THE SHELL-BEARING ARCHAIC IN THE MIDDLE CUMBERLAND RIVER VALLEY

TANYA M. PERES[1] AND AARON DETER-WOLF[2]

[1] *Department of Anthropology, Florida State University, Tallahassee, FL 32306, USA*
[2] *Tennessee Division of Archaeology, Tennessee Department of Environment and Conservation, Nashville, TN 37243, USA*

The Middle Cumberland River Valley (MCRV) of Tennessee comprises a unique regional environment that has continually supported human occupation along the natural river levees and adjacent terrace landforms since the Late Pleistocene. Over thousands of years Archaic period inhabitants of the MCRV harvested the invertebrate species that populated the streams and waterways of the region, using them for subsistence and raw materials and taking an active role in managing the riverine resources. The cumulative result of this process appears in the archaeological record as abundant and often-dense deposits of invertebrate zooarchaeological remains. However, few formal archaeological investigations have been conducted on Archaic shell-bearing sites in the region. In this field report we present initial results of site file analysis, radiocarbon dating, and species composition research in order to introduce the MCRV manifestation of the cultural phase traditionally known as the Shell Mound Archaic.

KEYWORDS: *Shell Mound Archaic, Shell midden, Zooarchaeology, Cumberland River*

Archaeological sites featuring dense concentrations of freshwater mollusks appear along the interior waterways of the American Southeast during the Archaic period of regional prehistory, including in Kentucky, Tennessee, Mississippi, Georgia, and Alabama (see Claassen 2010; Marquardt 2010a, 2010b; Marquardt and Watson 2005; Sassaman 2006; Sassaman et al. 2006). These sites, typically called shell middens or shell mounds,[1] are of great significance to understanding the past, in that they can reveal unique information regarding the relationship between humans, animal species, and the natural environment over periods of thousands of years. The invertebrate species recovered from these sites also are useful proxies for understanding past flood cycles and long-term regional patterns of environmental change and human negotiations of the landscape (e.g., Álvarez et al. 2011; Peacock and Gerber 2008; Peacock and Seltzer 2008; Sassaman 2010).

Intensive archaeological research and debate have taken place over the last 70 years regarding Archaic shell-bearing sites (e.g., Anderson 2004, 2010; Claassen 1991, 1992, 1996, 2010; Marquardt 2010a, 2010b; Peacock 2002; Sassaman 2006; Webb 1950, 1974; Webb and Haag 1939). One interpretation of shell-bearing site formation postulates that these locales reflect population sedentism and/or indicate seasonal occupation in areas of exceptional productivity during extreme environmental pressures (e.g., Hofman 1984; Jenkins 1974). The implicit assumption underlying this model is that shellfish functioned as starvation food during the Archaic, and would not have been otherwise extracted in such large quantities.

Another interpretation of shell-bearing site formation emphasizes corporate construction efforts and sociopolitical complexity. According to this model, freshwater shells were deliberately harvested and re-deposited in order to construct above-ground architectural features (e.g., Anderson 2004; Russo 2006). This interpretation assumes the frequent inclusion of burials within shell-bearing deposits and use of these locations for feasting events served to consecrate site locations, and may have associated specific sites and their surrounding territories with particular groups or lineages (e.g., Claassen 1996, 2010).

Although this debate has unfolded in other areas of the Southeast, few formal archaeological investigations have been conducted on Archaic shell-bearing sites in the Middle Cumberland River Valley (MCRV) of Tennessee. In this region, densely deposited remains of freshwater shellfish

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appear in the archaeological record between approximately 6200 and 1000 cal B.C.[2] In this research report, we present the results of site file analysis, radiocarbon dating, and species composition analysis generated by our research on Archaic shell-bearing sites within the MCRV of Tennessee between 2007 and 2015. Although additional multi-site fieldwork remains to be completed in order to gain a holistic understanding of this regional cultural phenomenon, the site distribution data, radiocarbon chronology, and faunal data presented here constitute significant new information towards refining the regional cultural sequence and placing these sites within the larger context of the Southeastern Archaic.

The MCRV of Tennessee

The United States Geologic Survey divides the Cumberland River watershed into Upper and Lower segments at its confluence with the Caney Fork in Smith County, Tennessee (Seaber et al. 1994). However, the portion of the Cumberland and its tributaries that drain into Tennessee's Central Basin is recognized as a unique region within both the archaeological and biological literature (e.g., Bentz 1986; Dillehay et al. 1984; Page and Beckham 1987; Parmalee and Klippel 1982). Based on cultural and environmental factors noted by earlier sources, as well as our own research into regional prehistory (e.g., Deter-Wolf and Peres 2012), we herein discuss the MCRV as a geographic area linked to the formation of Archaic shell-bearing sites.[3]

The MCRV is oriented around the Cumberland River as it flows through the Central Basin of Tennessee, from its confluence with the Obey River downstream to the mouth of the Harpeth River (Figure 1). Along this length, the Cumberland is fed by major tributaries including the Obey, Caney Fork, Stones, and Harpeth rivers, as well as abundant named and unnamed rivers and streams. In total, the MCRV watershed drains more than 2 million hectares across 29 Tennessee counties, and includes over 4,000 recorded archaeological sites.

The freshwater mollusks that comprise the defining element of Archaic shell-bearing sites in the MCRV generally favor rocky substrates shallowly submerged beneath calm (gastropods) or rapidly (bivalves) flowing currents. These environments form in locations where lower order streams empty into higher order waterways, depositing their erosional bed loads and creating rocky shoals. The construction of flood and navigation control measures and U.S. Army Corps of Engineers reservoirs beginning in 1888 (Brent and DuVall 2001) have largely destroyed or obscured these features and associated shellfish beds along the main channel of the Cumberland, Stones, and Caney Fork rivers.

Excavations along the Cumberland at Robinson Shell Mound (40SM4) (Morse 1967), Penitentiary Branch (40JK25) (Cridlebaugh 1986), and along the Harpeth River at the Anderson site (40WM9) (Dowd 1989; Moore et al. 1990) (see Figure 1) represent the only published, generally accessible investigations of Archaic shell-bearing sites in the MCRV prior to 2007. Both Cultural Resources Management testing (Dicks 1999) and burial removal projects (Allen 2006) have also been performed at Archaic shell-bearing sites in the region; however, the results of those undertakings are not widely available. Although these projects and work along the Duck River at the Hayes site (40ML139) (e.g., Klippel and Morey 1986) provide a window into the broader Middle Tennessee region, those efforts do not specifically address contemporary research issues regarding the many shell-bearing sites situated within the MCRV. This trend has begun to change in recent years as a result of research-focused work in the western MCRV by the authors and others (e.g., Miller et al. 2012; Peres, Deter-Wolf, and Myers 2012).

Investigations by the Authors into Archaic Shell-Bearing Sites of the MCRV

emergency shoreline assessment and sampling

The authors began monitoring and documenting erosion and looting at shell-bearing sites along the western portion of the MCRV in 2007 (Figure 2). Three years later, in 2010, the authors and bioarchaeologist Shannon Hodge (Middle Tennessee State University [MTSU]) were awarded a National Science Foundation grant for rapid response research (RAPID) to assess site conditions and salvage endangered data at 128 previously recorded prehistoric sites along the Cumberland near Nashville following catastrophic flooding along the Cumberland and its tributaries (Deter-Wolf and Peres 2012; Deter-Wolf et al. 2011; Peres et al. 2011). That effort combined documentation of natural and anthropogenic site disturbances, delineations of site stratigraphy, and selective sampling of deposits

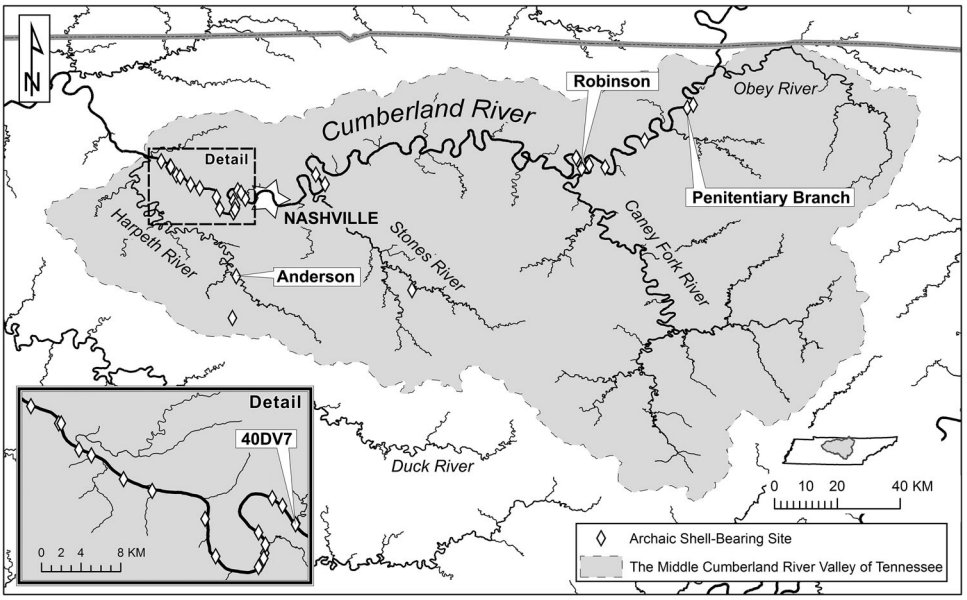

FIGURE 1. Map of the MCRV in Tennessee with general locations of Archaic shell-bearing sites.

assessed as being in imminent danger of destruction (Figure 3). Twelve of the sites investigated during the 2010 survey included shell-bearing deposits from the Archaic and Mississippian periods, and were selected for emergency bankline sampling due to ongoing threats from erosion and ongoing looting.

SURVEY AND EXCAVATIONS AT 40DV7

In 2012, Peres directed an MTSU archaeological field school at site 40DV7, a multicomponent site situated along the Cumberland River west of Nashville. That project sought to delineate horizontal and vertical site boundaries, and specifically to examine Archaic shell-bearing deposits through bucket auger and ground-penetrating radar survey, test unit excavation, and column sampling.

Site 40DV7 includes a substantial Archaic shell-bearing component encompassing an area of approximately 3,200 m². Those deposits begin between 50 and 100 cm below ground surface, average 70–150 cm in thickness, and are mainly comprised of aquatic gastropods (Peres, Baluha,

FIGURE 2. Inspection of Archaic shell-bearing stratigraphy exposed by hard rains along the Cumberland River near Nashville, 2009.

FIGURE 3. Emergency sampling of Archaic shell-bearing deposits following the May 2010 flood along the Cumberland River near Nashville.

Deter-Wolf, Keasler, Mills, Moore, and Robinson 2012). Test unit excavations suggest portions of the site away from the natural levee of the Cumberland were prepared with re-deposited fire-cracked rock prior to Archaic shell deposition (Figure 4). This may have been an effort to offset erosion along the site margins, as the site was situated in a rapidly accreting and high-energy environment during the early and middle Holocene (Peres, Baluha, Deter-Wolf, Keasler, Mills, Moore, and Robinson 2012).

TENNESSEE DIVISION OF ARCHAEOLOGY STATE SITE FILES SURVEY

Between 2013 and 2015, the authors conducted a review of archaeological site files housed at the Tennessee Division of Archaeology in Nashville in an effort to understand the quantity and distribution of shell-bearing sites in the MCRV beyond the RAPID survey boundaries. This record search included an examination of site file data for nearly 1,400 prehistoric sites along the natural levee and first terrace of the Cumberland River and its tributaries within the MCRV.

Shell-bearing sites are not a distinct site type in the Tennessee Site File, and, although some sites are described as "shell middens" or "shell mounds," this nomenclature is not consistent throughout the database. Instead, the authors relied on narrative descriptions and artifact inventories from the site file, which were then cross-referenced with data from recent fieldwork, prior excavations (e.g., Cridlebaugh 1986; Morse 1967), Cultural Resource Management projects and Agency documentation (e.g., Barker 2010; McCormack 2011), and informant reports. As a result, 31 sites within the MCRV can be confidently identified as exhibiting Archaic shell-bearing strata (Table 1; see Figure 1). Only five of these sites (40CH171, 40DV7, 40DV14, 40DV160, and 40DV307) have undergone archaeological testing during the past decade (Allen 2006; Bentz 2012; Miller et al. 2012; Peres, Baluha, Deter-Wolf, Keasler, Mills, Moore, and Robinson 2012), although seven others were subject to limited emergency sampling in 2010 (Deter-Wolf and Peres 2012). It is therefore likely that new data will emerge in the future regarding these and other yet to be identified Archaic shell-bearing sites in the region.

RADIOCARBON CHRONOLOGY FOR ARCHAIC SHELL-BEARING SITES OF THE MCRV

A main initial goal of the authors' work has been to create a preliminary radiocarbon chronology for Archaic shell-bearing sites in the MCRV that can be used to place these sites in the context of other southeastern Archaic sites. This chronology incorporates data from Anderson, Robinson, and Penitentiary Branch, and work by Miller et al. (2012), along with previously unreported AMS dates recovered by the authors from Archaic shell-bearing strata in the western MCRV (Table 2). The results of this analysis show that the

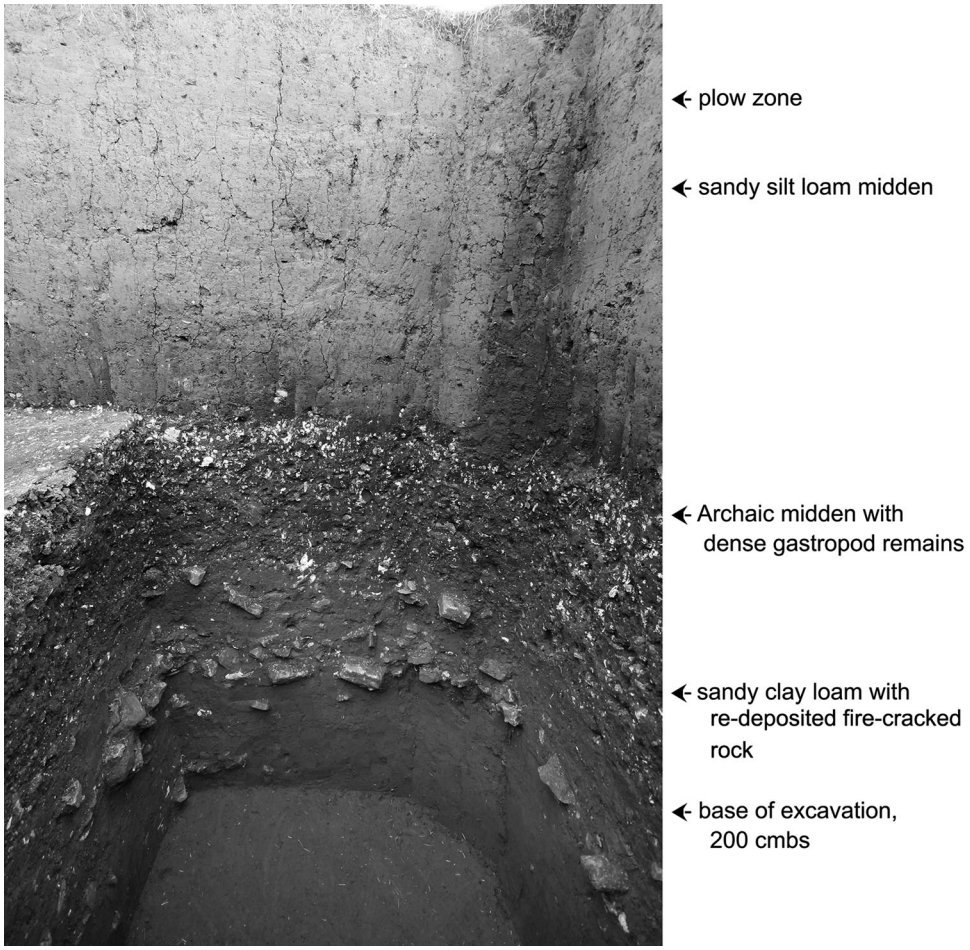

FIGURE 4. Photographic profile of the west wall of Test Unit 1 at 40DV7, excavated in 2012.

formation of shell-bearing archaeological deposits within the MCRV begins by approximately 6200 cal B.C., and continues until approximately 1000 cal B.C., encompassing portions of the Middle and Late Archaic (Table 3, Figure 5). The initial dates for this phenomenon along the MCRV are generally consistent with shell-bearing sites along the Duck River in Tennessee (Hall et al. 1985) and the Green River in Kentucky (Marquardt and Watson 2005), whereas shell-bearing site formation began somewhat earlier in the MCRV than in the Lower Tennessee River Valley (Bissett 2014; Lewis and Lewis 1961; see also Claassen 2010: Table 2.1).

In the western portion of the MCRV, shell deposition ends on a site-to-site basis over a period of nearly four millennia (see Figure 5). At 40DV14, Miller et al. (2012, Sample AA-96409) report a date of 4770–4545 cal B.C. for the top of the shell-bearing midden. Other radiocarbon samples collected from above shell-bearing strata by the authors (see Table 2) include dates of 4904–4709 cal B.C. at 40CH171, 4232–3996 cal B.C. at 40DV13, and 2876–2626 cal B.C. at 40DV7. Shellfish deposition does not begin elsewhere in the western MCRV until a millennium later, as evidenced by sites 40DV88 and 40DV307, both near Nashville, where shell-bearing strata have been dated to between approximately 1500 and 1800 cal B.C. (see Tables 2 and 3).

Shellfish deposition east of the Caney Fork River confluence appears to begin ca. 2000 cal B.C., and continue until approximately 1000 cal B.C., according to data from the Robinson and Penitentiary Branch sites (Cridlebaugh 1986; Morse 1967). Radiocarbon assays from these sites include significant standard deviations, and Morse (1967) notes that despite the presence of several calibrated dates from the last millennium B.C. at Robinson, artifact associations and a lack of ceramics suggest that site formation took place from approximately 1500 to 1000 cal B.C. Future research in the eastern MCRV will allow significant refinement of this chronology.

Table 1. Archaic shell-bearing sites in the MCRV.

Site number	Archaic mortuary known?	Confluence <200 m?	Citation(s)
40CH018	Yes	Yes	Deter-Wolf et al. (2011)
40CH037	Yes	No	Deter-Wolf et al. (2011)
40CH050	No	Yes	Dicks (1999)
40CH073	No	Yes	Dicks (1999)
40CH171	Yes	Yes	Barker (2010), Deter-Wolf et al. (2011), McCormack (2011), Miller et al. (2012)
40CH175	No	No	TN Site File
40CH191	Yes	Yes	Barker (2002)
40DV007	Yes	Yes	Peres, Deter-Wolf, and Myers (2012)
40DV013	Yes	No	TN Site File
40DV014	Yes	Yes	Miller et al. (2012)
40DV085	No	Yes	TN Site File
40DV086	Yes	Yes	TN Site File
40DV088	No	No	TN Site File
40DV090	No	No	TN Site File
40DV160	Yes	No	Bentz (2012)
40DV307	No	Yes	Miller et al. (2012), Deter-Wolf and Peres (2015)
40DV551	Yes	Yes	Allen (2006)
40DV626	No	Yes	TN Site File
40DV627	No	No	TN Site File
40DV628	No	No	TN Site File
40JK002	No	Yes	TN Site File
40JK010	No	Yes	Morse and Polhemus (1964)
40JK025	Yes	Yes	Cridlebaugh (1986)
40KJ021	No	Yes	TN Site File
40RD299	Yes	No	TN Site File
40SM001	No	Yes	Morse and Polhemus (1964)
40SM004	Yes	Yes	Morse (1967), Morse and Polhemus (1964)
40SM008	No	Yes	Morse and Polhemus (1964)
40SM015	No	Yes	Morse and Polhemus (1964)
40WM009	Yes	Yes	Dowd (1989), Moore et al. (1990), Parmalee and O'Hare (1989)
40WM443	Yes	Yes	TN Site File

Summary of Zooarchaeological Data from the MCRV Shell-Bearing Sites

Archaic shell-bearing sites in the MCRV formed as a result of human extraction and deposition of large quantities of freshwater mollusks, including species of both bivalves and gastropods. Although regionally the trend during the mid-Holocene is toward greater use of aquatic resources, local environments were important in shaping the focus and mix of the subsistence base (Styles and Klippel 1996). It therefore is notable that 71 percent ($n = 22$) of the MCRV Archaic shell-bearing sites are located within 200 m of the confluence of a river and a first- to third-order stream.

The shallow-riffle environment created at river confluences is a habitat favored by the Pleuroceridae, a family of freshwater gastropods consisting of five genera and 144 species that occurs only in eastern North America. Pleurocerids consume the algae and detritus that accumulate on shoals and

TABLE 2. PREVIOUSLY UNREPORTED RADIOCARBON DATES FROM THE WESTERN MCRV.

Site	Sample #	Provenience	Material	^{14}C Age B.P.	$\delta^{13}C/^{12}C$ ratio	Calibrated age (oxCal 4.2.4; INTcal 2013)
40CH37[a]	Beta-323841	122 cmbs, riverbank sample within shell-bearing midden	Charcoal	6230±40 B.P.	−23.8	5306–5061 B.C.
40CH37[a]	Beta-323842	127 cmbs, riverbank sample 6 cm above base of shell-bearing midden	Charcoal	6150±40 B.P.	−27.7	5216–4993 B.C.
40CH171[b]	Beta-323843	135 cmbs, riverbank sample directly above shell-bearing midden	Charcoal	5920±40 B.P.	−25.7	4904–4709 B.C.
40CH171[a]	Beta-323845	240 cmbs, eroding pit feature on riverbank, within shell-bearing midden	Charcoal	5750±40 B.P.	−24.9	4701–4501 B.C.
40DV7[b]	Beta-360936	118–119 cmbs, unit column sample, directly above shell-bearing midden	Charcoal	4150±30 B.P.	−26.2	2876–2626 B.C.
40DV7[a]	Beta-360937	121 cmbs, unit column sample within shell-bearing midden	Charcoal	5010±30 B.P.	−27.1	3942–3706 B.C.
40DV13[b]	Beta-323851	198 cmbs, riverbank sample 5 cm above shell-bearing midden	Charcoal	5280±30 B.P.	−27.9	4232–3996 B.C.
40DV13[a]	Beta-323852	225 cmbs, riverbank sample within shell-bearing midden	Charcoal	5790±30 B.P.	−24.2	4712–4552 B.C.
40DV86[a]	Beta-323854	10–87 cmbs, riverbank bulk sample of shell-bearing midden	Charcoal	5690±40 B.P.	−25.5	4679–4450 B.C.
40DV88[a]	Beta-323856	136–196 cmbs, riverbank bulk sample of upper shell-bearing midden	Charcoal	3420±30 B.P.	−24.1	1871–1636 B.C.
40DV88[a]	Beta-323858	296–343 cmbs, riverbank bulk sample of lower shell-bearing midden	Charcoal	4980±40 B.P.	−24.6	3937–3656 B.C.
40DV307[a]	Beta-381236	168–198 cmbs, riverbank bulk sample of shell-bearing midden	Charcoal	3280±30 B.P.	−22.3	1630–1497 B.C.

[a]Within Archaic shell-bearing strata.
[b]Above shell-bearing strata.

Table 3. Radiocarbon dates for Archaic shell-bearing deposits in the MCRV, arranged by site number.

Site number	^{14}C Age B.P.	Calibrated age[a]	Reference #	Source
40CH37	6230±40 B.P.	5306–5061 B.C	Beta-323841	This report
40CH37	6150±40 B.P.	5216–4993 B.C.	Beta-323842	This report
40CH171	6197±45 B.P.	5296–5036 B.C.	AA-96408	Miller et al. (2012)
40CH171	6152±44 B.P.	5220–4981 B.C.	AA-96398	Miller et al. (2012)
40CH171	6115±44 B.P.	5211–4940 B.C.	AA-96397	Miller et al. (2012)
40CH171	6092±44 B.P.	5208–4855 B.C.	AA-96401	Miller et al. (2012)
40CH171	6044±46 B.P.	5192–4802 B.C.	AA-96402	Miller et al. (2012)
40CH171	5960±43 B.P.	4945–4726 B.C.	AA-96400	Miller et al. (2012)
40CH171	5750±40 B.P.	4701–4501 B.C.	Beta-323845	This report
40DV7	5810±40 B.P.	4770–4548 B.C.	Beta-323849	Peres, Deter-Wolf, and Myers (2012)
40DV7	5010±30 B.P.	3942–3706 B.C.	Beta-360937	This report
40DV7	4670±30 B.P.	3620–3367 B.C.	Beta-323848	Peres, Deter-Wolf, and Myers (2012)
40DV13	5790±30 B.P.	4712–4552 B.C.	Beta-323852	This report
40DV14	6136±45 B.P.	5214–4959 B.C.	AA-96405	Miller et al. (2012)
40DV14	6101±44 B.P.	5209–4910 B.C.	AA-96406	Miller et al. (2012)
40DV14	6004±44 B.P.	5006–4786 B.C.	AA-96403	Miller et al. (2012)
40DV14	5979±66 B.P.	5031–4716 B.C.	AA-96393	Miller et al. (2012)
40DV14	5977±44 B.P.	4988–4743 B.C.	AA-96407	Miller et al. (2012)
40DV14	5954±44 B.P.	4942–4725 B.C.	AA-96404	Miller et al. (2012)
40DV14	5805±43 B.P.	4770–4545 B.C.	AA-96409	Miller et al. (2012)
40DV86	5690±40 B.P.	4679–4450 B.C.	Beta-323854	This report
40DV88	4980±40 B.P.	3937–3656 B.C.	Beta-323858	This report
40DV88	3420±30 B.P.	1871–1636 B.C.	Beta-323856	This report
40DV307	3280±30 B.P.	1630–1497 B.C.	Beta-381236	This report
40JK25	3375±345 B.P.	2621–842 B.C.	UGa-1626	Cridlebaugh (1986)
40JK25	3185±165 B.P.	1879–1027 B.C.	UGa-1628	Cridlebaugh (1986)
40JK25	3050±140 B.P.	1614–929 B.C.	UGa-1627	Cridlebaugh (1986)
40JK25	2975±145 B.P.	1506–838 B.C.	GX-8584	Cridlebaugh (1986)
40JK25	2370±205 B.P.	926 B.C.–AD 49	GX-8583	Cridlebaugh (1986)
40SM4	3230±160 B.P.	1920–1088 B.C.	M-1800	Morse (1967)
40SM4	3200±160 B.P.	1880–1056 B.C.	M-1797	Morse (1967)
40SM4	2970±150 B.P.	1511–829 B.C.	M-1799	Morse (1967)
40SM4	2970±150 B.P.	1511–829 B.C.	M-1798	Morse (1967)
40SM4	2830±130 B.P.	1389–794 B.C.	M-1802	Morse (1967)
40SM4	2630±130 B.P.	1073–405 B.C.	M-1805	Morse (1967)
40SM4	2530±150 B.P.	1009–234 B.C.	M-1801	Morse (1967)
40SM4	2410±200 B.P.	980–3 B.C.	M-1806	Morse (1967)
40SM4	2450±140 B.P.	893–204 B.C.	M-1803	Morse (1967)
40WM9	7180±150 B.P.	6373–5764 B.C.	URC-1941	Dowd (1989). Smith (2002)
40WM9	6990±120 B.P.	6072–5650 B.C.	AA-1182	Dowd (1989). Smith (2002)
40WM9	6700±230 B.P.	6072–5211 B.C.	URC-1940	Dowd (1989). Smith (2002)
40WM9	6495±205 B.P.	5837–4992 B.C.	GX-8365	Dowd (1989). Smith (2002)
40WM9	6270±200 B.P.	5617–4781 B.C.	GX-8215	Dowd (1989). Smith (2002)
40WM9	5680±200 B.P.	5002–4053 B.C.	GX-9900	Dowd (1989). Smith (2002)

[a]oxCal 4.2.4; INTcal 2013.

riffles in freshwater rivers. The constant flow from tributaries at these locations replenishes nutrient loads that gastropods are otherwise depleting, thereby sustaining the shellfish biomass. Archaic shell-bearing sites at confluences are therefore ideally positioned to extract and manage this resource. Sustained human occupation at these confluences would have additionally improved the nutrient load, thereby further sustaining and enhancing the shellfish population.

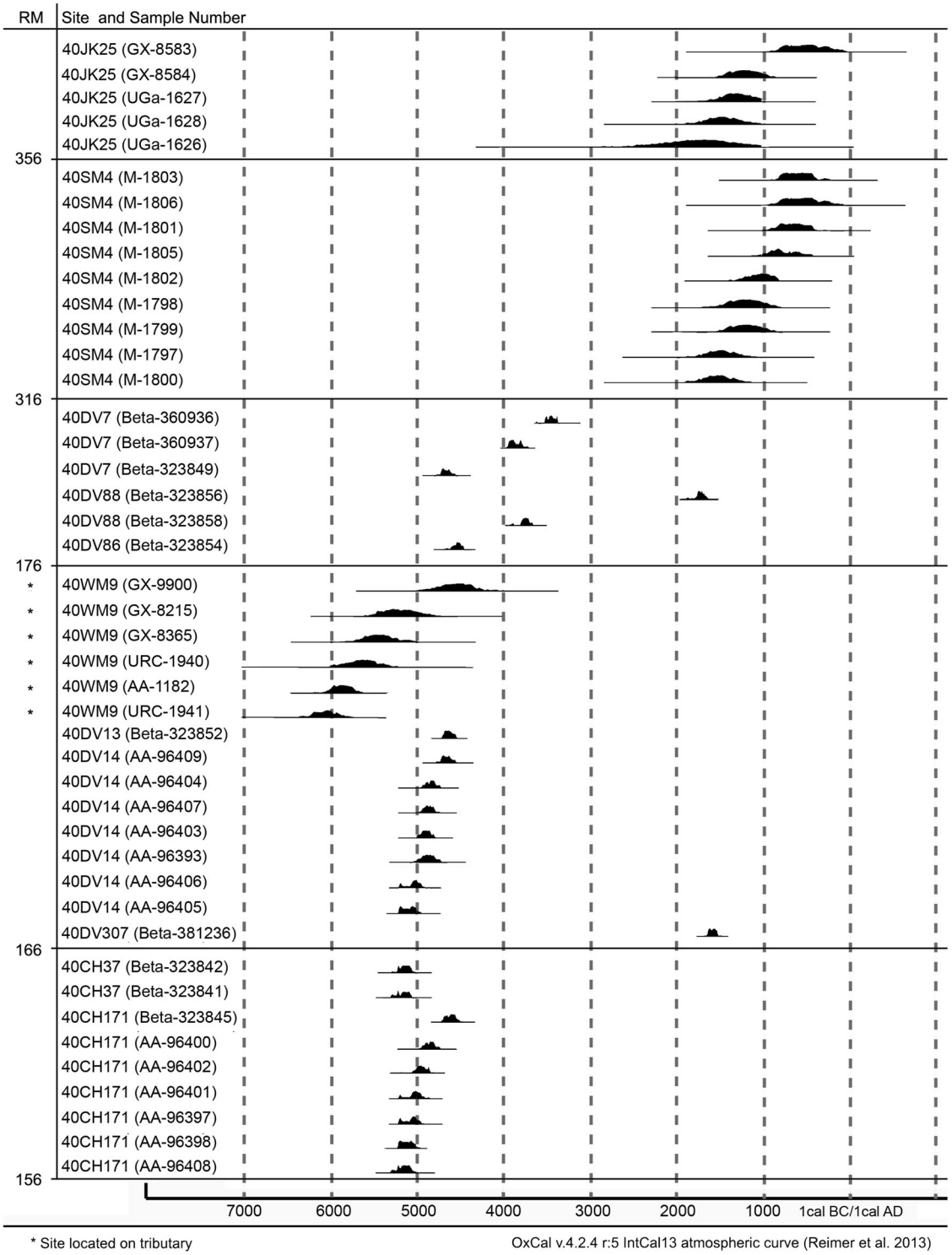

FIGURE 5. Plot of radiocarbon dates for Archaic shell-bearing strata in the MCRV, arranged by Cumberland River mile (RM).

REPRESENTED TAXA

A notable aspect of shell-bearing deposits at MCRV Archaic sites is the taxonomic composition. Site 40DV7 has been extensively sampled, including bankline samples collected in 2010 (Peres, Deter-Wolf, and Myers 2012) and 2012 excavations consisting of test units and column samples. The Archaic component of that site contains both aquatic bivalves (nine species) and gastropods (three species) as well as very low (<1 percent) percentages of vertebrate fauna (Peres, Deter-Wolf, and Myers 2012:Tables 2 and 3, Figure 3). Other MCRV Archaic shell-bearing sites sampled during the 2010 RAPID survey yielded similar proportions of gastropods to bivalves (Table 4). Using estimates of the Minimum Number of Individuals (MNI), gastropods far outnumber bivalves.

As seen for the assemblage composition at 40DV7, pleurocerid taxa are the largest group of gastropods in these collections (78–100 percent MNI). Of the gastropods, the armored rocksnail (*Lithasia armigera*) is the most abundant (MNI = 84 percent). This species is geographically limited and occurs in only two localities outside of the Ohio River Valley, one of which is the MCRV (Burch 1989); however, its ecological needs and life history are similar to other members of the genus. *Lithasia* are adapted to rocky shoals in big rivers, inhabiting the firm substrates of shallow waters and are generalized grazers (Burch 1989). Species in this genus typically live for several years, giving them a "…relatively stable temporal biomass" (Richardson et al. 1988:239).

In the eastern portion of the MCRV, the Robinson and Penitentiary Branch sites exhibit markedly different species composition, consisting mainly of bivalves (Guilday 1978; Morse 1967). This is interesting in light of the radiocarbon chronology outlined above, as it suggests that there may be shifts in both spatial distribution of shell-bearing sites (west to east) and species composition (gastropod to bivalve) in the MCRV over time. Unfortunately, the ratios of gastropods to bivalves in these collections cannot be determined from the available data, and these differences may therefore reflect excavator bias rather than cultural or natural phenomena. For example, Breitburg (1986:88) notes that while gastropods were recovered during excavations at Penitentiary Branch, only bivalves were included in the faunal analysis.

Discussion and Conclusions

Our investigations of Archaic period shell-bearing sites in the MCRV since 2007 have allowed us to collect preliminary data regarding the setting, chronology, and species composition of these sites. Prominent shell-bearing sites in the MCRV are located along natural levees or lower alluvial terraces overlooking the confluence of major waterways. These sites include dense deposits of mollusks ranging from 30 to 200 cm thick, consisting predominantly of freshwater gastropods. Although bivalves are typically present in the midden, they comprise a relatively low portion of Archaic shell-bearing deposits compared to gastropod remains. The Archaic shell-bearing deposits at these sites often contain little soil relative to the amount of shell within the matrix. Although they may exhibit internal stratigraphy and features such as human burials, the absence of soil formation, copious amounts of crushed shell, and the structural features identified at other MCRV Archaic sites (e.g., Bentz 1986; Deter-Wolf 2013) suggest they were not long-term living surfaces.

Other Archaic shell-bearing sites in the MCRV exhibit freshwater mollusks distributed in varying densities throughout the archaeological

Table 4. Ratio of gastropod MNI to bivalve MNI from MCRV sites.

Site	Gastropods (%MNI)	Bivalves (%MNI)	%Pleurocerid
40CH37[a]	79	21	100
40CH171[a]	95	4.8	93
40DV14[a]	97.44	2.55	90
40DV307[a]	64	35	78
	Gastropods %NISP	Bivalves %NISP	%Pleurocerid
40WM9[b]	91	8.9	96.8

[a]Data collected during 2010 RAPID survey.
[b]Parmalee and O'Hare (1989).

midden, as well as clustered within discrete features. These sites may be located along river levees, alluvial terraces, or non-riverine caves and rockshelters, and include species of both aquatic gastropods and smaller bivalves. The mixed-density deposition of freshwater mollusks at these sites alongside other archaeological materials may represent gradual accumulation resulting from regular shellfish consumption by site inhabitants over seasons or even centuries. Conversely, the presence of concentrated clusters of mollusks within the midden at these sites may represent processing activities, ritual deposits, mortuary offerings, or some combination thereof, depending on the specific context and associated artifacts (Claassen 2010; Deter-Wolf and Peres 2014). Additional excavations are required to parse out the archaeological correlates of these behaviors.

Numerous research questions remain to be addressed regarding Archaic shell-bearing sites of the MCRV, including, but not limited to: examinations of environmental variability, anthropogenic species selection and resource management, shell deposition rates, and the relationship of these sites to the traditionally defined Shell Mound Archaic in other areas of the Southeast. Although the MCRV will undoubtedly play a future role in assessing technological and environmental shifts during the Archaic period and contribute to debates regarding shell-bearing site formation and function, additional data remain to be collected and synthesized before a comprehensive regional or interregional discussion can be undertaken. Our intent in this report has been to present site distribution data, a preliminary radiocarbon chronology, and a first look into the faunal data from the MCRV shell-bearing Archaic as an initial step in understanding these sites within the larger context of the Southeastern Archaic. Based on these preliminary data, however, the initial formation of MCRV Archaic shell-bearing sites appears to be roughly contemporaneous with shell-bearing site formation on the Duck and Green Rivers. Shell density varies widely within and between sites in the MCRV, and future research will address species composition and variability between the MCRV and Archaic shell-bearing sites in other regions of the Southeast.

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Data Availability Statement

Data from the 2010 NSF-funded RAPID survey are curated at the Tennessee Division of Archaeology in Nashville and have been uploaded to the Digital Archaeological Record (tDAR, http://core.tdar.org/). The Project Outcomes Report for that survey is available at http://www.research.gov/.

NOTES

1 Traditionally, prehistoric sites containing large concentrations of freshwater mollusks have been identified as *shell mounds* or *shell middens*. *Shell mound* implies deliberate construction or architecture for domestic or ritual purposes, whereas *shell midden* implies food waste and/or domestic habitation. However, to assign such functionally loaded terms to sites that have not been subjected to extensive, research-driven modern excavations confuses issues surrounding their formation. Thus, for our work in the Middle Cumberland River Valley, we prefer to use the functionally neutral, but adequately descriptive term *shell-bearing*.

2 Radiocarbon dates in the text of this article, including those first reported elsewhere and by other authors, are presented here as calibrated B.C./A.D. using OxCal 4.2.4/INTcal 2013 (Reimer et al. 2013).

3 The Middle Cumberland River Valley is a geographic designation and should not be confused with the Middle Cumberland Region or Middle Cumberland Culture. These other terms reference a regional Mississippian period cultural tradition defined in part by distinctive mortuary practices, artistic styles, and ceramic typologies (Moore et al. 2006; Moore and Smith 2009).

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Note on Contributor

Tanya M. Peres (PhD, University of Florida 2001; MA, Florida State University 1997; BA Florida State University 1995) is an Associate Professor in the Department of Anthropology faculty at Florida State University. She is interested in the relationships between humans and their environments, and humans and animals - especially in terms of subsistence and how animals were incorporated into the native worldview beyond food. She has conducted research in the southeastern U.S., Gulf Coastal Mexico, Central Pacific Panama, and the Scottish Highlands.

Aaron Deter-Wolf is a Prehistoric Archaeologist for the State of Tennessee's Division of Archaeology, where he is responsible for managing prehistoric sites on State-owned lands, investigating disturbances to prehistoric human remains, conducting archaeological excavations and research, and informing the public about archaeology. He holds a BA from Duke University and earned his MA from Tulane University in 2000.

Correspondence to: Tanya M. Peres, Department of Anthropology, Florida State University, Tallahassee, FL 32306, USA. E-mail: drtmperes@gmail.com.