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The South Lilly #4 Site (41UR279), Upshur County, Texas

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THE SOUTH LILLY #4 SITE (41UR279), UPSHUR COUNTY, TEXAS

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with a contribution by LeeAnna Schniebs

INTRODUCTION

The South Lilly #4 site was discovered in early 2003 by Bo Nelson during a survey of portions of the South Lilly Creek valley in Upshur County, Texas. During the course of his survey he recorded 13 prehistoric archeological sites on the north side of the valley, just upstream from the FM 556 crossing of South Lilly Creek. No archaeological sites had been previously known or recorded along this stretch of the valley, but his survey made it apparent that there was a high density of prehistoric sites along this creek, a tributary to Big Cypress Creek.

Nelson noted that several of these prehistoric sites had Caddo ceramic sherds, and/or were in locations where prehistoric Caddo habitation sites are often found in the northeastern Texas region. The South Lilly #4 site is in one such setting, namely a prominent upland ridge and knoll (360 feet amsl) that projects southward into the South Lilly Creek valley (Figure 1), but is elevated well above any seasonal flooding along the creek and its broad floodplain (Figure 2). The landform was in pasture at the time, and surface exposure was virtually nil.

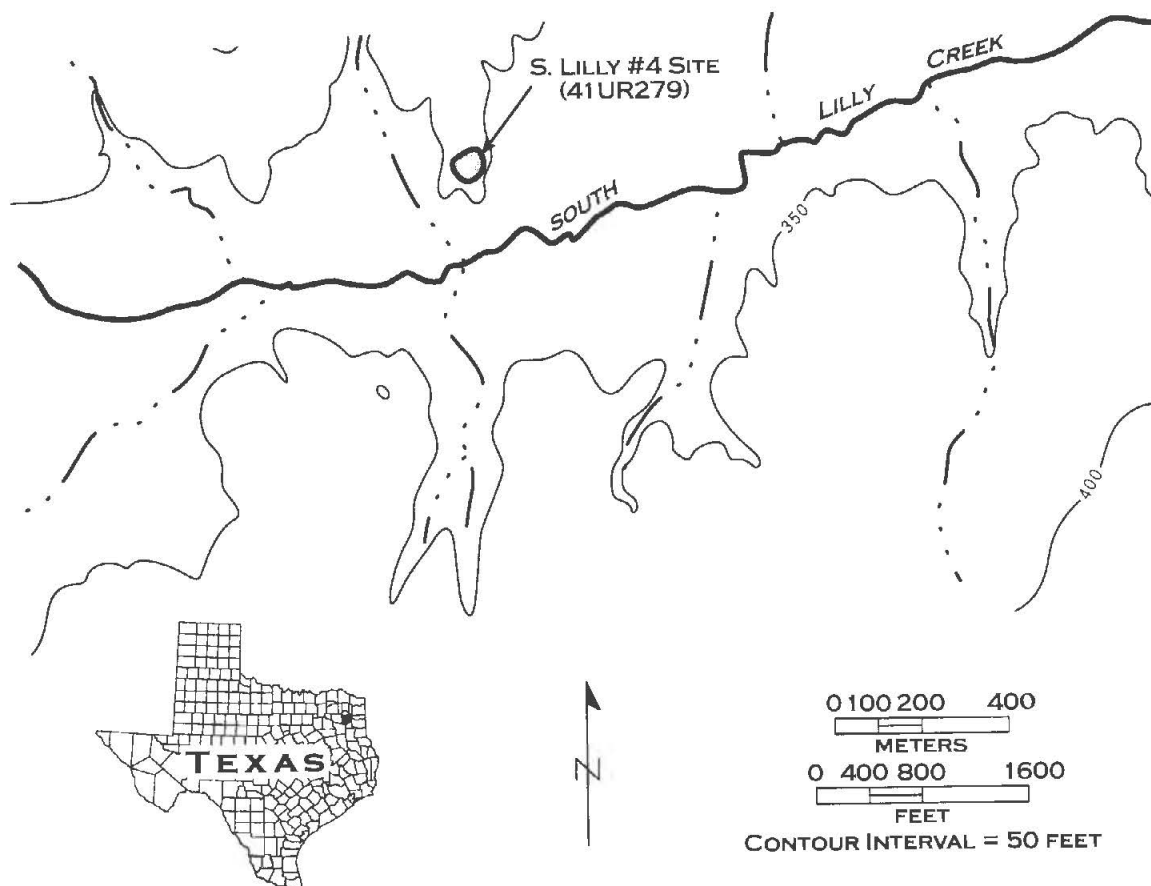


Figure 1. The general setting of the South Lilly #4 site (41UR279).



Figure 2. Looking south at the South Lilly Creek floodplain.

ARCHAEOLOGICAL INVESTIGATIONS AT THE SOUTH LILLY #4 SITE

Three shovel tests (ST 1-3) were excavated in January 2003 on the prominent upland landform (Figure 3), and each of these had prehistoric Caddo pottery sherds, animal bone, charred nutshell, and lithic debris in a midden deposit that was between 43-46 cm in thickness. The Cuthbert fine sandy loam sediments at the site were about 64-79 cm thick overlying a strong brown clay.

Because there was a well-preserved prehistoric Caddo midden deposit at the site, in February 2003 we set out to conduct additional investigations here. Our purpose was primarily to assess the condition of the midden deposits, determine if there were other features preserved in and/or around the midden, obtain a controlled sample of associated artifacts from the archaeological deposits, and secure samples of charred plant remains and sediments to establish the age of the Caddo occupation here.

To that end, we first excavated four additional shovel tests (ST 4-7) to better establish the extent of the midden deposits (see Figure 3). Two of these shovel tests had midden deposits (ST 4 and ST 5), while the other two, at the southeastern end of the knoll, did not, although they did contain prehistoric ceramic sherds and lithic debris. The best preserved midden deposits appeared to be in and around ST 1, and thus we laid out a 1 x 1 m unit (Unit 1) about 90 cm east of it to gather more detailed information about these midden deposits. The unit was excavated in 10 cm arbitrary levels to a depth of 40 cm bs.

We expanded the hand-excavated unit to a 1 x 2 m unit, adding on Unit 2 to the east of Unit 1 (see Figure 3), to obtain a better profile of the archaeological deposits, but also to increase our horizontal exposure in searching for features exposed in and below the midden deposits. As it turned out, two pit features were visible in the shovel-scraped floor of the unit, at 54 cm bs (see below). We excavated and screened four 10 cm thick arbitrary levels in Unit 2, taking fine-screen samples from 20-40 cm in both Unit 1 and 2, and then shovel-scraped the sediments to a depth (ca. 50-55 cm bs) where soil color contrasts were present; these color contrasts would aid in the identification of any features that extended below the midden.

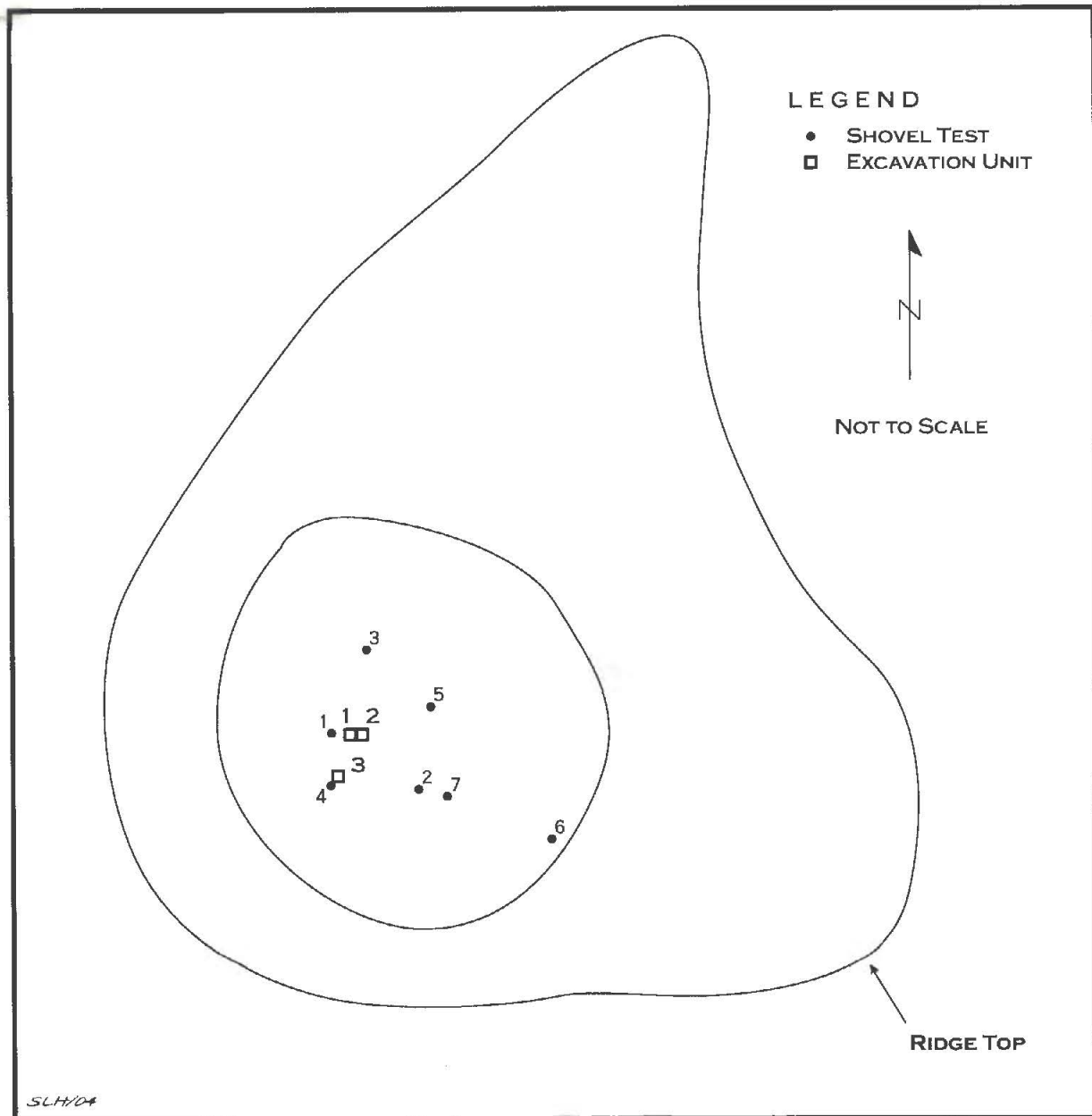


Figure 3. Location of shovel tests and 1 x 1 m units at 41UR279.

Finally, we excavated a third 1 x 1 m unit (Unit 3), placing it 3 m south of the southwestern corner of Unit 1 (Figure 4). This unit was also in the Caddo midden deposits.

The archaeological deposits at the South Lilly #4 site occur in several sediment zones, principally Zone 2, the midden zone (Figure 5). Overlying the midden is a brown fine sandy loam (Zone 1) about 5-6 cm thick. The very dark brown fine sandy loam midden (with charcoal flecking) is ca. 35-40 cm thick in these units, and both Unit 1 and Unit 2 have a dark grayish brown fine sandy loam deposit (Zone 3) that extends to about 55 cm bs in some areas (Figure 6), but is otherwise discontinuous across the units; this zone of sediments lies atop Zone 4. This zone is a yellowish-brown fine sandy loam E-horizon, and extends to the B-horizon clay, which lay some 20 cm below the depth of our



Figure 4. Excavations underway at the South Lilly #4 site.

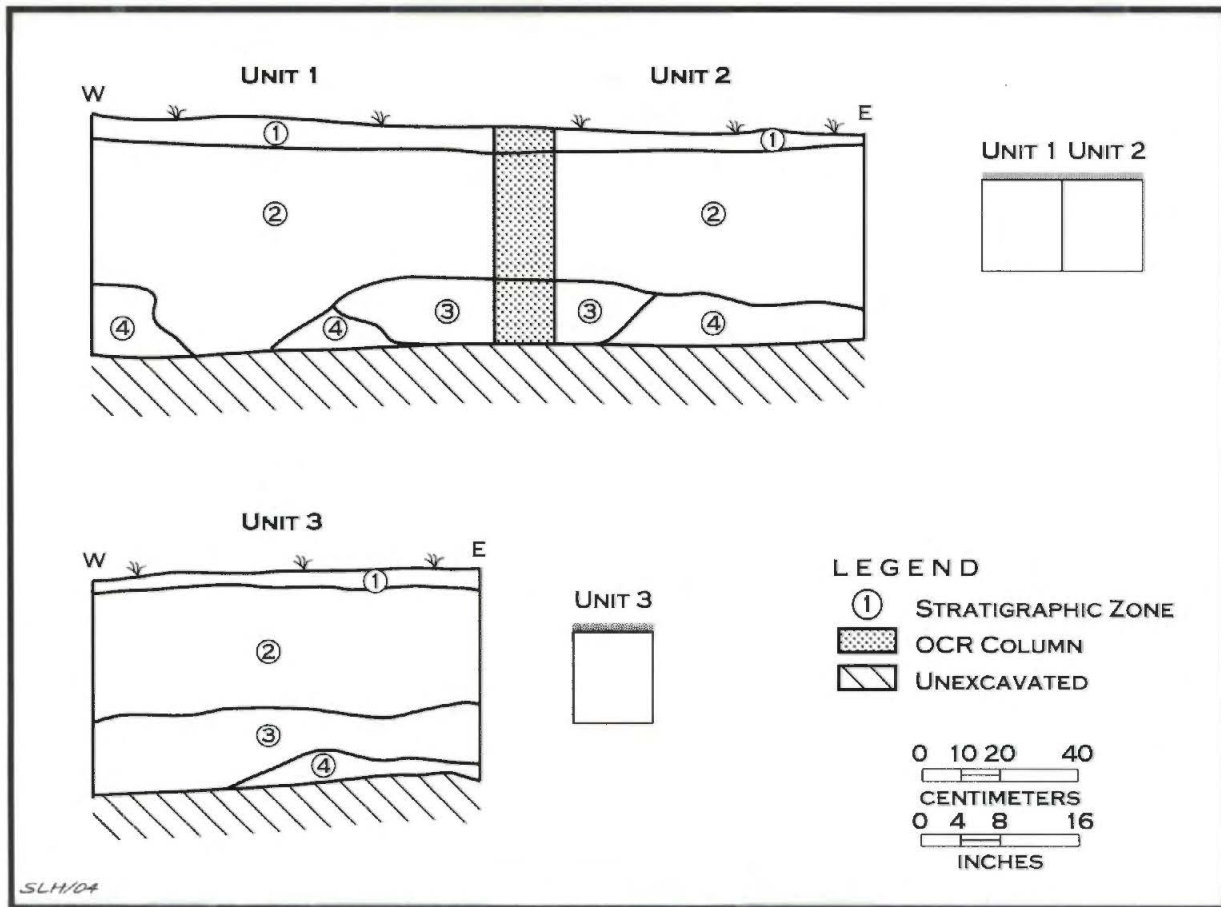


Figure 5. Profiles of Units 1/2 and 3.



Figure 6. Unit 1/2 profile, looking north.

excavations. Both features encountered in Unit 1 and Unit 2 became apparent when our excavations reached the contact of zones 2 and/or 3 with Zone 4.

Features

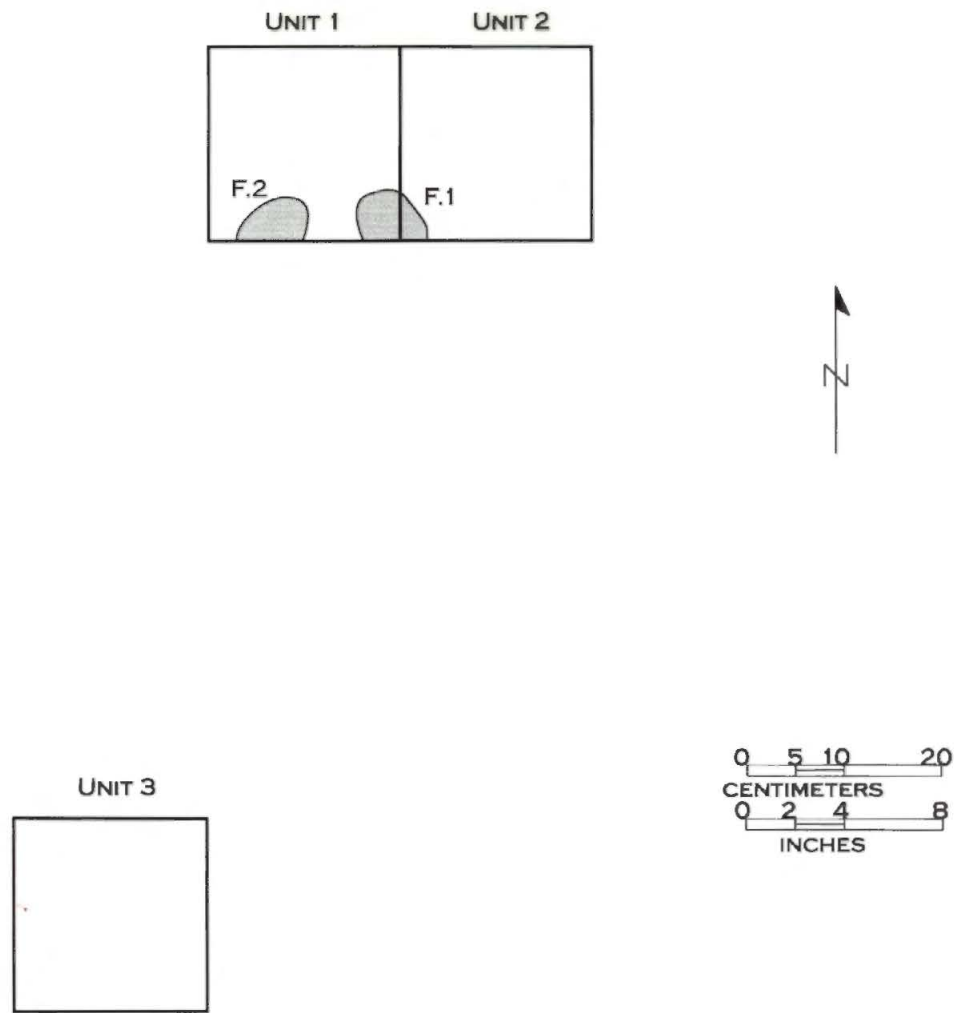
Both features are apparently pits at least 50 cm in diameter (Figure 7), and both are characterized by a charcoal-flecked very dark brown fine sandy loam fill. Charred nutshells and a plain body sherd were noted in Feature 2. The two features were exposed at 55 cm bs; they have yet to be excavated, however. Other probable features stains were visible in the floor of Units 1 and 2 (Figure 8).

DATING OF THE SITE

We obtained two radiocarbon dates from the Zone 2 midden deposits, both dates on charred hickory (*Carya* sp.) nutshells. The first date came from 20-30 cm bs in Unit 1 and 2, and it included 103 charred nutshells weighing 4.5 grams. The conventional age of these nutshells in the upper part of the midden is A.D. 1490 \pm 50 (Beta-183858), with a calibrated intercept of AD 1440 (see Appendix 1). At 1 sigma, the calibrated age range is AD 1420-1460, while at 2 sigma (with a 95% probability) the calibrated age range is AD 1410-1500.

The second date was from 30-40 cm bs in the same units; this is from the deepest part of the Zone 2 midden. The sample consisted of 126 charred nutshells weighing 4.6 grams. This sample has a conventional age of A.D. 1090 \pm 70 (Beta-183859), and a calibrated intercept of AD 1190, some 250 years older than the calibrated date from the upper part of the midden deposits. The calibrated age range at 1 sigma is AD 1050-1260, with a AD 1020-1280 age range at 2 sigma.

Oxidizable Carbon Ratio (OCR) dates from the Zone 2 midden (see Appendix 2) in Unit 1 and 2 range from 409-555 years B.P., between A.D. 1395-1541. These basically overlap in time with the younger calibrated date obtained on charred hickory nutshells in the upper part of the midden itself. The one OCR date associated with a pedogenic event is AD



SLH/04

Figure 7. Plan map of features in Units 1 and 2.



Figure 8. Marked stains (probable features) in Units 1 and 2.

1379-1411 (the 18-20 cm bs), and may pertain to a significant period of deposition of the midden. OCR dates below the midden range from 658-709 years ago (A.D. 1241-1292) (see Appendix 2)

ARTIFACTS FROM THE CADDO OCCUPATION

A wide variety of prehistoric artifacts were recovered from the South Lilly #4 site, including more than 300 plain and decorated pottery sherds, daub, burned clay, a few chipped stone tools, lithic debris, fire-cracked rock, animal bones, mussel shell fragments, and charred plant remains (hickory nutshells and wood charcoal pieces). We discuss in turn each of the different kinds of artifacts from the Caddo occupation, beginning with the plentiful ceramic sherds from fine ware and utility ware vessels.

Ceramic Artifacts

There are 309 sherds in the ceramic assemblage (Table 1), with about equal numbers in each of the three 1 x 1 m units. The density of sherds in these excavations is between 80-89 sherds per square meter. There is an equal representation of plain and decorated sherds, and the plain to decorated sherd ratio is a low 0.99; this was our first hint that the South Lilly #4 site was occupied in the Late Caddoan period (ca. A.D. 1400-1680), as plain to decorated sherd ratios less than 1.30 tend to be characteristic of Late Caddo ceramic assemblages in this part of northeastern Texas.

Table 1. Ceramic sherds from the South Lilly #4 site.

Provenience (cm bs)	Decorated Rim	Decorated Body	Plain rim	Plain body	Plain base	N
Surface		1				1
ST 1, 0-20		1		2	1	4
ST 1, 20-40		1		1		2
ST 1, 40-60				2		2
ST 2, 0-20	1	2				3
ST 2, 20-40		1				1
ST 3, 0-20		2		1		3
ST 3, 20-40				1		1
ST 4, 0-20		3		3		6
ST 4, 20-40	1	2		3		6
ST 5, 0-20		2		1		3
ST 5, 20-40	1	2		3	1	7
ST 6, 0-20					1	1
ST 6, 20-40				2	1	3
ST 7, 20-40		1		2		3
Sub-total	3	17	0	21	4	45
Unit 1, 0-10	2	6	2	12		22
Unit 1, 10-20	2	16		18		36
Unit 1, 20-30		7		9		16
Unit 1, 20-30 FS				3		3
Unit 1, 30-40		7		3		10

Table 1. Ceramic sherds from the South Lilly #4 site, cont.

Provenience (cm bs)	Decorated Rim	Decorated Body	Plain rim	Plain body	Plain base	N
Unit 1, 30-40 FS	1					1
Unit 1, Fea. 2				1		1
Sub-total	5	36	2	46		89
Unit 2, 0-10		9		5		14
Unit 2, 10-20	2	10		16		28
Unit 2, 20-30	1	11	1	9		22
Unit 2, 20-30 FS		1				1
Unit 2, 30-40	1	7	1	6		15
Sub-total	4	38	2	36		80
Unit 1/2 profile		4		4		8
Unit 3, 0-10	1	3		3	1	8
Unit 3, 10-20	1	22		11	2	36
Unit 3, 20-30	2	11	1	11	1	26
Unit 3, 30-40		5	1	5	2	13
Unit 3, 40-50		2		1		3
Sub-total	4	43	2	31	6	86
Total	16	139	6	138	10	309

The 155 decorated sherds are from both utility wares (81%, n=126) and fine wares (19%, n=29) (Table 2). Among the utility wares, brushed sherds were by far the most common, accounting for almost 50% of these decorated sherds; brushed-incised sherds comprise another 8% of the utility wares. Most of the brushed decorations (and the brushed-incised sherds) were apparently confined to the vessel body, and only rarely were rims also brushed, given the high body to rim ratio (24.7:1) among the brushed sherds. The incised and punctated sherds, especially the punctated sherds, were from utility ware vessels likely to have been decorated on both the rim and body, although not necessarily with the same decorative element. Body to rim ratios for these groups of sherds are 13.5:1 and 1.5:1 (see Table 2).

Table 2. Decorated sherds from 41UR279.

Decorative Method	Decorated Rim	Decorated Body	N
Utility wares			
Brushing	3	74	77
Incising	2	27	29
Brushed-Incised	-	12	12

Table 2. Decorated sherds from 41UR279, cont.

Decorative Method	Decorated Rim	Decorated Body	N
Punctated	2	3	5
Punctated-Incised		1	1
Appliqued		2	2
Fine wares			
Engraved	7	18	25
Red-slipped	-	4	4
Totals	14	141	155

The fine ware sherds include both engraved and red-slipped vessels (see Table 2). The red-slipped vessels were probably otherwise plain on both the rim and the body, but we cannot be certain of this because there are no red-slipped rims in the assemblage. One of the red-slipped vessel sherds (Unit 2, 10-20 cm bs) may be from a shell-tempered bowl. The engraved vessels were usually decorated on the rim of bowls and carinated bowls and on the body of bottles. The body to rim ratio is a low 2.6:1.

There are a number of different decorative elements in the engraved fine wares (Figure 9a-f), although many of the sherds simply have a single straight or curvilinear line with an uncertain orientation. One of the more distinctive is a bottle sherd (Unit 3, 10-20 cm bs) with a cross-hatched engraved panel (Figure 9a); the engraved lines are filled with a red pigment. Another bottle sherd (Unit 3, 30-40 cm bs) has part of a circular element (Figure 9e).



Figure 9. Engraved rim and body sherds from the South Lilly #4 site.

Among the sherds from carinated bowls, several have parts of an engraved scroll element (see Figure 9d, ST 5, 20-40 cm bs), and another has engraved and excised lines from a Ripley Engraved vessel (see Figure 9f, Unit 2, 30-40 cm bs). One has a set of broad curvilinear lines (see Figure 9c, Unit 3, 10-20 cm bs), and there is a red pigment smeared in the engraved lines. One small rim, with horizontal and diagonal engraved lines below the rim, also has a small suspension hole on the rim (see Figure 9b, Unit 3, 10-20 cm bs). The carinated bowls have direct rims, with rounded and exterior folded lips.

As we previously mentioned, the utility wares from the South Lilly #4 site are dominated by brushing, usually applied to the body of cooking jars, with lesser amounts of brushed-incised, incised, punctated, punctated-incised, and applied sherds (see Table 2).

All three of the brushed rims have horizontal brushing marks on them (Figure 10b and Figure 11c). The rims are direct, with exterior folded lips. The body sherds have both parallel (n=68, Figure 10e-f), overlapping (n=5, Unit 2, 20-30 cm, Unit 3, 10-20 cm, Unit 3, 20-30 cm, Unit 3, 40-50 cm, and Unit 1/2 profile, Figure 10d) and opposed (n=1, Unit 1, 0-10 cm bs) brushing marks on them. These brushed sherds may be from Bullard Brushed or Maydelle Incised vessels, or other utility wares with brushed vessel bodies.



Figure 10. Incised, brushed, and punctated utility ware sherds.

The brushed-incised sherds all have parallel brushed and incised lines, and they are all apparently from the body of cooking jars. The brushed and incised lines probably are oriented vertically on vessel bodies.

Among the incised sherds, one rim (ST 2, 0-20 cm) has a single horizontal incised below the lip, while another has sets of opposed incised lines (Unit 3, 0-10 cm bs), and is perhaps a late variety of Dunkin Incised. Body sherds include the following elements: parallel incised, closely-spaced (n=9); parallel incised, widely-spaced (n=8); parallel incised, closely and widely-spaced (n=2, see Figure 10a); diagonal and horizontal incised (n=1); diagonal and parallel incised (n=1); cross-hatched (n=1); paneled incised (n=2, see

Figure 11a); and single straight incised line (n=2). The paneled incised sherds (Unit 1 and Unit 2, 0-10 cm bs) have opposed sets of diagonal incised lines filled with short incised lines filling the diagonal incised panels.



Figure 11. Incised, incised-punctated, brushed, punctated, and plain rim and body sherds.

One of the punctated rims has a row of tool punctations below the lip (see Figure 10c, Unit 3, 20-30 cm), and the other has rows of cane punctations encircling the vessel rim (see Figure 11e, Unit 2, 10-20 cm). The body sherds also have rows of punctations, either fingernail-punctated (n=2) (see Figure 11g, Unit 2, 20-30 cm bs and Unit 3, 0-10 cm bs) or tool punctated. The one punctated-incised sherd has a set of vertically incised lines on the vessel body, with a row of tool punctates at the rim-body juncture (see Figure 11d, Unit 1, 20-30 cm bs). Both applied sherds (Unit 1, 20-30 cm bs and Unit 2, 20-30 cm bs) have narrow applied ridges on vessel bodies; these probably served as panel dividers on large jars.

The sherds are tempered primarily with grog, with small amounts of bone or hematite added to the paste in both the fine wares and utility wares (Table 3). About 9.3-14.6% of the sherds had bone temper—either by itself or in combination with grog—and 4.7-14.3% of the sherds had a hematite temper. The fine wares had a more heterogeneous use of tempering inclusions, including one sherd with a possible shell temper (although eroded away), while grog temper was much more commonly used in the manufacture of the utility ware vessels.

Table 3. Tempers used in the 41UR279 ceramics.

Temper	Utility Ware	Fine Ware
Grog	81.4%	57.1%
Grog-organics	3.9%	10.7%
Grog-bone	8.5%	10.7%
Grog-hematite	4.7%	3.6%
Grog-hematite-organics	-	10.7%
Grog-grit	0.8%	-
Bone	0.8%	3.6%
Shell (?)	-	3.6%
Totals	129	28

Between 7-7.1% of the utility ware and fine ware sherds are from vessels that were made using a naturally sandy clay, and they have a noticeable sandy paste; most of these were also tempered solely with grog. The remainder of the sherds have a clay paste, and the clays were probably obtained from sources near to the site.

The utility ware and fine ware vessels were not fired in the same ways (Table 4), although most of the sherds are from vessels fired in a low oxygen or reducing environment; that is, the vessels were smothered while in the fire, and were regularly left smothered while the fire cooled. More than 89% of the fine wares were fired in a reducing environment, apparently to produce hard and durable vessels, compared to only 62% of the utility wares. Most of these vessels were then pulled from the fire after they had been fired, and allowed to cool in the open air, leaving a thin and earth-colored oxidized zone on either one or both vessel surfaces. The other vessels fired in a reducing environment had gray to dark gray colors on interior and exterior surfaces.

Table 4. Firing conditions in the 41UR279 ceramics.

Firing Conditions	Utility Ware	Fine Ware
Oxidizing environment	18.5%	7.1%
Incompletely oxidized	18.6%	3.6%
Reducing environment	21.7%	32.1%
Reducing, but cooled in the open air	40.3%	57.1%
Refired	0.8%	-
Totals	129	28

Only 10.7% of the fine wares were fired in an open air, or else incompletely oxidized during firing, but more than 37% of the utility ware sherds were fired in these ways. We suspect this difference is related to the length of time the utility ware vessels

were fired, and they were probably not particularly hard or durable, but serviceable enough to stand up to the repeated exposure to heat during cooking use. The utility ware vessels surely had a shorter use-life than the fine ware vessels at the South Lilly #4 site, and this is reflected in the differences between the two classes of vessels in firing conditions.

Daub (n=138) and/or burned clay (n=10) were also common in the archaeological deposits, particularly in the hand-excavated units. Their total weight is 107.9 grams. Their occurrence here indicates that there was at least one clay and thatch-covered house structure built on the site; the burned clay may be from the lining of hearths or dispersed pieces of earth that had been exposed to a fire.

Lithic Artifacts

Chipped stone tools are not particularly abundant at the South Lilly #4 site. The six tools include an Ellis point found on the surface, made from brown novaculite (Figure 12a); the stem of a contracting stem Gary dart point (Figure 12b, Unit 1, 20-30 cm bs); a petrified wood gouge (Figure 12c, Unit 3, 30-40 cm bs); a dart point mid-section made of quartzite (Unit 2, 30-40 cm bs), a quartzite bifacial tool fragment (Unit 3, 10-20 cm bs); and an expedient flake tool made from a heat-treated quartzite (Unit 1, 0-10 cm bs). Only the latter two chipped stone tools may be associated with the prehistoric Caddo occupation, while the others are the manifestation of site use during the lengthy Woodland period (ca. 500 B.C.-A.D. 800).



Figure 12. Chipped lithic tools from the South Lilly #4 site (41UR279).

There were 330 pieces of lithic debris from the archaeological investigations, including one piece collected from the surface (Table 5). Most of these (n=281 or 85%) were pieces of local quartzite, followed by petrified wood (n=8, 2.4%), and local earth-colored cherts (n=15, 4.5%). Non-local raw materials represented in the lithic debris includes novaculite (n=23, 7%) and gray and dark brown cherts (n=3, 0.9%) from non-local sources. All told, almost 8% of the lithic debris is from non-local lithic raw material sources, most likely from the Ouachita Mountains and Red River gravels, well to the north of the site.

Table 5. Lithic debris from 41UR279.

Provenience	Quartzite	Local chert	Petrified wood	Novaculite	non-local Chert	N
Surface	-	-	1	-	-	1
ST 1	4	1	1	-	-	6
ST 2	5	-	-	1	-	6
ST 3	4	-	1	1	-	6
ST 4	10	-	-	-	-	10
ST 5	9	2	-	-	-	11
ST 6	5	-	-	-	-	5
ST 7	14	1	-	-	-	15
Sub-total	51	4	2	2	0	59
U1, 0-10	15	3	-	-	-	18
U1, 10-20	22	-	-	-	1	23
U1, 20-30	9	-	1	1	-	11
U1, 20-30FS	13	-	-	2	-	15
U1, 30-40	21	-	-	2	-	23
U1, 30-40FS	13	1	-	3	-	17
Sub-total	93	4	1	8	1	107
U2, 0-10	10	-	-	1	-	11
U2, 10-20	12	-	-	2	-	14
U2, 20-30	19	-	2	-	-	21
U2, 20-30FS	13	-	-	3	-	16
U2, 30-40	14	-	-	-	-	14
U2, 30-40FS	21	-	-	4	-	25
Sub-total	89	0	2	10	0	101
U3, 0-10	8	-	-	1	-	9
U3, 10-20	15	2	2	1	-	20
U3, 20-30	10	-	-	-	-	10
U3, 30-40	11	4	-	1	1	17
U3, 40-50	4	1	-	-	1	6
Sub-total	48	7	2	3	2	62
Totals	281	15	8	23	3	330

About 30% of the local quartzite and chert lithic debris are cortical; none of the petrified wood pieces have cortex, as is the case for the novaculite; for the latter, we suspect that completed novaculite tools were only resharpened on the site, and had been manufactured elsewhere. This conclusion is further supported by the relatively high amounts of small non-cortical lithic debris pieces in the Unit 1 and Unit 2 fine-screen samples (see Table 5). The relatively high percentage of cortical flakes in the local raw

materials suggests that small cobbles of raw material were being reduced and knapped on the site, mainly to produce flakes large enough to be suitable for tools.

We recovered 15 pieces of quartzite and ferruginous sandstone fire-cracked rock, weighing in total 0.86 kg. Most of the pieces came from Unit 2 (n=5) and Unit 3 (n=6) between 20-50 cm bs. Some amount of indirect cooking with heated rocks must have taken place at the South Lilly #4 site, probably during the Woodland period occupation of the site.

Charred Plant Remains

Charred plant remains were present throughout the archaeological deposits, especially in the fine-screen samples from midden deposits in Unit 1 and Unit 2. A total of 874 pieces (weighing 32.7 g) were recovered, principally charred hickory nutshells, obviously the residues of processing hickory nuts for their meat and oil.

By weight, almost 58% of the charred plant remains were collected in the 1/4-inch screen samples, with the remainder coming in the fine-screen (1/32-inch) samples from the aforementioned two samples. More than 75% of the charred plant remains by count, however, came from the fine-screen samples (n=663), indicating the generally small size of the processed and discarded plant remains at the site. Only 211 pieces were collected from the 1/4-inch screening of sediments from the shovel tests and hand-excavated units.

FAUNAL ANALYSIS, LeeAnna Schniebs

Archaeological investigations at the South Lilly #4 site (41UR279) on South Lilly Creek in Upshur County, Texas, yielded 285 faunal specimens. Total weight of the sample is 57.83 grams. Faunal material was recovered from four shovel tests and three hand-excavated units in midden deposits, including fine screen samples taken in Units 1 and 2. Depths range from 0 to 70 centimeters below surface (cm bs). The following sections of the faunal analysis discuss the methods employed in the faunal analysis, results of taxonomic identification and quantification, and distribution of these remains.

All prehistoric vertebrate remains were inventoried and weighed. Excel for Windows was used to manipulate the generated faunal data. An Ohaus digital scale, Model CT600-S, was used to record bone weight. All fragments recovered were analyzed by the author, using comparative collections on loan from or housed at the Institute of Applied Sciences, Zooarchaeology Lab, University of North Texas, Denton, Texas. Occasional supplements were required, using conventional osteological keys such as Olsen (1964), Gilbert (1980), and Schmid (1972). Identifications were made to the most specific category possible depending on the condition of the bone and available comparative materials. Only positive identifications resulted in the assignment of elements to genus or species.

Standard zooarchaeological methods have been used. The animal bones were inventoried and bagged by personnel from Archeological and Environmental Consultants, LLC (Pittsburg, Texas, office), then submitted for identification and quantification. Both unidentifiable and identifiable pieces were analyzed in similar fashion. That is, the same attributes were recorded on each identifiable piece: taxon, element and portion of that element, anatomical location of the element, condition of the bone and any notes on age, taphonomy, burning or breakage patterns, and presence of modification if applicable. Provenience information was also recorded.

Quantification of the assemblage is summarized as number of identified specimens per taxon (NISP) and as minimum number of individuals (MNI) for identified elements. MNI estimates were calculated according to the most frequently occurring element, based on symmetry and element portion (Munzel 1986). In the mammalian class, teeth were used whenever possible. In some cases, complete long bones and proximal or distal ends were considered. In other cases, the presence of a single element constituted an MNI of one.

The faunal data tables provided in this section of the article comprise standard species lists with the number of occurrences for each animal. Those specimens regarded as unidentifiable (those coded to only class) have been consolidated into a few general categories. Elements of non-diagnostic skeletal value (i.e., unidentifiable fragments, ribs, vertebrae, and long bone shafts, see Olsen [1964]), are coded in an indeterminate category by class and size range. For example, specimens counted as "unidentifiable mammal" are from indeterminate-size mammals; "small mammal" is rabbit or squirrel-size; "medium mammal" is at least dog-size; and "large mammal" refers to a deer-size mammal. "Indeterminate vertebrate" includes the bones of unidentifiable class. Recording these specimens in a size category enables the most precise level of observation as the specimen allows. In small samples, taking note of weight and the size categories of non-diagnostic elements broadens the function of the bone assemblage. However, percentages referred to in this article are calculated by number of bones (NISP) rather than weight. A complete inventory of the faunal collection from the South Lilly #4 site (41UR279) can be found in Appendix 3 accompanying this article.

Results

Reptilia and mammalia (carnivora and artiodactyla) are the only taxonomic classes identified. The sample is comprised of 42 indeterminate vertebrate bone fragments, four small pieces of unidentifiable turtle shell, seven indeterminate mammal bones, 121 unidentifiable small mammal bones, 25 medium mammal bones, 72 unidentifiable large mammal bones, one raccoon tooth, nine medium artiodactyl bones, and four deer tooth fragments. The following section describes the identifiable vertebrate taxa recovered from the South Lilly #4 site. Number of identified specimens (NISP) and minimum number of individuals (MNI) for each taxon are summarized in Table 6, as are weights for each taxon and percentages of the assemblage. Composition of anatomical elements can be found in Table 7.

Table 6. Taxonomic composition of the 41UR279 faunal sample.

Scientific Name	Common Name	NISP	MNI	% of Sample	Wt./g
Vertebrata (indeterminate)	unidentifiable	42		15	0.71
Testudinata	turtle	4	1	1	0.11
Mammalia (indeterminate)	mammal	7		2	0.3
Mammalia (small)	sm. mammal	121	1	43	1.96
Mammalia (medium)	med. mammal	25		9	2.8
Mammalia (large)	lg. mammal	72		25	19.8
<i>Procyon lotor</i>	raccoon	1	1	1	0.1
Artiodactyla (medium)	deer-size artiodactyl	9		3	31.4
<i>Odocoileus sp.</i>	deer	4	1	1	0.65
	TOTAL	285		100	57.83

Assemblage Composition

Class Reptilia

Order Testudinata (family indeterminate)

Four small shell fragments from unidentifiable turtle were recovered from two levels in two units. Fine screen samples taken in Unit 1 (20-30 and 30-40 cm bs) yielded three specimens, and one piece came from Unit 2 (20-30 cm bs). The fragments are burned. Turtle remains are common in prehistoric faunal assemblages, and often apparently supplemented the prehistoric Caddo diet.

Table 7. Composition of faunal elements from 41UR279.

Scientific Name	Common Name	Element						
		unid.	teeth	cranial	axial	long bone	pod/phx	other
Vertebrata (indeterminate)	unidentifiable	41				1		
Testudinata	turtle							4
Mammalia (indeterminate)	mammal	7						
Mammalia (small)	sm. mammal	117				4		
Mammalia (medium)	med. mammal	20	2	1		2		
Mammalia (large)	lg. mammal	44		1	1	26		
<i>Procyon lotor</i>	raccoon		1					
Artiodactyla (medium)	deer-size artiodactyl			1		6	2	
<i>Odocoileus sp.</i>	deer		4					
	TOTAL	229	7	3	1	39	2	4

NOTE:
 "Teeth" inc. six enamel frags and one complete tooth.
 "Cranial" inc. one skull frag, one mandible frag, and one tooth socket frag.
 "Axial" inc. one vertebral epiphysis frag.
 "Long bone" inc. shaft frags.
 "Pod/phx" inc. one calcaneus frag and one phalanx frag.
 "Other" inc. turtle shell frags.

Class Mammalia

Order Carnivora, Family Procyonidae

Raccoon (*Procyon lotor*) is represented by a single tooth. It was recovered from a fine screen sample taken in Unit 1 (30-40 cm bs). The range of the raccoon includes the northeastern Texas area, occurring also throughout most of the country. The preferred habitats are streams and lake borders near wooded areas or rock cliffs (Burt and Grossenheider 1980). The raccoon may have been hunted for its pelt as well as the edible meat.

Order Artiodactyla, Family Cervidae

Deer (*Odocoileus sp.*) is represented by four tooth fragments. They were recovered from Shovel Test 2 (20-40 cm bs), Shovel Test 4 (20-40 cm bs), Unit 1 (20-30 cm bs), and a fine screen sample taken in Unit 1 (30-40 cm bs). One specimen is charred. Whitetail Deer (*Odocoileus virginianus*) is the only species in Family Cervidae that currently occupies the general region, and is found in forests, swamps, and open brushy areas nearby (Burt and Grossenheider 1980). Deer is the most common large game animal preferred by the Caddo, and also one of their main subsistence animals. The Caddos were adept imitators of deer, and a hunter disguised with the antlers and hide of a deer was able to approach his quarry closely, and even to attract it to himself (Newcomb 1993).

Nine medium artiodactyl bones were recovered from Shovel Test 2 (70 cm bs) and Units 1, 2, and 3 (0-50 cm bs). This includes one toe bone fragment found in Feature 1 in

Unit 1 (54 cm bs). Six medium artiodactyl bones are burned. These specimens are probably the remains of deer. Although pronghorn is also categorized as a medium-sized artiodactyl, a specific identification cannot be made based on post-cranial bone fragments. But since no pronghorn tooth fragments were recovered, it is probably safe to assume that no pronghorn were present at the site. Both animals are similar in size, but pronghorn antelope are found in open prairies and sagebrush plains well outside of most of the northeastern Texas region (Burt and Grossenheider 1980). Pronghorn currently reside in the western half of Texas from the Panhandle to the lower Rio Grande valley (Davis 1978). However, one pronghorn element was recovered from the Hurricane Hill site (41HP106), a prehistoric Early and Middle Caddoan habitation site at Cooper Reservoir in nearby Hopkins County (Yates 1999). Henderson (1978) reported pronghorn remains at the Arnold and Luna sites at Cooper Lake; both of these sites have Woodland and prehistoric Caddoan components.

Medium artiodactyl (deer) is probably also represented in the unidentifiable large mammal category (n=72). Large mammal bone fragments were recovered from the four shovel tests and the three units, and depths range from 0 to 46 cm bs. A total of 49 large mammal specimens are burned.

The unidentifiable small mammal bones (n=121) may represent rabbit or squirrel. Most of the small mammal bones came from fine screen samples taken in Units 1 and 2 (n=120). These are common animals found in Caddoan faunal assemblages. They are easily procured by hunters, and are often dietary supplements. At least some of the 25 unidentifiable medium-sized mammal bones may be the remains of the previously mentioned raccoon.

Assemblage Condition

In general, the faunal material from the site is highly fragmented. This probably explains the low amount of identified faunal remains. Taphonomic patterns were absent on 238 fragments (Table 8). Surface observations on the remaining specimens include abrasion and exfoliation. Eighty-eight percent of the site sample is burned (n=252), probably a result of trash disposal. Summary of burned specimens can be found in Table 9, and the distribution of these burned remains can be found in Table 10.

Table 8. Summary of taphonomic patterns on 41UR279 faunal specimens.

Scientific Name	Common Name	Taphonomy Type			
		absent	abraded	exfoliated	abrade+exfol
Vertebrata (indeterminate)	unidentifiable	41		1	
Testudinata	turtle	4			
Mammalia (indeterminate)	mammal	1	6		
Mammalia (small)	sm. mammal	120		1	
Mammalia (medium)	med. mammal	23		2	
Mammalia (large)	lg. mammal	38	17	15	2
<i>Procyon lotor</i>	raccoon	1			
Artiodactyla (medium)	deer-size artiodactyl	6		2	1
<i>Odocoileus sp.</i>	deer	4			
	TOTAL	238	23	21	3

Table 9. Summary of burning patterns on 41UR279 faunal specimens.

Scientific Name	Common Name	Degree of Burning			
		not burned	charred	white	black
Vertebrata (indeterminate)	unidentifiable	1		41	
Testudinata	turtle			4	
Mammalia (indeterminate)	mammal			7	
Mammalia (small)	sm. mammal	2		118	1
Mammalia (medium)	med. mammal			19	6
Mammalia (large)	lg. mammal	23	1	37	11
<i>Procyon lotor</i>	raccoon	1			
Artiodactyla (medium)	deer-size artiodactyl	3	2	1	3
<i>Odocoileus sp.</i>	deer	3	1		
	TOTAL	33	4	227	21

In addition to weathering, spiral fracturing was recorded during the faunal analysis. Spiral fractures are the result of impact, such as striking the bone with a hammerstone or breaking on an anvil. It is a common, expedient technique used in tool manufacturing, bone processing, and refuse disposal. Usually associated with large mammal long bones, spiral fracturing can also occur during trampling, carnivore gnawing, or any other severe impacts not necessarily associated with human activity. Five medium-sized artiodactyl and 12 large mammal bones are recorded as spirally fractured (Table 11). The remainder of the large mammal sample is angularly fractured, suggesting that the bone was broken when it was dry, rather than while green and fresh. Perhaps after processing, it was broken into smaller pieces for disposal.

Scavenging activities are relatively minimal. Rodent gnawing was observed on three specimens, while carnivore gnawing was noted on only one fragment (see Table 11).

Distribution

The following section discusses the distribution of the South Lilly #4 site faunal collection across the site. This information can be found in Tables 12 and 13. Fine screen recovery is summarized in Table 14.

Shovel Tests

Four shovel tests yielded 13 faunal specimens. A burned large mammal long bone fragment was recovered from Shovel Test 1 (20-30 cm bs). Four specimens came from Shovel Test 2: a deer tooth fragment and a burned large mammal long bone fragment came from the second level (20-40 cm bs), and two medium artiodactyl metapodial fragments were found at 70 cm bs. Three levels in Shovel Test 4 contained five specimens. Two large mammal long bone fragments were in the first level (0-20 cm bs), a deer tooth fragment and one large mammal bone came from the second level (20-40 cm bs), and one small mammal long bone fragment was found in the third level (40-60 cm bs). Four specimens from Shovel Test 4 are burned. Two levels in Shovel Test 5 yielded three burned

Table 10. Distribution of 41UR279 burned faunal specimens by unit and level.

Unit	Scientific Name	Common Name	Depth (cm bs)					
Shovel Test 1 (B=1)	Mammalia (large)	lg. mammal	20to40					
			1					
Shovel Test 2 (B=1)	Mammalia (large)	lg. mammal	20to40					
			1					
Shovel Test 4 (B=4)	Mammalia (small)	sm. mammal	0to20	20to40	40to60			
	Mammalia (large)	lg. mammal	2	1			1	
Shovel Test 5 (B=3)	Mammalia (indeterminate)	mammal	0to20	20to40				
	Mammalia (large)	lg. mammal	1				2	
Unit 1 (B=106)	Vertebrata (indeterminate)	unidentifiable	0to10	10to20	20to30	30to40	F-1 (54cmbs)	
	Testudinata	turtle			13	14		
	Mammalia (indeterminate)	mammal		6	2	1		
	Mammalia (small)	sm. mammal			19	18		
	Mammalia (medium)	med. mammal			10	3		
	Mammalia (large)	lg. mammal	2	3	7	4		
	Artiodactyla (medium)	deer-size artiodactyl		1	1			1
	<i>Odocoileus sp.</i>	deer			1			
		TOTAL	2	10	53	40		1
Unit 2 (B=125)	Vertebrata (indeterminate)	unidentifiable	10to20	20to30	30to40			
	Testudinata	turtle		5	9			
	Mammalia (small)	sm. mammal		1				
	Mammalia (medium)	med. mammal		39	42			
	Mammalia (large)	lg. mammal	4	12	1			
	Artiodactyla (medium)	deer-size artiodactyl			1			
		TOTAL	4	60	61			
Unit 3 (B=12)	Mammalia (medium)	med. mammal	10to20	20to30	30to40	40to50		
	Mammalia (large)	lg. mammal	5	2	2			
	Artiodactyla (medium)	deer-size artiodactyl			1	1		

Table 12. General distribution of 41UR279 faunal collection.

Unit Type	Scientific Name	Common Name	Provenience			
			ST 1	ST 2	ST 4	ST 5
Shovel Tests						
	Mammalia (indeterminate)	mammal				1
	Mammalia (small)	sm. mammal			1	
	Mammalia (large)	lg. mammal	1	1	3	2
	Artiodactyla (medium)	deer-size artiodactyl		2		
	<i>Odocoileus sp.</i>	deer		1	1	
		TOTAL	1	4	5	3
Units						
			U 1	U 2	U 3	
	Vertebrata (indeterminate)	unidentifiable	28	14		
	Testudinata	turtle	3	1		
	Mammalia (indeterminate)	mammal	6			
	Mammalia (small)	sm. mammal	37	83		
	Mammalia (medium)	med. mammal	13	11	1	
	Mammalia (large)	lg. mammal	26	23	16	
	<i>Procyon lotor</i>	raccoon	1			
	Artiodactyla (medium)	deer-size artiodactyl	4	1	2	
	<i>Odocoileus sp.</i>	deer	2			
		TOTAL	120	133	19	

specimens. One unidentifiable mammal bone came from 0-20 cm bs, and two large mammal bones were recovered from 20-40 cm bs.

Unit 1

Unit 1 had 120 faunal specimens, comprised of 34 fragments from four levels, 85 pieces from fine screen samples taken in two of these levels, and one medium artiodactyl toe bone fragment from Feature 1. Two large mammal long bone fragments came from the first level (0-10 cm bs), and Level 2 (10-20 cm bs) yielded six unidentifiable mammal bones, six large mammal bones, and one medium-sized artiodactyl radius fragment. The third level (20-30 cm bs) had the majority of remains (n=60), but most of these specimens came from a fine screen sample (n=43). The collection from Level 3 is comprised of indeterminate vertebrate, turtle, unidentifiable small, medium, and large mammal, medium artiodactyl, and deer. Level 4 (30-40 cm bs) yielded 44 faunal specimens, including 42 fragments from a fine screen sample. Taxonomic recovery is similar to that of Level 3, except for the addition of raccoon and the absence of medium artiodactyl. A total of 106 specimens from Unit 1 are burned.

Unit 2

Unit 2 yielded a total of 133 faunal specimens, comprised of 25 fragments from four levels and 108 pieces from fine screen samples taken in two of these levels. Only four large mammal bones were found in Level 2 (10-20 cm bs). Sixty-one fragments were recovered from Level 3 (20-30 cm bs), including 49 specimens from a fine screen sample. Level 4 (30-40 cm bs) yielded 66 fragments, including 59 pieces from a fine screen sample. Two large mammal bones were recovered at 46 cm bs. Taxonomic recovery from Unit 2 is dominated by small mammal remains. The remainder of the unit sample consists of indeterminate vertebrate, turtle, unidentifiable medium, and large mammal, and medium artiodactyl. One hundred and twenty five specimens from Unit 2 are burned.

Table 13. Specific distribution of 41UR279 faunal specimens by provenience.

Unit	Scientific Name	Common Name	Depth (cm bs)				
Shovel Test 1			20to40				
	Mammalia (large)	lg. mammal	1				
Shovel Test 2			20to40		70		
	Mammalia (large)	lg. mammal	1				
	Artiodactyla (medium)	deer-size artiodactyl	2				
	<i>Odocoileus sp.</i>	deer	1				
Shovel Test 4			0to20	20to40	40to60		
	Mammalia (small)	sm. mammal	1				
	Mammalia (large)	lg. mammal	2		1		
	<i>Odocoileus sp.</i>	deer	1				
Shovel Test 5			0to20	20to40			
	Mammalia (indeterminate)	mammal	1				
	Mammalia (large)	lg. mammal	2				
Unit 1 (N=120)			0to10	10to20	20to30	30to40	F-1 (54cmbs)
	Vertebrata (indeterminate)	unidentifiable			13	15	
	Testudinata	turtle			2	1	
	Mammalia (indeterminate)	mammal	6				
	Mammalia (small)	sm. mammal			19	18	
	Mammalia (medium)	med. mammal			10	3	
	Mammalia (large)	lg. mammal	2	6	13	5	
	<i>Procyon lotor</i>	raccoon			1		
	Artiodactyla (medium)	deer-size artiodactyl	1		2		1
	<i>Odocoileus sp.</i>	deer			1	1	
	TOTAL		2	13	60	44	1
Unit 2 (N=133)			10to20	20to30	30to40	46	
	Vertebrata (indeterminate)	unidentifiable	5		9		
	Testudinata	turtle	1				
	Mammalia (small)	sm. mammal	40		43		
	Mammalia (medium)	med. mammal	3		8		
	Mammalia (large)	lg. mammal	4	12	5	2	
	Artiodactyla (medium)	deer-size artiodactyl			1		
	TOTAL		4	61	66	2	
Unit 3 (N=19)			10to20	20to30	30to40	40to50	
	Mammalia (medium)	med. mammal			1		
	Mammalia (large)	lg. mammal	5	2	9		
	Artiodactyla (medium)	deer-size artiodactyl			1	1	

Table 14. Summary of faunal recovery from 41UR279 fine screen samples.

Scientific Name	Common Name	Unit 1	Unit 1	Unit 2	Unit 2
		20to30	30to40	20to30	30to40
Vertebrata (indeterminate)	unidentifiable	13	15	5	9
Testudinata	turtle	2	1		
Mammalia (indeterminate)	mammal				
Mammalia (small)	sm. mammal	19	18	40	43
Mammalia (medium)	med. mammal	8	3	3	6
Mammalia (large)	lg. mammal		3	1	1
<i>Procyon lotor</i>	raccoon		1		
Artiodactyla (medium)	deer-size artiodactyl	1			
<i>Odocoileus sp.</i>	deer		1		
	TOTAL	43	42	49	59

Unit 3

Four levels in Unit 3 had 19 faunal specimens. Five large mammal bones came from Level 2 (10-20 cm bs), and two large mammal bones were recovered from Level 3 (20-30 cm bs). One medium mammal bone, nine large mammal bones, and one medium artiodactyl were found in Level 4 (30-40 cm bs). One medium artiodactyl femur shaft fragment was recovered from 40-50 cm bs). Twelve specimens from Unit 3 are burned.

Summary

Four shovel tests and three units in midden deposits at the South Lilly #4 site (41UR279) yielded 285 faunal specimens, including 193 fragments recovered from fine screen samples taken in two units. Unidentifiable small mammal remains dominate the collection, but this is probably a result of collection bias (i.e., the selective use of fine-screening). Unidentifiable large mammal remains are also abundant (n=72).

Animals never supplied more than a subsidiary part of the food supply for the Caddo peoples (e.g., Newcomb 1993). The faunal collection from the South Lilly #4 site indicates that some of the Caddo diet consisted of large and small game, including deer, probably squirrel and rabbit, supplemented with turtle. The presence of the raccoon may indicate the procurement of animals for hides as well. The faunal assemblage from the site can be considered subsistence debris.

MUSSEL SHELL

Six fragmentary pieces of freshwater mussel shell (1.0 g) were recovered in the Caddo midden deposits. These came from 20-30 cm bs in Units 1 and 2.

CONCLUDING COMMENTS

The South Lilly #4 site (41UR279) is a well-preserved prehistoric Caddo habitation site, perhaps a farmstead, on South Lilly Creek. Investigations in 2003 uncovered a midden deposit as well as at least two pit features; possible post hole stains were also noted in sediments beneath the midden itself. One radiocarbon date and a series of OCR dates suggest that the midden accumulated between about AD 1390 and the early part of the 16th century, probably during the early part of the Late Caddoan Titus phase (Perttula 1998).

The midden deposits contain quantities of domestic artifacts, principally including utility ware ceramic sherds, lithic debris from primarily locally procured quartzite, many charred plant remains (especially charred hickory nutshells, processed for their meat and oil), and a high density of animal remains. Species hunted for meat and/or hides included deer, raccoon, and squirrel, and turtles were also apparently eaten by the Caddo inhabitants of the site.

The South Lilly #4 site holds considerable potential—because of its well-preserved archaeological deposits and features—to better understand, through further research, the life and times of the prehistoric Caddo peoples that lived in this part of northeastern Texas some 400-600 years ago. We hope that further work at the site will allow us to investigate the spatial arrangement and composition of the structures and features created by the families and households that lived here, as well as obtain detailed information on their health and diet, in particular establishing how important cultivated plants (such as maize, beans, and squash) were to the Caddo people at that time. Additional studies of the ceramic and lithic artifacts made and used by the Caddo at the site should offer insights into how plant and animal foods were processed and cooked, where raw materials (both clay and stone) were gathered, and the styles on the decorated vessels may point to the strength of local and community relationships and social entities. There will be more avenues to explore at the site as future archaeological work is planned and eventually completed, but for now we are grateful that the South Lilly #4 site remains protected and preserved until new archaeological studies of the Caddo people beckon.

ACKNOWLEDGMENTS

We would like to thank the landowner, Mr. M. G. Drew, for permission to conduct the archaeological investigations at the South Lilly #4 site, as well as others on his property along South Lilly Creek. Sandra Hannum prepared the maps and profiles in this article.

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**APPENDIX 1,
RADIOCARBON CALIBRATION SHEETS FOR 41UR279**

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.2:lab. mult=1)

Laboratory number: **Beta-183858**

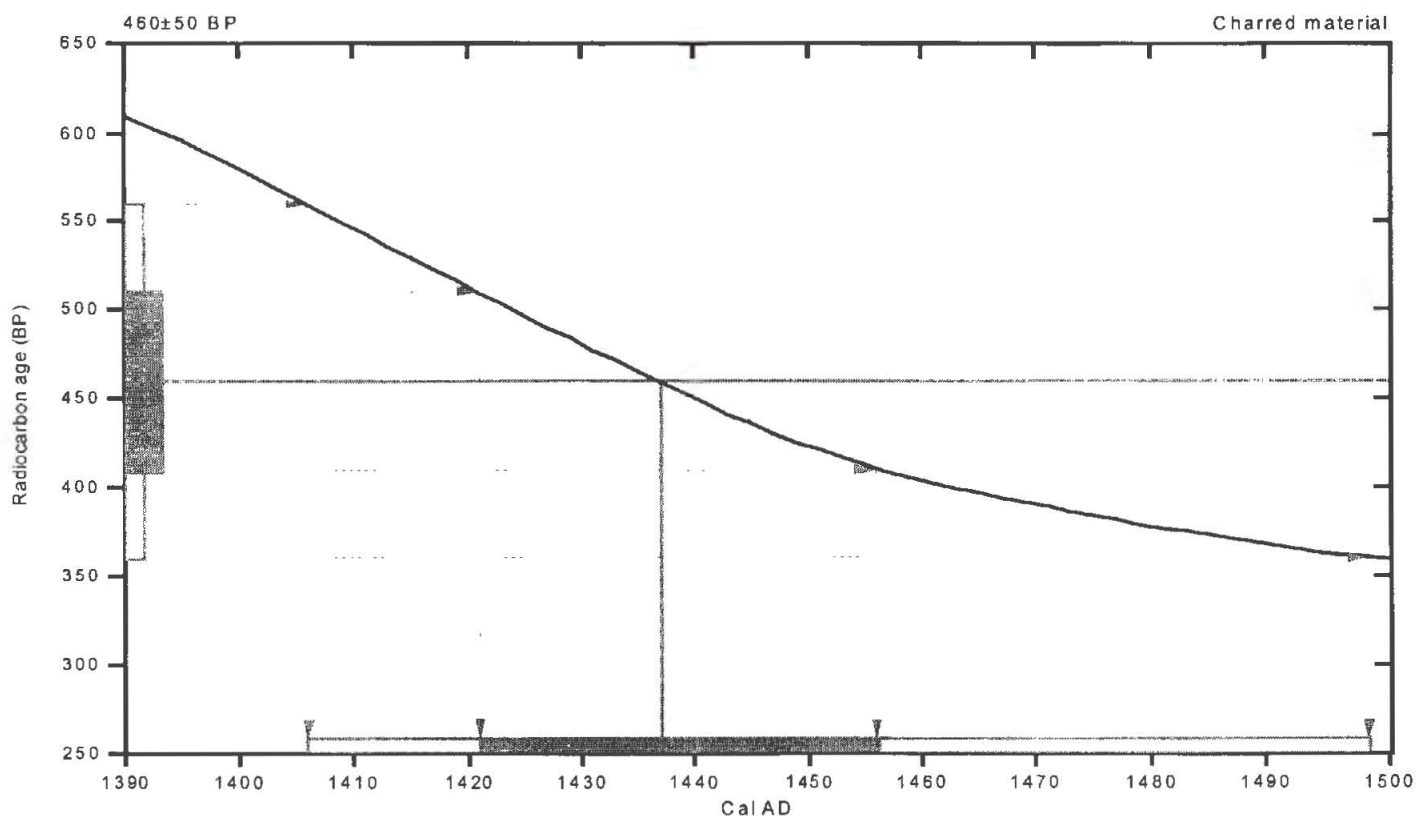
Conventional radiocarbon age: **460±50 BP**

2 Sigma calibrated result: **Cal AD 1410 to 1500 (Cal BP 540 to 450)**
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: **Cal AD 1440 (Cal BP 510)**

1 Sigma calibrated result: **Cal AD 1420 to 1460 (Cal BP 530 to 490)**
(68% probability)



References:

Database used

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Inc.

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CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.4:lab. mult=1)

Laboratory number: **Beta-183859**

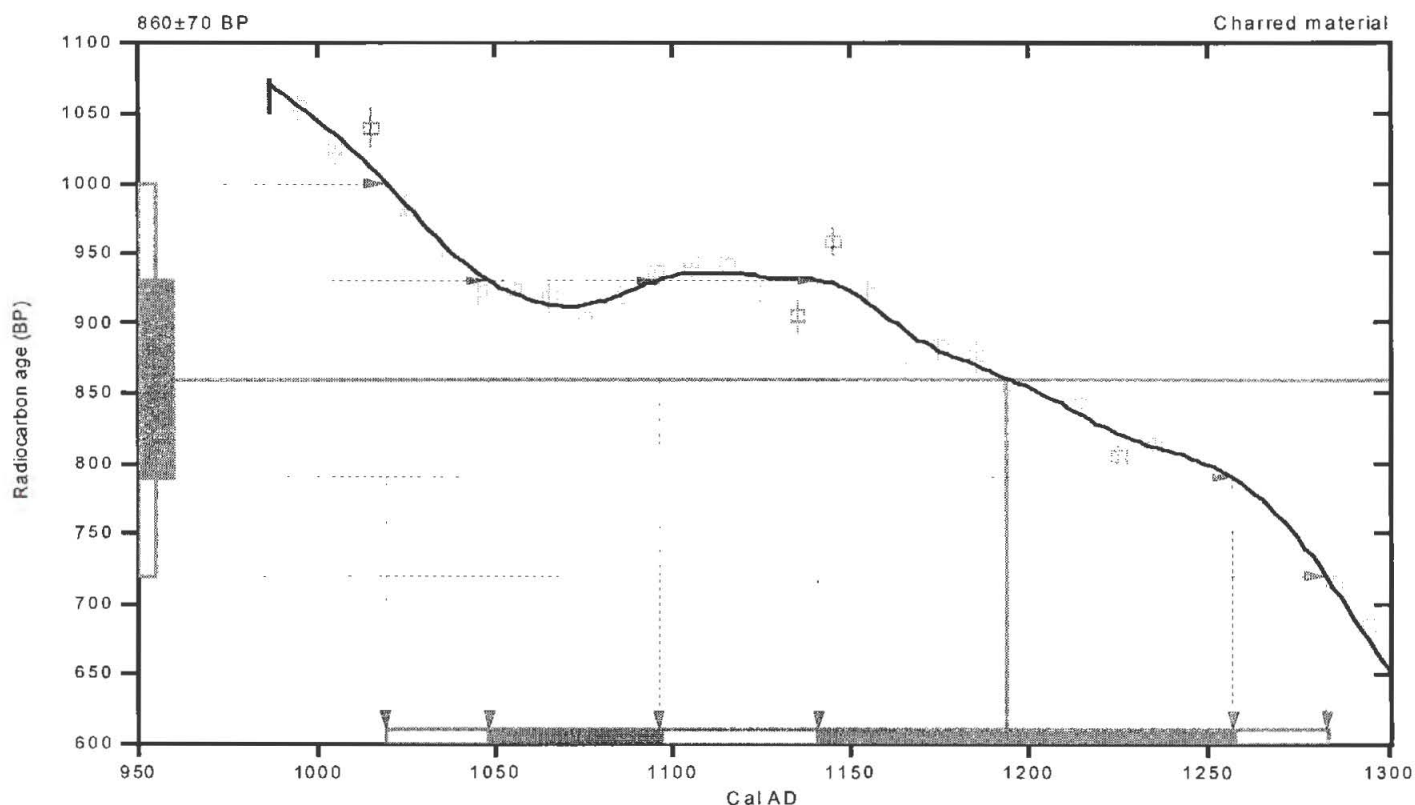
Conventional radiocarbon age: **860±70 BP**

2 Sigma calibrated result: **Cal AD 1020 to 1280 (Cal BP 930 to 670)**
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: **Cal AD 1190 (Cal BP 760)**

1 Sigma calibrated results: **Cal AD 1050 to 1100 (Cal BP 900 to 850) and**
Cal AD 1140 to 1260 (Cal BP 810 to 690)



References:

Database used

Calibration Database

Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

Mathematics

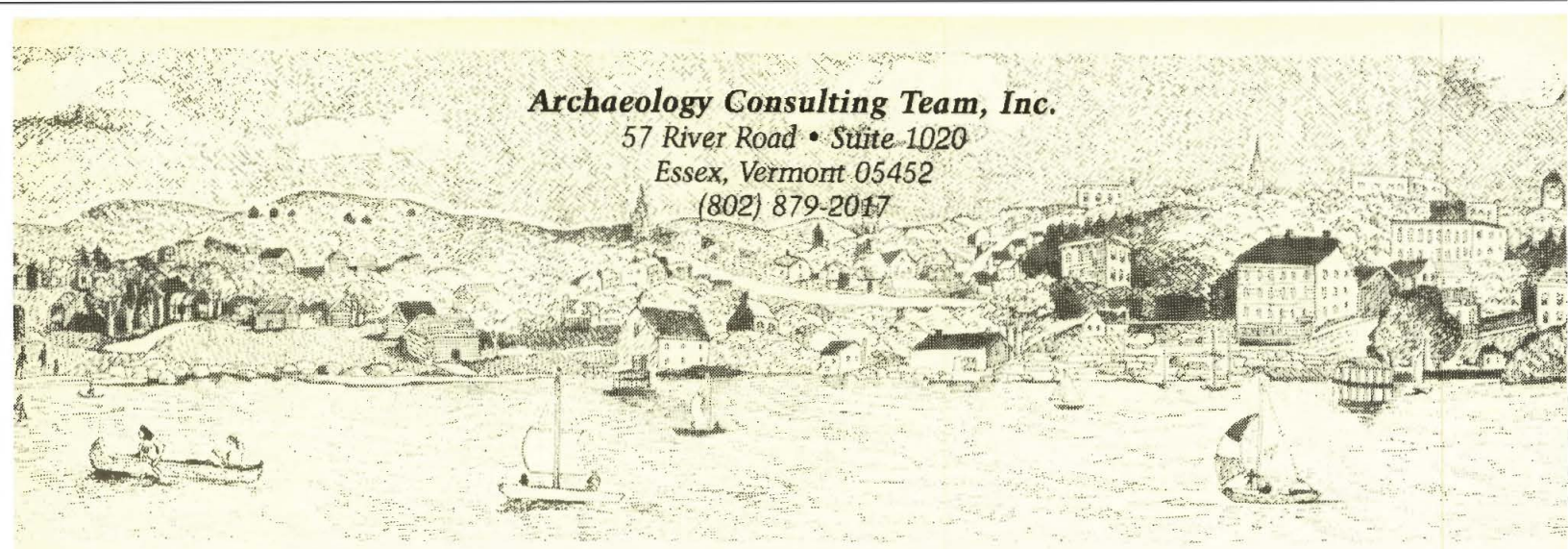
A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Inc.

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**APPENDIX 2,
OCR DATA FORMS FOR 41UR279**



Archaeology Consulting Team, Inc.

57 River Road • Suite 1020

Essex, Vermont 05452

(802) 879-2017

March 14, 2003

Dr. Timothy Perttula
Archaeological & Environmental Consultants, LLC
10101 Woodhaven Drive
Austin, TX 78753

Dear Dr. Perttula:

Thank you for sending us the additional soil samples from South Lilly #4 for OCR_{DATE} analyses. These samples were received on February 18, 2003, in good condition. Prior to our analyses, we screened the samples through a 2mm-meshed screen to remove any cultural material. The coarse fraction found in these samples is being returned to you for further study. The OCR_{DATE} analyses were conducted in accordance with the procedures outlined in:

Frink, D.

1992 *The Chemical Variability of Carbonized Organic Matter Through Time.*
Archaeology of Eastern North America, Vol. 20:67-79.

using the data format and formula as presented in:

Frink, D.

1994 *The Oxidizable Carbon Ratio (OCR): A Proposed Solution to Some of the Problems Encountered with Radiocarbon Data.* North American Archaeologist. Vol.15 (#1).

The results of the OCR analyses for your samples are presented on the separate computer printouts. The bottom line OCR_{DATE} and the confidence interval have been rounded to the nearest year. Also, the expression of results has been adjusted to "years before present"—defined as 1950, to correspond with calibrated ¹⁴C radiocarbon data. For example, your sample #2 (ACT #6396) should read OCR_{DATE}: 555 ± 16 YBP. Further rounding may be prudent - i.e. 550 ± 20 YBP.

Please note, that in addition to the individual data printouts, we have provided data tables for the column. The highlighted data set represent significant pedologic events of stability. These might be natural, environmental, cultural, or a combination of any of these events. The intent to suggest contextual data within which your artifactual material may be interpreted.

I hope that the OCR_{DATE} data provided will be helpful in your evaluation of this site. If you have further questions on the OCR procedure, please don't hesitate to give us a call. To aid us in improving this dating technique, we would appreciate it if you would send us information on how the OCR_{DATE} corresponds to other data classes for these samples.

Also please feel free to keep track of the OCR literature and data on our WEB-Site:

<http://members.aol.com/dsfrink/ocr/ocrpage.htm>

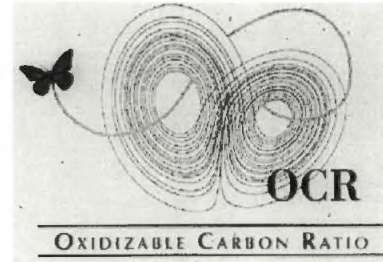
Sincerely,

A handwritten signature in blue ink, appearing to read "Douglas S. Frink". The signature is stylized and cursive.

Douglas S. Frink

Calculated OCR DATE Report
For Archeological & Environmental C

13-Mar-03



Sample Id:	ACT # 6395		
Site Id #:	South Lilly #4		
Location:	a		
Feature Type:	Cultural		
Feature Designation:	1		
Sample Recieved:	2/18/2003		
Calculated OCR DATE:	409	YBP(1950)	+/- 12

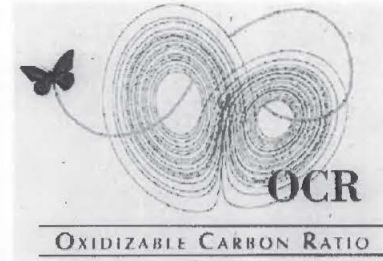
Sample Id:	ACT # 6396		
Site Id #:	South Lilly #4		
Location:	a		
Feature Type:	Cultural		
Feature Designation:	2		
Sample Recieved:	2/18/2003		
Calculated OCR DATE:	555	YBP(1950)	+/- 16

Sample Id:	ACT # 6397		
Site Id #:	South Lilly #4		
Location:	a		
Feature Type:	Cultural		
Feature Designation:	3		
Sample Recieved:	2/18/2003		
Calculated OCR DATE:	542	YBP(1950)	+/- 16

Sample Id:	ACT # 6398		
Site Id #:	South Lilly #4		
Location:	a		
Feature Type:	Cultural		
Feature Designation:	3		
Sample Recieved:	2/18/2003		
Calculated OCR DATE:	658	YBP(1950)	+/- 19

Calculated OCR DATE Report
For Archeological & Environmental C

13-Mar-03



Sample Id:	ACT # 6399
Site Id #:	South Lilly #4
Location:	a
Feature Type:	Cultural
Feature Designation:	5
Sample Recieved:	2/18/2003
Calculated OCR DATE:	709 YBP(1950) +/- 21

South Lilly #4

Soil Depth	pH	% Organic Carbon (LOI)	Ocr Date	Very Coarse	Coarse	Medium	Fine	Very Fine	Coarse Silt	Fine Silt	Sample Id	% Oxidizable Carbon (WB)	OCR Ratio	Mn
9	4.4	1.413	409	.089	.141	.634	7.425	29.674	37.979	24.057	6395	0.49	2.88	36.1
19	4.6	1.186	555	.149	.166	.678	7.225	29.964	36.097	25.721	6396	0.41	2.89	25.1
29	5.0	0.87	542	.023	.103	.897	7.215	28.091	38.085	25.586	6397	0.36	2.42	17.1
39	5.3	0.65	658	.097	.118	.907	7.068	30.934	35.273	25.603	6398	0.33	1.97	13.475
54	5.9	0.378	709	.	.033	.574	6.835	27.348	34.538	30.671	6399	0.19	1.99	10.85

**APPENDIX 3,
FAUNAL INVENTORY, 41UR279**

Table 1. Complete Inventory of DSL#4 Faunal Sample

Unit	Depth	Qty	Taxon	Elem/Por	Side	Age	Taphonom	Burn	Gnaw	Mod	Wt/g	Comments
ST 1	20to40	1	lg mam	I.b.frag			absent	wh			0.2	
ST 2		70	1 med art	mtpod prox	post	frg	exfol	not			3.1	spir frac
ST 2		70	1 med art	mtpod dist			absent	not	rodent		8.2	spir frac
ST 2	20to40	1	deer	tooth frg			absent	not			0.05	
ST 2	20to40	1	lg mam	I.b.frag			absent	wh			0.1	
ST 4	0to20	1	lg mam	I.b.frag			absent	blk			0.9	spir frac
ST 4	0to20	1	lg mam	I.b.frag			absent	wh			0.2	
ST 4	20to40	1	deer	tooth frg			absent	not			0.5	
ST 4	20to40	1	lg mam	unid			absent	wh			0.1	
ST 4	40to60	1	sm mam	I.b.frag			absent	wh			0.1	
ST 5	0to20	1	mammal	unid			absent	wh			0.1	
ST 5	20to40	1	lg mam	I.b.frag			absent	wh			0.3	
ST 5	20to40	1	lg mam	unid			absent	wh			0.2	
U 1	0to10	1	lg mam	I.b.frag			absent	blk			1.2	spir frac
U 1	0to10	1	lg mam	I.b.frag			absent	wh			0.3	spir frac
U 1	10to20	3	lg mam	I.b.frag			absent	wh			0.8	
U 1	10to20	2	lg mam	unid			exfol	not			0.5	
U 1	10to20	1	lg mam	vert epiph frg		imm	absent	not			0.1	
U 1	10to20	6	mammal	unid			abrade	wh			0.2	
U 1	10to20	1	med art	mtpod shft frg			absent	wh			0.4	
U 1	20to30	1	deer	tooth frg			absent	char			0.05	
U 1	20to30	1	lg mam	I.b.frag			absent	blk			0.2	spir frac
U 1	20to30	1	lg mam	unid			absent	blk			0.2	
U 1	20to30	1	lg mam	unid			absent	char			0.2	
U 1	20to30	3	lg mam	unid			abrade	wh			0.6	
U 1	20to30	1	lg mam	I.b.frag			absent	wh			0.4	spir frac
U 1	20to30	1	lg mam	unid			abrade	not			0.1	
U 1	20to30	1	lg mam	I.b.frag			absent	not	rodent		1	spir frac
U 1	20to30	4	lg mam	unid			absent	not			0.5	
U 1	20to30	1	med art	rad prox frg	L		absent	not	rodent		7	spir frac
U 1	20to30	1	med mam	unid			absent	blk			0.3	
U 1	20to30	1	med mam	unid			absent	wh			0.2	
U 1	30to40	1	lg mam	unid			abrade	wh			0.1	
U 1	30to40	1	lg mam	I.b.frag			absent	wh			0.2	
U 1 F1	top to 54	1	med art	phx3 prox	L		absent	blk			1	in 2 frgs
U 1 FS	20to30	1	med art	mtpod shft frg			absent	blk			1.1	spir frac
U 1 FS	20to30	1	med mam	unid			absent	blk			0.1	
U 1 FS	20to30	2	med mam	tooth frg			absent	blk			0.1	
U 1 FS	20to30	2	med mam	I.b.frag			absent	wh			0.4	
U 1 FS	20to30	3	med mam	unid			absent	wh			0.1	
U 1 FS	20to30	19	sm mam	unid			absent	wh			0.4	
U 1 FS	20to30	2	turtle	shell frg			absent	wh			0.05	
U 1 FS	20to30	2	unid	unid			absent	wh			0.01	
U 1 FS	20to30	11	unid	unid			absent	wh			0.1	
U 1 FS	30to40	1	deer	tooth frg			absent	not			0.05	
U 1 FS	30to40	2	lg mam	unid			absent	wh			0.1	
U 1 FS	30to40	1	lg mam	I.b.frag			absent	not			0.6	spir frac
U 1 FS	30to40	3	med mam	unid			absent	wh			0.1	
U 1 FS	30to40	1	raccoon	PM2 lo	L		absent	not			0.1	

U 1 FS	30to40	1	sm mam	l.b.frag		absent	blk			0.1	
U 1 FS	30to40	1	sm mam	l.b.frag		absent	wh			0.2	
U 1 FS	30to40	16	sm mam	unid		absent	wh			0.2	
U 1 FS	30to40	1	turtle	shell frg		absent	wh			0.01	
U 1 FS	30to40	14	unid	unid		absent	wh			0.1	
U 1 FS	30to40	1	unid	l.b.frag		exfol	not			0.3	poss bird
U 2		46	2 lg mam	unid		exfol	not			0.2	nwcom fl scrp
U 2	10to20	3	lg mam	l.b.frag		absent	wh			0.7	
U 2	10to20	1	lg mam	unid		absent	wh			0.3	
U 2	20to30	2	lg mam	l.b.frag		absent	blk			0.6	
U 2	20to30	8	lg mam	unid		abrade	wh			1.2	
U 2	20to30	1	lg mam	l.b.frag		absent	wh			0.9	spir frac
U 2	20to30	1	turtle	shell frg		absent	wh			0.05	
U 2	30to40	4	lg mam	unid		exfol	not			0.9	
U 2	30to40	1	med art	cran frg	L	exfol	char			2.5	below petrous
U 2	30to40	2	med mam	unid		absent	wh			0.4	
U 2 FS	20to30	1	lg mam	l.b.frag		absent	wh			0.4	spir frac
U 2 FS	20to30	1	med mam	mand frg		exfol	blk			0.6	poss coon
U 2 FS	20to30	2	med mam	unid		absent	wh			0.1	
U 2 FS	20to30	39	sm mam	unid		absent	wh			0.5	
U 2 FS	20to30	1	sm mam	unid		exfol	not			0.05	
U 2 FS	20to30	5	unid	unid		absent	wh			0.1	
U 2 FS	30to40	1	lg mam	l.b.frag		absent	blk			0.2	spir frac
U 2 FS	30to40	6	med mam	unid		absent	wh			0.2	
U 2 FS	30to40	1	sm mam	l.b.frag		absent	wh			0.1	
U 2 FS	30to40	41	sm mam	unid		absent	wh			0.3	
U 2 FS	30to40	1	sm mam	unid		absent	not			0.01	
U 2 FS	30to40	9	unid	unid		absent	wh			0.1	
U 3	10to20	1	lg mam	unid		abrade,exf	blk			2.4	spir frac
U 3	10to20	1	lg mam	l.b.frag		absent	blk			0.5	spir frac
U 3	10to20	2	lg mam	unid		abrade	wh			0.3	
U 3	10to20	1	lg mam	alveolar frg		exfol	wh			0.2	
U 3	20to30	2	lg mam	l.b.frag		absent	blk			0.6	
U 3	30to40	2	lg mam	unid		abrade	wh			0.4	
U 3	30to40	1	lg mam	unid		abrade,exf	not			0.6	
U 3	30to40	6	lg mam	unid		exfol	not			0.3	
U 3	30to40	1	med art	calc prox	L	abrade,exf	char	carn		5	
U 3	30to40	1	med mam	unid		exfol	blk			0.2	
U 3	40to50	1	med art	fem shft frg		absent	blk			3.1	spir frac