69, Fea. 5, 44–46 cm	596	±17	1350 ± 20
ACT 1983	Unit 67, Fea. 6, 10–11 cm, A1 horizon midden	276	± 8	1670 ± 10
ACT 1984	Unit 67, Fea. 6, 20–21 cm, A1 horizon midden	299	± 8	1650 ± 10
ACT 1985	Unit 67, Fea. 6, 30–31 cm, A1 horizon midden	383	±11	1570 ± 10
ACT 1986	Unit 67, 48–50 cm, below midden	537	±16	1410 ± 20
ACT 1987	Unit 67, above Fea. 7 burial, 59–61 cm	907	±27	1040 ± 30
ACT 1988	Unit 30, Fea. 3, 70–80 cm	1009	±30	940 ± 30
ACT 1989	Unit 24, Fea. 1, 30–40 cm	759	±22	1190 ± 20
Knight's Bluff (41CS14)				
ACT 2618	ST 22, 31 cm bs	1700	±50	250 ± 50
ACT 2619	ST 33, 26 cm bs	1649	±49	300 ± 50
ACT 2716	Near ST 22, 15 cm bs	1158	--	790
Tom Moore (41PN149)				
ACT 2669	OCR 1	1502	±45	450 ± 50
ACT 2670	OCR 2	1570	±47	380 ± 50
41TT670				
ACT 1974	Unit 20, 7–10 cm	687	±20	1260 ± 20
ACT 1975	Unit 20, 17–20 cm, Area A midden	713	±21	1240 ± 20
ACT 1976	Unit 20, 25–28 cm, Area A midden	762	±22	1190 ± 20
ACT 1977	Unit 20, Fea. 2, 35–38 cm, base of midden	746	±22	1200 ± 20
ACT 1978	Unit 20, Fea. 2, 40–43 cm, bottom of feature hearth	788	±23	1160 ± 20
ACT 1979	Unit 20, 49–51 cm, below midden	1005	±30	940 ± 30
ACT 1980	Unit 20, 63–66 cm, below midden	898	±26	1050 ± 30
Camp Joy Mound (41UR144)				
ACT 2218	South Trench, Fea. 1, 57 cm	296	± 8	1650 ± 10
ACT 2219	Northwest wall, Fea. 1	420	±12	1530 ± 10

*In years before present, defined as 1950, to correspond to ^{14}C data