RADIOCARBON DATES FROM THREE SITES ALONG THE MIDDLE CUMBERLAND RIVER NEAR NASHVILLE

D. Shane Miller, David G. Anderson, Thaddeus G. Bissett, and Stephen B. Carmody

Archaeological investigations by the authors along the Cumberland River near Nashville in 2009 and 2010 recovered materials from stratified deposits at three archaeological sites that collectively span the Early Archaic through Early Woodland periods. A series of 29 AMS radiocarbon determinations, all but five obtained from close interval flotation sampling of stratigraphic columns, document the age of these deposits. Two shell midden deposits at sites 40DV14 and 40CH171 were dated to the Mid-Holocene, between ca. 5800 to 6200 ^{14}C yr BP. Numerous dates were obtained from artifact bearing deposits above and below the shell midden at 40CH171, demonstrating that the site was occupied throughout the Middle Holocene and into the Late Holocene, from ca. 8000 to 4000 ^{14}C yr BP. A third site, 40DV307, was characterized by pit features dating to the early Woodland period, ca. 2700 ^{14}C yr BP. This research greatly expands the inventory of absolute dates from secure archaeological context in the western portion of the Middle Cumberland River valley, and demonstrates the utility of careful fine screen/flotation procedures for the recovery of datable materials from deeply stratified sites in riverine environments.

In 2009 and 2010, the authors conducted fieldwork along the Middle Cumberland River near Nashville, Tennessee in order to identify sites that had the potential to fill critical gaps in our understanding of the prehistoric occupation of the southeastern United States during the terminal Pleistocene though Middle Holocene (ca. 11,500 to 3000 14C yr BP). Initially, our goal was to locate stratified Paleoindian sites with datable materials (Anderson 2009; Anderson et al. 2009; Miller 2009), which are extremely rare despite the fact that the Mid-South has some of the densest concentrations of late Pleistocene sites and artifacts reported anywhere in North America (Anderson 2005:32–37; Anderson et al. 2010; Goodyear 1999; Miller and Gingerich 2012; Waters and Stafford 2007). Once fieldwork began, our goals changed to include examining later sites that were being actively looted, and that could provide archaeological and paleoenvironmental information useful to documenting human adaptation and settlement in the region over a much longer period of time (Anderson et al. 2011).

The culture-historical framework for the Archaic period in the Mid-South (ca. 10,000 to 3000 14C yr BP) relies primarily on dated deposits from a relatively small number of stratified sites, such as Ice House Bottom in eastern Tennessee (Chapman 1976), Russell Cave in northwestern Alabama (Griffin 1974), and Eva (Lewis and Lewis 1961), Anderson (Dowd 1989), and Morrisroe in west-central Tennessee (Nance 1986). Moreover, with the exception of a few recently excavated sites like Dust Cave (Sherwood et al. 2004), the majority of radiocarbon dates from the Mid-South were processed using the conventional method, as opposed to more precise Accelerator Mass Spectrometer (AMS) determinations. Age determinations

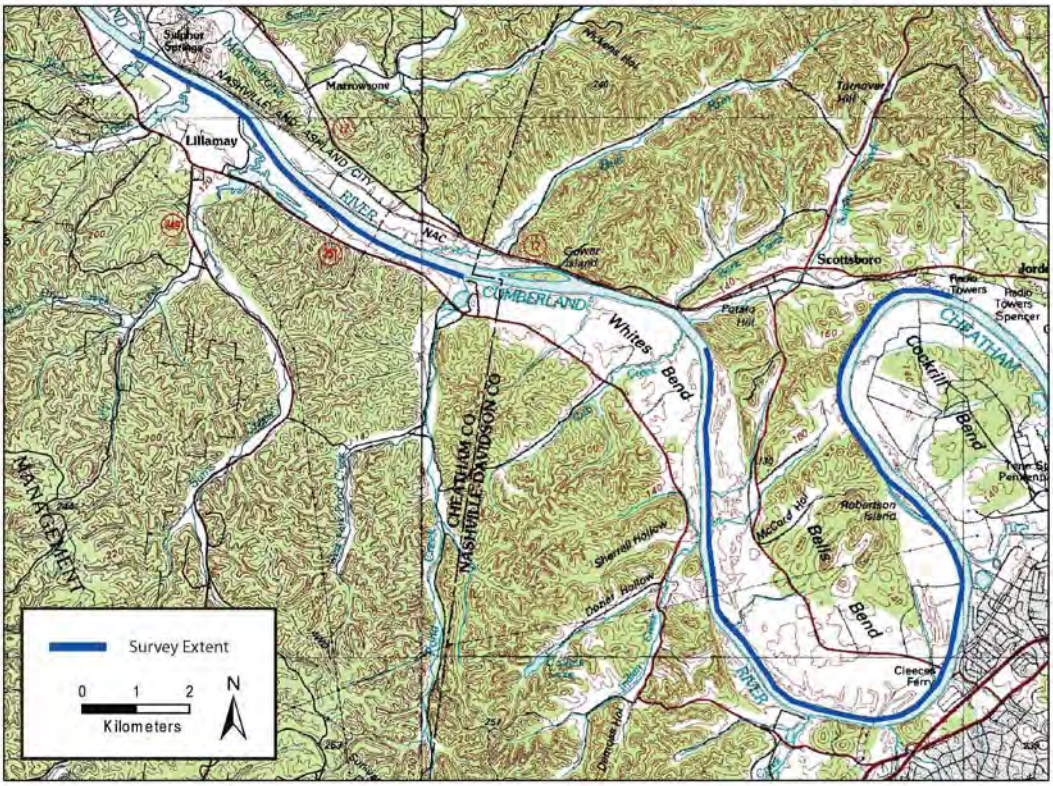

FIGURE 1. Overview of the project area.

obtained prior to the inception of the AMS method have much larger standard errors (e.g., Beukens 1992; Gove 1992; Trumdore 2000:46; Walker 2005:5, 20-23). Additionally, because large samples of charcoal were required for conventional radiocarbon dating, there is a greater possibility that a sample included charcoal of different ages, resulting in aberrant dates. AMS determinations run on small pieces of wood charcoal, and barring contamination, are likely to yield far more useful determinations.

The Middle Cumberland River valley near Nashville offers significant potential for improving the temporal resolution of the Paleoindian and Archaic periods in the southeastern United States. Previous research, primarily by archaeologists from the Tennessee Division of Archaeology (TDOA), has demonstrated that this area contains a number of stratified sites that likely contain datable material and span the terminal Pleistocene through Mid-Holocene (e.g., Broster et al. 2012). For example, two deeply buried sites, Johnson (40DV400) and Widemeier (40DV9), have produced radiocarbon dates of Late Pleistocene and Early Holocene age (Barker and Broster 1996; Broster and Barker 1992; Broster and Norton 1996; Broster et al. 1991, 2006). However, both Johnson and Widemeier have been severely damaged by erosion, looting, and urban development; and illustrate the dual threat of both cultural and natural processes to the preservation of archaeological sites in the area. Natural erosion enhanced by the wake from passing river traffic has severely damaged Johnson. At Widemeier, the majority of the artifact-bearing sediments were removed with heavy equipment and sold as fill. The exposed areas were then

subject to looting until the land owner put a halt to that activity. Johnson, fortunately, was partially riprapped by the Nashville District of the U.S. Army Corps of Engineers (COE), providing a measure of protection to the remaining cultural deposits. These two sites provide stark examples of how vulnerable deeply stratified archaeological deposits are in the Middle Cumberland River valley.

Our survey efforts focused on the area of the Cumberland River between Bells Bend and Ashland City because there is minimal urban development, an abundance of previously recorded Paleo-Indian and Archaic sites, and the potential for locating stratified sites with datable material (Figure 1). Moreover, this portion of the Middle Cumberland River has also been the target of extensive looting in the wake of the May 2010 flood (Deter-Wolf et al. 2011).

Our research has been based out of the 808 acre Bells Bend Park, a facility of the Nashville Metropolitan Board of Parks and Recreation located in the southwestern portion of the meander loop known as Bells Bend, immediately west of downtown Nashville. The area was archaeologically surveyed when the property was initially purchased by the city of Nashville for the construction of a landfill, with follow-up testing conducted at multiple sites (Anderson 1995; Merritt and Versluis 2000; Taylor 1989; Taylor et al. 1991). During that survey, and in a subsequent assessment conducted in advance of the construction of a water treatment facility immediately to the south (Anderson 1997), 35 sites were recorded including six (40DV263, 40DV273; 40DV310, 40DV526, 40DV527, and 40DV528) that yielded Paleo-Indian and/or Early Archaic artifacts (Anderson 1995, 1997; Tennessee Division of Archaeology 1989a, 1989b). Moreover, Law (2005:23) argued that similar site densities may be encountered in areas of Bells Bend that have yet to be systematically surveyed. In addition, the Widemeier site (40DV9) and 40DV524, both of which contain Paleoindian and Early Archaic artifacts, are located at the northeastern corner of the Bells Bend meander loop (Broster et al. 2006; Tennessee Division of Archaeology 1997). Downstream from Bells Bend in Cheatham County, three sites (40CH18, 40CH171, and 40CH193) all had previously reported stratified deposits with Paleoindian and Archaic artifacts that were collected from shoreline lag deposits (Barker 2004; Tennessee Division of Archaeology 1966, 1993, 1996). Finally, local avocational archaeologists have also monitored sites eroding into the Cumberland River, including one previously unrecorded site (Coble, 40DV645) that produced an Early Paleoindian, Clovis-type biface and a broken lithic drill tip that was not temporally diagnostic (see Figure 8a). The drill tip was found by our project team *in situ* in 2009 in a band of charcoal two meters below the bank crest. A sample of the charcoal returned a date of 7948 ± 51 (AA89767) and was the first of many dates resulting from this project (Table 1).

During the summer of 2010, we re-located 25 sites that ranged from comparatively recent historic sites to the initial Holocene/late Pleistocene. Of these, five upland sites were subjected to systematic shovel testing (40DV246, 40DV262, 40DV263, 40DV265, and 40DV526). We also intensively examined bank profiles at ten sites along the river (40CH18, 40CH171, 40CH193, 40DV9, 40DV14, 40DV98, 40DV307, 30DV317, 40DV524, and 40DV645). This fieldwork was conducted under ARPA permits DACW62-4-10-0438 and DACW62-4-10-

TABLE 1. Radiocarbon Dates.

Site #	Context	Material	AA #	$\delta^{13}C$	^{14}C Age BP	Cal. Age BP
40CH171	2009 Profile (160cmbs)	charcoal	AA89761	-25.1	4072 ± 39	4590 ± 102
40CH171	2009 Profile (260cmbs)	charcoal	AA89764	-25.9	5018 ± 47	5774 ± 74
40CH171	2009 Profile (280cmbs)	charcoal	AA89763	-23	5061 ± 41	5813 ± 57
40CH171	2009 Profile (260cmbs)	charcoal	AA89762	-27.8	5076 ± 41	5820 ± 54
40CH171	2009 Profile (260cmbs)	charcoal	AA89765	-27	5096 ± 42	5828 ± 56
40CH171	Float Column #5 (165cmbs)	wood (angiosperm)	AA96400	-27.7	5960 ± 43	6794 ± 58
40CH171	Float Column #5 (180cmbs)	wood (angiosperm)	AA96402	-26.2	6044 ± 46	6894 ± 71
40CH171	Float Column #5 (200cmbs)	wood (gymnosperm)	AA96401	-25.2	6092 ± 44	6974 ± 83
40CH171	Float Column #5 (210cmbs)	wood (angiosperm)	AA96397	-25.3	6115 ± 44	7014 ± 81
40CH171	Float Column #5 (220cmbs)	wood (angiosperm)	AA96398	-28.2	6152 ± 44	7058 ± 69
40CH171	Float Column #5 (190cmbs)	wood (angiosperm)	AA96408	-26.7	6197 ± 45	7096 ± 69
40CH171	Excavation Unit #1 (330cmbs)	wood (angiosperm)	AA96410	-25.9	7946 ± 49	8811 ± 105
40CH171	Excavation Unit #2 (335cmbs)	hickory nutshell	AA96411	-26.7	8004 ± 49	8864 ± 92
40CH171	Excavation Unit #2 (340cmbs)	hickory nutshell	AA96412	-27.5	8019 ± 49	8878 ± 91
40CH171	Excavation Unit #1 (345cmbs)	hickory nutshell	AA96416	-24.9	8034 ± 49	8894 ± 93
40CH171	Excavation Unit #1 (335cmbs)	hickory nutshell	AA96414	-26.6	8041 ± 49	8904 ± 95
40CH171	Excavation Unit #1 (340cmbs)	hickory nutshell	AA96415	-26.7	8043 ± 60	8904 ± 110
40CH171	Excavation Unit #2 (3350cmbs)	hickory nutshell	AA96413	-25.3	8064 ± 49	8950 ± 102
40CH193	Feat. #1 (Miller et al. This issue)	wood (angiosperm)	AA96399	-26.6	9412 ± 54	10649 ± 88
40DV14	Float Column #1 (Top)	wood (angiosperm)	AA96409	-26.4	5805 ± 43	6603 ± 58
40DV14	Float Column #1 (Middle)	wood (angiosperm)	AA96404	-23.8	5954 ± 44	6787 ± 59
40DV14	Float Column #2 (Top)	wood (oak)	AA96407	-26.8	5977 ± 44	6815 ± 58
40DV14	Profile #5 - Charcoal Lens	wood (angiosperm-oak?)	AA96393	-26.4	5979 ± 66	6822 ± 85
40DV14	Float Column #2 (Middle)	wood (angiosperm)	AA96403	-25.9	6004 ± 44	6845 ± 59
40DV14	Float Column #1 (Bottom)	wood (angiosperm)	AA96406	-24.1	6101 ± 44	6990 ± 83
40DV14	Float Column #2 (Bottom)	wood (indet.)	AA96405	-24.1	6136 ± 45	7041 ± 75
40DV307	Float Column #3 (110-115cmbs)	hickory nutshell	AA96394	-25.6	2061 ± 37	2031 ± 54
40DV307	Float Column #4 (Feature 1)	wood (angiosperm)	AA96396	-25.3	2716 ± 38	2816 ± 36
40DV307	Float Column #4 (100-105cmbs)	wood (angiosperm)	AA96395	-25.6	2728 ± 38	2825 ± 39
40DV307	Float Column #3 (105-110cmbs)	wood (angiosperm)	AA96392	-24.5	2766 ± 38	2861 ± 49
40DV645	Assoc. w/ Lithic Drill	charcoal	AA89767	-24.3	7948 ± 51	8812 ± 105

0438 issued by the Nashville District, US Corps of Engineers (COE) along with landowner permission for sites on private property.

The first phase of our survey included careful examination of the shoreline by boat. This was followed by pedestrian survey and controlled surface collections. For spatial control, we divided the shoreline into collection localities at either five or ten meter intervals along the bank. Survey collection unit boundaries and diagnostic artifact locations were determined using high precision Global Position System (GPS) instruments or with a total station. At eleven sites we noted evidence of recent looting, typically characterized by freshly gouged holes in

the archaeological deposits. We mapped the locations and extent of this damage and notified both COE and TDOA officials, and where warranted, private landowners. In the second phase of our 2010 fieldwork, we focused the bulk of our efforts on three sites where we were able to obtain access from private landowners, COE, and/or Nashville Metro Parks. Our goal was to recover relevant information from large and potentially significant sites that were being rapidly destroyed. The three sites examined included two in Bells Bend (40DV14, 40DV307) and one approximately 15 miles downriver in Cheatham County (40CH171). In this article, we focus on the stratigraphy, associated radiocarbon dates, and artifacts recovered from these three sites.[1] A single radiocarbon date obtained from a fourth site (40CH193) has been reported in a separate article (see Miller et al., this issue).

Site 40DV14, Clees Ferry

John Dowd recorded 40DV14 as a multi-component archaeological site eroding out of an alluvial terrace in the Bells Bend area (Tennessee Division of Archaeology 1972). He noted the presence of a large Mississippian period occupation most readily apparent in the form of stone-box graves that are sporadically visible in the upper meter of sediment, and that these graves may have been examined as far back as the late 19th century by representatives from the Peabody Museum (Moore and Smith 2009). In his classic tome on Tennessee archaeology, Thruston (1890:164-165) reported the site yielded "thirteen well-burned marbles, or pottery balls… in a stone box grave at Clees Ferry." Dowd observed that Thruston may have actually been referring to 40DV15 (Ganier) located on the other side of the river.

Site 40DV14 has been sporadically visited for decades, and temporally diagnostic Woodland and Mississippian pottery sherds have been occasionally collected from the surface and shoreline. However, the most visible archaeological component is a substantial shell midden (with an absence of ceramics) that has been continuously looted for decades. Following a visit to the site in January 2009, TDOA archaeologist Aaron Deter-Wolf noted in an update to the site file that "without any formal excavations… collections [by local avocationals] may soon provide the only artifact record for this and other sites on this portion of the Cumberland."

2010 Investigation

We chose this site as part of our investigation to: (1) determine the age and nature of the occupations present at this location; (2) document the most recent looting that had occurred; and (3) remove flotation columns from the shell-bearing component to acquire samples for radiocarbon dating as well as for zooarchaeological and paleoethnobotanical analyses. Given the severe bank erosion and the extent of looting observed, the recovery of information from the site before it was lost forever was considered critical.

The 2010 field team cleaned five separate profiles approximately one meter wide to provide clear exposures of the shell-bearing deposits that were observed eroding out of the bank along a nearly 70 meter stretch of shoreline. The shell deposit ranged from 30 cm to as much 130 cm thick. Three of the five profiles (Profiles 3, 4, and 5) produced radiocarbon determinations, and are discussed here. In Profile 3 (Figure 2), the

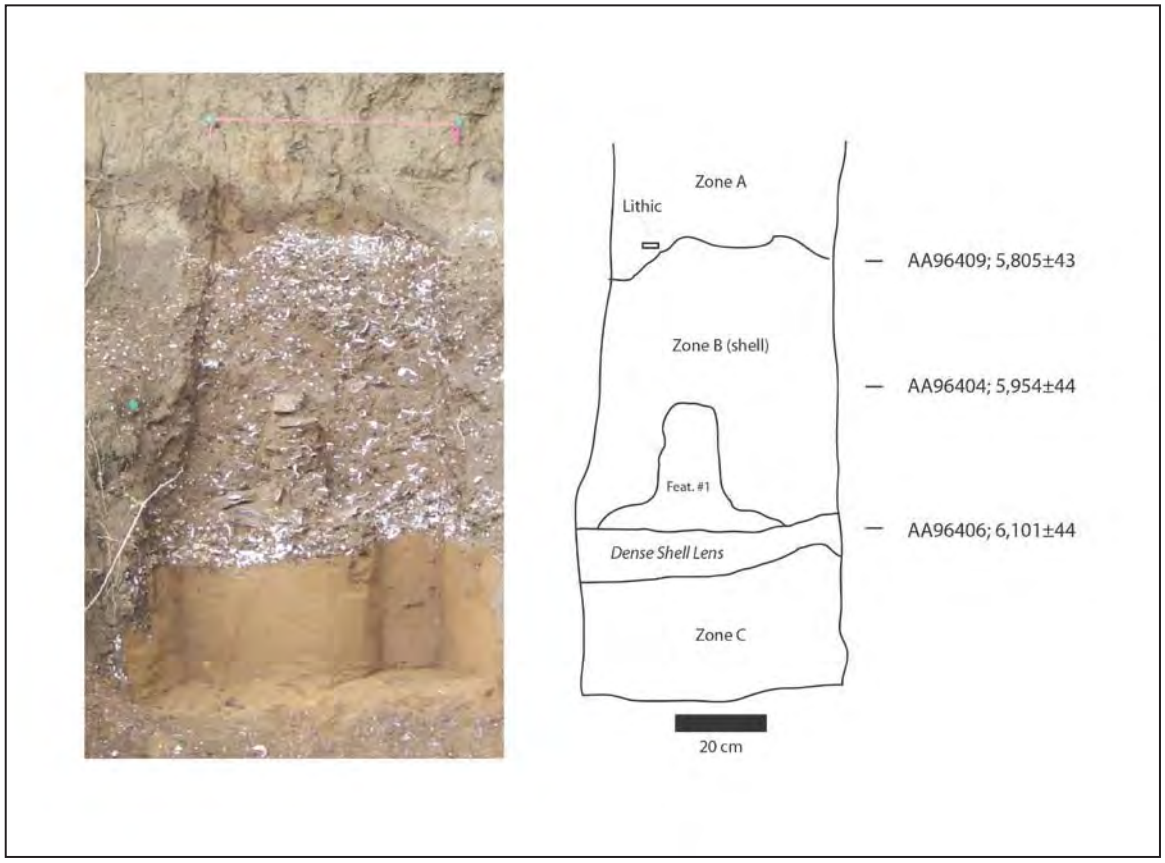

FIGURE 2. Profile 3 at 40DV14.

shell midden was capped by more than one meter of sterile alluvial sediments (Zone A). Within the shell deposit (Zone B) we observed a rock cluster (Feature 1) that may have been the remnants of a rock-lined hearth superimposed over a dense layer of shell. Similar features were observed eroding out of the shell midden in the immediate vicinity, several of which had been probed by looters. The shell layer overlaid a sterile alluvial deposit (Zone C) that had a noticeably higher sand content than the alluvial sediments in Zone A. The shell-bearing deposit had a discrete upper and lower boundary, thus making it an ideal candidate for the removal of a flotation column sample. We first isolated and removed Feature 1 and then proceeded to remove five liter flotation samples (Flotation Column 1) in 50 x 50-cm units, and at 5-cm intervals (Figure 3a).[2] From the flotation samples we were able to identify material to radiocarbon date the top (AA96409; 5805 ± 43),[3] middle (AA96404; 5954 ± 44), and bottom (AA96406; 6101 ± 44) of the shell deposit (see Table 1).

Profile 4 at 40DV14 (Figures 3b, 4) displayed stratigraphic complexity, and is discussed in detail here to document that the creation of these middens was not a haphazard or one-time affair, but involved a series of episodes. Five zones were observed, with the first (Zone A) a dark midden deposit (10 YR 3/4 dark yellowish brown) that grades into the upper boundary of the shell midden. Many large pieces of charcoal and limestone rocks were observed in the profile at the base of Zone A. Zone B contained a shell deposit that was intersected by a looter hole on the western side of the profile. Zone C

FIGURE 3. Flotation Colum 1 (A) and Flotation Column 2 (B) at 40DV14.

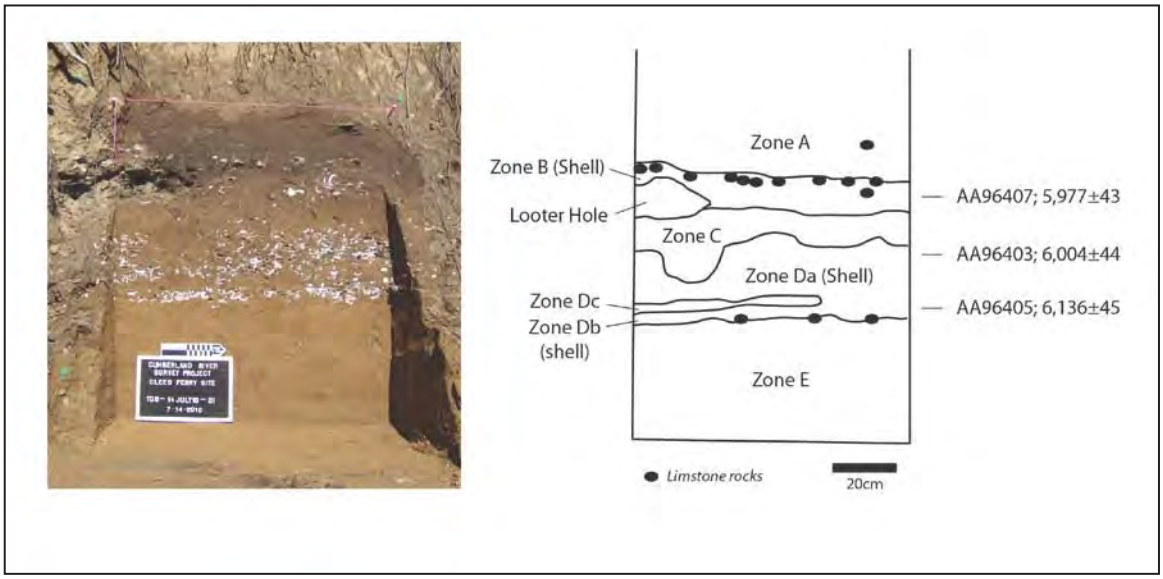

FIGURE 4. Profile 4 (facing west) at 40DV14.

was a near sterile layer of silty, alluvial sediment that overlaid Zone D, with a small disturbance on the western side that intruded into the next layer. We divided Zone D into three separate sub-strata. Zone Da was a thick deposit of shell (~30 cm) that appears to have been disturbed by either a pit feature or krotovina on the western side of the profile. Zone Db consisted of a thin layer of sterile alluvial sediment superimposed over Zone Dc, a layer of dense shell at the base of the archaeological deposits. Many of the shells at the base of the lowest part of the midden were oriented with the dorsal surface facing upward atop Zone E, suggesting intentional placement rather than casual discard. Zone E was a sterile alluvial deposit underlying the archaeological deposits and the upper part of this stratum had a noticeably higher sand content relative to the other strata. Flotation Column 2 was taken through the Profile 4 deposits using 5-cm

levels, with care taken to avoid the looter hole and the disturbance noted intruding into Zone Da (see Figure 3b). Radiocarbon dates were obtained on charcoal extracted from the top (AA96407; 5977 ± 43), middle (AA96403; 6004 ± 44) and bottom (AA96405; 6136 ± 45) of the shell deposit (see Table 1).

Profile 5 was cleaned and a radiocarbon sample obtained from the base, but a flotation column was not taken because of the sloping deposits and the apparent feature disturbance. As with Profiles 3 and 4, the shell deposits in Profile 5 were capped by a darker (10 YR 3/4 dark yellowish brown) deposit (Zone A) (Figure 5). Zone B consisted of the upper-most shell deposit over-lying a much denser shell deposit (Zone C) that we sub-divided into three sub-strata based on relative shell content. Otherwise the color and texture of the sediments between the three sub-strata are indistinguishable. Within Zone C we observed a large rock feature designated Feature 2 that was similar to the rock feature identified as Feature 1 in Profile 3. On the western side of Feature 2 was a very dense charcoal deposit from which we were able to obtain a fragment of wood charcoal to radiocarbon date, yielding a result in agreement with the determinations obtained from the other two flotation columns (AA96393; 5979 ± 66)(see Table 1).

The three profiles and associated radiocarbon determinations indicate that the Clees Ferry shell midden was laid down between ca. 5800 and 6000 14C yr BP. While multiple depositional episodes are indicated, the overall span of time involved was comparatively short.

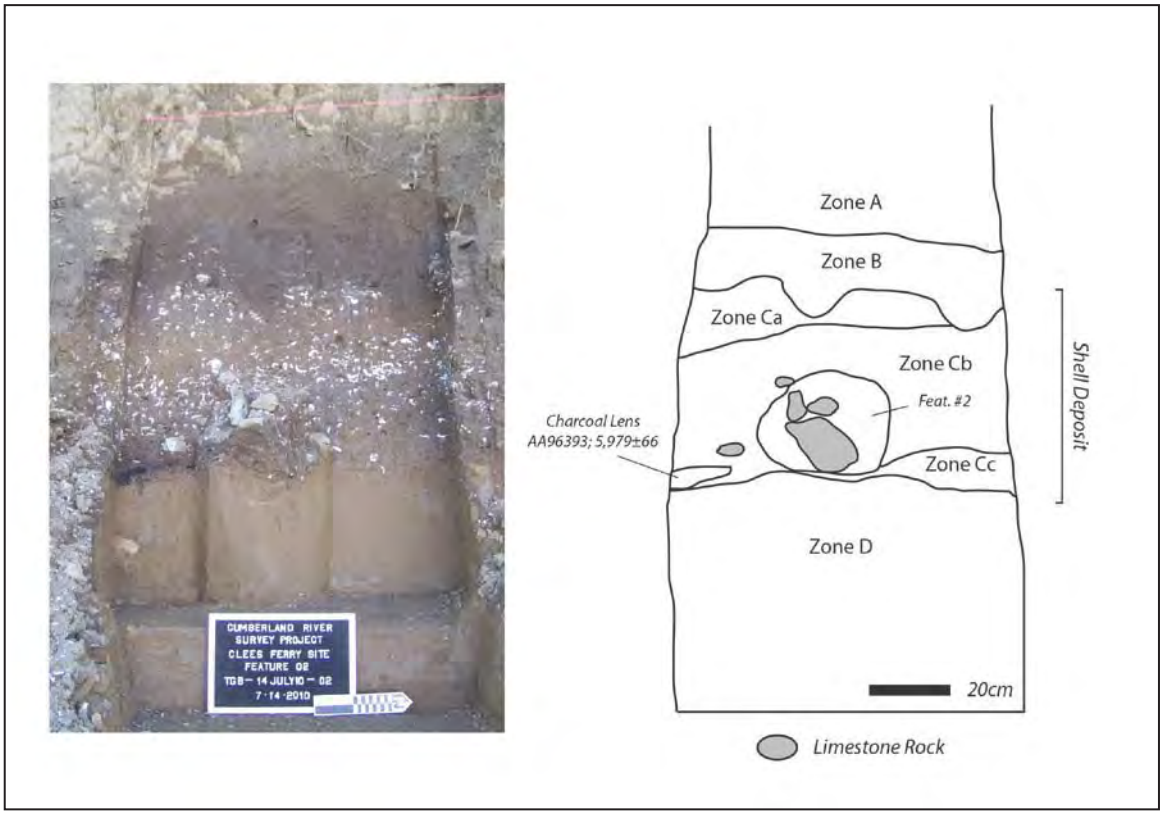

FIGURE 5. Profile 5 (facing west) at 40DV14.

Site 40DV307

Site 40DV307 was originally recorded in 1989 by Richard Taylor of the Office of Archaeological Research at the University of Alabama, during a survey of the property that later became the Bells Bend Outdoor Center (Taylor et al. 1991). The site was described as a well-defined shell midden extending for approximately ten meters along the shoreline. The remains of two stone-box graves together with human skeletal remains were also observed along the shoreline and had recently been looted out of the bank. The site was reported as having probable Woodland and Mississippian components based on the presence of a large bifacial hoe as well as both limestone-tempered and shell-tempered pottery. Mammal and fish bones were observed eroding out of the deposits as well as gastropods and bivalves.

2010 Investigation

When we revisited 40DV307 in 2010, the site had been freshly looted with human remains and probable stone-box grave slabs displaced onto the bank slope. The human remains were collected by TDOA personnel and included in the TDOA NAGPRA inventory. Inspection of the profile noted features of shell and earth (including possible pit features), warranting careful cleaning and mapping of a portion of the bank profile.

The initial focus of our work at this site was to identify if there were older deposits present due to its location on a levee at a relatively elevated position above the current river channel. Additionally, we observed very recent looter activity that had probably occurred just hours before our arrival. An undisturbed cigarette that had been laid by a human long bone, and shovel/pick gouges in the bank wall with the soil still damp.[4] The scattered human remains were associated with fragments of (at least) one stone-box grave. In order to document both the extent of the looting and the archaeological deposits eroding from the site, a controlled surface collection was conducted at ten-meter intervals along the shoreline. The boundary of the site was determined to be much larger than first reported based on the distribution of recovered artifacts.

A four-meter wide bank profile revealed stratified cultural deposits and two prehistoric pits (Pits 1 and 2) bisected by the recent bank erosion (Figure 6). Our 2010 fieldwork focused on documenting and sampling each pit. Both features extended from an upper, dark (10YR 4/3 brown) cultural deposit (Zone Aa), and were well-defined by clear contrasts in color between the darker (10YR 2/1 black), organic fill and the surrounding lighter matrix (10YR 4/4 dark yellowish brown) of the deeper deposits. Pit 2 (see Figure 6) was excavated through an earlier cultural stratum containing freshwater mussel shell (Zone B). The discontinuity in the horizontal extent of the shell deposit at the pit edges further delineated the edges of the prehistoric excavation. A thin layer of shell defined at the top of Pit 2 had been deposited when the pit was filled (presumably from the earlier midden the pit intruded, see Figure 6). In contrast, Pit 1 was positioned immediately beyond the horizontal extent of the deeper shell midden. The upper boundary of Pit 1 was less defined than observed for Pit 2 by grading into the overlying Zone Aa cultural deposit. The lower boundaries of the pit were also less delineated than those of Pit 2, with Pit 1 slightly shallower in overall depth.

Both pits extended into Zone C below the Zone B shell deposit. Distinctions in

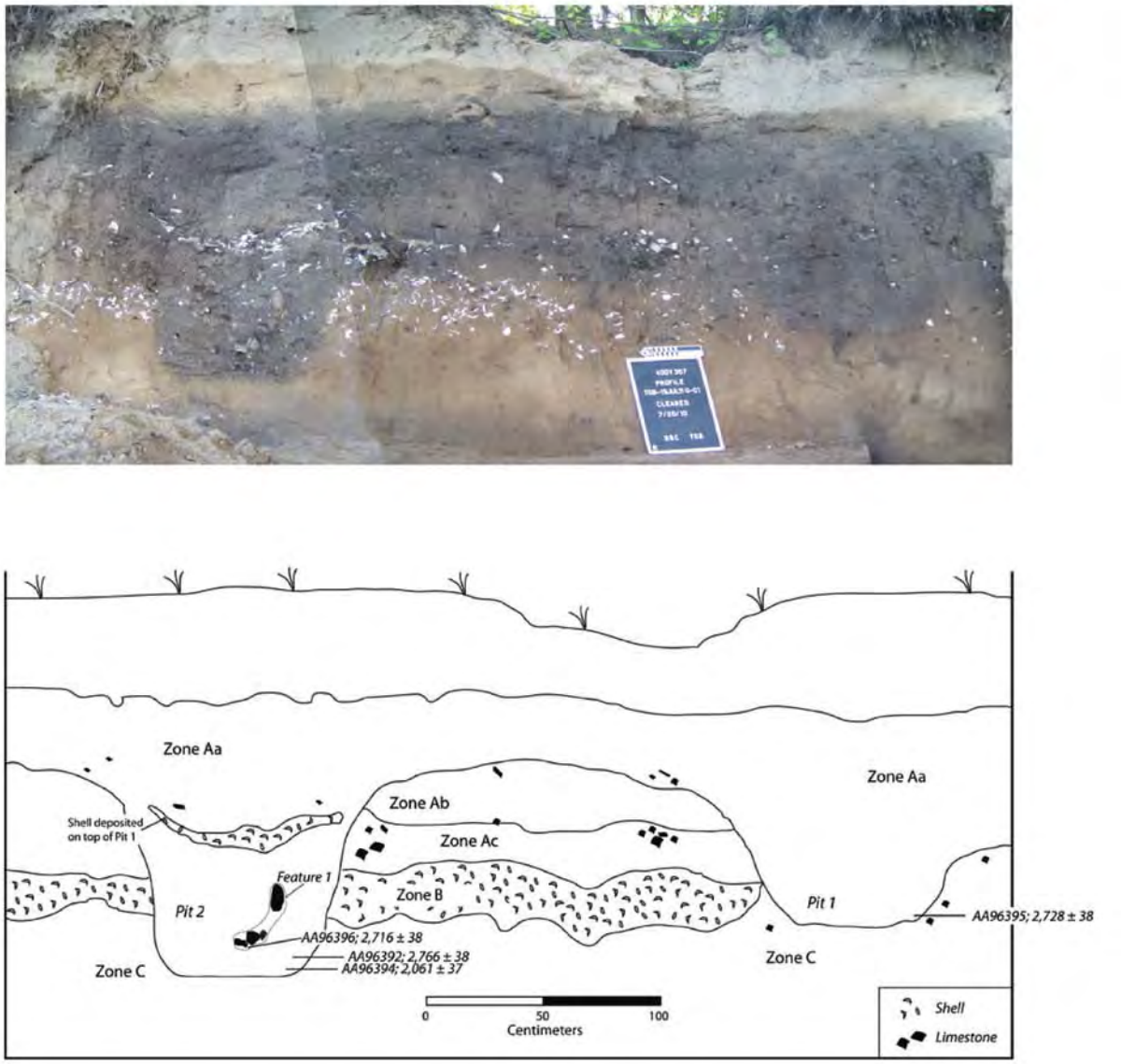

FIGURE 6. 40DV307 Profile.

color in the sediments noted in the profile between Pits 1 and 2 were labeled Zone Ab and Zone Ac. Zone Ac was of the same approximate color and content as Zone Aa (10YR 4/3 brown), while Zone Ab (between Aa and Ac) was lighter in color (10YR 4/1 dark gray). The lack of shell in Zone Ab suggested the possibility that it comprised the remains of subsoil from Zone C, removed and piled to one side when either Pit 1 or Pit 2 was excavated.

Two 50 x 50-cm flotation columns were excavated in 5-cm intervals (producing five-liter samples), one each from Pit 1 (Flotation Column 3) and Pit 2 (Flotation Column 4). These produced abundant organic material suitable for dating. Two radiocarbon dates were obtained from column levels at the base of Pit 2 (see Figure 6) (AA96392; 2766 ± 38; AA96394; 2061 ± 37) and from Feature 1 (AA96396; 2716 ± 38). A fourth date came from a column level at the base of Pit 1 (AA96395; 2728 ± 38). Finally, a Late Archaic/Early Woodland

stemmed projectile point (e.g., Justice 1995:154) was recovered after it fell out of the Pit 1 wall (Figure 8b).

Site 40CH171

This site was recorded in 1993 after a local informant notified the COE and TDOA that a four-foot thick shell deposit was being actively looted (Tennessee Division of Archaeology 1993). Subsequent fieldwork (Tennessee Division of Archaeology 1996) recorded Archaic and Woodland period artifacts including Kirk Stemmed, Benton, and Motley type bifaces (Coe 1964:70; Ford and Webb 1956:57; Ford et al. 1955:129-130; Justice 1995:82, 111, 198-201; Kneberg 1956:25; Lewis and Lewis 1961:34).

Our fieldwork at 40CH171 began with a visit in July 2009, when Shane Miller accompanied TDOA archaeologist John Broster and Bobby Hulan, a local avocational archaeologist, on a tour of riverbank sites that had the potential for deeply buried, intact deposits. Miller returned to the site in September 2009 and collected a total of six samples for radiocarbon dating (Figure 7). Five separate archaeological deposits between 1.6 and 3.3 meters below modern ground surface were apparent in the exposed profile at that time. In addition to these deposits were two buried soil horizons at 1.6 and 2.8 mbs. Based on a radiocarbon dated sample of charcoal (AA89764; 4072 ± 39), the upper soil horizon at 1.6 meter below surface and the associated archaeological materials are likely terminal Late Archaic in age. The lower soil horizon and associated archaeological material date to the Middle Archaic/Late Archaic transition based on five dates that produced an averaged date of 5065 ± 22.[5]

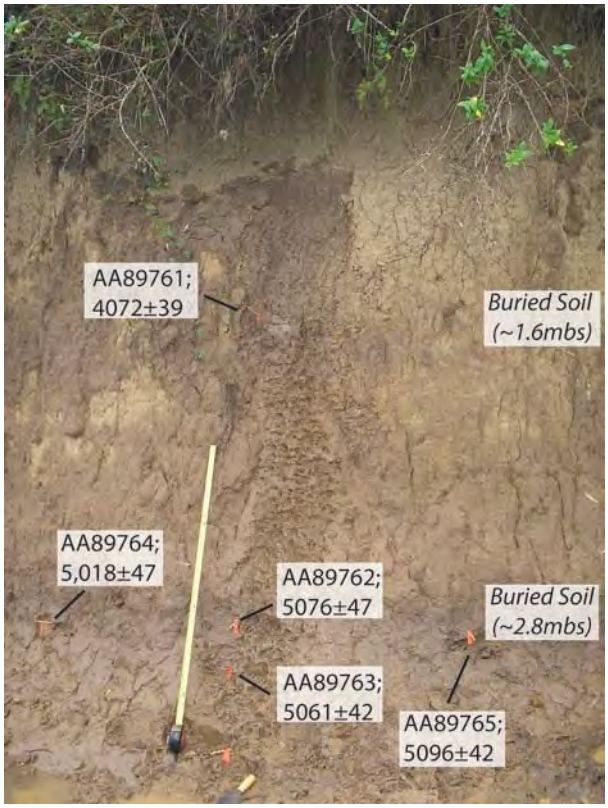

FIGURE 7. 40CH171 - 2009 Profile.

2010 Investigation

Our efforts during the 2010 field season focused on further testing at 40CH171 since: (1) intact archaeological deposits and radiocarbon datable material were present; (2) Early Archaic artifacts have been reported from the site; and (3) we received permission from the inland landowner to investigate the site. The actual site location falls under the jurisdiction of the COE.[6]

One of the more dramatic aspects of 40CH171 is the massive volume of lithic artifacts that has eroded out of the bank and covers the shoreline. Most of the eroded material consists of debitage. A controlled surface collection was conducted in the hopes of locating temporally diagnostic tools, points, and other artifacts. Collection areas at five-meter intervals were examined by team

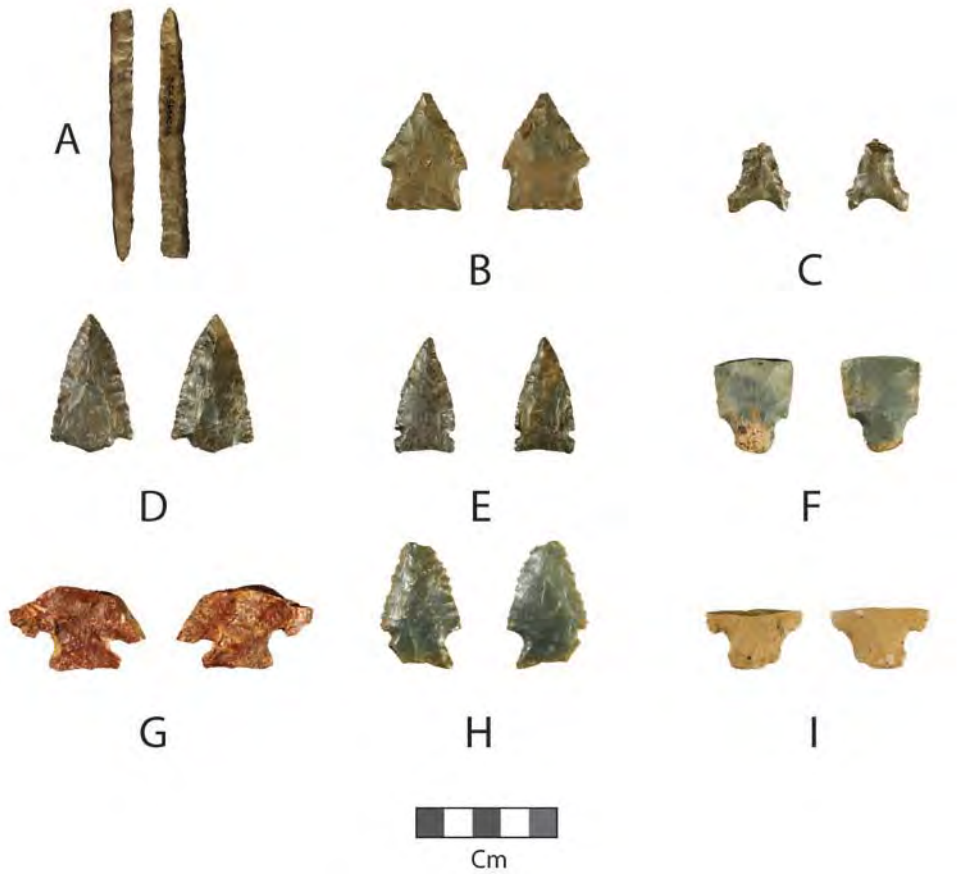

FIGURE 8. Selected lithic artifacts: A) 40DV645; B) 40DV307 - Pit 2; C-F) 40CH171 - Shoreline Collection; G-H) 40CH171 - Zone B; I) 40CH171 - Zone D.

members. A total of 1,121 artifacts were collected and catalogued from the controlled collection units. Another 107 items were either collected from the general site area during later visits, or donated to the project by local avocation archaeologists. Artifacts recovered from the controlled collection include a heavily re-worked biface that appears to be either an Early Side-Notched or Dalton (Figure 8c), a possible Early Archaic Kirk Corner-Notched biface with a missing proximal portion (Figure 8d), a Big Sandy Side-Notched (Figure 8e), and a Late Archaic Stemmed (Figure 8f).

In addition to the lithic artifacts found along the shoreline and eroding out of the bank, a well-defined shell midden was observed in the bank extending for approximately 20 meters at the site's eastern end. This midden was being actively looted, with gouged out holes extending almost a meter into the bank. Shell and human remains were present on the shoreline.[7]

The authors chose to remove controlled samples from select locations within the midden for a variety of reasons, including: (1) the relatively small area of exposed shell; (2) the strong possibility that the shell deposit would not survive many more episodes of looting; (3) ease of access to the exposed bank deposits; and (4) the high probability of obtaining information relevant to project research goals. The first excavation profile (Profile 1) was placed at the eastern end of the shell deposit (Figure 9). The upper 20 cm

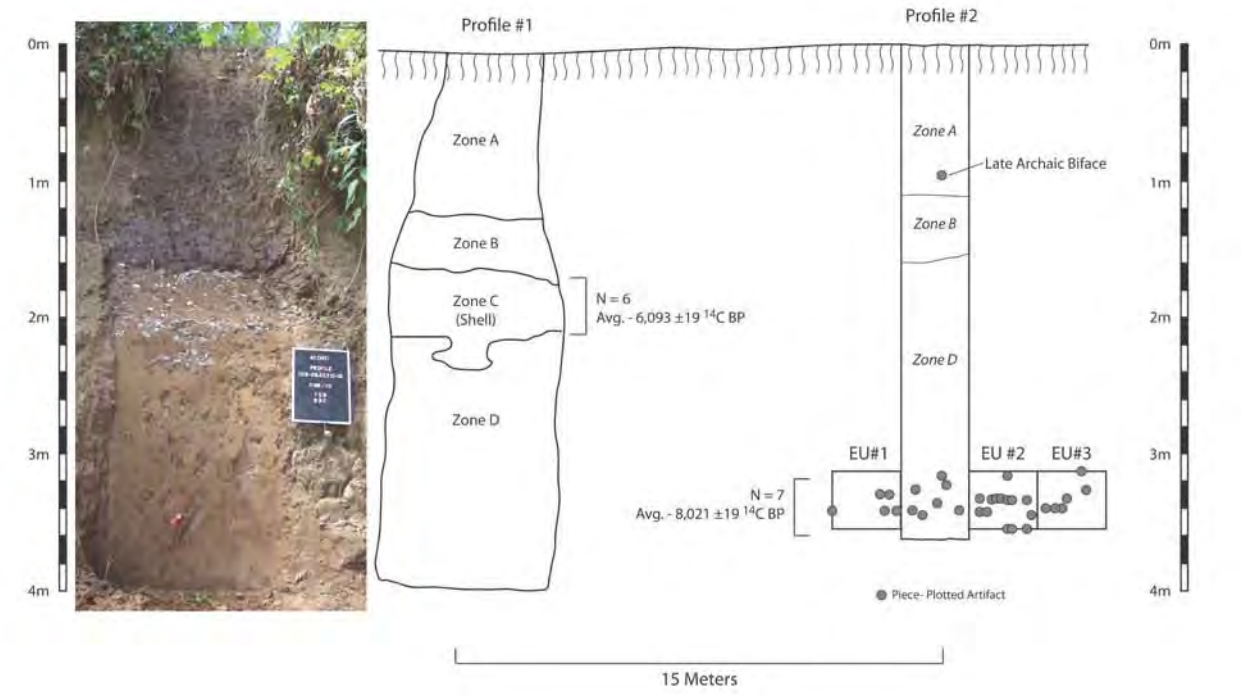

FIGURE 9. 40CH171 - Profiles 1 and 2.

level comprised an A horizon covered with dense vegetation. Below this level the profile was divided into five zones. Zone A extended from 20–125 cm below surface and contained little archaeological material. In Zone B (125–165 cm below surface) the deposits became noticeably darker (10YR 2/2 very dark brown) and yielded substantially more artifacts, including two bifaces found at 150 cm and 153 cm below surface. One biface is likely a Snyders (Justice 1995:201; Scully 1951) (Figure 8g). Zone C (165–225 cm below surface) consisted of two dense bands of shell separated by a 25–30 cm thick deposit of sediment with much lower shell content. Zone D consisted of a silt loam deposit that graded into a sandy silt loam with increasing depth. No artifacts were found in Zone D from either the general profile or the subsequently collected flotation samples. However, we decided to remove a flotation column (Float Column 5) from this profile due to the presence of lithics, bone, shell, and charcoal in Zones B and C. Project personnel collected 25 x 25 cm samples at 10-cm intervals from the bank top to just above the waterline (depth of approximately four meters). Wood charcoal samples suitable for radiocarbon dating were submitted from six levels within the shell midden (Zone C). These determinations resulted in an averaged date of 6093 ± 19 (see Table 1).

Profile 2 was placed just beyond the western extent of the shell deposit in an area of the site where the slope of the shoreline was not completely vertical. This location provided an opportunity to conduct limited excavations if intact deposits could be defined below the shell deposit. We began cleaning the profile at 95 cm below ground surface and encountered sediments that were the same color and texture as Zone A in Profile 1. A biface was removed at 95 cm below surface (Figure 8h) that may be a Late Archaic Matanzas (Bray 1956;

Justice 1995:119, 124; Suhm et al. 1954).[8] From 110–160 cm below surface we encountered darker sediments (10YR 3/3 dark brown) consistent with Zone B in Profile 1. However, below this zone there was no shell deposit, and from 160–308 cm below surface we instead encountered a culturally sterile zone consistent with Zone D in the previous profile. Then, beginning at 308 cm below surface we encountered a large flake, fire-cracked rock, and charcoal fragments extending to 339 cm below surface. The levels were now at the water's edge and grew increasingly saturated with depth. Larger debitage, rock, and charcoal fragments were piece-plotted and removed, with the fill removed for later flotation. Flotation was conducted following the fieldwork, and the samples required soaking in sodium hexametaphosphate before they could be successfully floated.

This particular area of the site provided a unique opportunity because the profile had eroded at an angle that allowed us to open small excavation units without having to excavate through three meters of sediment that capped the lower archaeological deposits. Consequently, three adjacent 50 x 50 cm excavation units were excavated in 5-cm intervals to a depth of 350 cmbs where the waterline was reached (see Figure 9). All observed lithic artifacts, large pieces of charcoal, and rocks were piece plotted, with all level fill collected and floated. From these units we were able to recover seven charcoal and hickory shell specimens that produced an average date of 8021 ± 19 (see Table 1). The floatation samples also yielded numerous pieces of debitage, one retouched flake, and a biface base (Figure 8i) at a depth of 330-335 cmbs that is most likely an Early Archaic Kirk Stemmed or Stanly Stemmed (Coe 1964:35-36, 70; Justice 1995:82, 97).

Conclusions

A total of 29 high precision AMS determinations were obtained from sites 40DV14, 40DV307, and 40CH171 in 2009 and 2010 (Figure 10). When combined with the radiocarbon dates from 40DV645 and 40CH193 (AA96399, 9412 ± 54; see Miller et al., this issue), our project yielded dated components spanning almost the entire breadth of the Archaic period as well as the initial part of the Woodland period. The stone drill tip and associated charcoal from 40DV645, and the average of dates from Zone D of 40CH171, are consistent with terminal Early Archaic components associated with Kirk Stemmed and Stanly Stemmed bifaces from elsewhere in the Cumberland and Tennessee River Valleys. Comparable sites include Icehouse Bottom (Chapman 1976:3), Dust Cave (Sherwood et al. 2004:538), Russell Cave (Griffin 1974), and Morrisroe (Nance 1986:42). The presence of possible Early Side-Notched/Dalton and Kirk Corner-Notched bifaces from the surface collection of 40CH171, as well as the Paleo-Indian period fluted points reportedly recovered from the water's edge by local collectors, indicates a potential for older deposits present at this site.

Dates from the 40DV14 and 40CH171 shell deposits overlap with Middle Archaic components associated with White Springs/Sykes and Benton bifaces at sites such as Dust Cave (Sherwood et al. 2004: 538), Anderson (Dowd 1989), Ervin and Hayes (Hoffman 1984), and elsewhere in the Mid-South (McNutt 2008). The dates also overlap with the side-notched components from Austin Cave (Barker 1997:216). Finally, the dates and the stemmed biface recovered from the 40DV307 pits are terminal Archaic/Early Woodland in age.

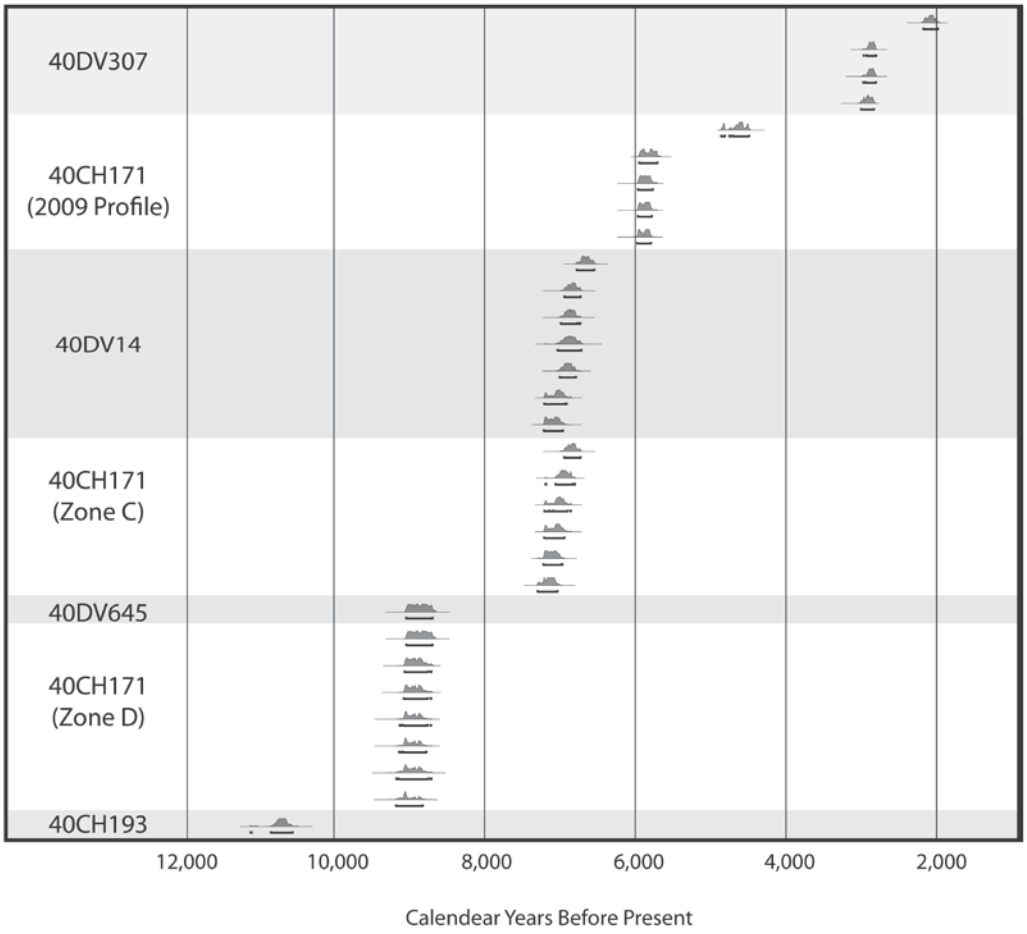

FIGURE 10. Radiocarbon determinations calibrated with OxCal 4.1 using the IntCal 09 curve (Bronk Ramsey 2009).

The precision and close agreement of the dating illustrate the utility of conducting fine screen/flotation column sampling at deeply stratified sites, and also the value of submitting multiple samples for dating. The banks and adjoining uplands along the Cumberland River west of Nashville contain archaeological data useful to documenting the range of human cultures present in the Mid-South over the past 15, 000 years from the late Pleistocene through later Holocene eras. Investigations of project materials are ongoing, with more fieldwork planned for the summer of 2012 and beyond to explore human existence over the long term in the Mid-South.

Notes.

[1] Comprehensive artifact inventories from these sites will be submitted as part of a final report to the U.S. Army Corps of Engineers (Nashville District), Tennessee Historical Commission, and Nashville Metro Parks.

[2] All flotation column samples were processed using the methodology outlined in Pearsall (1989).

[3] All radiocarbon determinations are reported as uncalibrated unless otherwise noted.

[4] A follow-up visit to the site in mid-April 2012 found another looted stone-box grave.

[5] We used the “R-Combine” function in OxCal 4.1 (Bronk Ramsay 2009) to average multiple radiocarbon dates.

[6] Fieldwork at the site conducted by Miller in September 2009 was undertaken under ARPA

Permit DACW62-4-09-0414. Subsequent fieldwork in July and August 2010 was under ARPA Permit DACW62-4-10-0438.

[7] The U.S. Army Corps of Engineers, Nashville District collected the human skeletal remains and is working in accordance with the Native American Graves and Repatriation Act (NAGPRA) to repatriate the remains.

[8] Reviewers suggested the point may be a re-worked Kirk Corner-Notched. Given its position in the deposits at a level consistently dated to younger than 5000 14C yr BP, we continue to hold that it is probably a re-worked Matanzas-like form, similar to the Big Sandy side-notched points from Strata II and III at Eva (Lewis and Lewis 1961:38). However, it is possible that the shell midden was itself built on a much older surface, or that point was an Early Archaic type that was subsequently curated and re-deposited on a Late Archaic surface.

Acknowledgements: We extend special thanks to Tom Pertierra and SEPAS, Inc. for logistical and financial support. This project was also supported with grants from the Tennessee Historical Commission, the American Philosophical Society's Lewis and Clark Fund, and the Office of Research from the University of Tennessee. Our fieldwork was facilitated with the help of the Nashville District Army Corp of Engineers, the Metropolitan Parks of Nashville, the Bells Bend Outdoor Center, and the Tennessee Division of Archaeology. Marcus Lee of the University of Arizona AMS Lab aided greatly in the pretreating and processing of the radiocarbon samples in this project. We especially thank John Broster, Aaron Deter-Wolf, LinnAnn Welch, Bobby Hulan, Kathleen Wolff, Eric Wooldridge, Susan Hollyday and the community of Bells Bend for their help and providing such a great environment to conduct archaeological research. Aaron-Deter-Wolf, Tanya Peres, and one anonymous reviewer provided excellent commentary on earlier versions of the manuscript, and their help is appreciated. Finally, we thank the graduate students (Derek Anderson, Tracy Hadlett, Erik Johanson, Ashley Smallwood, Sarah Walters, and Stephen Yerka), 16 excellent University of Tennessee undergraduates, and the many local volunteers whose work during the 2010 field season contributed to the results reported here.

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D. Shane Miller
School of Anthropology
University of Arizona
P.O. Box 210030
Tucson, AZ 85721-00030

David G. Anderson
University of Tennessee
Department of Anthropology
250 South Stadium Hall
Knoxville, TN 37996-0720

Thaddeus G. Bissett
University of Tennessee
Department of Anthropology
250 South Stadium Hall
Knoxville, TN 37996-0720

Stephen B. Carmody
University of Tennessee
Department of Anthropology
250 South Stadium Hall
Knoxville, TN 37996-0720