

TENNESSEE ARCHAEOLOGY

Volume 7

Fall 2013

Number 1



EDITORIAL COORDINATORS

Michael C. Moore
Tennessee Division of Archaeology

Kevin E. Smith
Middle Tennessee State University

EDITORIAL ADVISORY COMMITTEE

Paul Avery
Cultural Resource Analysts, Inc.

Jared Barrett
TRC Inc.

Jay Franklin
East Tennessee State University

Nick Honerkamp
University of Tennessee

Phillip Hodge
Tennessee Department of Transportation

Shannon Hodge
Middle Tennessee State University

Kandi Hollenbach
University of Tennessee

Zada Law
Middle Tennessee State University

Tanya M. Peres
Middle Tennessee State University

Sarah Sherwood
University of the South

Jesse Tune
Texas A&M University

Tennessee Archaeology is published semi-annually in electronic print format by the Tennessee Council for Professional Archaeology.

Correspondence about manuscripts for the journal should be addressed to Michael C. Moore, Tennessee Division of Archaeology, Cole Building #3, 1216 Foster Avenue, Nashville TN 37243.

The Tennessee Council for Professional Archaeology disclaims responsibility for statements, whether fact or of opinion, made by contributors.

TENNESSEE ARCHAEOLOGY

VOLUME 7

Fall 2013

NUMBER 1

1 EDITORS CORNER

ARTICLES

- 5 **Subadult Health and Mortality at Gordontown: The Possible Effects of Weaning and Agriculture**
KELLUM K. EVERETT

- 18 **Linville Cave (40SL24) Revisited: Multiple Lines of Evidence to Address Assemblage Formation**
MEAGAN E. DENNISON, JAY D. FRANKLIN, MAUREEN A. HAYS, AND S.D. DEAN

- 42 **Tennessee's Ancient Pygmy Graveyards: The "Wonder of the Western Country"**
KEVIN E. SMITH

RESEARCH REPORTS

- 76 **X-Ray Fluorescence Analysis of Two Metal Beads from the David Davis Farm Site (40HA301), Hamilton County, Tennessee**
SARAH A. BLANKENSHIP, BRUCE KAISER, AND MICHAEL C. MOORE

- 83 **Negative Painted Plates and Bowls from the Middle Cumberland Region of Tennessee**
EMILY L. BEAHM AND KEVIN E. SMITH

EDITORS CORNER

Welcome to the first issue of *Tennessee Archaeology* in our seventh volume which includes articles and research reports concerning high-tech examination of Spanish contact period metal beads from southeast Tennessee, health and mortality among Mississippian period children, site formation processes in the Cumberland Plateau, an examination of negative painted plates and bowls from Tennessee, and an exploration of one of the most enduring legends of Tennessee archaeology. As always, we appreciate the contributions of the authors and extend our thanks to the reviewers who help make this peer-reviewed e-journal possible. We report several items of note on activities in Tennessee Archaeology since our last Editors Corner.

First, the Frank H. McClung Museum of Natural History and Culture at the University of Tennessee in Knoxville is in the midst of a year-long 50th anniversary celebration. Since the formal dedication of the museum on June 1, 1963, the museum has hosted hundreds of temporary exhibits, more than 1.4 million visitors, hundreds of thousands of university undergraduates, and provided collections that served as the source of countless academic papers and research projects. A history of the McClung Museum prepared by Jeff Chapman and Elaine A. Evans for this special event is available at:



<http://mcclungmuseum.utk.edu/files/2013/08/MuseumHistory.pdf>



FIGURE 1. Ron Spores (Vanderbilt University) and John Broster excavating at the Arnold site in 1965.

We also report the retirement of John Bertram Broster from the Tennessee Division of Archaeology in May of this year (nearing a 50th anniversary of his own as an archaeologist; Figure 1). While his dedicated and sometimes colorful service will be missed, we congratulate him on his retirement. John was born May 17, 1945 in Tallahassee, Florida to Roy and Mary Anne Broster. Roy served as a fighter pilot in Italy during World War II and later enjoyed a successful banking career. Mary Anne was a homemaker with a passion for painting. They relocated to Middle Tennessee early in John's life.

After a very brief 1963 stint at the United States Merchant Marine Academy in New York, John returned to Middle Tennessee, helped found the Southeastern Indian Antiquities Survey (now the Middle Cumberland Archaeological Society), worked several archaeological seasons in southern Mexico, and eventually graduated with a B.A. in Sociology/Anthropology from Vanderbilt University. In 1971, John received his MA in Anthropology from the University of New Mexico – after which he

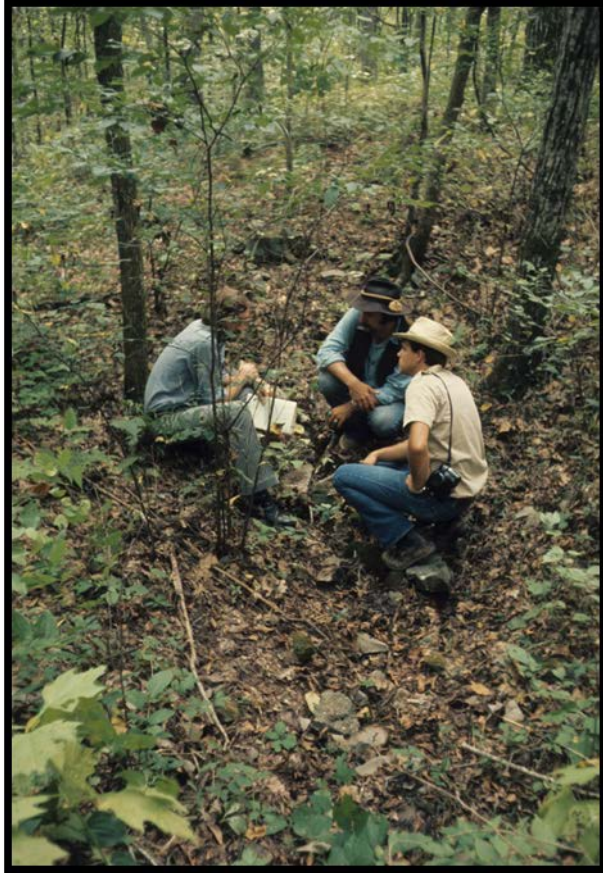


FIGURE 2. The first three regional archaeologists with the Division of Archaeology. Left to right: Carl Kuttruff, John Broster, and Brian Butler (Courtesy, Mack Prichard).

traveled to the Netherlands to join an archaeological expedition sponsored by the University of Michigan.

By 1973, John had completed all coursework for the PhD, but decided to pursue other opportunities. He spent the spring and summer of 1973 working with Dennis Stanford on the Smithsonian-sponsored excavation of the Jones-Miller site in northeastern Colorado, as well as the Ranch 6 site in northeast New Mexico. In September 1973, John was hired as one of the first three regional archaeologists with the newly created Tennessee Division of Archaeology (Figure 2). John conducted some of the early foundational work at Pinson Mounds and at the Paleoindian Pierce site before returning to New Mexico in 1975, where he spent the next decade working for the University of New Mexico, Bureau of Indian Affairs, and San Juan Basin Archaeological Consultants.

In 1985, John returned to Tennessee to rejoin the Division of Archaeology staff. In 1987, John published his initial preliminary report on Tennessee's Paleoindian sites in *Current Research in the Pleistocene*. By the following year, John and TDOA colleague Mark Norton

had launched their seminal long-term project known as the "Tennessee Paleoindian Projectile Point and Site Survey." Over the following nearly twenty-five years, that project documented over 5400 projectile points and produced critical information on some of the most important Paleoindian sites in the state (and nation), including Johnson (40DV400), Coats-Hines Mastodon (40WM31), Carson-Conn-Short (40BN190), Widemeier (40DV9), Sinclair (40PY207), and Burgess-Mabry (40JK247). John has also long supported regional journals and has co-authored seven articles in *Tennessee Archaeology* since its inception in 2004.

In January 2013, the Tennessee Council for Professional Archaeology presented John Broster with a Career Achievement Award "For outstanding and significant professional contributions to the understanding and preservation of Tennessee's archaeological heritage, especially with regard to the Paleoindian heritage of the State of Tennessee and the southeastern United States." This was an appropriate segue to his retirement in May. However, we note that retirement did not keep John away from the Paleoamerican Odyssey conference held October 2013 in Santa Fe, New Mexico, where he and Mark Norton presented a summary of Paleoindian studies in Tennessee.



FIGURE 3. John, Lionel Barrett, and John T. Dowd at his retirement reception in May 2013 (*Photograph Kevin E. Smith*).

We are pleased to once again acknowledge John's many years of dedicated service to Tennessee archaeology.



FIGURE 4. Tom Des Jean (*Photograph National Park Service*).

Finally, in September 2012, National Park Service Director Jonathan P. Jarvis presented Tom Des Jean, archeologist at Big South Fork National River and Recreation Area and Obed Wild and Scenic River, with an Appleman-Judd-Lewis Award for excellence in Cultural Resource Management.

"Preservation of our nation's historic resources is one of the key missions of the National Park Service," said Director Jarvis. "The passion, dedication and innovation of these individuals will benefit not only the resources in their own parks, but will serve as a model and inspiration for other projects throughout the National Park System."

The Appleman-Judd-Lewis Awards recognize expertise and outstanding contributions to cultural resource stewardship and management by permanent full-time employees of the National Park Service. Offered annually, the awards were created to encourage creativity in cultural resource stewardship and management practices and projects, particularly those that may serve as examples or models for programs service-wide. Established in 1970, the awards are named for three

distinguished former National Park Service employees: historian Roy E. Appleman, historical architect Henry A. Judd, and curator Ralph H. Lewis.



Tom Des Jean received the award for Cultural Resource Management because his archeological investigations and research made significant contributions to the knowledge and protection of archeological resources at Mammoth Cave National Park, Shiloh National Military Park, Cumberland Gap National Historical Park, Obed Wild and Scenic River and Big South Fork National River and Recreation Area. He has authored ten published research or study papers, co-authored seven published research studies, authored 21 un-published research studies, co-authored five unpublished research studies, and authored or co-authored 15 research

papers presented at various professional conferences. Although the majority of these papers and presentations deal with the results of archeological studies at various sites in the National Park Service, Tom's writings cover other cultural resource topics, including niter mining, history of the Stearns Coal and Lumber Company, Civil War effects on local communities, moonshining, and African Americans on the Cumberland Plateau. Our thanks to Tom for his dedicated efforts to protect archaeological sites on the Cumberland Plateau of Tennessee.

SUBADULT HEALTH AND MORTALITY AT GORDONTOWN: THE POSSIBLE EFFECTS OF WEANING AND AGRICULTURE

Kellum K. Everett

This project sought evidence of nutritional deficiencies in the skeletal remains of 36 subadults from the Gordontown site (40DV6) to better understand the role that agriculture played in the health of early agriculturalists. Fetuses, infants, and young children from Gordontown exhibited a high mortality rate, and this high rate likely resulted from nutritional deficiencies such as scurvy and anemia. These deficiencies at times existed co-morbidly, and were characterized in bone by porosity and hypertrophy. This analysis supports the results from other contemporaneous site studies that suggest a heavy reliance on maize agriculture led to general poor health among Mississippian peoples.

Malnutrition affects every system of the body, including bone. Evidence of malnutrition can be observed skeletally in various forms, most often porosity and hypertrophy. The etiology of these generalized lesions may not always be clear-cut, especially in immature remains and growing or healing bone. Cribra orbitalia and porotic hyperostosis are two common conditions that manifest in these types of lesions. However, there is still some debate as to whether or not the two conditions merely represent different expressions of the same etiology, which many believe to be anemia. Scurvy may cause similar lesions, possibly making them easily confused with lesions caused by anemia (Aufderheide and Rodríguez-Martín 1998; Eisenberg 1986, 1991; Ortner and Ericksen 1997; Ortner et al. 2001; Stuart-Macadam 1989; Walker et al. 2009).

Children are often more easily affected by nutritional stresses in a population due to the high demand for nutrients during growth and development. Multiple studies have shown that in agricultural societies these nutritional deficiencies often start to manifest in skeletal remains between 3 to 4.5 years of age. Many believe this coincides with weaning practices when children may be receiving less nutrients

with the declining consumption of the mothers' milk; and also exposed to more infectious diseases and parasites when introduced to new foods and the local water supply (Bazarsad 2007; Eisenberg 1991; Ortner et al. 2001; Smith 1992). At Gordontown, porosity and hypertrophic bony lesions begin to appear much earlier. To better understand the role nutrition plays in the development and remodeling of the skeletal system, as well as how agriculture may have affected the health of the Mississippian populations, an analysis was performed on 36 subadults to look for any evidence of nutritional deficiencies. Many of the bony lesions observed are consistent with malnutrition, specifically anemia and possibly scurvy, but other nutritional deficiencies and illnesses (such as infection and parasites) cannot be ruled out. What remains unknown is how much of a role diet played in the nutritional deficiencies observed.

Gordontown and Middle Cumberland Mississippian

Gordontown is a Mississippian site located just south of Nashville, Tennessee near the Davidson and Williamson County line. The site was established on a

dissected upland ridge near two large springs and a small tributary of Sevenmile Creek. Salvage excavations of the Gordontown site area were conducted in 1985-86 by the Tennessee Division of Archaeology (TDOA) prior to subdivision development. This work ultimately removed 100 individuals from 85 graves (Moore and Breitburg 1998; Moore et al. 2006). Radiocarbon assays of carbonized wood recovered from these excavations date this site to the Thruston regional period, roughly A.D. 1250-1450.

Maize agriculture was not the primary nutrition source until later in the Mississippian period as a noticeable spike is observed in nutritional stress in many populations. Furthermore, homesteads in the study area were becoming less common as people began moving to more centralized villages, thus creating more populated settlements and less sanitary conditions. By the Thruston regional period, it is believed that most villages in the Middle Cumberland region had become highly dependent on maize agriculture, along with beans, squash, and other plants (Broster 1972; Clinton and Peres 2011; Cook 2007; Crites 1984; Moore et al. 2006; Shea and Moore 2001; Smith 1992). These living conditions and diet likely led to the observed high prevalence of nutritional deficiencies and infectious disease in the region. In fact, Gordontown residents may have been among the top maize consumers in the eastern United States, possibly to the point of over-reliance, which may have been a large contributing factor to over-all poor health and high infant mortality which seems to hold true at Gordontown (Buikstra et al. 1988; Cook 2007; Larsen et al. 2007; Moore and Breitburg 1998; Moore et al. 2006; Rose et al. 1991; Smith 1992).

Middle Cumberland Mississippian

burial modes included the interment of very young children under house floors, along with the burial of older children and adults in mounds (generally earlier in the Mississippian period), small plots, and large cemeteries. These modes were especially prevalent later in the Mississippian period as people moved from farmsteads to more populated villages (Milner 1991; Moore and Smith 2009; Smith 1992). The 1985-86 excavations at Gordontown did not remove a large formal cemetery, although at least one was identified during the investigation but ultimately left alone. The excavations did uncover and remove individuals placed in small plots and isolated graves primarily near residential structures. Keeping this in mind, the mortality rate for children four years of age and under was possibly as high as 45 percent (Moore et al. 2006).

Many Middle Cumberland Mississippian period populations supplemented their diets with meat by practicing selective hunting strategies. These groups would opportunistically hunt and trap prey, such as white-tailed deer, that lived along the forest edge and were drawn to the gardens and fields (Breitburg 1998; Breitburg and Moore 2001; Clinton and Peres 2011; Moore et al. 2006; Peres 2005). However, most of the meat yield at Gordontown came from animals such as elk and bear that lived in the more rugged upland forest habitats (Breitburg 1998). Even though their diet was diverse, the infant mortality rate and high rate of skeletal lesions in children three years old and younger suggest that the supplementation may not have been enough to prevent malnutrition, at least for the young children.

This author believes the same deficiencies that led to observed skeletal lesions are what caused the children of

Gordontown to possibly suffer the highest mortality rate in the region; and may have been a contributing factor to the eventual dispersal of Mississippian residents from the study area by the late 15th century (Cobb and Butler 2002; Moore et al. 2006; Smith 1992; Williams 1990). This research addresses the possible causes of these lesions at Gordontown, and suggests the lesions often resulted from weaning stress and a transition to a less nutritious maize diet.

Weaning and Nutritional Stress

Human milk is the only single food source that contains all the nutrients required to feed a child up to roughly six months of age. It also contains beneficial immunological properties. While milk is low in iron and several other nutrients, a baby is usually born with enough reserves to last up to about six months. After that the child's stores start to run out and the mother's milk slowly becomes less concentrated with the proper nutrients to meet the child's full dietary requirements. At that point, a child needs to have his or her milk intake supplemented with other foods to obtain the adequate level of nutrients. If the mother is moderately nutritionally deficient, the baby will most often still get adequate nutrition, even at the expense of the mother's own health. Not until the mother is severely deficient will the child likely come into the world deficient, if it even survives birth (Colson 2002; Ek 1983; WHO 2001).

In maize dependent garden agriculturalist societies, weaning would mean more maize consumption for a child. Not only is maize lacking in many nutrients (such as iron, and vitamins B₁₂, folate, and C), but the phytates it contains actually inhibit the absorption of iron into the bloodstream. However, consuming

vitamin C or foods of a heme source (such as meat, fish, and shellfish) help make iron more bioavailable. These nutritional deficiencies not only have direct repercussions, but also weaken an individual's immune response, leaving them more susceptible to infectious disease (WHO 2001). Without the addition of meat and more nutritious fruits and vegetables, a heavy reliance on maize can lead to both anemia and scurvy, among other nutritional deficiencies.

Anemia

Anemia is the pathological condition of having a low red blood cell count or low hemoglobin levels (110-130g/l of Hb). The iron component in hemoglobin carries oxygen to our cells, so a deficiency in iron can lead to anemia. Insufficient vitamins A, B₁₂, B₆, and folate (as well as other factors such as infection, tuberculosis, intestinal parasites, and genetics) can also lead to anemia. Vitamin B₁₂ deficiency is a common cause, as B₁₂ can only be obtained from animal sources. Babies who are fed vitamin B₁₂ depleted milk (e.g., the milk of some vegetarian and vegan mothers) are likely to develop megaloblastic B₁₂ anemia. Vitamin B₁₂ deficient individuals are also at greater risk for bone mineral loss and osteoporosis (Walker et al. 2009; WHO 2001).

Scurvy

Scurvy is caused by inadequate vitamin C (ascorbic acid) intake (e.g., a diet low in fruits and vegetables). Vitamin C aids in the absorption of iron and folate, as well as maintenance of connective tissues such as bone collagen and blood vessels. Scurvy leads to weakened blood vessels, and also weakens the

periosteum sheath that covers the bone. Both of these issues can lead to hemorrhaging. Hemorrhaging of the orbits is well-documented in clinical cases of scurvy (Aufderheide and Rodríguez-Martín 1998; Hood and Hodges 1969; Ortner and Ericksen 1997; Ortner et al. 2001; WHO 2001). Since bone contains collagen, scurvy also inhibits proper bone formation. Symptoms usually appear within one to three months after vitamin C is completely removed from the diet (Aufderheide and Rodríguez-Martín 1998; WHO 2001).

Observation of Anemia and Scurvy in Bone

Anemia and scurvy are most easily observed as porous and hypertrophic bone whose appearance can manifest in a number of ways. The specific ways lesions are expressed are vital to determining possible etiologies. In bone, anemia is believed to manifest in porotic hyperostosis and cribra orbitalia. As the name suggests, porotic hyperostosis is characterized by porosity and hypertrophy of the cortical bone. Cribra orbitalia reflects those same lesions restricted to the orbital roofs. The porosity of the cortical bone is due to resorption caused by expanding diploë (the trabecular bone sandwiched between the inner and outer tables of the skull cortex, as well as the site of red blood cell production). Expansion of the diploë is due to an increase in the demand for red blood cell production (Stuart-Macadam 1989; Walker et al. 2009). These lesions have often been attributed to iron-deficiency anemia. Recent studies suggest that megaloblastic anemias, such as those caused by deficiencies in B₁₂ or folate, may in fact be the cause (Ortner and Ericksen 1997; Ortner et al. 2001; Walker

et al. 2009).

Scurvy is also associated with porosity and hyperostosis on the orbital roofs, as well as on certain cranial and postcranial elements. However, in scorbutic bone, hyperostosis refers to new bone deposition on top of existing cortical bone resulting from subperiosteal hemorrhaging on the orbital roofs (Hood and Hodges 1969; Ortner and Ericksen 1997; Ortner et al. 2001). Studies have linked other cranial porosity to scurvy, including porosity on the mandible, zygomatic bones, maxilla, greater wing of the sphenoid, and where the temporal and frontal bones meet (Ortner and Ericksen 1997; Ortner et al. 2001). These studies also suggest that some cases of scorbutic orbital lesions may have previously been misinterpreted as anemia in the bioarchaeological record (Ortner and Ericksen 1997; Ortner et al. 2001; Stuart-Macadam 1989).

A diagnosis may not always be possible due to lesion similarities, individual age, and how long the individual may have experienced the deficiency. Also, scurvy and anemia are not the only conditions to elicit porosity and new bone deposition. Other conditions such as rickets, tuberculosis, meningitis, trauma, and other causes of cranial inflammation/hemorrhaging cannot always be ruled out when macroscopically evaluating bone (Lewis 2004). These conditions may also result in endocranial lesions in the form of new bone deposition, diploë expansion, and capillary impressions often around the cruciform eminence (Lewis 2004; Roberts and Buikstra 2003). Possible co-morbidity also further complicates a definitive etiology as it is likely that more than one deficiency may exist in an individual at the same time. Furthermore, the developmental porosity and woven bone



FIGURE 1. Cranial fragments from Burial 51A, with active porosity, characteristic of porotic hyperostosis.

characteristic of very young infants and fetuses can mimic or disguise certain pathologies (Ortner et al. 2001).¹

Analysis Methods

All subadult crania were visually examined under strong light with a 5x magnifying lens. Lesion morphology was compared with four subadults from the David Davis Farm site (40HA301) skeletal assemblage to provide a clearer picture of the differences and variations in immature and growing bone.² Each burial was documented through detailed notes describing the morphology of the observed lesions (including porosity, new bone deposition, and whether or not the lesions were healed or active). These results have been presented in Table 1. Lesions were additionally documented through digital photographs for future research and comparisons.

Most of the Gordontown remains were highly fragmented and poorly preserved. These conditions made it difficult to analyze all of the bones necessary to evaluate potential pathological conditions. Several perinates could not be confidently differentiated between potential pathological conditions from age-related porosity and/or taphonomic damage. However, many of those individuals did exhibit lesions that were outside the expected range for the growing bones of a young child, so actual rates of malnutrition may be higher.

Analysis Results

At least four subadult crania ($n=26$) exhibited lesions associated with porotic hyperostosis (Burials 51A, 62, 78, and one of the Burial 82 infants), even though expansion of the diploë was not always obvious (Figure 1). Burial 51A, as well as

Table 1. Observed Orbital and Cranial Lesions in Gordontown Subadults.

Burial	Orbital Lesions	Orbital Diploë expansion	Orbital periosteal reaction	Cranial Porosity	Cranial diploë expansion	Endocranial periosteal reaction
31	Y	Y	Y	Y	N	N
32	Y	?	Y	N	N	N
37	Y	Poss	Y	N	N	Poss
51A	Y	Y	Y	Y	Y	Y
51B	Y	Poss	N	Poss	Poss	Y
62	Y	Y	N	N	N	N
63intr.	Y	Y	N	?	?	?
67	Poss	Y	Poss	N	Y	Y
78	Poss	?	?	Y	Y	Y
82A	Poss	Y	N	Poss*	?	Y*
82B	Y	Poss	N	Poss*	?	Y*
Total	8/20	5/18	4/20	4/26	3/26	6/11

* = Either subadult 82A or 82B, or both, did exhibit cranial porosity and endocranial periosteal reaction.

? = Undetermined or unobservable lesions

Y = Yes, positive for lesions

N = No, negative for lesions

Poss = Possible lesions present

other subadults (Burials 37, 51B, 67, 75, 77, 78), also exhibited hypertrophic cortical bone resulting from some form of reaction on the endocranial surface (Figure 2). The combination of lesions in the Burial 78 cranium suggests a comorbidity of porotic hyperostosis along with endocranial inflammation caused by another illness, such as any of those mentioned above. It is likely that many of these children had more than one underlying health problem that resulted in their deaths.



FIGURE 2. Endocranial lesions on Burial 78.

No less than eight of the subadults who had observable orbits ($n=20$) had orbital porosity (Burials 31, 32, 37, 51A, 62, 63 intrusive, 67A, and 82B). Although porosity was observable on orbital fragments, Burial 32 was too fragmentary to evaluate diploë expansion. However, at least four subadults (Burials 31, 51A, 62, and 63 intrusive) did appear to have obvious expansion. The diploë expansion in Burial 62 (Figure 3) not only resulted in a complete removal of the outer table of cortical bone, but also extended beyond the original cortical elevation of the roof of



FIGURE 3. Active porosity and hypertrophic bone of the left orbital roof with healing porosity on the frontal in Burial 62, indicative of cribra orbitalia.



FIGURE 4. Porosity and hypertrophy in the left orbital roof of Burial 37, in the healing stages.



FIGURE 5. Cross-section view of the medial aspect of the left orbital roof of Burial 51A, showing active bone deposition.



FIGURE 6. Hypertrophic bone in left orbit of Burial 51A showing active bone deposition from periosteal reaction.

the orbit. From this data, it appears that four (Burials 31, 51A, 62, 63 intrusive), if not all eight, of these children exhibited lesions consistent with cribra orbitalia.

At least two individuals (Burials 37, 51A) who exhibited orbital porosity also had new bone deposition on the orbital roofs, indicating periosteal reaction. The new bone deposition on the orbital roofs of Burial 37 (Figure 4) was in the healing stages and observed as new bone being laid down on top of, and incorporated into, the existing cortical bone; while the new bone deposition on the orbital roofs of Burial 51A was mostly thick, raised, and active (Figures 5-6). This subadult also exhibited porosity of the temporal bones (Figure 7), posterior maxilla, and palate (Figure 8) commonly seen in scorbutic crania (Ortner and Ericksen 1997; Ortner et al. 2001). Ortner and Ericksen (1997) suggest porosity of the greater wing of the sphenoid is almost pathognomonic for scurvy. The porosity in Burial 51A may be in normal range (Figure 9). One of the children in Burial 82 exhibited porosity of the temporal bones as well, but it is presently unknown if it represents the same individual with orbital porosity. These individuals have lesions consistent with some form of orbital periosteal reaction. Due to the amount of malnutrition observed in the Gordontown subadults, it is possible that these reactions resulted from scurvy (although other causes of inflammation and hemorrhaging cannot be ruled out). The children in Burials 37 and 51A likely had multiple nutritional stresses.

A majority of individuals between 36 weeks and four years of age exhibited some sort of porosity or hypertrophic bone in the crania or orbits. Numerous children appeared to be anemic, had lesions that were consistent with vitamin C deficiency, or both (Burial 37 for example). Many also



FIGURE 7. Active porosity of the right temporal in Burial 51A.



FIGURE 8. Active porosity and hypertrophy of the maxillary palate in Burial 51A.



FIGURE 9. Porosity of the sphenoid in Burial 51A.

exhibited lesions on the endocranial surface and some postcranial elements that are indicative of a systemic inflammation (or less likely trauma).

Discussion

The children of Gordontown suffered severe nutritional stresses that may have been brought on by diet, diarrhea, parasitic infections, or other illnesses. Many of the subadults with observable elements exhibited some degree of abnormal porosity, and many more would have likely died before lesions had a chance to develop. It appears that once these individuals rebounded from nutritional stresses experienced during weaning, most survived until middle adulthood. Even though the infant mortality rate was high, and many of the children show signs of malnutrition and other illnesses, it could be argued that the population as a whole was quite healthy, in spite of inadequate nutrition. The fact that there were so many children less than three years of age and very few older children suggests that the weaker individuals may have died very young, while the healthier individuals survived into middle or older adulthood. However, the children that did have skeletal lesions should not be considered the weakest, since they did live long enough for the lesions to form, and in some cases to begin healing.

The observed lesions were likely caused by general diet, weaning practices, and illnesses associated with more crowded conditions that accompanied later Middle Cumberland Mississippian groups congregating in village settings; although the children may have died from something else all together. Studies in adjacent regions support this observation, such as the

American Bottom where cribra orbitalia and porotic hyperostosis was three times higher during the Sand Prairie phase (A.D. 1250-1400) than in previous phases (Milner 1991).

Researchers do not know for sure whether a high maize and low meat diet was a leading factor in the nutritional deficiencies exhibited by Gordontown residents. But, it does appear that the nutritional stresses were strongest in childhood, as a few adult crania with healed porotic hyperostosis and orbital porosity were observed. Hopefully, as technology continues to permit better photographic and microscopic documentation, and more research is conducted comparing clinical cases to bioarchaeological cases, we will be able to better understand the causes of these lesions and how they came about in specific populations.

Notes

- ¹ Limited availability of comparative photographic documentation, especially of scurvy and anemia, can make comparison difficult to a less experienced observer. The illustrated publications of Brickley and Ives (2006); Lewis (2003, 2004); and Ortner and Ericksen (1997) were very helpful to this analysis.
- ² The David Davis Farm site is a late prehistoric and protohistoric site in Chattanooga, Hamilton County, Tennessee. A total of 189 individuals were removed from the site in 2007 prior to commercial development, and are currently held by the TDOA. Dr. Shannon Hodge of Middle Tennessee State University (MTSU) conducted an analysis of these remains at the request of the TDOA. This analysis served to prepare a comprehensive inventory of the skeletal remains for disposition under NAGPRA.

Acknowledgements. A previous version of this article was published in the *McNair Research Review* as the fruition of the McNair Scholars Award research scholarship and several months of research under the supervision and guidance of Dr. Shannon Hodge at Middle Tennessee State

University, and with the generous cooperation of the staff at the Tennessee Division of Archaeology (Everett 2013).

This highly revised version would not have been possible had it not been for my patient mentor Dr. Kevin Smith (MTSU), the URECA Research Grant, and the undergraduate research staff at MTSU. I truly appreciate the help and support they were all willing to offer. I would like to again thank the Division of Archaeology staff for helping me with numerous research-related questions and requirements, including Mike Moore and Mark Norton for arranging, transporting, and housing the skeletal collection for me, Suzanne Hoyal for her hours of help in retrieving previously published literature on Gordontown and other sites, and assistance from Aaron Deter-Wolf, John Broster, Sam Smith, and Ben Nance. Your help and support will be forever appreciated. Also, I would like to apologize for any break-down in will-power that I may have contributed with my morning Krispy Kreme run.

I would also like to thank Dr. Hodge and Dr. Tanya Peres for allowing me access to the research lab, not to mention Dr. Hodge's generosity in taking me on as a mentee when she had so many other things filling her schedule. And, last but certainly not least, I would like to thank Dr. Leslie Eisenberg (Wisconsin Historical Society) for her generous advice, critique, insight, and general support she so kindly offered me even though she had no real stake in the progress of my research, other than her kind heart and commitment to bioarchaeology and forensic anthropology, as well as the education of future osteologists. I apologize if I have left anyone out, since everyone was so humble about the amount of work they had to do behind the scenes for my research to be possible.

References

- Aufderheide, Arthur C. and Conrado Rodríguez Martín
1998 *The Cambridge Encyclopedia of Human Paleopathology*.
Cambridge University Press,
Cambridge.
- Bazarsad, Naran
2007 Iron-Deficiency Anemia in Early Mongolian Nomads. In *Ancient Health*, edited by Mark N. Cohen and Gillian M. Crane-Kramer, pp.

- 250-254. University Press of Florida, Gainesville.
- Breitburg, Emanuel
1998 Faunal Remains. In *Gordontown: Salvage Archaeology at a Mississippian Town in Davidson County, Tennessee*, edited by Michael C. Moore and Emanuel Breitburg, pp. 147-168. Research Series No. 11. Tennessee Department of Environment and Conservation, Division of Archaeology, Nashville.
- Breitburg, Emanuel and Michael C. Moore
2001 Faunal Remains. In: *Archaeological Excavations at the Rutherford- Kizer Site: A Mississippian Mound Center in Sumner County, Tennessee*, edited by Michael C. Moore and Kevin E. Smith, pp. 119-134. Research Series No. 13. Tennessee Department of Environment and Conservation, Division of Archaeology, Nashville.
- Brickley, Megan and Rachel Ives
2006 Skeletal Manifestations of Infantile Scurvy. *American Journal of Physical Anthropology* 129:163-172.
- Broster, John B.
1972 The Ganier Site. A Later Mississippian Village on the Cumberland River. In *The Middle Cumberland Culture*, edited by Robert B. Ferguson, pp. 52-78. Publications in Anthropology No. 3. Vanderbilt University, Nashville.
- Buikstra, Jane E., William Autry, Emanuel Breitburg, Leslie Eisenberg, and Nikolaas van der Merwe
1988 Diet and Health in the Nashville Basin: Human Adaptation and Maize Agriculture in Middle Tennessee. In *Diet and Subsistence: Current Archaeological Perspectives*, edited by Brenda V. Kennedy and Genevieve M. LeMoine, pp. 243-259. Proceedings of the 19th Annual Chacmool Conference, The Archaeological Association of the University of Calgary.
- Clinton, Jennifer M, and Tanya M. Peres
2011 Pests in the Garden: Testing the Garden-Hunting Model at the Rutherford-Kizer Site, Sumner County, Tennessee. *Tennessee Archaeology* 5(2):131-141.
- Cobb, Charles R. and Brain M. Butler
2002 The Vacant Quarter Revisited: Late Mississippian Abandonment of the Lower Ohio Valley. *American Antiquity* 67(4):625-641.
- Colson, Jenni L. (editor)
2002 *Breastfeeding Sourcebook*, 1st edition, pp. 3-7. Omnigraphics, Detroit.
- Cook, Della C.
2007 Maize and Mississippians in the American Midwest: Twenty Years Later. In *Ancient Health*, edited by Mark N. Cohen and Gillian M. Crane-Kramer, pp. 10-19. University Press of Florida, Gainesville.
- Crites, Gary D.
1984 Late Mississippian Paleoethnobotany in the Nashville Basin: The Evidence from Averbuch. In *Averbuch: A Late Mississippian Manifestation in the*

- Nashville Basin, Vol. 1, Observations*, edited by Walter E. Klippel and William M. Bass, pp. 1.3.1-1.3.23. Report submitted to the National Park Service in accordance with Contract CX 5000-9-5943 between the University of Tennessee and the National Park Service. Copy on file, Tennessee Division of Archaeology, Nashville.
- Eisenberg, Leslie E.
 1986 Adaptation in a "Marginal" Mississippian population from Middle Tennessee: Biocultural Insights from Paleopathology. Unpublished Ph.D. dissertation, Department of Anthropology, New York University, New York.
- 1991 Mississippian Cultural Terminations in Middle Tennessee: What the Bioarchaeological Evidence Can Tell Us. In *What Mean These Bones*, edited by Mary Lucas Powell, Patricia S. Bridges, and Ann Marie Wagner Mires, pp. 70-88. University of Alabama Press, Tuscaloosa.
- Ek, Johan
 1983 Plasma, Red Cell, and Breast Milk Folic Acid Concentrations in Human Breast Milk. *American Journal of Clinical Nutrition* 38:929-935.
- Everett, Kellum K.
 2013 Nutritional Deficiencies at Gordontown: Effects of Weaning and Agriculture on Subadult Health and Mortality. *McNair Research Review* XI:33-39.
- Hood, James and Robert E. Hodges
 1969 Ocular Lesions in Scurvy. *American Journal of Clinical Nutrition* 22(5):559-567.
- Larsen, Clark S., Dale L. Hutchinson, Christopher N. Stojanowski, Matthew A. Williamson, Mark C. Griffin, Scott W. Simpson, Christopher B. Ruff, Margaret J. Schoeninger, Lynette Norr, Mark F. Teaford, Elizabeth M. Driscoli, Christopher W. Schmidt, and Tiffany A. Tung
 2007 Health and Lifestyle in Georgia and Florida: Agricultural Origins and Intensification in Regional Perspective. In *Ancient Health*, edited by Mark N. Cohen and Gillian M. Crane-Kramer, pp. 20-34. University Press of Florida, Gainesville.
- Lewis, Mary E.
 2003 *The Bioarchaeology of Children: Perspectives from Biological and Forensic Anthropology*. Cambridge University Press, Cambridge.
- 2004 Endocranial Lesions in Non-adult Skeletons: Understanding Their Aetiology. *International Journal of Osteoarchaeology* 14:82-97.
- Milner, George R.
 1991 Health and Cultural Change in the Late Prehistoric American Bottom, Illinois. In *What Mean These Bones*, edited by Mary Lucas Powell, Patricia S. Bridges, and Ann Marie Wagner Mires, pp. 52-69. University of Alabama Press, Tuscaloosa.
- Moore, Michael C. and Emanuel Breitburg
 1998 *Gordontown: Salvage Archaeology at a Mississippian Town in Davidson County, Tennessee*. Research Series No. 11. Tennessee Department of

- Environment and Conservation,
Division of Archaeology, Nashville.
- Moore, Michael C. and Kevin E. Smith
2009 *Archaeological Expeditions of the Peabody Museum in Middle Tennessee, 1877-1884*. Research Series No. 16. Tennessee Department of Environment and Conservation, Division of Archaeology, Nashville.
- Moore, Michael C., Emanuel Breitburg, Kevin E. Smith, and Mary Beth Trubitt
2006 One Hundred Years of Archaeology at Gordontown: A Fortified Mississippian Town in Davidson County, Tennessee. *Southeastern Archaeology* 25(1):89-109.
- Ortner, Donald J. and Mary F. Ericksen
1997 Bone Changes in the Human Skull Probably Resulting from Scurvy in Infancy and Childhood. *International Journal of Osteoarchaeology* 7(3): 212-220.
- Ortner, Donald J., Whitney Butler, Jessica Cafarella, and Lauren Milligan
2001 Evidence of Probable Scurvy from Archaeological Sites in North America. *American Journal of Physical Anthropology* 114:343-351.
- Peres, Tanya. M.
2005 *Analysis of Zooarchaeological Remains from the Fewkes Site (40WM1), Tennessee*. Technical Report No. 549. Program for Archaeological Research, University of Kentucky, Lexington.
- Roberts, Charlotte A. and Jane E. Buikstra
2003 *The Bioarchaeology of Tuberculosis: A Global View on a Reemerging Disease*. University Press of Florida, Gainesville.
- Rose, Jerome E., Murray K. Marks, and Larry L. Tieszen
1991 Bioarchaeology and Subsistence in the Central and Lower Portions of the Mississippi Valley. In *What Mean These Bones*, edited by Mary Lucas Powell, Patricia S. Bridges, and Ann Marie Wagner Mires, pp. 7-21. University of Alabama Press, Tuscaloosa.
- Shea, Andrea B. and Michael C. Moore
2001 Floral Remains. In *Archaeological Excavations at the Rutherford Kizer Site: A Mississippian Mound Center in Sumner County, Tennessee*, edited by Michael C. Moore and Kevin E. Smith, pp. 135-140. Research Series No. 13. Tennessee Department of Environment and Conservation, Division of Archaeology, Nashville.
- Smith, Kevin E.
1992 *The Middle Cumberland Region: Mississippian Archaeology in North Central Tennessee*. Unpublished Ph.D. dissertation, Vanderbilt University, Nashville.
- Stuart-Macadam, P.
1989 Porotic Hyperostosis: Relationship between Orbital and Vault Lesions. *American Journal of Physical Anthropology* 80(2):187-193.

Walker, Phillip L., Rhonda R. Bathurst,
Rebecca Richman Thor Gjerdrum,
and Valarie A Andrushko
2009 The Cause of Porotic Hyperostosis
and Cribra Orbitalia: A Reappraisal
of the Iron-Deficiency-Anemia
Hypothesis. *American Journal of
Physical Anthropology* 139:109-
125.

Williams, Stephen
1990 The Vacant Quarter and Other Late
Events in the Lower Valley. In
*Towns and Temples along the
Mississippi*, edited by David H. Dye
and Cheryl Anne Cox, pp. 170-180.
University of Alabama Press,
Tuscaloosa.

World Health Organization (WHO)
2001 *Iron Deficiency Anaemia
Assessment, Prevention, and
Control: A Guide for Programme
Managers*. WHO/UNICEF/UNU.
World Health Organization,
Geneva. Electronic document,
http://www.who.int/nutrition/publications/en/ida_assessment_prevention_control.pdf, accessed June 24,
2012.

Kellum K. Everett
Middle Tennessee State University
Murfreesboro, TN

LINVILLE CAVE (40SL24) REVISITED: MULTIPLE LINES OF EVIDENCE TO ADDRESS ASSEMBLAGE FORMATION

Meagan E. Dennison, Jay D. Franklin, Maureen A. Hays and S. D. Dean

*Franklin and Dean (2006) presented the initial paper on the archaeology of Linville Cave in which they discussed the excavations, ceramic assemblage, and lithic assemblage in detail. Their results indicated that the sinkhole shelter vestibule was used as an intermittent late fall hunting and retooling camp by late Middle Woodland peoples. Comprehensive and detailed analyses of the faunal remains and lithic use-wear were not included in that paper. We present the results of a new radiocarbon date, use-wear analysis of stone tools, and a detailed analysis of faunal remains from Linville Cave (40SL24). The faunal assemblage (when compared to three other contemporaneous sites in the region) represents a similar subsistence pattern for upper East Tennessee with a focus on large mammals, mainly white-tailed deer (*Odocoileus virginianus*), but with some reliance on birds, reptiles and fish. The faunal analysis, use-wear analysis, new radiocarbon date, and assemblage formation studies all support the initial contention that the vestibule of Linville Cave was used by late Middle Woodland groups as a temporary situational hunting and retooling camp site. Activities related to initial white-tailed deer carcass processing and tool maintenance were carried out at this location before moving on to another location.*

Linville Cave (40SL24) is part of a large, extensive karst system near Blountville in Sullivan County, Tennessee; however, the archaeological record is restricted to the cave's sinkhole vestibule (Figure 1). As part of a commercial venture, salvage excavations were conducted within the vestibule, or shelter entrance, in 1991 by Dean. While these excavations were conducted in a scientific and controlled manner, funds were not available for complete artifact analyses or radiocarbon dates. However, Franklin and Dean (2006) later completed detailed analyses of the ceramic and lithic assemblages from these excavations. While a cursory identification list of the fauna recovered was also presented in that article, a detailed faunal analysis was not, nor was lithic use-wear analysis. We rectify this deficiency here with a detailed use-wear analysis of stone tools and zooarchaeological analysis of faunal remains. We also present a second radiocarbon date.

Summary of Previous Research

Dean conducted intensive Phase III excavations at Linville Cave in 1991. Thirty-eight 1x1 meter squares were excavated in arbitrary 10 centimeter levels. An estimated nine tons of sediment were dry screened through ¼" hardware mesh on site. An additional 1.5 tons of sediment and debris were water-screened away from the site. Archaeological remains were recovered to a depth of 40 centimeters below surface. The three recorded features were excavated by trowel and water screened. Bulk sediment samples were also taken for future analysis. Feature 3, the only prehistoric feature, contained substantial wood charcoal which was collected for radiocarbon dating. While the site contained Pleistocene fauna that washed in from an upper cave conduit, as well as a historic component, only the prehistoric Woodland period component was analyzed and published. A summary of



FIGURE 1. Linville cave vestibule area.

the excavations and site stratigraphy can be found in Franklin and Dean (2006).

Charred hickory nutshells were the most numerous botanical remains recovered. Some walnut, hackberry, and one squash seed were also present. In short, the paleobotanical remains suggest use of the cave's vestibule during the fall (Franklin and Dean 2006:71, Table 1).

The ceramic assemblage suggests the site was occupied during the Woodland period. More than 400 sherds were recovered from the excavation units and Feature 3. All ceramics ($n=415$) are limestone tempered, and a few also contain grit temper ($n=9$). Most of the ceramics are cord-marked ($n=233$), with fine cord-marking noted on 166 specimens. Other surface treatments include knot roughened and/or fabric-

marked. In the previous article, Franklin and Dean (2006:74) suggested the recovered ceramics may belong to the Candy Creek Series or the Radford Series. We suggest here that Candy Creek is more likely given our dates from the site and the fact we have recovered Radford Series ceramics in much later contexts at other nearby sites. Still, the ceramics are not typical in appearance as noted by both Faulkner (personal communication, 1991) and Evans (1955:66). In any case, the ceramics represent a Middle Woodland to late Middle Woodland assemblage (Franklin and Dean 2006:75). There may be as many as eight, or as few as four, vessels represented. In either case, the sherds do not comprise a large ceramic assemblage.

The prehistoric lithic assemblage is composed almost entirely of locally abundant Knox cherts. Diagnostic stone tools include Ebenezer ($n=1$), Nolichucky ($n=1$), and Swan Lake ($n=3$) bifaces as well as Madison ($n=7$) arrow points. These specimens are consistent with a Woodland occupation. The authors wish to emphasize the temporal placement of Madison points here. Seven Madison points were recovered in unambiguous Middle and late Middle Woodland contexts at Linville Cave (Franklin and Dean 2006:77-78) and we have found this to be quite common as Dean (personal communication, 2012) has routinely recovered Madison points in Middle Woodland contexts in upper East Tennessee. This is also true in adjacent upland regions of Tennessee such as the Upper Cumberland Plateau. At Workshop Rock Shelter, Madison points were recovered in a context dated securely to A.D. 883 in association with limestone tempered plain and cord-marked ceramics (Franklin and Bow 2009:149). At York Palace, two Madison points recovered from levels below two plain sherds OSL dated to A.D. 894 and A.D. 971 clearly places them in Late Woodland context (Langston et al. 2010). We have also recovered Madison points in well-dated Late Woodland contexts at Far View Gap Bluff Shelter (Franklin 2008). While Justice (1987:224-227) suggests a temporal span that begins about A.D. 800, we believe their use may have begun as early as A.D. 600 in the uplands of East Tennessee. In sum, Madison points clearly have their origin in the Woodland period and are not Mississippian *sensu stricto*.

Mass analysis (Ahler 1989) and flake attribute analysis (Bradbury and Carr 1995; Magne 1985) represent independent methods used to analyze the

flaking debris assemblage from Linville Cave. Both lines of evidence indicate an emphasis on tool production, or late stage reduction. Lithic analyses at Linville Cave suggest that the technology consisted of gearing up activities such as tool manufacture/maintenance and resharpening (Franklin and Dean 2006:76-79).

Chronology

Franklin and Dean (2006:71) reported the first AMS date from Linville Cave. A single piece of wood charcoal from Feature 3 yielded an age determination of 1349 ± 36 B.P. with a calibrated mean date of A.D. 675. The date is consistent with the associated ceramic and lithic assemblages. Feature 3 was encountered in Level 2 of the excavations. As typical Early Woodland stone tools (e.g., Ebenezer and Nolichucky bifaces, $n=2$) were recovered in the lower levels, the archaeological deposits were thought to possibly span a greater length of time than the late Middle Woodland period. In an effort to refine the site chronology, a charred hickory nutshell from Level 4 of Unit C4 was submitted for AMS dating. The resulting age determination is 1270 ± 40 B.P. (Beta-253441). At the 1σ level, the calibrated mean date is A.D. 727. This result is statistically indistinguishable from the first date, and both dates are quite consistent with the recovered ceramics and stone tools. Therefore, it appears that the archaeological assemblage is restricted to the late Middle Woodland period.

Use-Wear Analysis

In our work, we employ a *chaîne opératoire* approach (e.g., Franklin et al. 2012:128-129) that North American

scholars have roughly equated with an organization of technology approach. Use-wear analysis is not standard practice, and tool use and reuse are often bypassed due to the technical skills of the analyst and time constraints. However, we believe a critical element of addressing tool function, and more broadly site function, may be addressed utilizing the methods developed for use-wear analysis. Our methods are predominantly those developed by Keeley (1980) for assessing polishes. Attributes identified to be significant indicators of use, such as scarring, edge rounding, and striations were also recorded (Odell 1977). An Olympus BH-2 metallurgical microscope, with an incident-light attachment and magnification capabilities from 50x to 500x was used in this analysis (e.g., high power use-wear analysis). Interpretations were made with reference to an experimental collection believed to be representative of the archaeological record that includes projectile damage, butchering or meat processing, hide processing, bone and antler working, and wood working (Hays 1998; Hays and Lucas 2001).

Nineteen prehistoric stone tools were recovered from the Linville Cave excavations. One specimen was excluded from the use-wear analysis due to significant mineral concretions on the blade edges. Seven tools exhibited evidence of use while eleven did not. Given that most of the tools are formal (stemmed) bifaces, it is not surprising that most of the tools show no use-wear. If the bifaces were used as knives, damage from cutting soft substances such as meat is often ephemeral. If the bifaces were used as armatures, damage from projection is rarely represented by polishes given there is little repetitive motion, and identifying fractures due to

impact in hunting activities is difficult to distinguish from fractures caused by other means (Dockall 1997; Fisher et al. 1984; Odell and Cowan 1986). No organic residues were observed on these stone tools. As noted before, we recovered seven Madison arrow points. Based on the results of the use-wear analysis, activities represented at Linville Cave include hide scraping ($n=2$), bone scraping ($n=1$), hide cutting ($n=2$) and meat cutting ($n=1$). One impact fracture was present. Given the small number of tools recovered, the indicated activities are consistent with a briefly occupied gearing up site.

Site Formation: Lithic Assemblage

Magne (1989) expanded upon his debitage stage approach based on individual flake attribute analysis (Magne 1985) to develop a model of assemblage formation processes. This model is predicated on assemblage diversity (variety in tool types) and frequencies of tools and tool fragments *vis a vis* the percentage of late stage debitage recovered. In short, archaeological sites with high numbers of tools and a greater diversity of tools but low percentages of late stage debitage were residential locations. Sites with few tools, lower diversity, and low late stage flaking debris were manufacturing sites. Locations with low diversity, few tools, but higher late stage debitage are interpreted as situational “emergency” (retooling, gearing up, etc.) camps. Finally, sites with large numbers of tools, relatively high diversity, and higher percentages of late stage flaking debris were repeated logistical camps (Figure 2).

For the Linville Cave assemblage, of the flaking debris that could be assigned a reduction stage (early, middle, or late),

50% is categorized as late stage reduction. This total measure in relation to the low number of recovered tools and tool fragments indicates that the site functioned as a short-term situational camp (see Figure 2).

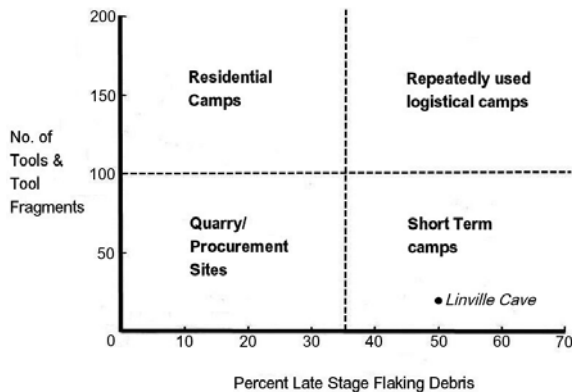


FIGURE 2. Lithic assemblage site formation diagram for Linville Cave. Diagram adapted and modified from Magne (1989: Figures 3 and 7).

Zooarchaeological Analysis

In the summer of 1996, faunal remains recovered from Linville Cave were sent to the University of Tennessee, Knoxville (UTK) for preliminary analysis. The results of this cursory analysis were presented in the earlier article (Franklin and Dean 2006). The species list generated at that time included modern domesticates such as chicken (*Gallus gallus*), cow (*Bovidae* sp.) and horse (*Equus* sp.). Invasive species including woodrat (*Neotoma floridana*) were also identified, as were several Pleistocene species including caribou (*Rangifer tarandus*), mastodon (*Mammuth americanum*), and dire wolf (*Canis dirus*) (see Franklin and Dean 2006:72, Table 2). No quantitative analyses were conducted on the faunal material (such as NISP, MNI, MNE or diversity). Modifications were not

systematically recorded and seasonality was not addressed, all of which could yield more information about settlement and subsistence activities.

In 2005, the Linville Cave faunal remains were transferred from the McClung Museum to the Paleontology Department at East Tennessee State University (ETSU) for further analyses. The archaeological faunal remains were reexamined during the winter of 2008-2009, and again during the summer of 2012, and represent the subject of the analysis presented in this article.¹

Methods

All faunal materials were identified using collections at the University of Tennessee, Knoxville.² Each provenience was examined separately and animal taxa were sorted by class/high order classifications (i.e., Mammalia, Aves, Reptilia, Amphibia, Osteichthyes and Invertebrata). All faunal remains that were too fragmentary or lacked diagnostic features to be identified to any specific class were classified as unidentifiable (UID). Each class was then examined in more detail for lower taxonomic classifications where possible. Modifications recorded include heat modification (burning and calcination), butchering marks, signs of digestion and concretions, and signs of working/shaping and/or use. Breakage patterns were not systematically recorded on this assemblage other than to note whether complete or fragmented, and what portion is represented. Each specimen or group of similar specimens per provenience was weighed to the nearest 0.01 g.

Quantifications employed for this assemblage include NISP, MNI, MNE and diversity calculations. NISP refers to the number of identifiable specimens (Payne

1975) and can be problematic as it does not necessarily reflect the actual abundances of taxa at a site. The representation of elements can be inhibited by a number of cultural and non-cultural factors (i.e. transport, butchering, cooking, and disposal methods, carnivore and rodent scavenging, differential survivorship of elements, element size and density, and recovery methods) (Reitz and Wing 2008:202-205). MNI is the count of the fewest number of individuals represented in a faunal assemblage, a determination made by investigating the number of same sided elements representative of a particular species (White 1953). In addition to same-sided elements, age and size were also used here. Like NISP, MNI can be influenced by transport, survivorship and recovery of faunal elements. MNI can also be affected by a low sample size (Grayson 1978).³

All Linville Cave faunal remains were recovered using ¼" mesh and/or water screening through fine mesh (Franklin and Dean 2006:66). Rodent and carnivore modifications were recorded. Additionally, MNE (minimum number of elements) was calculated by counting the number of overlapping landmarks for a particular element (see Reitz and Wing 2008:226-228 for discussion). Transport, survivorship, and recovery can also influence MNE determinations. However, MNE serves as an observational unit for zooarchaeologists as it does loosely indicate the degree of fragmentation of a particular element and transport of that element (Lyman 1994:102). For this analysis, calculating MNE was important for discussing the transport of large mammal carcasses, in particular white-tailed deer (*Odocoileus virginianus*), as this has implications for site use (see discussion below). MNE was calculated

for all skeletal elements of white-tailed deer except separate head parts which are all categorized as cranium. Each element was investigated for overlapping landmarks to determine the minimum number of elements represented.⁴

Lastly, diversity indices were calculated for each class and the entire site based on species NISP.⁵ Diversity indices are a useful tool for comparing faunal assemblages from several sites, although these calculations can be influenced by the same factors that affect MNI, NISP and MNE. However, diversity indices are less prone to bias when sample sizes are greater than 25 (Cruz-Uribe 1988). The Shannon-Weaver Diversity Index (Odum 1971) is employed here using the formula:

$$H' = -\sum \left(\frac{n_i}{N}\right) \log\left(\frac{n_i}{N}\right)$$

where n_i is the number of specimens within a particular species, and N is the total number of specimen for all species with a certain group (i.e. Mammalia, Aves, Reptilia, etc. or some combination). This diversity index has no set scale, but higher diversity is represented by a higher diversity value. Diversity indices can therefore be used to compare groups of faunal taxa.

Results

A total of 2,403 (1,203.43 g) faunal remains recovered from archaeological deposits was analyzed (Table 1). Mammals make up 63% of the assemblage, with 11.2% avian, 11.5% reptilian, 1.8% amphibian, 4.6% fish, and <1% invertebrate. The remaining 7.7% of the assemblage is unidentifiable. In addition to counts and weights for each taxonomic designation, the diversity index

for each faunal class is presented in Table 1. These indices were calculated using the NISP for each species, which does include 'c.f.' designations. The species and counts used can be found in Tables 2-4 and are indicated by an asterisk. Several bone tools/bone artifacts present in this faunal assemblage are discussed with bone modifications below.

Table 1. Linville Cave Fauna.

Taxon	NISP	Weight (g)	Diversity Index
Mammalia	1,514	911.17	2.24641
Aves	270	70.81	1.2154
Reptilia	276	183.25	0.96523
Amphibia	45	7.81	0.51303
Osteichthyes	111	10.61	0.63651
Invertebrata	1	0.25	-
UID	186	19.53	-
Total	2,403	1,203.43	2.6871572

Mammalia

A total of 1,514 faunal remains was identified as mammal and make up the majority of the assemblage in both count and weight (911.17 g). The diverse array of families, genera, and species represented at the site are presented here in terms of small, medium, and large mammal (Table 2). Small mammals are defined as those that weigh less than 10 pounds when fully adult, such as squirrel (*Sciurus* sp.), eastern cottontail (*Sylvilagus floridanus*), and muskrat (*Ondatra zibethicus*). Medium mammals fall between 10 and 50 pounds. This category includes woodchuck (*Marmota monax*), gray fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*) and river otter (*Lutra canadensis*). Beaver (*Castor canadensis*) are included in this category even though some individuals

can weigh up to 70 pounds (Reid 2006:179). Large mammals are anything over 50 pounds and generally exclusive to large canids, deer and elk (*Cervidae*) and black bear (*Ursus americanus*).

Small mammals make up nearly a third of the identifiable mammalian assemblage ($n=215$) and are typical of the small mammalian fauna present in the Southeast. Parmalee (Franklin and Dean 2006, Table 2) reported five additional small mammalian species that were not identified in the proveniences analyzed here. These species include the red-backed vole (*Clethrionomys* c.f. *gapperi*), meadow vole (*Microtus pennsylvanicus*), southern bog lemming (*Synaptomys cooperi*) and hairytail mole (*Parascalops breweri*). Similarly, two species identified in these analyses that were not previously reported comprise the star-nosed mole (*Condylura cristata*) (identified by a complete left humerus) and possibly domestic rabbit (c.f. *Oryctolagus cuniculus*). As previously mentioned, several other domesticates were encountered.

Medium mammals are the most represented group of identifiable taxa ($n=304$). This number is slightly skewed by an apparent natural death of an opossum (*Didelphis marsupialis*) on the cave floor sometime in recent history. A total of 119 elements associated with a single sub-adult opossum was recovered from two adjacent test units (C2 and C3) in the first, second, and third levels of excavation, with the majority of skeletal elements from Level 1. After accounting for these particular skeletal elements, the frequency of opossum is actually quite low ($n=9$). Cause of death for the opossum could not be determined (almost all skeletal elements were present and unmodified, and there were no signs of disease reflected in the skeleton). This

Table 2. Linville Cave Mammalian Taxa.

Size Class	Taxon	Common Name	NISP	MNI	Wt. (g)
Sm. Mammal	<i>Blarina brevicauda</i> *	northern short-tailed shrew	1	1	0.07
	<i>Condylura cristata</i> *	star-nose mole	1	1	0.18
	c.f. <i>Eptesicus fuscus</i> *	big brown bat	9	2	0.33
	c.f. <i>Oryctolagus cuniculus</i> *	domestic rabbit	1	1	0.18
	<i>Microtus pinetorum</i> *	woodland vole	2	2	0.12
	<i>Microtus</i> sp.*	vole sp.	3	1	0.07
	Mustelidea	mink, weasel, etc.	1	-	0.32
	<i>Neotoma floridana</i> *	eastern woodrat	57	6	20.57
	<i>Ondatra zibethicus</i> *	muskrat	5	1	2.4
	<i>Peromyscus</i> sp.*	mouse	1	1	0.03
	Rodentia		4	-	1.13
	<i>Scalopus aquaticus</i> *	eastern mole	14	7	3.3
	<i>Sciurus carolinensis</i> *	gray squirrel	2	1	0.33
	<i>Sciurus niger</i> *	fox squirrel	2	1	0.2
	<i>Sciurus</i> sp.*		25	2	4.86
	<i>Sylvilagus floridanus</i> *	eastern cottontail	43	5	13.79
	<i>Tamias striatus</i> *	eastern chipmunk	7	2	0.7
	UID small mammal		37	-	5
	Md. Mammal	Canidae		2	-
<i>Canis lupus</i> c.f. <i>familiaris</i> *		domestic dog	2	1	2.25
Carnivora			2	-	1.32
<i>Castor canadensis</i> *		beaver	21	2	18.7
<i>Didelphis marsupialis</i> *		opossum	128	3	117.51
<i>Lutra canadensis</i> *		river otter	4	1	4.27
<i>Marmota monax</i> *		woodchuck	36	2	40.22
<i>Procyon lotor</i> *		raccoon	27	2	18.2
<i>Urocyon cinereoargenteus</i> *		gray fox	2	1	2.67
UID medium mammal		80	-	27.34	
Lg. Mammal	<i>Odocoileus virginianus</i> *	white-tailed deer	114	2	258.01
	<i>Ursus americanus</i> *	black bear	2	1	2.67
	UID large mammal		100	-	154.48
UID Mammal	UID mammal		779	-	209.49
Total Mammal			1,514		911.17

*used in diversity calculations presented in Table 1

individual is likely not related to the prehistoric archaeological assemblage, although it should be noted that the elevated NISP for opossum was used in the diversity calculations presented in Table 1.

An interesting occurrence in any Southeastern faunal assemblage is the presence of domestic dog. To ensure accuracy of identification, all canid specimens were compared with Archaic period dogs recovered from the Eva site

in Benton County, Tennessee (Lewis and Kneberg 1961).⁶ Two teeth, a crown of a 2nd molar on the right maxilla, and a heavily worn but complete 3rd molar from the left maxilla were the only potential dog elements identified. Given the fragmentary nature of one tooth and the heavy wear on the other, neither could be conclusively identified as dog. Both were large compared to Archaic dogs, but too small when compared to modern wolf. Therefore, they remain identified as *Canis lupus* c.f. *familiaris*. The two specimens classified as Canidae include another heavily worn 4th mandibular premolar and a burned piece of parietal. Both of these specimens are similar to fox, dog, and wolf morphology but cannot be differentiated based on size. Lastly, the two gray fox specimens include a fragmentary mandible with several premolars and a complete metatarsal. Gray fox and red fox (*Vulpes vulpes*) are similar in morphology and are often differentiated based on size. These two specimens are from fully adult individuals and more closely resemble the size of gray fox and therefore are classified as such.

Another species identified by Parmalee (Franklin and Dean 2006, Table 2), but not identified in this analysis, is bobcat (*Lynx* c.f. *rufus*) from the overhead fissure (a Pleistocene fauna associated context). All other medium mammal species identified here were also identified by Parmalee.

Only two large mammals, white-tailed deer and black bear, were identified at Linville Cave.⁷ White-tailed deer are overwhelmingly more represented than black bear ($n=114$ as compared to $n=2$). White-tailed deer were likely the target animal of prehistoric hunting activities in the Southeast because they can be found in both wooded and open environments,

can be hunted year-round, and provide a consistent source of protein and fat. They are commonly represented in great number in faunal assemblages from surrounding areas (e.g., Franklin et al. 2008; Manzano 1987).

A total of 779 faunal elements analyzed could not be identified beyond the class Mammalia or to any size category. Many of these remains are small fragments of burned bone.

Just over 20% of the mammalian assemblage has been modified by burning ($n=291$) or calcination ($n=22$). Five elements exhibit butchering marks including a large mammal long bone shaft fragment (see Franklin and Dean 2006:70, Figure 7) and a deer mandible with a series of cut marks on the interior surface. Finally, a total of 75 elements display gnaw markings from rodents ($n=68$) and carnivores ($n=7$). The much larger number of rodent gnawed bones is discussed below.

Aves

A total of 270 avian remains was identified (Table 3). Several birds are common in Southeastern faunal assemblages, including wild turkey (*Meleagris gallopavo*), sandhill crane (*Grus canadensis*), and ruffed grouse (*Bonasa umbellus*). Anatid specimens (i.e., swan, geese, duck) are also common in this faunal assemblage, but the remains recovered here were too fragmentary to be identified to the species level. The avian assemblage is quite fragmentary with only six complete elements. Recovered chicken remains are obviously historic and have greater implications for site formation.⁸ One possible passenger pigeon (*Ectopistes migratorius*) element was identified. These birds were common in the

Table 3. Linville Cave Avian Fauna.

Taxon	Common Name	NISP	MNI	Wt. (g)
Anatidae	swan, goose, duck	3	-	1.7
<i>Bonasa umbellus</i> *	ruffed grouse	1	1	0.12
cf. <i>Ectopistes migratorius</i> *	passenger pigeon	1	1	0.1
<i>Gallus gallus</i>	domestic chicken	8	2	11.22
<i>Grus canadensis</i> *	sandhill crane	1	1	5.92
<i>Meleagris gallopavo</i> *	wild turkey	3	1	3.43
Passarine	perching birds	3	-	0.24
Phasianidae	pheasant	1	-	0.22
UID		249	-	47.86
Total Aves		270		70.81

*used in diversity calculations presented in Table 1

Table 4. Linville Cave Reptilian Fauna.

Group	Taxon	Common Name	NISP	MNI	Wt. (g)
Turtles	<i>Chelydra serpentine</i> *	snapping turtle	1	1	0.91
	<i>Chrysemys picta</i> sp.*	painted	5	1	7.83
	<i>Graptemys geographica</i> *	map turtle	5	1	5.74
	<i>Sternotherus odoratus</i> *	musk turtle	6	2	3.23
	<i>Terrapene carolina</i> *	eastern box turtle	72	3	81.02
	<i>Trachemys scripta</i> *	red eared slider	6	1	5.9
	UID		135	-	68.09
Snakes	<i>Crotalus</i> sp.*	rattlesnake	1	1	0.88
	Serpentes	non-poisonous snake/UID snake	34	-	6.58
	Viperidae	poisonous snake	11	-	3.07
Total reptile		276		183.25	

*used in diversity calculations presented in Table 1.

Southeast before their extinction in the early 20th century and are often recovered from archaeological sites.

Reptilia

Most of the 276 reptilian elements were representative of turtles. Parmalee originally identified eastern box turtle (*Terrapene carolina*), map turtle (*Graptemys geographica*), and musk turtle (*Sternotherus orderatus*). This analysis identified three additional species: snapping turtle (*Chelydra serpentina*), painted turtle (*Chrysemys picta* sp.) and red-eared slider (*Trachemys scripta*)

(Table 4). Most of the turtle remains come from eastern box turtle. This species is a land turtle and one of the most common turtles found in Southeastern faunal assemblages. The other turtles are aquatic, and inhabit ponds and river settings such as those located near the cave (Conant and Collins 1998). Forty-four turtle elements are burned, four calcined, and none display evidence of being worked. Twenty-nine specimens have been gnawed, but only one by a carnivore.

Forty-six snake vertebra were recovered, including 11 poisonous and 14 non-poisonous specimens.⁹ Twenty

Table 5. Linville Cave Amphibian, Fish and Invertebrate Taxa.

Group	Taxon	Common Name	NISP	MNI	Wt. (g)
Amphibia	<i>Cryptobranchus alleganiensis</i> *	hellbender	9	1	2.41
	<i>Rana/Bufo</i> sp.*	frog/toad	34	4	5.21
	UID		2	-	0.19
Osteichthyes	Catostomidae	sucker	11	-	2.74
	Cyprinidae	minnow	3	-	0.15
	Ictaluridae	catfish	1	-	0.03
	<i>Micropterus</i> sp.*	bass	1	1	0.24
	<i>Moxostoma erythrurum</i> *	golden redhorse	1	1	0.12
	<i>Moxostoma</i> sp.*	redhorse sp.	2	1	1.4
	UID		92	-	5.93
Invertebrata	Bivalvia	bivalve	1	-	0.25
Total Amphib. Fish and Invert.			157		18.45

*used in diversity calculations presented in Table 1

vertebral fragments could not be identified. Only two snake remains were burned.

Amphibia

The majority of recovered amphibian remains ($n=45$) were frog/toad ($n=34$).¹⁰ The remaining amphibian elements are hellbender (*Cryptobranchus alleganiensis*) and two unidentified. The amphibian remains were relatively unmodified with only four burned elements. No specimens are calcined, cut or gnawed. The presence of these semi-aquatic specimens is expected given the cave's close proximity to water.

Osteichthyes

Sixty-one fish remains were recovered from Linville Cave (Table 5). Fifty fish scales were also recovered but not included in the NISP presented here (no effort was made to identify these to family, genus, or species). The remaining fish elements represent several families commonly found in the study area

including sucker fish (Catostomidae), minnow (Cyprinidae) and catfish (Ictaluridae). All of these species can be found in streams, rivers and lakes located near Linville Cave. None of the fish remains display any modification.

Invertebrata

A single shell fragment of a burned marine bivalve shell was recovered (Table 5). Due to the presence of domestic species in the faunal assemblage, it's unknown if this artifact is the result of long distance trade or represents a modern intrusion.

Unidentified (UID)

A small portion of the faunal assemblage ($n=186$, wt.=19.53 g) was highly fragmented and could not be identified.

Faunal Modification

Table 6 summarizes faunal modifications from Linville Cave. Overall,

Table 6. Linville Cave Faunal Modification.

Modification	Count
Burned	371
Calcined	39
Cut	7
Rodent Gnawed	109
Carnivore Gnawed	7
Digested	32
Total	533

the presence of cultural modifications is relatively low for the entire assemblage (17.35%), while natural modifications make up roughly 5% of the assemblage (the majority from rodent gnawing). In addition to these modifications, 35 specimens of mostly unidentifiable mammals displayed macroscopic signs of digestion. These non-cultural modifications have greater implications for site disuse, rather than use, a topic that will be discussed in more detail below.

Calcination suggests direct contact with fire, whereas bone can darken to appear burned if in close proximity to a fire rather than direct association (Bennett 1999). A total of 46 burned bone fragments are associated with Feature 3. In addition to these modifications, three elements display evidence of cultural modification in the form of smoothing or shaping. One appears to be the distal end of a bone point (likely a bone awl). Striations on the side of this point indicate use in a twisting motion. A medial section of a burned bone point was also recovered and displays similar striations. Lastly, a flat piece of large mammal long

bone displays two 'notches' along with several striations. A total of 51 medium-large and large mammal long bone shaft fragments were identified during analysis. These fragments could be the result of breakage for marrow, bone grease, blanks for tool making or possibly the result of taphonomy by natural agents such as carnivores (none display carnivore gnaw marks, yet 15 specimens display rodent gnaw marks).¹¹

Discussion of Faunal Analysis

The results of lithic, ceramic, and paleoethnobotanical analyses (along with radiocarbon dates and one feature) indicate ephemeral use of Linville Cave during the late Middle Woodland period as a hunting camp. The site was later revisited by historic moonshiners as evidenced by two additional associated features. Analysis of the site faunal assemblage offers support to these prior conclusions along with new interpretations.

Site Formation

The Linville Cave faunal remains have multiple origins. Looking first at the faunal assemblage composition, the most diverse class represented is mammal, and more specifically, small mammal (diversity: 2.1257465). Many of the species are nocturnal and commonly preyed upon by raptorial birds. Andrews (1990:45) suggests that owls tend to cause the accumulation of small mammal bone deposits more so than other raptorial birds and carnivores.

In a study on the effects of owl consumption and regurgitation of small animals, Kusmer (1990:633) outlines six characteristics of owl accumulated assemblages. The small mammal

Table 7. Linville Cave Representation of Small Mammal Remains.

Element	Right	Left
Mandible	11	9
Humerus	18	15
Ulna	3	3
Radius	3	0
Femur	12	10
Tibia/Fibula	6	8

assemblage at 40SL24 meets these characteristics. First, the assemblage is diverse yet dominated by a few species such as eastern woodrat, squirrel and eastern cottontail rabbit. Second, juveniles are well represented in the small mammalian assemblage ($n=17$) with most specimens consisting of eastern woodrat ($n=6$), squirrel ($n=3$) and eastern cottontail rabbit ($n=2$). Third, equal representation of right and left elements are present in the assemblage, although there are consistently more rights than lefts (Table

7). Fourth, the small mammal bones are relatively complete and many mandibles display a broken ramus and tooth loss (Figure 3). Additionally, 66 of the 215 small mammal bones are complete (30%). Lastly, only a few remains display signs of digestion ($n=4$). The evidence suggests that the small mammal accumulation represents natural rather than cultural deposition. Snakes and amphibians found in this assemblage may also be associated with these accumulations.

This aspect of interpretation has implications for site function. Owls would have inhabited the entrance of the cave when humans did not. The mixture of recovered small mammal specimens with archaeological remains suggests repeated, short term use of the site. A high degree of rodent gnawing ($n=109$) also indicates the site was unused by humans for extended periods of time. Woodrat dens are often located in caves and rock shelters. These rodents are known to collect bones and their gnawing can be quite extensive (Hoffman and



FIGURE 3. Figure 3. Small mammal mandibles with signs of digestion (i.e. broken ramus, missing teeth).



FIGURE 4. Digested unidentified (UID) bone from C2-2.

Hays 1987). Carnivores may also have used the cave during periods of nonhuman occupation as evidenced by one medium mammal coprolite (not yet processed) recovered during excavations and 32 unidentifiable bones that appear to have been digested. Several of these unidentifiable bones were found in clusters and possibly indicate scat (Figure 4). However relatively few bones show evidence of carnivore gnawing (see Table 6).

Several domestic species are represented at the site. The most frequent species in this analysis is the domestic chicken. This result is not surprising given the historic use of the cave. These remains were concentrated in two discrete areas (Test Units C4 and D2/D3), with the remains found as deep as Level 3 in both areas. This depth suggests some reworking of the sediment. Opossum remains associated with the single individual (which presumably died of natural causes) were also found as deep as Level 3, but in a relatively contained area.

Interpretations for Site Function and Seasonality

The site was originally interpreted as a temporary hunting camp and some of the most compelling evidence comes from the

distribution of white-tailed deer remains. The hunting of large mammals presents transport dilemmas and decisions that often must be made based on criteria identified by the hunter, something archaeologists can only address on a post hoc basis. Archaeologists often assume that the meatiest portions of large mammals would be targeted for transport back to places of consumption (e.g., a residential base or temporary hunting camp) (*sensu* Bunn et al. 1998). However, a number of factors ultimately play into this decision (see Kelly 2007, Chapter 3; Klein 1976; Perkins and Daly 1968). By investigating which elements of white-tailed deer are represented at the site, it may be possible to address the topic of transport, and therefore the nature of a faunal assemblage from a situational hunting camp.

Of the 114 recovered deer remains, 85 are representative of the axial skeleton (e.g. cranium, vertebra, ribs, and pelvis) and 29 of the appendicular skeleton. There appears to be an over-representation of axial skeletal elements at the site, but when weight is taken into account, we see that axial elements (106.19 g) make up much less of the recovered remains than appendicular elements (151.82 g). These two results are visually represented in Figure 5. Weight and count are most similar in areas of the head and midsection of the skeleton. This suggests transport of certain white-tailed deer remains, such as shoulder and rump portions, to another location. There is evidence that some white-tailed deer remains were burned on site ($n=20$), including several antler tines from Feature 3, lower leg bones (metapodia), vertebra, and ribs.

When MNE is taken into account, an emphasis on the appendicular skeleton becomes evident (Table 8), although

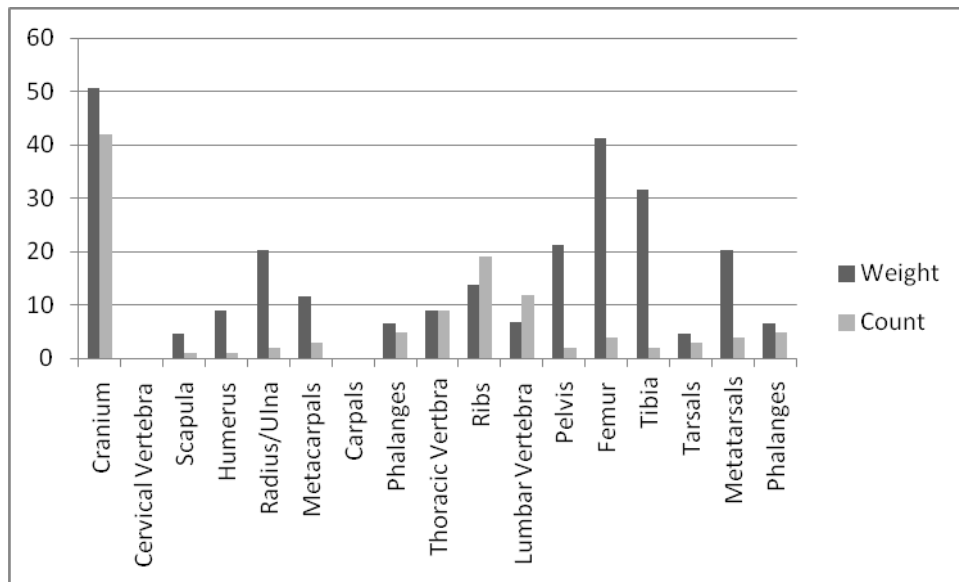


FIGURE 5. Distribution of white-tailed deer remains at Linville Cave.

Table 8. MNE Calculations for Deer Based on Overlapping Landmarks.

Element	MNE
Distal Phalanx	3
Lumbar Vertebra	3
Medial Phalanx	3
Femur, proximal	3
Dew Claw	2
Metacarpal, shaft	2
Metatarsal, proximal	2
Patella	2
Innominate	2
Thoracic Vertebra	2
Tibia, shaft	2
Cranium	2
Humerus, distal	1
Lateral Malleolous	1
Metapodia, condyle	1
Radius, proximal	1
Scapula	1
Ulna, shaft	1

counts overall are low. In short, it seems that using NISP, weight, and MNE to investigate the representation of white-

tailed deer elements (with a focus on transport) suggests deer were transported to the site whole for butchering, and that meatier portions may have been transported to another location. This behavior does not seem to have been repeated often, as all counts (NISP, MNI, MNE) are low.

Several other taxa are represented in high frequencies including beaver, raccoon, woodchuck, eastern box turtle, and several sucker fish. It is far from clear if these species are indicative of human activity as only two of the 170 elements represented by these species display cultural modification. However, taken together, this assemblage represents a highly diversified meat diet with the target animal being white-tailed deer.

Site seasonality can be determined using several lines of evidence (Monks 1981). First, one can look at presence/absence of species that indicate seasonality, such as warm weather taxa and migratory birds. The presence of Anatidae species and sandhill crane indicates winter-spring seasonality, whereas warm weather occupation is indicated by the high number of aquatic

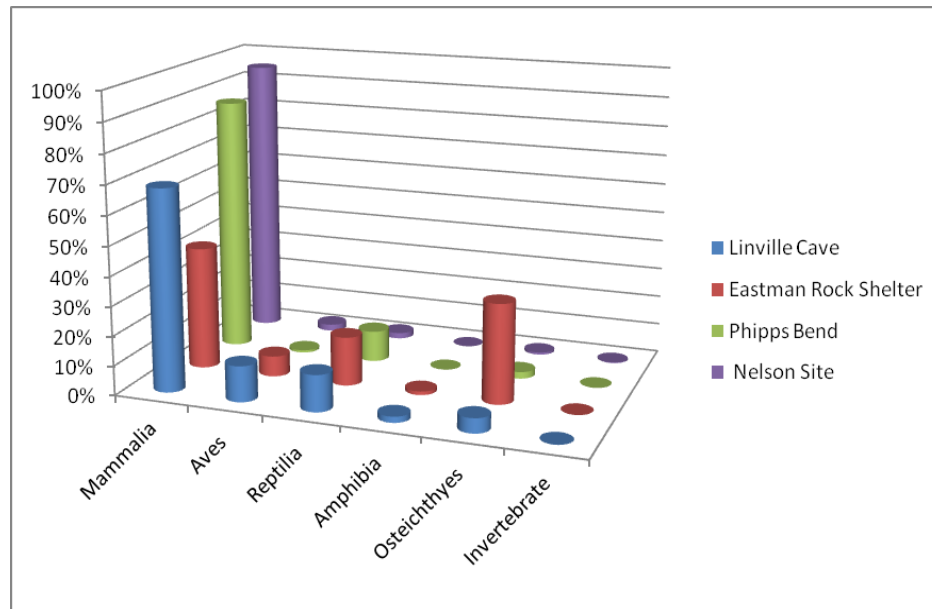


FIGURE 6. Percentage of faunal remains based on NISP from Middle Woodland components from four sites in upper East Tennessee. Data adapted from Curren (1981:413-414, Table 117); Franklin et al. (2008:190-192); and Manzano (1986:42-45, Table 3.01).

specimens and land turtles. Second, the buildup of medullary bone in one female turkey tarsometatarsus indicates a winter – early spring occupation (turkeys lay eggs in spring). Medullary bone is a buildup of calcium phosphate in the medullary cavity of female birds prior to egg laying (Monks 1981:193; Rick 1975).

Perhaps the clearest indicator of site seasonality is the analysis of fusion in long bones and tooth development of juvenile mammals such as white-tailed deer. Given that fawn are born between April and June each year, and epiphyseal rates are known for several skeletal elements, we can estimate the season in which juvenile deer represented at the site died, thus suggesting seasonality. Twenty-four of the 114 deer remains are juvenile (MNI=2 based on two right proximal femora). Purdue (1983) outlines known fusion rates for white-tailed deer elements. Two unfused phalanges and an unfused acetabulum suggest at least one deer is represented that is less than one year of age (e.g., a summer – winter/early

spring occupation). An unfused thoracic vertebra represents a deer less than two months old, suggesting summer occupation. All other long bones represented by juvenile deer recovered from the site take more than one year to completely fuse and are therefore ambiguous to season. Since no elements overlap that could be assigned an age, the MNI for juvenile white-tailed deer remains at two.

These three lines of evidence strongly favor a fall through spring occupation of the site. The botanical remains recovered from the site also indicate a fall occupation.

Linville Cave in Regional Perspective: Faunal Evidence

Three archaeological sites with Early-Middle Woodland components and preserved faunal remains are located near Linville Cave. These sites consist of Phipps Bend (Lafferty 1981), Eastman Rock Shelter (Manzano 1987), and

Table 9. Species Represented at Four Middle Woodland Sites in Upper East Tennessee (data adapted from Curren 1981:413-414, Table 117; Franklin et al. 2008:190-192; Manzano 1986:42-45, Table 3.01).

Class	Taxon	Common Name	Eastman Rock Shelter	Linville Cave	Nelson Site	Phipps Bend	
Mammal	<i>Eptesicus fuscus</i>	big brown bat	14	9			
	<i>Ursus americanus</i>	black bear	1	2	3		
	<i>Castor canadensis</i>	beaver	13	21		2	
	<i>Lynx rufus</i>	bobcat	1				
	<i>Canis sp.</i>	dog/wolf	26	6		2	
	<i>Tamias striatus</i>	chipmunk	4	7			
	<i>Felis concolor</i>	cougar	1				
	<i>Odocoileus virginianus</i>	deer	747	114	94	173	
	<i>Cervus canadensis</i>	elk	11			6	
	<i>Urocyon cinereoargenteus</i>	gray fox	7	2			
	<i>Condylura cristata/Scalopus aquaticus</i>	mole			15		
	<i>Peromyscus sp.</i>	mouse sp.	5	1			
	<i>Ondatra zibethicus</i>	muskrat	11	5			
	<i>Didelphis marsupialis</i>	opossum	6	128	1		
	<i>Lutra Canadensis</i>	river otter	2	4			
	<i>Erethizon dorsatum</i>	porcupine	5				
	Lagomorpha	rabbit sp.	48	44			
	<i>Procyon lotor</i>	raccoon	82	27	1	7	
	<i>Neotoma floridana/Signodon hispidus</i>	rat sp.	11	57			
	Rodentia	rodent	29	4			
	<i>Blarina brevicauda</i>	shrew		1			
	<i>Mephitis mephitis</i>	striped skunk	1				
	<i>Sciurus sp.</i>	squirrel	151	29		1	
	<i>Microtus sp.</i>	vole	1	5			
	<i>Marmota monax</i>	woodchuck	11	36			
	SM Mammal				38	23	2
	MD Mammal				80	1	
	MD-LG Mammal	md-lg mammal				18	
	LG Mammal	lg mammal			100	240	942
	UID Mammal	uid mammal		3427	779	10	
	Aves	Anatidae	duck/goose family	7	3		
		<i>Colinus virginianus</i>	bobwhite	5			
		<i>Gallus gallus</i>	chicken		8		
		<i>Grus canadensis</i>	sandhill crane		1		
		<i>Podilymbus podiceps</i>	grebe sp.	3			
		<i>Bonasa umbellus</i>	roughed grouse	1	1		
		<i>Gavia immer</i>	loon				1
		cf. <i>Strix varia</i>	Barred owl	1			
		cf. <i>Ectopistes migratorius</i>	passenger pigeon		1		
		Passerine	perching bird	8	3		
		Phasianidae	pheasant		1		
		<i>Meleagris gallopavo</i>	turkey	79	3		8
		<i>Cathartes aura</i>	turkey vulture	3			
		LG bird				4	
		UID aves	uid aves	665	249	5	1
Reptilia		<i>Terrapene Carolina</i>	eastern box turtle	177	72	4	92
		Kinosternidae	musk/mud turtle	269	6		
		Emydidae	pond turtle	99	16	4	
		<i>Trionyx spiniferus</i>	soft-shell turtle	163			41
		<i>Chelydra serpentina</i>	snapping turtle	12	1		4
	UID turtle	uid turtle	1045	135	4		
	Serpentes/Vuiperidae	snakes	69	46		1	
Amphibia	<i>Rana/Bufo sp.</i>	frog/toad	122	36			
	<i>Cryptobranchus sp.</i>	hellbender/mudpuppy	13	9			
Osteichthyes	<i>Micropterus sp.</i>	bass	114	1			
	<i>Ictiobus sp.</i>	buffalo	9				
	<i>Ictalurus spp.</i>	catfish	45	1		1	
	<i>Aplodinotus grunniens</i>	drum	192				
	<i>Lepisosteus sp.</i>	gar	10				
	Cyprinidae	minnow		3			
	Catostomidae	sucker	654	14		2	
	Centrarchidae	sunfish	35				
	<i>Stizostedion sp.</i>	walleye/sauger	18				
	UID Fish		2652	92	3	27	
Invertebrata	<i>Pelyceopoda</i>	fresh-water mussel			1		
	Bivalvia	marine shell		1			
Total			11,085	2,216	416	1,313	

Nelson (Franklin et al. 2008). All three sites are habitation sites in contrast to Linville Cave. A comparison of class distributions based on NISP is presented in Figure 6. The Nelson site is affected by a low sample size ($n=412$), as is Phipps Bend ($n=1,313$) to a certain extent although this represents a 10% sample of the entire faunal assemblage (Curren 1981:407). Eastman Rock Shelter yielded the largest sample of faunal remains ($n=11,085$). The large percentage of fish remains at Eastman Rock Shelter is likely due to its location on the banks of the Holston River. After accounting for these sampling and location biases, it seems these three sites vary only slightly at this level of resolution. When species are taken into account, however, more meaningful conclusions about overall regional subsistence can be made (Table 9).

Only three species (white-tailed deer, raccoon, and eastern box turtle) are present at all four sites. Other important species represented at three sites include black bear, beaver, canids, opossum, squirrel, wild turkey, pond turtle, catfish, and sucker. The Linville Cave faunal assemblage does not deviate much from this general list of most represented species; and therefore seems to reflect the subsistence trends in the region of heavy reliance on white-tailed deer along with meaty/fatty medium sized mammals, ground birds, and aquatic resources.

It is important to consider the representation of white-tailed deer skeletal elements at the three habitation sites when compared to Linville Cave. As discussed above, one of the analytical goals was to investigate the site function of Linville Cave based on faunal elements. White-tailed deer are the primary animal of interest for this discussion. They are ubiquitous at these

four sites (and sites across the Southeast) and often must be butchered for transport from a kill location to a hunting camp to a residential site. Skeletal elements are presented here based on NISP and MNE, but are reported only as NISP for the Phipps Bend (Curren 1981, Table 117) and Nelson sites (Franklin et al. 1981, Figure 10), and as MAU (minimum animal unit, similar to MNE) for Eastman Rock Shelter (Manzano 1987, Figure 4.17.). For these reasons, only a general discussion of white-tailed deer elemental representation can be offered.

Nelson contains the fewest white-tailed deer remains ($n=94$; Franklin et al. 2008:190). Most of these elements are lower leg bones, with very few elements of the axial skeleton represented in the assemblage (Franklin et al. 2008:191, see Figure 10). However, this assemblage may be biased given a low sample size that is likely due to poor preservation and recovery methods.

White-tailed deer are more numerous ($n=173$) at the Phipps Bend site (Curren 1981:413-414). Most of these remains are representative of the appendicular skeleton ($n=120$). At least 52 specimens are representative of the axial skeleton which includes cranium, vertebra, scapula and pelvis (Curren 1981:413-414, Table 17).¹² Curren (1981:416) notes that no white-tailed deer ribs were identified from the Phipps Bend faunal assemblage and attributes this to differential transport. In this case, it is suggested that ribs were not transported from kill sites. However, Curren (1981:415) does note that sample size is an issue for this faunal assemblage.

Lastly, Manzano (1987, Table 3.01) reports 747 total white-tailed deer for the entire Eastman Rock Shelter assemblage. Manzano (1987, Figure 4.17) later indicates that the white-tailed deer

remains from the Middle Woodland layers are representative of the entire skeleton based on MAU rather than NISP. Interestingly, ribs are present yet few in number.

In sum, differential transportation of white-tailed deer elements does seem to have taken place in the past. But, given several taphonomic processes and the palimpsest nature of these assemblages, no clear transport patterns of white-tailed deer remains from a kill site to a habitation site can be identified at this time.

Conclusions

Further analysis of the Linville Cave faunal remains offers new insight into previously developed conclusions and interpretations of site use through time. The remains were well preserved and recovered through water-screening and 1/8" mesh. However, the faunal assemblage, like other artifact assemblages from the site, is not very extensive. Upon careful examination, many faunal elements seem to be in the shelter due to natural agents such as carnivores and raptorial birds. Numerous unidentifiable mammalian bones appear to have been digested and essentially deposited as scat. The abundant rodent gnawed bones suggest elements were left on the surface of the cave or areas nearby. Therefore, it does not seem likely from the faunal assemblage that the cave was occupied for extended periods of time by humans.

Humans did utilize the shelter, however, and this is reflected in the faunal assemblage by both cultural modifications (burning and butchering) as well as white-tailed deer element distribution. Given that preservation conditions are favorable in this cave environment, it is expected that

all parts of white-tailed deer will preserve evenly. However, more head and mid-section parts are represented which suggests transport of select deer sections to other locations. In contrast, the skeletal element distribution from Phipps Bend (a large Middle Woodland village) indicated all parts of white-tailed deer were represented (Curren 1981:Table 117).

The faunal assemblage of Linville Cave supports our overall contention that the site was used as a temporary situational camp. Visitation to the shelter seems to have occurred year-round, although more heavily during the cooler months. Late Middle Woodland hunter-gatherers used the Linville Cave vestibule for brief episodes where they conducted gearing up activities such as stone tool production, maintenance, and resharpening. The lithic use-wear analysis defined hide/bone scraping and hide/meat scraping activities in agreement with the faunal analysis. An impact fracture was also observed during the lithic analysis. These activities are consistent with the idea that hunter-gatherers were initially processing deer carcasses before transporting certain elements to another location, perhaps a residential camp. The high percentage of late stage flaking debris, and the flaking debris to tool ratio, also support the interpretation of Linville Cave as a short term hunting camp. The recovery of potsherds representing only a few vessels is another line of evidence that the vestibule was used ephemerally. In contrast, thousands of potsherds were recovered from the Eastman Rock Shelter, Nelson, and Phipps Bend sites. In addition, the faunal and botanical analyses support the idea that Linville Cave was mostly used during the fall. These lines of evidence obtained from the Linville Cave investigations consistently point to the site as a logistical camp

where small groups of late Middle Woodland hunter gatherers geared up in preparation for a move to another location.

Notes

- 1 The paleontological assemblage will be separately analyzed under the direction of Blaine Schubert with the East Tennessee State University (ETSU) Paleontology Department. All proveniences containing Pleistocene faunas are excluded from the present analysis.
- 2 Initial reexamination of the faunal assemblage was conducted at the ETSU Archaeology Laboratory using a limited number of comparative specimens. More thorough examinations were later conducted at the UTK Zooarchaeology Laboratory using the North American Vertebrate Collection.
- 3 Although problematic, NISP and MNI are still useful analytical tools for quantifying and comparing faunal assemblages. Furthermore, many of the problems that plague NISP and MNI, such as transport, survivorship and recovery, can be controlled for and/or addressed by the archaeologist(s) involved, minimizing their deleterious effects on interpretation.
- 4 This information is incredibly important for discussing meat yields and nutritional values. But the focus is on site function, therefore these calculations are beyond the scope of this paper.
- 5 *Sciurus* and *Microtus* species were combined and quantified at the genus level, since species determinations are often difficult in these groups. The *Peromyscus* sp. listed in Table 2 was also included in this calculation, as was the *Rana/Bufo* sp., *Micropterus* sp. and *Moxostoma* sp. designations in Table 5.
- 6 Eva site collection at McClung Museum of Natural History and Culture, University of Tennessee, Knoxville.
- 7 Parmalee identified horse and cow taxa from the overhead fissure, but as previously mentioned, this provenience was not analyzed for this study.
- 8 Due to similar morphological characteristics across the group, all chicken remains were distinguished from wild turkey and ruffed grouse based on size.

- 9 Poisonous snakes can be distinguished from nonpoisonous snakes by the presence of a haemal spine on the vertebra.
- 10 Frog and toad are not easily distinguishable and no attempt was made for this study.
- 11 Breakage patterns were not investigated separately.
- 12 One epiphysis was omitted given the ambiguity in terminology.

Acknowledgements. A preliminary analysis of faunal remains from Linville Cave were completed in fall 1996 by the late Dr. Paul Parmalee of the McClung Museum at the University of Tennessee, including identification of species where possible and notes on higher order classifications for all faunal elements. The authors gratefully acknowledge those early efforts and build upon them herein. Funding and support for the analysis of the faunal remains and the second radiocarbon date was provided to Meagan Dennison by the Ronald E. McNair Program at East Tennessee State University (ETSU). The second radiocarbon date was done by Beta Analytic, Inc. Tanya Peres with Middle Tennessee State University (MTSU) and Blaine Schubert (ETSU) offered very generous support, advice, and comparative collections to Meagan Dennison while at ETSU. Bruce Manzano (University of Kentucky) also provided helpful discussion concerning prehistoric faunal assemblages in upper East Tennessee. We would like to thank Roger Hartley and Tammy Hartley, the proprietors of Appalachian Caverns for their interest and support. Lastly, much gratitude is owed to two anonymous reviewers who provided very helpful comments and suggestions. We alone are responsible for any errors or omissions in this article.

References

- Ahler, Stan A.
1989 Mass Analysis of Flaking Debris: Studying the Forest Rather Than the Tree. In *Alternative Approaches to Lithic Analysis*, edited by Donald O. Henry and George H. Odell, pp. 85-118. Archaeological Papers of the American Anthropological Association No. 1.

- Andrews, Peter
1990 *Owls, Caves and Fossils: Predation, Preservation, and Accumulation of Small Mammal Bones in Caves, with an Analysis of the Pleistocene Cave Faunas from Westbury-sub-Mendip, Somerset, UK*. University of Chicago Press, Chicago.
- Bennett, Joanne L.
1999 Thermal Alteration of Buried Bone. *Journal of Archaeological Science* 26:1-8.
- Bradbury, Andrew P. and Philip J. Carr
1995 Flake Typologies and Alternative Approaches: An Experimental Assessment. *Lithic Technology* 20(2):100-115.
- Bunn, Henry T., Laurence E. Bartram, and Ellen M. Kroll
1988 Variability in Bone Assemblage Formation from Hadza Hunting, Scavenging, and Carcass Processing. *Journal of Anthropological Archaeology* 7:412-457.
- Conant, Roger and Joseph T. Collins
1998 *Reptiles and Amphibians, Eastern/Central North America*. Peterson Field Guide Series. Houghton Mifflin Company, Boston.
- Cruz-Uribe, Kathryn
1988 The Use and Meaning of Species Diversity and Richness in Archaeological Faunas. *Journal of Archaeological Science* 15:179-196.
- Curren, Cailup B., Jr.
1981 The Faunal Remains from Phipps Bend. In *The Phipps Bend Archaeological Project*, edited by Robert H. Lafferty, pp. 407-412. Research Series No. 4, Office of Archaeological Research, University of Alabama, and TVA Publications in Anthropology No. 26, Knoxville.
- Dockall, John
1997 Wear Traces and Projectile Impact: A Review of the Experimental and Archaeological Evidence. *Journal of Field Archaeology* 24:321-331.
- Evans, Clifford
1955 *A Ceramic Study of Virginia Archeology*. Smithsonian Institution Bureau of American Ethnology Bulletin 160. Washington, D. C.
- Fisher Anders, Peter Vemming Hansen, and Peter Rasmussen
1984 Macro and Micro Wear Traces on Lithic Projectile Points: Experimental Results and Prehistoric Examples. *Journal of Field Archaeology* 3:19-46.
- Franklin, Jay D.
2008 Luminescence Dates and Woodland Ceramics from Rock Shelters on the Upper Cumberland Plateau of Tennessee. *Tennessee Archaeology* 3(1):87-100.
- Franklin, Jay D. and Sierra M. Bow
2009 Archaeological Exploration of Workshop Rock Shelter, Upper Cumberland Plateau, Tennessee. In *Colleague, Mentor, and Friend: Papers in Honor of Charles H. Faulkner*, edited by Timothy Baumann and Mark Groover, pp. 145-162. Special edition of *Tennessee Archaeology* 4(1-2).

- Franklin, Jay and S.D. Dean
 2006 The Archaeology of Linville Cave (40SL24) Sullivan County, Tennessee. *Tennessee Archaeology* 2(2):63-82.
- Franklin, Jay D., Michelle L. Hammett, and Renee B. Walker
 2008 The Nelson Site: Late Middle Woodland Habitation on the Nolichucky River, Washington County, Tennessee. *Tennessee Archaeology* 3(2):181-198.
- Franklin, Jay D., Maureen A. Hays, Sarah C. Sherwood, and Lucinda M. Langston
 2012 An Integrated Approach: Lithic Analyses and Site Function, Eagle Drink Bluff Shelter, Upper Cumberland Plateau, Tennessee. In *Contemporary Lithic Analysis in the Southeast: Problems, Solutions, and Interpretation*, edited by Phillip J. Carr, Andrew P. Bradbury, and Sarah E. Price, pp. 128-145. University of Alabama Press, Tuscaloosa.
- Grayson, Donald K.
 1978 Minimum Numbers and Sample Size in Vertebrate Faunal Analysis. *American Antiquity* 43(1):53-65.
- Hays, Maureen A.
 1998 A Functional Analysis of the Magdalenian Assemblage from Grotte XVI Dordogne, France. Unpublished Ph.D. dissertation, Department of Anthropology, University of Tennessee, Knoxville.
- Hays, Maureen A. and Géraldine Lucas
 2001 Experimental Investigations of Aurignacian Dufour Bladelets. In *Questioning the Answers: Resolving Fundamental Problems of the Early Upper Paleolithic*, edited by Maureen Hays and Paul Thacker, pp. 109-116. B.A.R International Series No. 1005. British Archaeological Reports, Oxford.
- Hoffman, Rob and Christopher Hays
 1987 The Eastern Wood Rat (*Neotoma floridana*) as a Taphonomic Factor in Archaeological Sites. *Journal of Archaeological Science* 14:325-337.
- Justice, Noel D.
 1987 *Stone Age Spear and Arrow Points of the Midcontinental and Eastern United States*. Indiana University Press, Bloomington.
- Keeley, Lawrence
 1980 *Experimental Determination of Stone Tool Use: A Microwear Analysis*. University of Chicago Press, Chicago.
- Kelly, Robert L.
 2007 *The Foraging Spectrum: Diversity in Hunter-Gatherer Lifeways*. Percheron Press, New York.
- Klein, Richard
 1976 The Mammalian Fauna of the Klasies River Mouth Sites, Southern Cape Province, South Africa. *South African Archaeological Bulletin* 31:75-98.
- Kusmer, Karla D.
 1990 Taphonomy of Owl Pellet Deposition. *Journal of Paleontology* 64(4):629-637.
- Lafferty, Robert H.
 1981 *The Phipps Bend Archaeological*

- Project. Research Series No. 4, Office of Archaeological Research, University of Alabama, and TVA Publications in Anthropology No. 26, Knoxville.
- Langston, Lucinda M., Meagan E. Dennison, and Jay D. Franklin
2010 Archaeological Testing at York Palace (40Fn220), Pogue Creek State Natural Area. Paper presented at the 22nd Annual Current Research in Tennessee Archaeology Meeting, Nashville, Tennessee.
- Lewis, Thomas and Madeline Kneberg
1961 *Eva: An Archaic Site*. University of Tennessee Press, Knoxville.
- Lyman, R. Lee
1994 *Vertebrate Taphonomy*. Cambridge University Press, Cambridge.
- Magne, Martin P. R.
1985 *Lithics and Livelihood: Stone Tool Technologies of Central and Southern Interior B. C.* Archaeology Survey of Canada, Mercury Series No. 133, Ottawa.
- 1989 Lithic Reduction Stages and Assemblage Formation Processes. In *Experiments in Lithic Technology*, edited by Daniel S. Amick and Raymond P. Mauldin, pp. 15-31. BAR International Series No. 528, British Archaeological Reports, Oxford.
- Manzano, Bruce
1986 Faunal Resources, Butchering Patterns, and Seasonality at the Eastman Rockshelter (40SL34): An Interpretation of Function. Unpublished Masters Thesis, Department of Anthropology, University of Tennessee, Knoxville.
- Monks, Gregory G.
1981 Seasonality Studies. In *Advances in Archaeological Method and Theory*, Volume 4, edited by Michael B. Schiffer, pp. 177-240. Academic Press, New York.
- Odell, George
1977 The Application of Micro-Wear Analysis to the Lithic Component of an Entire Prehistoric Settlement: Methods, Problems, and Functional Reconstructions. Unpublished Ph.D. Dissertation, Department of Anthropology, Harvard University, Cambridge, Massachusetts.
- Odell, George and Frank Cowan
1986 Experiments with Spears and Arrows on Animal Targets. *Journal of Field Archaeology* 3:195-212.
- Odum, Eugene P.
1971 *Fundamentals of Ecology*. W.B. Saunders Company, Philadelphia.
- Payne, Sebastian P.
1975 Partial Recovery and Sample Bias In *Archaeozoological Studies*, edited by A. T. Clason, pp. 7-17. North-Holland Publishing Company, Amsterdam.
- Perkins, Dexter and Patricia Daly
1968 A Hunter's Village in Neolithic Turkey. *Scientific American* 219(5):96-106.
- Purdue, James R.
1983 Epiphyseal Closure in White-Tailed Deer. *Journal of Wildlife Management* 47(4):1207-1213.

Reid, Fiona A.
2006 *A Field Guide to Mammals of North America*, Fourth Edition. Houghton Mifflin Company: New York.

Reitz, Elizabeth J. and Elizabeth S. Wing
2008 *Zooarchaeology*, Second Edition. Cambridge University Press, Cambridge.

Rick, Anne Meachem
1975 Bird Medullary Bone: A Seasonal Dating Technique for Faunal Analysts. *Canadian Archaeological Association* (7):183-190.

White, Theodore E.
1953 A Method of Calculating the Dietary Percentage of Various Food Animals Utilized by Aboriginal Peoples. *American Antiquity* 18:396-398.

Meagan E. Dennison
Department of Anthropology
University of Tennessee
Knoxville, TN

Jay D. Franklin
Department of Sociology & Anthropology
East Tennessee State University
Johnson City, TN

Maureen A. Hays
Department of Anthropology
College of Charleston
Charleston, South Carolina

S. D. Dean
Kingsport, Tennessee

TENNESSEE'S ANCIENT PYGMY GRAVEYARDS: THE "WONDER OF THE WESTERN COUNTRY"

Kevin E. Smith

In July 1820, newspapers first reported the discovery of Tennessee graveyards filled with the stone-lined coffins of a primordial "pygmy race." Over the subsequent two centuries, Tennessee Pygmies became a persistent and recurring part of national and international "archaeological folklore." Despite efforts by antiquarians and archaeologists to disprove these stories, the legend of the Tennessee Pygmies survived those challenges -- eventually entering the nineteenth century literary world as the central plot of two novels. Most recently, the Tennessee Pygmies were resurrected after the discovery of Homo floresiensis in Indonesia as "proof" of an ancient global race of pygmies.

Another problem which perplexed the last generation was the long extinct pygmy race which centuries ago undoubtedly inhabited the Tennessee mountains... (Daily Tribune, 20 Sep 1905, Beaver Falls, Pennsylvania)

One of the most persistent and widely published tales about Tennessee prehistory concerns cemeteries of diminutive stone-lined graves containing the remains of a primordial "pygmy race."¹ In July 1820, the *Nashville Whig* (newspaper) published the earliest known account of these mysterious remains -- describing in detail the discovery of hundreds of diminutive graves on several farms near Sparta in White County, Tennessee. In modern parlance, this initial report "went viral" and over the following weeks and months was republished and quoted in newspapers and magazines across the globe-- setting the stage for nearly two centuries of recurring waves of interest in the mysterious and wondrous Tennessee pygmies. The White County pygmies would soon be discovered throughout much of the Upper Cumberland region of Tennessee and Kentucky -- the section of the Cumberland River drainage basin to the north of Carthage in Smith County, Tennessee (Birdwell and Dickinson 2004:8). While the story is fascinating in

and of itself, it also provides an intriguing example of the history of tension between science and folklore, archaeology and antiquarianism, north and south, urban and rural, and past and present both in Tennessee and on the national scene. In the current analysis, the Tennessee pygmies serve as a prime example of the enduring nature of pseudoscientific explanations in popular culture (*sensu* Feder 2011).

First Wave: The White County Pygmies 1820-1850

As the original report published in the *Nashville Whig* (5 Jul 1820) sets the stage and context for virtually all later discussions, the substantive portions are reproduced herein:

On the farm of Turner Lane, Esq., five miles south east of Sparta, on the waters of the Caney Fork of Cumberland, and on other farms adjacent, have lately been found, small graves, sunk into the earth from one foot to eighteen inches below the surface. They are about ten inches broad and eighteen inches long, having a flag limestone rock at each of the ends and sides, and covered with the same species of rock. In these graves are found scull bones, about three inches in diameter, nearly sound : the other bones being proportionally small. Between two and three hundred of these

graves have been discovered. In every tomb, yet opened, was found a small black earthen pot, about one pint in capacity, containing a small conch-shell, undecayed, of a grey colour on the exterior and red within, and as transparent as this species of shell is usually found. The pot, when broken, exhibits numerous white specks of round shining particles...

At Mr. Anderson's, two miles and a half in a south-westwardly direction from the farm of Mr. Lane, were found other skeletons of the same dimensions, in tombs constructed upon the same plan, and of similar materials. One at least, it is said, was observed to have teeth, and all the bones belonging to the human body.

The facts above stated are attested by Mr. Lane, of White County, who has seen the skeletons very often; by his son, Jacob A. Lane, Esq. of Sparta, in the same county, and by another son, Alexander Lane, Esq., a student at law, who all say they can be verified by all the inhabitants in the vicinity of the farm of Mr. Lane. Mr. Lane the father, who is a man of observation, gives it as his decided opinion, that these are the skeletons of adult persons – He founds his opinion upon the solidity of the bones of the heads, and also upon the fact, of the sutures of the skulls being entirely closed and solid.

The trees growing where they were found, are of as great size and age as any in the surrounding forest. . The small graves at Mr. Lane's are arranged, but at Mr. Anderson's there is a large burying ground full of them, without any order as to position. That the bones are human, Mr. Lane thinks there can be no doubt, and that they are not the bones of children, he thinks unquestionable.

... The rocks which inclose them, are thin blue limestone, and not of that neighborhood originally, all the limestone in the vicinity being of a grey colour. Here is a mystery that baffles conjecture, and puts all experience at defiance. The stories of the pigmies of Herodotus, on the borders of Ethiopia and the Red Sea, and those of Homer in India, have always been treated as fables, which, in the days of those men, entered into most of their written compositions. At this day, we must outstrip credulity itself, to belief in the real existence of pigmy men. How could a nation of pigmy men, not exceeding eighteen inches in stature, build habitations, clear the forest, cultivate the soil, defend themselves against the ravages of the hawk and eagle, the wolf and the panther?

Signed by the correspondent as "J.H.," the author is certainly John Haywood, one of the earliest historians of Tennessee, who would subsequently champion the pygmy cause. Publication was timely, as the Tennessee Antiquarian Society (TAS) had met for the first time only four days earlier on July 1. Led by Haywood, who was collecting materials for his first two books on Tennessee history (Haywood 1823a, 1823b), this organization is widely acknowledged as the first effort to establish a historical society in the fledgling state (Toplovich 1999). In fact, Michael O'Brien has argued that "The South had no such organization [historical society] until John Haywood founded the Tennessee Antiquarian Society in Nashville in 1820..." (O'Brien 2004:623). One of the stated goals of the TAS was "to institute enquiries into the remains of antiquity in the western country, and particularly in the state of Tennessee" (Tennessee Historical Society Office Files, 1790-1985, THS 455, Box 15, Folder 1, Tennessee State Library and Archives). Lane's discovery was of strong interest to the TAS and a lengthy letter "was read at a meeting and copied in the minute book" (Owsley 1970:228). The discovery was also made timely by the efforts of Ralph E.W. Earl, the confidante and portrait painter of President Andrew Jackson, to establish the first Tennessee museum. From 1818 until 1827, Earl directed the "Museum of Natural and Artificial Curiosities for the State of Tennessee" on the Public Square in Nashville (Kelly 1998). Earl began collecting items as early as 1817 and wrote to Turner Lane soon after the newspaper article requesting that he send some of the pygmy skeletons and artifacts for examination and ultimately for the museum (Owsley 1970:228).

By all accounts, Turner Lane (1762-1840) was a well educated person who served as a teacher in White County for a number of years (Summers 1903:558). After receiving the request for materials from Earl in late July 1820, Mr. Lane undertook "to make some further discoveries among the little Tombs, which seem to be peculiar to this Settlement" (Turner Lane to R.E.W. Earl, Letter of July 28, 1820; Tennessee Historical Society Office Files 1790-1985, THS 455, Box 15, Folder 1). Using an iron rod as a probe, he located and dug four additional small graves (one on his own property and three on the neighboring Doyle farm) and sent packages of human remains, pottery vessels, and shell artifacts to Nashville. In a series of letters accompanying these packages (dated 28 Jul, 29 Jul, 1 Aug 1820), Mr. Lane provided very detailed observations about the graves and their contents. Dissatisfied with what he was able to recover on short notice, he wrote: "My Neighbours are all apprized of my anxiety to obtain full and incontestible proof of the existence of a race of small beings of the human species, who once inhabited this part of the Globe... if at any time to come, we should any of us fully succeed in obtaining a perfect Skeleton, especially a Scull of the usual size; it will be carefully attended to, and forwarded" (Tennessee Historical Society Office Files 1790-1985, THS 455, Box 15, Folder 1). In his final letter, he concluded: "I shall now close my narrative... this Country was inhabited by ... a race of Pigmy Men, whose height did not exceed 2 feet 10 inches, or possibly 3 feet" (Tennessee Historical Society Office Files 1790-1985, THS 455, Box 15, Folder 1). Dr. John Overton, a member of the society, examined the bones and artifacts in Package 1. While reluctant to draw final conclusions from a single skull with an

artificially flattened occipital area, Overton reported to the Tennessee Antiquarian Society that the contents appeared "to be the Cranium of an adult human being of ordinary stature..." (Tennessee Historical Society Office Files 1790-1985, THS 455, Box 15, Folder 1).

Within weeks, the *Nashville Whig* article had been republished under the headline "Tennessee Antiquities" in *The Daily National Intelligencer* (25 Jul 1820), the most prominent Washington, D.C., newspaper of the day. By October, versions were also published in the *American Masonic Register and Ladies' and Gentleman's Magazine* (Volume 1, Number 2, pp. 75-76, October 1820). That same month, the White County pygmies crossed the Atlantic with reprinting of the article in *The Kaleidoscope: or, Literary and Scientific Mirror*, a newspaper distributed weekly in England (24 Oct 1820).

The account of Turner Lane, along with that of other locals, subsequently formed the basis of Judge John Haywood's extensive account (1823a: 200-209) of a race of Tennessee pygmies in his first book on Tennessee history:

A number of small skeletons were discovered a few miles from Sparta, Tennessee, in White County, an account of which was given by a Mr. Lane. The graves were about two feet in length, fourteen inches broad, and sixteen inches deep. These extend promiscuously throughout the farm of Mr. Lane, and in a large and closely connected burying-ground in the vicinity; there were others of the same description four miles south of Sparta, and it is said that hundreds of them might be found throughout the locality... From the great number of small graves found here, says Mr. Lane, all of the same description and, among them all, but one being of a large size, it seems to indicate that there was, in ancient times, a race of people whose height was from two feet ten to three feet.

During the late 1820s, stories of the pygmy graveyard of White County continued to surface, appearing in such widely separated places as Massachusetts ("Ancient Burying Ground," *New Bedford Herald*, Letter of 26 Jun 1826) and Pennsylvania ("Ancient Burying Ground," *Susquehanna Democrat*, 1 Aug 1826), along with a brief article in *Zion's Herald*, which was subsequently reprinted in *The Cherokee Phoenix* (20 Aug 1828).²

Due to the widespread coverage of the Tennessee pygmies in newspapers, magazines, and Haywood's treatise, many early travelers visiting Tennessee during subsequent years took time out for side excursions to explore the story. For example, in December 1829, J.W. Post "whilst on the road from Nashville... was induced to spend several days in the neighborhood of Sparta, to gratify the curiosity that had been raised in me, to obtain some evidence of the former existence of those extraordinary beings" ("American Antiquities," *National Daily Intelligencer*, 27 Mar 1829). Mr. Post obtained permission to explore over half a dozen farms for evidence of pygmy graves, cogently noting that "in the course of my research I found skeletons of various sizes, corresponding with the different ages in our own species... it may be reasonably inferred that the greater portion of them never arrive in the age of maturity and very many... do not survive the earliest infancy." During more than a week exploring the area, he was frequently accompanied by six, eight, or as many as a dozen persons and "discovered and examined the time wasted relics of an hundred human beings." He concluded his correspondence with the following observations about the living inhabitants of the region:

It may be due from me to the inhabitants of that neighborhood to acknowledge the civility and indulgence I received from them; many of whom, however, were not backward in expressing doubts respecting the propriety of disturbing the repose of the dead... I have no recollection that I have ever been the same length of time, in any other place, where I had intercourse with an hundred inhabitants, from whom I have not heard either profane or offensive language.

Praise of the local inhabitants was not always to be the norm for outsiders visiting the Sparta area in coming years.

In 1834, George William Featherstonhaugh (1780-1866), serving as the first federal geologist, conducted a resource survey of Tennessee which fell into the region then referred to as "The Western Country" (Berkeley and Berkeley 1988). Featherstonhaugh eventually published an account of his travels as *Excursion through the Slave States*, writing "I had heard of Indian graves of a peculiar kind that were found [near Sparta], and was desirous of inspecting them" (1844:48). Featherstonhaugh visited several of the local farms that had produced small graves – including those creating the initial stir:

Mr. Lane and his friends were now convinced – as they still are – that they had discovered an ancient race of pigmies that had been buried in this valley before the existing forest had grown up... they pronounced the skulls and bones to have belonged, not to children of the ordinary Indian race, but to adults of a pigmy race. A book was next written about it, and it became one of the wonders of the western country (Featherstonhaugh 1844:48).

After opening one of the graves himself and examining other available remains, Featherstonhaugh satisfied himself that they were not the remains of pygmies, but rather bundled secondary burials of normal sized adults. As a scientist, he

could not resist trying to make the case for an alternative interpretation – with little success:

Before we parted with Mr. Doyle, I essayed to undeceive him about the pigmy race, and told him it was the custom with a great many tribes of Western Indians to expose their adult dead upon scaffolds, and when all the soft parts had wasted away, the bones of the skeleton were put into very short graves; that if he would consider the size of the oldest skulls he had found, he would see that they had belonged to individuals with as large heads as our own, which would have been both inconvenient and unnecessary to a pigmy race. But Mr. Doyle was not at all pleased to have his wonder taken to pieces in this way, and fought for his pigmies with all the pertinacity of an inventor of genera and species for shells... I regretted my indiscretion, and was determined henceforth to be as careful about interfering betwixt a man and his pigmies as I would be betwixt a man and his wife (Featherstonhaugh 1844:49).

After leaving Lane and Doyle at Sparta, Featherstonhaugh continued on to Nashville, where he visited several times with Professor Gerard Troost at the University of Nashville. Among many other accomplishments, Troost was a founder and the first president of the Academy of Natural Sciences in Philadelphia (1812), the first Tennessee State Geologist (1831-1850), and is among the state's best known antebellum scientists (Corgan 1998; Glenn 1905). Sharing interests in both geology and Indian relics, they undoubtedly discussed at length the "pygmy graves."

In 1841, Dr. Samuel G. Morton, considered by some as the founder of physical anthropology in the United States, presented a paper to the Academy of Natural Sciences in Philadelphia in which he addressed the tales of pygmies:

It has long been contended by intelligent persons, who, however, were ignorant of Anatomy, that the adjusted bones of individuals

of this race never exceed four feet and half in length, and are often but three feet. These statements induced me to investigate the subject by means of a skeleton of one of these people, which I at length obtained through the kindness of Dr. Troost of Nashville; Dr. A. McCall, an intelligent correspondent of Dr. Troost, having exhumed these remains from a cemetery near the Cumberland Mountain, in White county, Tennessee (Morton 1842:205-207; 1843:12-122).

He further quoted from a letter from Dr. McCall describing in some detail the discovery:

The coffins are from 18 to 24 inches in length, by 18 inches deep and 15 wide. They are made of six pieces of undressed sandstone or limestone, in which the bodies are placed with their shoulders and head elevated against the eastern end, and the knees raised towards the face, so as to put the corpse in a reclined or sitting posture. The right arm rested on an earthen pot, of about two pints in capacity, without legs, but with lateral projections for being lifted. With these pots, in some graves, are found basins and trays also of pipe clay and comminuted shells mixed; and no one of these repositories is without cooking utensils. In one of the graves was found a complete skull, and an os femoris, but most of the other bones were broken in hastily removing them. This is said to be the largest skeleton ever found at any of these burying grounds. It has the cranium very flat and broad, with very projecting front teeth, and appears to have pertained to an individual not over twelve or fourteen years of age (Morton 1842:205-207; 1843:12-122).

Soon thereafter, Troost published his own opinion on the pygmy graves:

they have general burying festivals, when they collect the bones thus preserved, which are then buried; and thence, in my opinion, those numerous small graves, which are attributed, but I believe erroneously, to pigmies. I have opened numbers of these small graves, and have found them filled with a parcel of mouldered bones, which, judging from some fragments I have seen, belonged to common sized men. In one of them I found, amongst

these mouldered bones, two occipital bones -- of course it was a mere mixture of bones, belonging to more than one body... (Troost 1845:358-359)

Seemingly, these highly respected scientists of the 1840s had finally put the pygmies to rest -- interpreting them simply as the remains of infants and children, or the bundled secondary burials of adults. The pygmies were not, however, to remain at rest for long.

The Second Wave: A National Scientific Issue (1860s-1880s)

Local historians continued to explore the question of Tennessee pygmies throughout the mid-to-late nineteenth century. In 1858, Albigeance Waldo Putnam (1799-1869) once again addressed the question in a lecture to the Tennessee Historical Society (THS). One of the founders of the THS, Putnam was also a prominent lawyer, businessman, public official, historian and writer -- perhaps best known for *History of Middle Tennessee or the Life and Times of General James Robertson* (1859). In fall 1858, Putnam explored a number of stone graves at the Two Rivers site (40DV41) at the mouth of the Stones River in Davidson County:

An opinion has long prevailed among old settlers in Tennessee that there was once a numerous race of Pygmies here. They assert that they have seen the graves or tombs, made of slate and other thin rock, which were not more than two and three feet long, -- that they have examined hundreds of them, and know the bones were of a diminutive race, -- that they were the bones of full grown and aged persons from the sets of teeth, full or broken, and from other evidences of maturity.

These opinions have been urged with much pertinacity, and the chief argument has been "the shortness of the graves or vaults."

Judge Haywood, the late Dr. [William Pitt?] Lawrence (of our city) and others have insisted

upon these views.

Some years ago, I was referred to the small tombs at an ancient cemetery on the Sulphur Branch of Obed's river, in Overton County, in this State, as furnishing unquestionable proof of a race of Pygmies buried there.

I made an examination: the little vaults were neatly constructed of slate rocks-- were not more than half the length required for the interment of a man of our day, if laid at full length.

The bones, (in my judgment) were not the bones of children nor of pygmies but of persons of average height.... The explanation which we have to offer is this... it was customary with many savage or aboriginal tribes, to erect scaffolds or poles whereon to suspend or support a dead body; there it remained, exposed to the weather... until the flesh had entirely disappeared... then the small tombs were prepared and the bones deposited... As we discovered the other day, many of the bones are disjointed and out of position ("Indian Cemeteries," Nashville Patriot, 21 Sep 1858).

Many of Putnam's other observations are equally insightful and strikingly astute for an antiquarian observer of the mid-nineteenth century (Smith 2013b).

Following the Civil War, many former soldiers (both Union and Confederate) with interests in "antiquities" relocated to Nashville and eventually contributed substantially to investigations of local archaeological sites, including notably Joseph Jones (1869, 1876), Gates P. Thruston (1890, 1897), and Edwin Curtiss (Moore and Smith 2009). Following the war, former federal General Robert H. Milroy explored commercial interests in Middle Tennessee, including establishing "Milroy, Waters and Company" -- a mining company prospecting for lead, silver, and oil. Milroy's perception of Confederate sympathizers is perhaps most clearly summarized in a letter to his wife Mary concerning his occupation of Winchester, Virginia: "I can now realize something of the weighty and unpleasant responsibility that rests on a king... my will is absolute

law -- none dare contradict or dispute my slightest word or wish... both male and female tremble when they come into my presence... I feel a strong disposition to play the tyrant among these traitors" (Noyalas 2003:32).

In December 1865, General Milroy wrote a lengthy postscript in a letter to Mary -- describing in detail his discoveries and observations of pygmy graves near Watertown in Wilson County:

I forgot to tell you of a great curiosity I found or rather that was shown to me in Wilson Co... We stopped at Watertown, where Ole man Waters one of the best Union men in Tenn. resides. I had to stop there and stay all night, most of a day with them. I had often heard of the remains of human pigmys found in Tenn., but did not believe it. I heard that a number of these remains had been found near Watertown and upon making inquiry was shown a number small bones. About the size of chicken bones but much decayed. Parts of small skulls jaw bones & teeth were among them showing plainly that they were human bones. I then asked to see the graves or place where these bones were obtained & was shown an old field that had been wasted away very much uncovering the tops of several such stone boxes or sarcophagi made by digging a square oblong hole in the ground & laying the flat stone in the bottom, setting up thin flat stones at the sides, ends & laying one over the top. I measured the insides of ten of these boxes & they measured lengthwise from 13 to 16 inches - one was two feet & they measured lengthwise from 13 to 16 inches - one was two feet & all about a foot wide... We dug out the earth of several that had not been disturbed & got a lot of other bones & some teeth. I brought them all to a very scientific physician - the state librarian here & he pronounced them human bones without a doubt & those of adult persons. small rude earthen pots were found in each grave, each broken to pieces on taking them out. There had been two of these pots in the larger 2 foot graves. I learned that there was another place 9 miles off where acres of these pigmy graves have been discovered, and then near the mouth of Stones River on the Cumberland River some 7 miles above this place another still larger collection of these pigmy graves has

been discovered. The stones composing all these little sarcophagii are rude thin lime stone slabs picked up without any dressing. I think that these things prove that a race of human pigmies has at one time thousands of years ago existed on this continent & is a great curiosity. The papers of this place have noticed our discovery & you may see some mention of it (Major General Robert H. Milroy from Nashville to his wife Mary, 3 Dec 1865. Robert H. Milroy Collection, Jasper County Public Library, Rensselaer, Indiana, RHM_1865-16_2a,2b,3a,3b).

General Milroy's observations were indeed published under the byline of "Relics of a Pigmy Race in Tennessee" in the *Nashville Press and Union* (20 Nov 1865) -- mentioning perhaps thousands of pygmy graves near Statesville in the same county and at the mouth of the Stones River. Milroy also deposited some of the bones in the State Library. This article was to be republished multiple times over the next few months, including newspapers in California, Connecticut, and New York.

A.W. Putnam responded in a sarcastic editorial titled "The Pigmy Race in Tennessee" printed in the *Nashville Dispatch* (12 Dec 1865):

Some few days since we read in two of our city papers editorial pieces of discoveries made by Gen. Milroy and other gentlemen, of the graves and skeletons of an extinct race of human dwarfs, Lilliputian Aborigines of Tennessee! These small graves had been opened, the bones exhumed and placed in the rooms of the Historical Society at the capital, for the inspection of the curious.

We have examined those fragments of a skeleton; the teeth and the portion of cranium (occipital portion) we hesitate not to pronounce to have belonged to some four-legged animal; and never to a human being... the occipital bone belonged not to a creature which held his head erect, like man, but inclined forward, like a dog or wolf...

The extensive ancient cemeteries in Middle Tennessee have a notable peculiarity found not elsewhere, that I know of, and it is this

peculiarity which has led many persons to conclude, hastily, that the race of people buried there, were of small stature, of from two and a half to three or three and a half feet in height.

The fact to which I allude, is that in these burial places, the bones are deposited in tombs constructed of rude undressed flat stones, and are, usually, only of the length we have indicated, and often yea, generally too narrow to admit the body of a man of ordinary size, with flesh upon his bones. The grave would be "too short, that he could stretch himself in it, and too narrow, that he could wrap himself in it," nor deep enough to "bury the dead out of sight."

Reiterating at great length his earlier argument that the stone graves contained the bundled remains of secondary burials, he concluded:

Should Dr. (or Colonel) Hamlin and myself jump to the conclusion, that we had been wonderfully fortunate in discovering the most extraordinary man of the fabulous past, the man with three legs, or, because we found three tibias, or thigh bones of a full grown man in one short and narrow vault, that we might hope to find another and another, and so announce to the living men, old men and young gentlemen who flourish rattans or stay their steps with wooden sticks: "Ye are but poor representatives of the three legged men of olden times in Tennessee!"

Or, because in more than one instance, we found the thigh bone by the side of the arm bone or shoulder-blade, shall it be concluded that here was a lusus naturae, a human prodigy, a man with legs and arms joined to his body at the one scapula on each side? That because I found one head in the midst of the ribs, shall any one say, this was a gourmand. Grace a Dieu. Il a son tete dans son ventre! Il si devors lui meme! Il a commence bien! Good! This sort swallow their own heads – real unmistakable anthropophagi! A Terrapin, Man Monster!...

The revival of [the pigmy graveyard story] now, is doubtless, as in former instances, the hasty inference from "surface indication," and a disregard of the rules of science – the science of physiology and anatomy.

We sincerely hope that Gen. Milroy and other gentlemen who are more or less influenced by "surface indications" and small

drippings in their explorations for petroleum, may not be mistaken or disappointed, and we are of the number having faith in the existence of rock-oil, and in many places, too, in Middle Tennessee. I would insure discovery of petroleum, but not of giants or pigmy men (except the political).

The fact that the original was published in *The Nashville Union*, but the response in *The Nashville Dispatch* is probably not coincidental: "The *Union's* motto reflected its pro-Union stance: 'For Freedom and Nationality.' This steadfast viewpoint brought the paper into conflict with the politically devoid *Nashville Dispatch*" (Chronicling America: Historic American Newspapers, Electronic document accessed 23 Jun 2013; <http://chroniclingamerica.loc.gov/lccn/sn83025718/>). Not for the first or last time, politics became intertwined with discussions of the Tennessee pygmies. In this instance, the Tennessee pygmies were enlisted as tools in Reconstruction era conflicts. On January 2, 1866, Putnam presented "the greater part of a human skull, and a shell medallion... obtained from one of the so-called pigmy graves of an ancient aboriginal cemetery near the mouth of Stone River, Davidson County, Tenn" to the Academy of Natural Sciences of Philadelphia (*Proceedings of the Academy of Natural Sciences of Philadelphia* 1866, No. 1, pg 1.).

In a subsequent letter (31 Aug 1866) to Professor George Gibbs, geologist and ethnologist with the Smithsonian Institution, Milroy backtracked on his position on the pygmies:

The account you speak of seeing in a newspaper of my finding "a quantity of skulls of dwarf size" in the neighborhood of Nashville appeared without my authorization, and was not all true. The facts were as follows, I had heard frequently that at two or three points in Middle Tenn. collections of pigmy graves had been discovered that were believed by the

people of the neighborhood to be human graves. Happening to pass one of these points in Wilson County and being curious to see these graves and know whether they were human or not. I stopped and made an examination. I found a collection of about a dozen small rude stone boxes in an old field in the valley of a small stream that had been laid bare by the washing of high waters. The boxes had apparently been constructed by digging small oblong square holes in the ground and placing flat thin undressed stones at the bottom, sides, ends and over the top. The inside of these boxes were from 10 inches to a foot in diameter and from 14 inches to 2 ft. long averaging about 18 inches. Numerous small bones much decayed were found inside these boxes. Fragments of ribs, vertebra, leg bones, and occipital plate of a small skull -- but all so much decayed that it was very difficult to determine what they belonged to whether human or animal. Not being an anatomist I brought most of the fragments I could find to Nashville and submitted them to Dr. [August] Gatlinger, the state Librarian, who is a gentleman of some science. He was at first inclined to the opinion that they were human bones, but after a full examination came to the conclusion that they were dog bones. Some newspaper reporters who were present when I first submitted these bones to Dr. Gatlinger got up the story you saw in the papers (MS 1205, National Anthropological Archives, Smithsonian Institution).

These stories were to inspire Joseph Jones, one of the nation's emerging medical scholars, to address the question of pygmies at great length in the first major treatise to be published on the antiquities of Tennessee. During his 1867-1868 excavations in the Nashville area, Joseph Jones expended considerable effort gathering evidence to dispel the story once and for all. In addition to his own explorations in and about Nashville, Jones asked a medical colleague, Dr. James Snodgrass of Sparta, to send him bones from the small graves. After receiving a significant number of human remains and examining them thoroughly he concluded that:

[Haywood's] account of the pygmies of Tennessee is an example of how a wild hypothesis may, from the love of the marvelous, be founded upon a few hasty and imperfect observations... I carefully examined the bones from the small graves near Sparta... and found them to be the remains of infants and children during the period of dentition... I have never discovered a single skeleton of an adult of unusually small stature... in every case, the small graves contained either the skeletons of children or the bones of full-grown adults, which had been deposited in the square stone coffins, after they had been separated from the flesh and disjointed... the existence of a race of pygmies in Tennessee in ancient times is a mere figment of the imagination (Jones 1876:11-13).

Jones' conclusions were first presented at a public lecture held as a fundraiser for the Confederate Orphan Asylum on 20 Oct 1868 -- at which he was introduced by A.W. Putnam. Jones' vehement dismissal of the pygmy theory has been cited as evidence of his early scientific approach to archaeological research. In a broader context, some of Jones' vigor may well reflect his own involvement in Reconstruction era politics. That same year, however, Edward J. Wood (1868:246) would continue to publicize the White County Pygmies in *Giants and Dwarfs*, a work of juvenile nonfiction printed in England.

The Smithsonian Expeditions of 1875

With the United States Centennial celebration approaching in 1876, the widespread stories of Tennessee pygmies apparently began to concern the leadership of the Smithsonian Institution. In conjunction with the Centennial, Philadelphia was to host the first major world's fair and exposition in the United States. Intermingled with the host of stories about the nature and origins of the

"Ancient Moundbuilder Race," the pygmies became a centerpiece of Smithsonian interests in Tennessee. In 1874, Joseph Henry, first Secretary of the Smithsonian Institution, wrote to a number of Tennessee citizens seeking their assistance in examining the pygmy graveyard stories.

During May 1875, Dr. William Martin Clark explored a series of cemeteries and mounds near his home in Franklin, Tennessee with a \$50.00 grant from the Smithsonian. During the first week of October 1875, Professor Henry also commissioned three Nashville men to visit Sparta "to procure specimens of the skeletons of this departed race for exhibition in the collection at Washington... on Thursday, the 7th, beside of the grave out of which Haywood obtained a skeleton during his researches, were secured the bones of a pigmy" (*The Columbian*, 7 Jan 1876; Lillard 1884:28). At the same time, Henry received the first draft of Joseph Jones' monograph concerning his 1867-1868 explorations in Middle Tennessee with lengthy sections denouncing the Tennessee pygmy story. Henry agreed to fund the 1876 publication of a heavily edited version of Jones' monograph (in conjunction with the US Centennial) as part of the federal dismissal of the Tennessee Pygmy story. After detailed examination of the remains by Dr. George Otis and others at the Army Medical Museum and Smithsonian, Henry issued what we would today call a press release on January 4, 1876, titled "The Tennessee Pygmies:"

Since quite an early period of the history of the United States, reports of the former existence of a race of pygmies in different parts of the country have prevailed and been periodically revived. A recent revival of the tradition has given rise to much speculation and a number of dogmatic statements, and

reports of the existence of a pygmy race in Tennessee have been reprinted from American papers into European.

The Smithsonian institution has recently taken means to ascertain what foundation there might be for the current statements. For this purpose it dispatched a young man to a portion of the State of Tennessee where recent diggings have unearthed the remains which have given origin anew to the recent reports... The former existence of the pygmies, or "Little Folks," as they are called, is firmly believed in that place. Within the last ten years it was reported that at least three hundred bodies have been ploughed up in the county. Notwithstanding this fact, however, the agent sent for the purpose procured very few skeletal remains, all collected not filling more than a small box. The fragments thus sent proved on examination in no way abnormal, and corresponded with, and were evidently the remains of two young children between three and four years old.

There were three petrous bones with parts of the mastoid and squamous portions, tolerably well preserved, fragments of the occipitals, frontals, and sphenoids, four parietals, and the upper and lower maxillaries of both skeletons nearly entire, and with nearly all the deciduous and rudimentary permanent teeth either in place or scattered among the fragments. There were also numerous fragments of vertebrae, ribs, and long and flat bones. The teeth, on comparison by Dr. Otis, of the Army Medical Museum, corresponded very well with children of 42 and 45 months old. The long bones of the upper and lower extremities also indicated a corresponding age. There was in fact nothing to suggest arrested or abnormal development. With the human remains forwarded were two incisor teeth of the beaver, the costal fragments of a turtle, some wrought pottery, and broken valves of unions. These suggest the ordinary Indian sepulcher.

... There can, however, be no doubt that the belief in the existence of the pygmies has grown out of the consideration of the size of the graves rather than of their contents. These graves are quite uniform in size, and are each nearly two feet in length by about fourteen inches in width, and from twelve to sixteen in depth. The Smithsonian employee measured exactly the graves from which the remains sent to the Institution were taken, and found one to be 21 ½ inches long, 14 ½ wide, and 12 deep; and the other 22 inches in length, 14 ½ wide,

and 12 ½ deep. These were covered by slabs. The rocks of which the graves are formed are sandstone, which is said not to be found in the bottom land, but to have been obtained from the tops of the mountains.

The graves generally are quite superficial, the covering slabs being often not more than four or five inches below the surface of the ground. Their presence, however, is not indicated at the surface, and the graves are only detected by excavation. The farmer not infrequently runs across them with his plough on newly cultivated land, and on account of their being an obstruction they have been mostly pulled down.

One of the earliest, if not the earliest notice of the existence of pygmy graves in Tennessee may be found in John Haywood's *Natural and Aboriginal History of Tennessee*, published at Nashville in 1823 (pp. 200-209, 360-361), and reference is made therein to the same place in which the recent excavations were made. "Certain small tombs, and skeletons in them," says Haywood, "having been discovered a few miles from Sparta, in the county of White, and a publication having been made concerning them in the Nashville Whig of June, 1820, Mr. Lane, from whom the information first came, was written to; all his feelings were alive, and all his exertions were roused." The result was that excavations were made and several skeletons found. The remains found were submitted to medical men at Nashville, and various opinions were entertained respecting the maturity or infancy of the small skeletons, but the prevailing opinion was, says the author, that the skeletons belonged to adult persons. This may have been the case with regard to the others, but there can be no question of the immaturity of the fragments sent to the Smithsonian Institution (*The Academy*, Volume 9, January 29, 1876, pg. 97).

Although the question was now answered to the satisfaction of the national and international scientific community, the myth of the Ancient Tennessee Pygmies would prove as resilient as that of the Ancient Race of Moundbuilders. Only a few weeks after this "final" statement, an even more astonishing discovery of a cemetery in Coffee County was announced in papers nationwide:

an ancient graveyard of vast proportions has been found in Coffee county... and shows that the race of pigmies who once inhabited this country were very numerous... The bones show they were a dwarf tribe of people, about three feet high. It is estimated that there were about 75,000 to 100,000 buried there (Daily American, 14 Mar 1876; originally published in Woodbury Press).

This stimulated an editorial in the *Gallatin (Tennessee) Examiner* of 18 Mar 1876 that adds yet another county to the Land of the Pygmies:

Pigmy Remains in Sumner County... We remember, many years ago, to have made excavations in the yard of Col. Alfred R. Wynne, of Castalian Springs in this county, and we found the remains of a similar race of people. The bones indicated human beings not much above three feet in height. The most singular circumstance was their burial in layers, one above another. The graves were formed of stone slabs, at the side, end and bottom, and covered in the same manner. After taking out the upper body, we found a second and third grave exactly underneath. The bones did not disintegrate as is usually the case, where found in the earth, as we kept the skeleton for a year or two in our office... These graves are in a few hundred yards of the famous Mound in the Spring lot which was opened by the artist Earle, a great many years ago...

Nonetheless, the widespread publication of the Smithsonian conclusions in early 1876 did have an impact. Perhaps in response to the Coffee County pygmies article, in March 1876, W.L. Alden, the noted humorist, published a lengthy column in the *New York Times* about the Tennessee pygmies:

TENNESSEE'S PYGMIES

Prehistoric America must have been an exceedingly curious and interesting country. Its forests were filled with mastodons, megatheriums, and other large and lively beasts, any one of which thought nothing of

scratching himself on the sharp pinnacles of a convenient Gothic church, and so toppling it over on its scores of helpless pew-holders. In the Mississippi Valley, the industrious mound-builders were constantly throwing up gigantic mole-hills, and planting them with earthen pots and copper hatchets, in the vain expectation that the seed thus sown would yield enormous crops of kitchen-ware and carpenter's tools. In Kentucky, the giants to whom the bones recently discovered in a Kentucky cave are said to have belonged, strode loftily along the turnpikes, kicking the Indians and the mound-builders contemptuously out of the way; and finally, in Tennessee, a race of pygmies was continually holding political meetings and resolving that mastodons, mound-builders, and giants should be promptly abolished, and that the size of the inhabitants of this country should be made and kept commensurate with its commercial necessities.

It is rather odd that the existence of the Tennessee pygmies of prehistoric America was until recently never suspected. The name of the mastodon has long been familiar to every person who is in the least degree addicted to fossils. His remains, in the shape of a plaster-of-Paris skeleton, with the artist's name stamped on the forehead, are exhibited in every respectable museum, and inspire the youth of America with bitter regret that an animal so beautifully adapted for experiments with red-pepper lozenges has gone where the small boy ceases to trouble and the nomadic circus is at rest. The mound-builders have been the subject of scores of learned essays, in which their identity with the Aztecs, the Chinese, the Egyptians, the Welsh, and the lost tribes of Israel has been triumphantly shown; and of the exact height and probable capacity for whiskey of the Kentucky giants, we have had careful and presumably accurate statistics. The discovery of the pygmies is, however, so very recent, that no one has as yet framed any theory whatever to account for their origin, and to explain their complete extinction.

When the Kentucky giants were discovered it was natural that the State pride of the people of Tennessee should be somewhat hurt. The Tennesseans, however, did not sit down and content themselves with reviling the Kentuckians and insinuating doubts as to the alleged character of the gigantic bones. They promptly proceeded to find rival bones of still greater merit, and their industry has been rewarded by the discovery of a grave yard

containing the skeletons of seventy-five thousand pygmies of the average height of three feet each. What are the three nine-foot giants of Kentucky, in comparison with so great a cloud of pygmies? If we may judge from the price usually paid by circus manager for living giants and dwarfs a three-foot dwarf is decidedly more valuable than a nine-foot giant, and if the same standard governs the price of fossils, the seventy-five thousand Tennessee pygmies are worth fully twenty-five thousand times as much as the three Kentucky giants. While the Kentuckians can present their giants to three eminent scientific men, and thus obtain three distinct scientific reports certifying to the enormous interest and value of fossil giants, the Tennesseans can supply every scientific man in this country and in Europe with a fossil dwarf, and so secure testimonials without number to the unequally excellence of Tennessee pygmies. Indeed, if the discoverers of the pygmies will only employ some astute piano-maker who is an expert in testimonials, to obtain for the fossil dwarfs the recognition of the scientific world, there is not a living scientific person who will not sign a certificate setting forth his admiration for the beauty and durability of the pygmies, and his determination to use none but those of the celebrated Tennessee grave-yard for the rest of his professional life.

At what period these pygmies flourished, what they accomplished, and by what means they were induced to retire simultaneously to the graveyard, can only be conjectured. They may have been the identical pygmies that, according to the Greek legend, waged war with the cranes. If so, the cranes must have proved too powerful for them. This is hardly probable, and any modern Tennessean who has attempted to keep chickens in the neighborhood of a family of citizens of African descent, will scornfully refuse to believe that pygmies of three feet in height could not kill cranes on their roost with at least as much success as is achieved by the African small boy when invading the midnight hen-house. We must wait for further discoveries before it will be safe to decide whether the pygmies were contemporary with the giants and whether they preceded the mound-builders. The bare fact that they once existed is all that we can now safely affirm of them; but doubtless by the time that every home in the country is ornamented with a fossil pygmy, and every newspaper publishes extracts from the certificates of

scientific persons who are overwhelmed with admiration of the vast superiority of the Tennessee pygmies to those of all rival communities, we shall be in the possession of information which will enable us to know at least as much of the pygmies as we now know of the mastodon and the mound-builders (Alden 1876).

The emphatic statement of the Smithsonian concerning the demise of the Tennessee pygmy myth had also elevated them and their believers to the overt realm of national humor. Another effort to dispel the stories was published by Otis Mason, American ethnologist and curator at the Smithsonian Institution in the December 1876 issue of *Harper's*:

The frequent allusions in the daily newspapers to pygmy graves in Tennessee revive an old story set on foot, or at least confirmed, by John Haywood in his Natural and Aboriginal History of Tennessee, written fifty-three years ago. This fanciful notion, although now and formerly commonly entertained by the people of that State, has been thoroughly exploded by the labors of Troost, Putnam, Clark, Haskins, and others, but especially by the explorations of Dr. Joseph Jones, who "examined the bones from fifteen aboriginal cemeteries without discovering a single skeleton of an adult of unusually small stature." While giving a death-blow to this myth, these gentlemen have disclosed other facts of more thrilling interest, which proves that in Tennessee are to be found the evidences of the most advanced civilization which obtained in the Mississippi Valley (Mason 1876:43).

Despite this widespread distribution in a popular magazine, the pygmies continued to prove resilient. In 1883, a correspondent described his 1839 explorations of "A Buried City of Lilliputians in the Cumberland Mountains:"

In the summer of 1839 I spent some two or three weeks on the Cumberland mountains in Middle Tennessee. I had been engaged in teaching, and was in need of rest, and taking a good horse rode up to the Chalybeate Springs,

in White County, some twelve miles from Sparta, the county seat.... We heard from our host that there was a buried city of Lilliputians some five miles distant through the mountain passes, and a company of five gentlemen, with a colored man for a guide, started out to make an investigation... The farm was owned by Thomas Wilson, a good Scotch name, and I have no doubt a man of truth... The walls of the city were in the form of an octagon, or nearly so, and enclosed about six or eight acres. They were about three feet high, made of earth and loose stones thrown up...Running through the center of the town were two rows of houses, on each side of a street. These were mere circles of earth, only a foot or eighteen inches high, and about twelve feet in diameter. Near the center were two such circles, about thirty feet in diameter, which had probably been their council houses. These could be distinctly traced, although evidently greatly reduced by time.

But the strangest part of the story is yet to be told. Mr. Wilson told us that on the highest part of this enclosure many graves had been opened, and skeletons found... the plow struck a flat stone, and on turning it up there was found a human skeleton, of a very diminutive size. He said that about a hundred had been exhumed up to that time. They were all buried in a sitting posture, with the knees drawn up near the chin, and the hands clasped on the top of the head. A flat stone was at the bottom and on the four sides and on top. By taking an iron crow-bar, and striking it down in the mellow soil, we soon found a grave. We opened two that afternoon... The bones were well preserved, and we got out the entire skeleton, even to the bones of the fingers and toes.... And now the most curious of all is to be told. The bones of the thigh and of the arm were not quite half the length of an ordinary man; so that they could not have been more than two and a half or three feet in height. They were not the bones of children, for they were hard, and children's bones of that size would have perished in a few years, being almost wholly cartilage. Beside, they had the wisdom teeth, which proved that they were adults. Then, all the graves which had been opened contained these small skeletons; not one exception. There could not have been so many infants buried in one place... Why did I not write out some account of this wonderful discovery at the time? Simply because I thought it would be regarded as a hoax (Daily American, 9 Aug

1883, pg. 6; apparently originally published in the *New York Observer*).

Perhaps in response to *New York Observer* article, one of the explorers hired by Spencer Baird of the Smithsonian published a detailed memoir of his 1875 observations. In 1884, Dr. John B. Lillard, having relocated from Tennessee to New York, published "The Small Stone Graves of White County, Tennessee" in the *Proceedings of the Numismatic and Archaeological Society of New York*. Therein, he reveals the unfortunate devastation visited upon these ancient cemeteries by agricultural practices: "upon inquiry I learned that most of them, if not all in this locality, have been plowed up... I was told that as the top rock of these little graves or vaults dulled and broke the plow points, the farmers have in plowing taken out the rocks and plowed up the graves indiscriminately, thus forever destroying one of the richest fields for archaeologists. In the locality just mentioned, over three hundred have been lost, and perhaps among these some of the finest specimens..." (Lillard 1884:28).

Lillard also documents another source of damage and destruction that can be more directly attributed to the Tennessee Pygmy story. On another nearby farm he notes "we opened six in the field, all of which had been opened previously, but could find nothing worth preserving" (Lillard 1884:28; emphasis added). On yet another farm, he "examined nearly thirty graves, all of which had been previously opened" (Lillard 1884:28; emphasis added). Hence, even by the time of his explorations in 1875, the macabre interest in finding pygmy skeletons had devastated the region's archaeological record.

Third Wave: Tennessee Pygmies in the Literary Tradition (1890s)

The next wave of interest in the Tennessee Pygmies took a wholly different turn with their entry into the realm of literature -- reaching an even wider audience than before. Mary Noailles Murfree (1850-1922), writing under the pseudonym of Charles Egbert Craddock, was one of Tennessee's earliest prominent female novelists (Lloyd 1970). In her 1891 novel *In the Stranger People's Country*, Murfree incorporates the Tennessee pygmies as the central plotline around which she weaves the culture of the upper Cumberland region of Tennessee. Her story relates the contacts between the people of an Upper Cumberland mountain community and an amateur archaeologist in search of some pygmy graves to examine. Based in part on the multitude of real visits by "outsiders" in search of pygmies to these communities, numerous characters introduce the reader to these interactions that by 1891 had spanned nearly four generations. Shattuck, the "archaeologist," encounters resistance from Adelaide Yates, who threatens to shoot anyone seeking to disturb the rest of the "leettle stranger people." With prophetic vision, Adelaide noted that "they will all rise before we-uns at the jedgmint-day" (Craddock 1891:8). Her husband "was a hardy hunter, of a vigorous physique and but scantily acquainted with fear, but this eerie idea of a thousand or so adult pygmy Tennesseans astir on the last day, forestalling the familiar mountain neighbors, robbed immortality for the moment of its wonted prestige" (Craddock 1891:9). In striking disrespect for the desires of local people to respect the sleep of the dead, Shattuck vigorously prosecuted his search for a pygmy grave:

'I only want to see what this widespread story of prehistoric pigmy dwellers in Tennessee rests upon. That is all. I think they must be children - these Little People...' The opportunity of investigating this most unique myth, originating how and where no man can tell, of which so much has been so diversely written and said, caused every sentiment of the archaeologist to glow within him. In this secluded region it was hardly probable that the tread of science had ever before pressed the turf of the pygmy burying-ground... Every detail was full of interest; the very method of confining -- the six slabs of stone in the shallow graves, the strange weavings and material of the shrouding rugs and mats, the ornaments, the weapons, the jugs with the sea-shells within -- what rich intimations of the industrial status, the civilization of these people of the pygmy myth! (Craddock 1891:212).

Recently, a resurgence of interest in Murfree's writing prompted reprinting of several of her twenty-five novels, including this one (2005, University of Nebraska Press). Marjorie Pryse (2000:199) describes this region of Appalachia as a "contact zone" or social space within which disparate cultures meet, clash, and grapple with each other in highly asymmetrical relations of domination and subordination (Pratt 1992), Pryse describes this work as "her most complex intervention into the outsider-insider binary that characterizes the regionalist's approach to the mountaineers" and

as her attempt to intervene into that binary in various ways, including considering evidence of early Indian tribes that predated the Cherokee, exploring conflict between science and legend concerning who has control over the remains of these Indians, representing tensions in Appalachian politics that emerged with the arrival of outsiders into the region... It is precisely Murfree's interest in the prehistoric people who lie buried in her novel that expresses her larger interest in the process of exploring contact. Here interest in archaeology characterizes the encounter between science

and legend as itself a contact zone for exploring competing claims to the authority over the interpretation of Appalachia (Pryse 2000:199-200).

In a footnote to a later work, *The Story of Old Fort Loudon*, Murfree concludes that "the painfully prosaic hypothesis of certain craniologists that such relics were only those of children is, of course, rejected by any person possessed of the resources of imagination" (Craddock 1899:403-404). Elsewhere, Murfree (Craddock 1917:331) continued to defend the beliefs of the local people against the conclusions of scientists:

they did make an important discovery by unearthing the prehistoric graves of the so-called pygmy dwellers of Tennessee. The graves, which are only about two feet deep, are constructed of stone slabs and contain the bones of what was apparently a pygmy race. A noted craniologist, Dr. Morton, declared that one of the skulls was that of a child, but why scores of children only should be buried in a cemetery is hard to say. Other craniologists argued that the wisdom teeth proved that the skeletons were those of adult pygmies. Be that as it may, the relics seem an unsolved riddle of the ages.

At about the same time, the Cumberland Mountains emerged as a popular resort area and numerous writers and painters spent time there. For example, Margaret Bloodgood Peeke (1838-1908) garnered notoriety through her letters about her favorite summer resort in the Cumberland Mountains of Tennessee. While raised as a Protestant, she later converted to Martinism, a form of mystical Christianity, eventually becoming Inspectress General in America of the Martinist Order. Her later writing was devoted to an examination of the pygmies of America and the origin of this primordial race. Published under the title *Born of Flame* in 1892, the story was set in

Tennessee and intermingles the story of the pygmy people with the mystic faith of Rosicrucianism:

we have crossed oceans and seas to accomplish a purpose... that if we fail in this our journey will be fruitless, you will see how anxious we are to find the objects of our search, which, in a word, is neither more nor less than a skeleton of the pygmy race said to have existed here long ago... There have been at different times a number of graves of little people found at Doyle, about seven miles distant (Peeke 1892:216-217).

Chapter XIV - "The Pygmy Hunt" - recounts the successful search for the physical remains of this primordial race of beings. Peeke explicitly lays out the spiritual and physical evolution of modern humans from the pygmies:

These little creatures, who once lived here where now we sit, were the progenitors of the Adamic man. Amid the throes of nature, in this region, the land was hurled asunder, but the continent was not destroyed. The climate shielded well the race who lived and died here, and no one dare compute the ages that have passed since then. It was decreed that some remains should be preserved against the time when proof was needed of the truth, and hence, to-day, I carry with me fragments of their dead, and after this not one shall ever be found.

But Adam began the race by the Euphrates, and these were never there.

When the Mound-Builders of larger stature drove these little people hence, they fled across to Asia... they moved through India and on to the Euphrates. Here it was that light from spirit source first burned in human breast. Here man became Adamio - son of God - a living, never-dying creature (Peeke 1892: 262-263).

Like numerous mystical movements of the time, Peeke merged the spiritual evolution of humanity with the scientific jargon of biological evolution -- leaving us with a story of the initial Creation of an imperfect pygmy race that evolved to become the perfect "Adamic man."

Emma Lampert Cooper (1855-1920) was one of the most renowned painters of Rochester, New York during the late nineteenth and early twentieth centuries. Her 1893 experiences in the region were recounted in the *Post Express* (20 Oct 1893) in an article titled "Digging Pygmies: Miss Emma Lampert's Experiences in the Mountains of Tennessee:"

Finding the Pygmy Graves. A Race of People Hardly Known to Science and Antedating the Mound Builders -- They were Seldom Over Twenty Inches High. Miss Emma E. Lampert has returned to her studio and has resumed her classes... she.. was away all the summer... She was telling a POST EXPRESS reporter of her adventures the other afternoon and casually asked if he had ever heard of the race of pygmies which once inhabited the mountainous districts of Tennessee and North Carolina. "Scarcely anyone has," said she, "and almost everyone I tell about it seems to think that I must be slightly unbalanced.... My newly aroused interest in ethnology... commenced at the Fair [1893 Chicago World's Fair]... After leaving the Fair I went with a party of twelve to the mountains of Tennessee and passed a delightful month there. While sketching in that vicinity I heard for the first time in my life that some of the farms in these mountains are honeycombed with little graves of a race of people who must have antedated the mound builders and the cliff dwellers and all the peoples of antiquarian interest in North America. The peculiar part of it seems to be that science has as yet paid so little attention to them... Finally our patience was rewarded. On turning over a large flat rock a cavity was revealed half filled with dirt. On scraping this out we found that the pigmy grave was formed of flat rocks at the ends and sides. The grave was twenty-two inches long and thirty wide. It was evidently a double grave, and one of the largest ever found in that vicinity. From the position of the crumbled bit of bone found beneath the dirt it was evident that two little bodies had lain there side by side through the ages... the bits of bone were too much decomposed to give a very satisfactory indication of the size of the buried pigmies, but they cannot have been larger than the grave they inhabited... I do not think the scientists have as yet paid much attention to them. I am

going to have a talk with some of the Ward natural science establishment curators about the matter."

Alongside the flood of mining companies entering the region in the late nineteenth century came a parallel stream of tourists from throughout the eastern United States -- many of whom carried the stories of Tennessee pygmies away with them as souvenirs of their visits. In 1904, the *Nashville American* (4 Aug 1904) once again proved that folklore was stronger than science:

Graves of Midgets: Tombs of a Prehistoric Race Found in White County. Mystery Surrounds the Remains Found in these Diminutive Sarcophagi. Much Fiction has been Written About Them, but the Puzzle is Unsolved. Considerable interest has recently been aroused in what is known as the "Little People" [of Sparta].... As to the date when these little people existed there seems to be no evidence, but it was doubtless long before the Indians settled this section.... It is probable that there are other graves of these "Little People" undiscovered in this immediate vicinity, as no special effort has ever been made to find them.

In 1905, Henry Henshaw (1905:111-112) published his "top fourteen list" of popular fallacies respecting the American Indians. Prominent amongst them were stories of Native American pygmies and giants:

All times and all peoples have had traditions of pygmies... It is therefore nowise surprising that such myths were early transplanted to American soil. The story of an ancient race of pygmies in Tennessee, familiar to most archaeologists, owes its origin to the discovery, in the early half of the last century, of numerous small stone coffins, or cists, containing skeletons. The largest, measured by Featherstonhaugh, was 24 inches long by 9 inches deep. The small size of the cists was assumed by their discoverers to be proof of the existence of a race of dwarfs, and the belief gained ready credence and exists to the present day in the minds of a few. In many

cases the skeletons of the supposed dwarfs proved to be those of children, while, as pointed out by Jones and Thomas, the skeletons of the adults found in the cists had been deprived of flesh, a common Indian mortuary custom, and then disjoined, when the bones of an adult could be packed into a very small space.

A race of dwarfs has also been popularly ascribed to the cliff-dweller region of New Mexico and Arizona, partly owing to the finding of shriveled and shrunken mummies of children, too hastily assumed to be those of dwarfs, and partly owing to the discovery of small apartments in the cliff dwellings, of the nature of cubbyholes for the storage of property, the entrances to which were too small to permit the passage, erect, of an ordinary man; hence in the mind of the discoverers, they must have been used by dwarfs. The Pueblo peoples are, indeed, of relatively small stature, but they are as far from being dwarfs as other Indians from being giants. (Henshaw 1905; pp. 111-112).

The Reverend Doctor Monroe Seals, first pastor of the First Presbyterian Church at Cookeville in Putnam County and local historian, also explored the Tennessee pygmies, as recounted in the *Nashville American* (12 May 1907):

Traces of a Pigmy Race in Tennessee. Cookeville. Dr. M. Seals, a well-known scientist, who has spent much of his life studying the ancient history of mankind, the various forms of life, and the descent of humanity...is strongly of the opinion that years ago a race of dwarfs inhabited the North American Continent. This fact is strongly substantiated by evidences of their existence that have been found in White County, near Bon Air, and it is also said that a number of graves have lately been discovered in Overton County. Dr. Seals said: "I have spent much time investigating the theory whether there existed a pigmy race in America, that lived somewhere in the dim past and left a trace to puzzle moderners, and am convinced beyond a doubt that long ages ago a race of men much smaller than is commonly supposed did exist.... It has been frequently argued that the smaller graves contained bodies of adolescents who had been buried with their parents when killed,

but this cannot be true. The enamel on the teeth are perfect, the bones are not cartilaginous and they scarcely exceed a height of more than two and a half or three feet....Most of the tombs in White County have been broken into by curiosity-seekers, and just now only one place, to my knowledge, is complete in its original form."

In 1935, Reverend Seals published a *History of White County, Tennessee* in which he concluded: "In addition, at many places in the County there are small graves. These small graves are supposed by some to have been made by a pigmy race which inhabited this region before the coming of the Cherokees. There has been much argument among ethnologists on this point. Some of them contend that these graves are only the graves of children. Others contend that they are the graves of a long-forgotten race. Many of the skulls found in these graves have a full set of adult teeth, which lends some color to the claim that they were pigmies." With over a century in print, the Tennessee Pygmies continued to successfully defy the challenge of science.

The New Wave: Tennessee Pygmies Reborn (1980-)

Although the pygmies never quite disappeared from public interest, they remained largely in the realm of local folklore through the middle of the twentieth century -- until 1980, when Barry Fell, Harvard marine biologist turned epigrapher, raised them from quiescence once again. Fell acquired a following after his retirement with publication of three books *America B.C.* (1976), *Saga America* (1982), and *Bronze Age America* (1983) in which he rewrote the history of North America to include ancient transatlantic voyages by Europeans, Africans and Asians to the Americas.

Marc Stengel (2000) noted that "to the academic establishment, however, Fell was a self-promoting pseudo-scientist who threatened to undo more than a century of careful progress in archaeological and anthropological research... Both before and after Fell's death, in 1994, his critics were merciless, citing a variety of errors of chronology and interpretation and also Fell's perceived distaste for peer review by specialists." Stephen Williams (1986) addressed Fell's arguments:

However, I must then add a sad last note: the pygmies are back in Tennessee. Prof. Barry Fell, emeritus professor of Marine Biology from Harvard, has found them all over again. Apparently little knowing or caring about Joseph Jones versus John Haywood, and the fact that the matter was settled to most people's satisfaction over one hundred years ago, Prof. Fell, in Bronze Age America has published that there are skeletons of pygmies from East Tennessee, and they date to the third century B.C... It should not surprise us that with some of these skeletons are "readable inscriptions in an ancient European language". Apparently both Celtic and Basque words and phrases have been found. Mercifully, Prof. Fell has apparently not seen Thruston's inscribed stone or we would have a translation of it as well. So my reluctant conclusion is: all that is old is not bad, and all that is new is not good.

Williams further noted in his book *Fantastic Archaeology* (1990:273):

He also revives, for reasons I cannot fathom, the notion that there was a race of pygmies in Tennessee in late prehistoric times. Indeed, Fell's picture adorns the back cover of his latest volume with calipers in hand and a pygmy (so-called) skull lying on his garden table; obviously, physical anthropology is just another arcane specialty he has brought to fruition in retirement.

Most recently, creation of the Internet and the unprecedented opportunity it provides for virtually anyone to self publish has

prompted even more widespread dissemination of knowledge about the ancient Tennessee pygmies -- now most frequently examined as part of a global primordial "race of pygmies" that antedate modern humans. For examples, as reported by Peter Marsh (2004):

Skeletons of these people have been found in Tennessee, Brazil, Tierra del Fuego, and Tasmania, indicating they constituted a major pan global population that was crushed by a major natural catastrophe 75,000 years ago... Survivors of this world population of Pygmies can still be found in the Congo, Andaman Islands, Philippines, New Guinea Highlands, and some aborigines of North Queensland.... It is interesting to note that these pygmies all appear to have the bow and arrow as a hallmark of their culture. It is quite likely they had this technology 100,000 years ago.

The widely publicized discovery of the fossil remains of so-called "Hobbits" (*Homo floresiensis*) on the Indonesian island of Flores prompted a resurgence of speculation about the relationship of the Ancient Tennessee Pygmies to these mysterious diminutive hominids. Many other examples can be found with a simple Internet search on "Tennessee pygmies." Having brought the Tennessee Pygmies into the 21st century, I conclude with an examination of the reasons behind this nearly two centuries of recurrent interest.

Discussion

One of the earliest known published mentions of cemeteries filled with diminutive people comes from near the town of Fenton in southeast Missouri. In October 1818, Mr. Long discovered "a number of graves, the size of which appeared to be uncommonly small... which convinced him they were the remains of human beings much smaller than those of the present day" ("Antiquity:

Dwarf Skeletons," *The Nashville Whig and Tennessee Advertiser*, 12 Dec 1818). Whether the tales of the pygmies of Tennessee predate publication of this newspaper article remains unknown, but certainly they emerged shortly thereafter - and soon came to eclipse all others in the Midwest and Southeast. Sporadic reports of pygmy discoveries in nearby states can be noted, but none of these regional reports exhibit anywhere near the magnitude and persistence of the Tennessee Pygmy legend. This raises the question of "why?" I suggest that the relatively unique convergence of several factors along the Cumberland River contributed to the success of the Tennessee pygmies.

For the purposes of interpreting the stories of Tennessee pygmies, I will distinguish three general categories: a) "dwarfs", or individual humans affected by a variety of genetic and environmental factors that prevent them from reaching full normal stature for their population; b) "pygmies," groups of humans whose average stature is normally significantly less than the majority of human populations; and c) "Little People" (*aka* faeries, brownies, leprechauns, etc.), groups of supernatural creatures of human-like form but often described as having diminutive stature. The former two are "scientific" categories, while the latter fits more firmly into the stuff of legends.

First, let's dispense with the "science" before delving more deeply into legend. In the realm of science, two broad classes of humans can be said to exhibit diminutive stature – "dwarves" and "pygmies." In general, the term "dwarf" has been applied to individuals affected by genetic and/or environmental factors that limit their potential to reach adult stature within the normal population range – and exhibit atypical bodily proportions. The most

common cause of dwarfism in humans is achondroplasia – a disorder of bone growth that can be inherited genetically but in most cases appears as a spontaneous mutation (U.S. National Library of Medicine 2011). Achondroplasia is classified as a rare disease with a modern incidence rate of 1 in 15,000 to 40,000 newborns. Only two cases are documented for the prehistoric Southeast – both from Moundville, Alabama (Snow 1943). Given the seemingly thousands of graves exhumed in search of pygmies, it seems statistically possible that one of these early explorers encountered the remains of a skeleton exhibiting achondroplasia. However, since dwarfism refers to extraordinarily rare individual cases, its existence in prehistoric North America is noted but is probably not relevant to the topic at hand -- cemeteries full of individuals of diminutive stature.

The history of the term “pygmies” is more directly relevant – although substantively merged with mythology and the western literary tradition during the Renaissance: “In 1699, the distinguished English anatomist Edward Tyson penned a withering rebuttal of this resurgent mythology, based on his careful surgical analysis of a ‘Pygmy’ from the Congo – in fact a juvenile chimpanzee, the skeleton of which is still on display at London’s Natural History Museum – and his equally meticulous dissection of the literary sources for the myth... For Tyson, the term Pygmy carried with it all of the fabulous connotations of the other staples of the mediaeval imaginary – the satyrs, cynocephali and sphinges (or sphinxes)” (Ballard 2006:136). Travelers sustained the Pygmy myth, however, through the nineteenth century (Bahuchet 1993). As suggested by Ballard (2006:141-142), the “Pygmy question” revolved around the debate over Pygmy origins. Eventually the

corpus of collected travel stories were compiled to advance two competing “scientific” interpretations (even in the absence of any evidence): 1) the notion of a primordial global race of pygmies with the modern pygmies representing isolated remnant populations under pressure from later, larger humans; or 2) the different pygmy communities were simply degenerate forms of their larger neighbors and not directly related to one another. As Ballard (2001:141) asserts: “It is some measure of the power of Pygmy mythology that Pygmy primordality came to be assumed and was held to be ‘confirmed’ and ‘proved,’ despite a complete absence of evidence.” While beyond the scope of this article, there is clearly a synergistic interrelationship between the remains of the primordial Tennessee pygmies and the nineteenth and early twentieth century search for living examples. While no systematic study has been completed to date, the publication of traveler’s stories of living pygmies reportedly encountered in the far reaches of the globe do correspond at least on occasion with resurgence of interest in the Tennessee pygmy graveyards (Frederick 1912; Haliburton 1897; Panhuys 1905; Starr 1896). As the preceding examples have illustrated, none of the remains examined by “scientists” over the past nearly two centuries were deemed to be those of pygmies. The influences of folklore on scientific questions thus becomes of significance.

Lore about individual humans or groups of humans of unusual stature -- pygmies and giants -- are common worldwide and have a particularly lengthy history in the western literary tradition. In the literary tradition, many stories about human-like creatures of diminutive stature are traced to Homer, who alludes to a battle between the Pygmies and the

Cranes (the *geranomachy*) in the third book of the *Iliad* -- a mythological story often captured visually on Greek vases (Scobie 1975). Less poetical mentions of races of diminutive humans are found in the classical accounts of Aristotle, Herodotus, Ctesias, Pliny the Elder, Pomponius Melo, and others. Without delving too deeply into the continuous history of this literary tradition, it is perhaps sufficient to cite the familiar Lilliputians and Brobdingnagians of Jonathan Swift's 1726 *Gulliver's Travels* (Figure 1), whose popularity was sufficient that their names entered relatively common usage in the English language with the meanings of "tiny" and "enormous," respectively (acknowledging that the Lilliputians more successfully penetrated the English language).

Outside of the literary tradition, some additional folk culture context for Tennessee is also warranted that might play a role in interpreting the persistence of the Tennessee Pygmy legend. Many of the early settlers of the Upper Cumberland region of Tennessee came from parts of Europe with strong folk traditions of "wee folk," including faeries, elves, dwarves, and brownies (Hand 1981). To this mix, we can also add some indigenous folklore of the eastern parts of what is now Tennessee -- particularly from the Cherokees. According to Witthoft and Hadlock (1975:413):

Various types of dwarfs are conspicuous personalities in American Indian pantheons. Often they closely resemble European folk figures and might be considered as a borrowing from European tradition. Such Little People are so widespread in America, however, and often so isolated from a suitable European tradition, that a foreign origin seems improbable as a general explanation for their existence.

James Mooney described the Cherokee Little People as "a race of



"I found my arms and legs were strongly fastened on each side to the ground"

FIGURE 1. Swift's "Lilliputians" (illustration by Milo Winter, *Gulliver's Travels*, 1912, Rand McNally New York).

spirits... who live in rock caves on the mountain side." He further indicated that they were generally "helpful and kindhearted" but "do not like to be disturbed." (Mooney 1900:333). The *yunwi tsundi*, or "little people," are among the most persistent traditions of the Cherokees, as evidenced by their consistent appearance in recent publications. In their collection of Cherokee stories, *Friends of Thunder*, recorded among the Oklahoma Cherokee in the early 1960s, Jack and Anna Kilpatrick (1964) devote a whole chapter to stories about the Little People, noting that "to the average Cherokee with some degree of traditional upbringing, the existence of Little People is an indisputable fact" (Kilpatrick and Kilpatrick

1964). A similar pattern of persistence can be noted among the eastern Cherokee (King and Lossiah 2001; Prajznerova 2001). During a collection of oral histories, Jeannie Reed (1991:2) noted only three kinds of Little People that remained in the mountains: the Laurel People, the Rock People, and the Dogwood People. Although this contrasts with the multitude of spirits noted by Mooney, Reed further suggests that many of her informants believe that the other kinds of Little People left the mountains because of human intrusion into their territories (Reed 1991:2). A similar belief was expressed by Deskaheh, a Cayuga chief at the Six Nations Reserve who said that since so much of the land had been cleared, "the Little People have withdrawn to the westward and are now rarely seen - although their presence is sometimes very real and they have not severed their connections with the Indian people" (Witthoft and Hadlock 1975:421-422). According to Kathi Smith Littlejohn, a Cherokee storyteller, "they look a lot like Indian people except they're only about two feet high, sometimes they're smaller... The Little people can be very helpful, and they can also play tricks on us, too" (quoted in Duncan 1998:68). Even though the Cherokee Little People are in many ways reminiscent of dwarves, leprechauns, and elves in European stories, anthropologists agree that the Little People's importance in the mythology of numerous other Native American cultures suggests pre-contact origins. Several of the cited sources suggest that these "little people" were perceived as distinct from the "Ancient Moundbuilder race." For example, Peeke (1892:262-263) suggests that the "Moundbuilder Race" drove the pygmies from their lands. Doran's consultants also drew a distinction concerning the Rock

Woman as "probably one of the Mound Builders or one of the Little People" (Doran 1984:136). Although perceived as "civilized" since they built coffins of stone to inter the dead with their diminutive pots, these Little People were not clearly associated in the minds of believers with construction of the mounds, but rather preceded that "race" in an even more distant primordial time. This distinction may well have emerged alongside increasing assertions during the late nineteenth century that the Moundbuilders were the ancestors of historic Native Americans. Rather than ennobling the "savages" of Euroamerican contact with a grand past, the end result was to "ensavage" the Moundbuilders -- leading to the creation of a mythology of an even more ancient peaceful and civilized race of non-Indians. The assertion of savagery for the Moundbuilders was not a tremendous step in the context of the times -- they had long been associated as somehow related to the Aztecs and Toltecs -- the "Civilized Savages" of the far south. With that distinction in mind, I suggest that when the two powerful mythic traditions of Little People encountered one another in the Upper Cumberland, they may well have merged to become the deeply rooted story of Tennessee pygmies during the nineteenth century.

A second factor almost certainly contributed to the emergence and persistence of the Upper Cumberland Tennessee pygmies -- the reality of the pygmy graves. While the stone coffins of the Upper Cumberland may not have held the remains of diminutive people, the existence of diminutive graves has never been the point in dispute. In light of the last several decades of modern archaeological research in Middle Tennessee, these mysterious Pygmy

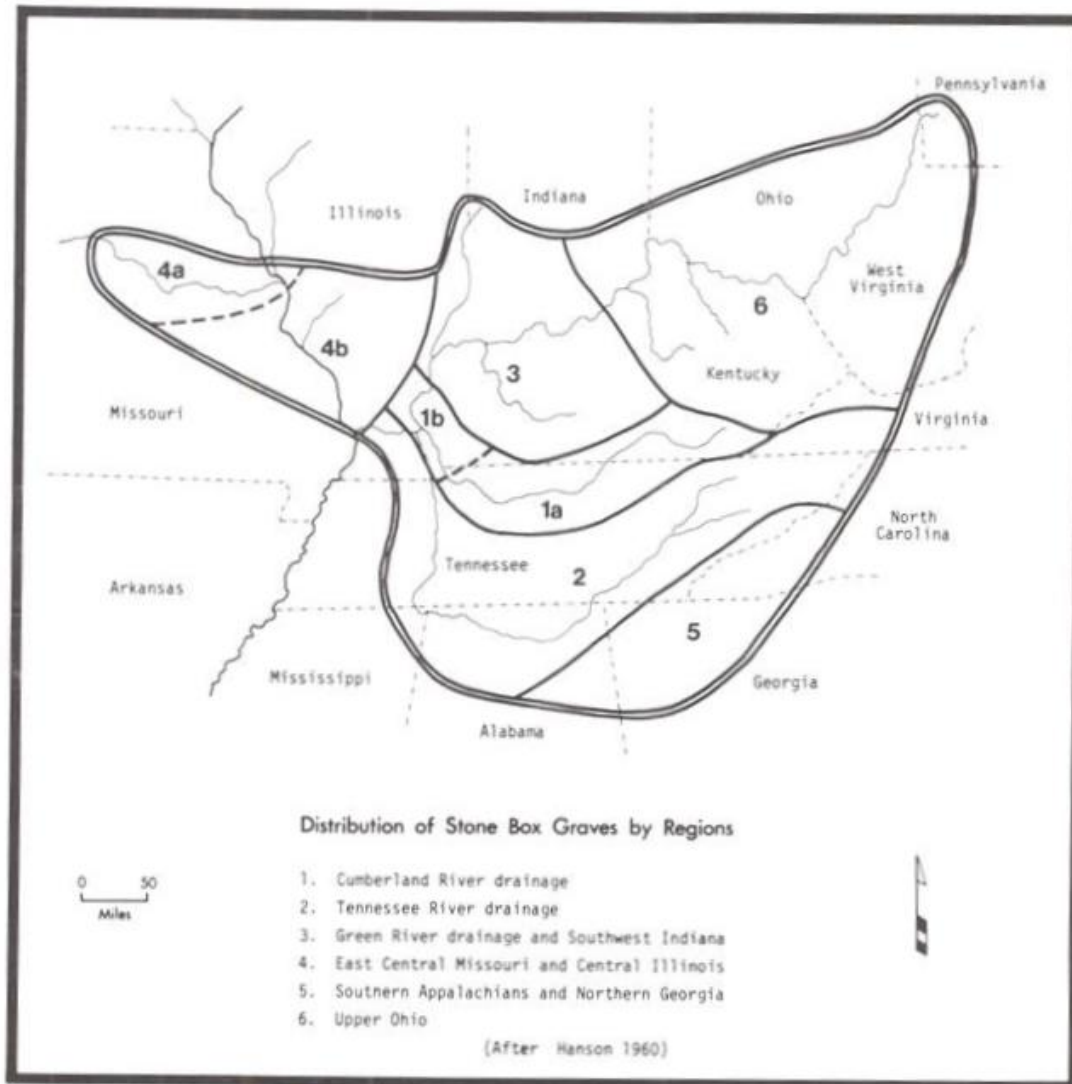


FIGURE 2. Distribution of stone-lined graves (Brown 1981, Figure 2).

Graves represent perhaps several different types of prehistoric Native American burial practice -- most related to the period between A.D. 1150 and 1450 in the region. Although mortuary features involving the extensive use of stone date back at least to the Woodland era in the interior south, the practice of constructing individual stone-lined graves reaches its most common and widespread form in Middle Tennessee between A.D. 1150 and 1450. While minority percentages of stone-lined graves are noted in a broad portion of the midwest and interior

southeastern United States, the core area for their nearly exclusive use lies in sites within the drainage of the Cumberland River (Figure 2, region 1). Ian Brown (1981:8) noted that "overall, it is quite clear that a considerable portion of Nashville was built over an incredibly immense stone grave cemetery." Modern archaeology has identified small square-to-rectangular stone-lined graves in a variety of forms and settings in the region (Dowd 2008). The most common type of diminutive stone-lined grave is that of children. During at least part of the late

prehistoric era in Middle Tennessee, it was common practice to inter some infants and small children (up to one or two years of age) beneath the floors of residential structures, with the remainder of individuals buried in larger village or town cemeteries at some distance from houses (Figure 3).

While the meaning of this cultural practice remains uncertain, it does create the potential for misinterpretation of the scattered stone graves beneath houses as cemeteries containing only diminutive graves. A less common but well documented alternative form includes graves in which adult individuals are buried in a flexed position (Figure 4). Although relatively widely distributed in the Nashville area, the practice seems

more common in the Eastern Highland Rim -- along the upper Cumberland River and its tributaries (including the Caney Fork). A final type of small stone lined grave was created to house secondary or bundle burials (Figure 5). In these cases, the skeletal remains of individuals were buried after the decay of the flesh. Although certainly varying in individual cases, this practice probably sometimes resulted from deaths far from home -- where the body was retrieved later as a bundle of skeletal remains for final interment. In other cases, the practice of retaining the honored dead in ossuaries or "bone houses" is relatively well documented for the southeastern United States. In these cases, bodies of honored ancestors and relatives were allowed to



FIGURE 3. Stone grave of child, Averbuch site (40DV60), Davidson County, Tennessee.



FIGURE 4. Stone-box grave containing flexed adult, Gordontown (40DV6), Davidson County, Tennessee.



FIGURE 5. Small rectangular stone box containing bundled remains of an adult male, 30-40 years of age at death, Gordontown (40DV6), Davidson County, Tennessee.

decay in special buildings until a designated time of reinterment. At least in this instance, science and folklore are in agreement -- the diminutive graves are real.

A final factor is also of importance in rooting this story so thoroughly in the local imagination. Although children, infants, and the bundled remains of adults were obviously buried in small graves throughout much of prehistoric North America, the practice of lining these small burial pits with stone slabs is rare outside the Cumberland River valley of Middle Tennessee and Kentucky. Their shallow placement and stone linings made their discovery using iron rods or probes a simple task -- and indeed this method is outlined in many of the early accounts. While skilled probes can readily discover multitudes of unlined burial pits, no skill whatsoever is required to recognize the solid clank of iron on the covering of a stone-lined grave. As a result, it was

indeed possible along the Cumberland to quickly expose vast numbers of graves with little skill and a minimal expenditure of effort. Although it has been a felony since 1984 under Tennessee state law to disturb prehistoric human graves, modern looters persist in their illicit use of this method. Along the Cumberland, the "wee folk" are not simply the stuff of legends glimpsed on occasion -- they are, in fact, set in the reality of stone.

Unfortunately, it can hardly be asserted that our understanding of the prehistoric peoples along the edges of the Cumberland Plateau in Middle Tennessee has been much advanced by the conflict of folklore and science. In this peculiar instance, folklore guided scientific inquiry. The wholly unsystematic gathering of skeletons by the undoubtedly hundreds if not thousands of "scientific curiosity seekers" beginning in 1820 and continuing through the modern day led to the wholesale destruction of many of these very real archaeological sites. While Murfree (1891:360) concludes her novel with "Meanwhile the Little People sleep well," the sleep of the Little People has indeed been anything but quiet. The recurrent lure and mystery of the Tennessee Pygmy Graveyards led outsiders to search for and open grave after grave (soon described in the accounts as "reopening" grave after grave). Many of the archaeological sites mentioned over the decades have been so thoroughly disturbed by the curious, treasure seekers, antiquarians, and the plow that they cannot now be relocated. Three of the first four archaeological sites officially recorded in White County are the stone-box cemeteries associated in legend with the Doyle farm (40WH1), the Lane farm (40WH2), and the Sparkman farm (40WH4). Each is simply a placeholder number with the general

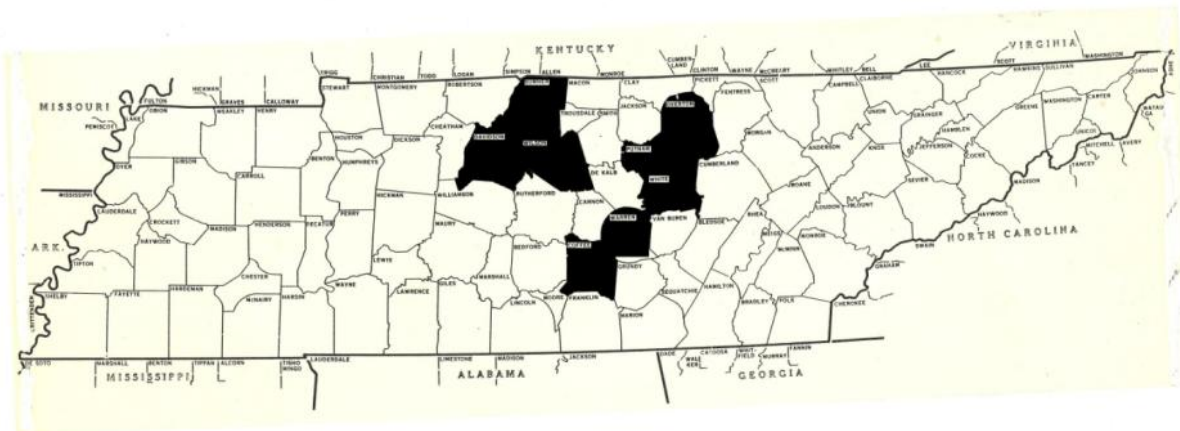


FIGURE 6. The "Land of the Tennessee Pygmies" as reported in identified newspaper accounts.

notation "unable to locate." Unfortunately, while many local inhabitants of the Upper Cumberland region respected the sleep of the "Little People," the story itself drew outsiders anxious to discover the "truth" for themselves.

What seems clear at this point is that the native peoples being buried along the eastern edge of the Central Basin of Tennessee between about A.D. 1100 and 1450 practiced a distinctive pattern or patterns of burial that set them apart from many of their contemporaries and neighbors -- as distinctive as the dialects, culture, and beliefs of the people of the southern Appalachian highlands that confronted George Featherstonhaugh in the early 1800s and so intrigued and fascinated Ms. Mary Murfree in the late 1800s. In the much better known region centered on modern Nashville, the dozens of vast stone grave cemeteries share two patterns significant to this discussion: 1) individuals were buried in "form fitting" stone-lined graves -- the dimensions being determined by the size of the individual to be interred; and 2) diminutive graves (other than those for children) are exceedingly rare with often only singular examples of semi-flexed burials or bundle

burials present within individual sites or cemeteries. Even acknowledging the journalistic slant of many of the newspaper articles quoted herein, I suggest the possibility that they describe a mortuary pattern different from that of their neighbors to the west around Nashville. A significant number of the remains examined by more skeptical inquirers appear to reflect bundled burials of adults -- seemingly in much higher concentrations in the Upper Cumberland region than is reflected in the archaeological record around Nashville (Figure 6). While treading on or across the border between interpretation and speculation, I suggest that there may indeed be a scientific story here to rival that of the pygmies.

The core region within which significant numbers of diminutive graves were reported is along the western escarpment of the Cumberland Plateau. Modern archaeological research of the past three decades has revealed another pattern that overlaps substantially with that of the "pygmy graves." For thousands of years, native peoples of the region visited the rockshelters and dark zones of caves to incorporate these places into a



FIGURE 7. Densest concentration of known prehistoric cave and open air rock art sites in Tennessee.

sacred landscape -- a literal transformation of an enormous landscape into a reflection of their cosmic worldview (Figure 7; Simek et al. 2013). In the future, we should consider the question of whether this same region was chosen as a particularly significant place to transport and place the bundled remains of ancestors for final interment -- what might be described as a pilgrimage to the sacred mountains. If they did occur, the specific motivation for those pilgrimages remains elusive -- and whether this apparent correlation of concentrations of bundled adult burials and rock art is meaningful remains to be examined more thoroughly. As I have suggested elsewhere (Smith 2012; 2013a), there are tantalizing reasons to believe that some of the human bodies interred just inside the entrances of caves were placed as part of this enormous Cumberland Plateau tableau. In at least three instances, two individuals were buried in close proximity to one another -- probably in each case one male and one female. In each known example, at least one individual was clad in an elaborate feathered garment (in the two "mummified" examples, identified as a female). Also in each documented

example, the bodies appear to have been elaborately wrapped with hides, furs, matting, and other organic materials. I suggest the possibility that those three pairs of burials represent the transformation of an adult male and a younger female into sacred bundles -- consecrating the entrance to these caves and rockshelters for an unknown (and perhaps unknowable) purpose. The elaborate wrapping containing multiple types of textiles, furs, and hides is a characteristic feature of sacred bundles. More convincing, however, is the final treatment -- placement within cane boxes. Surviving examples from sites such as the Great Mortuary at Spiro are clearly sacred bundles -- most of which contain human remains along with other sacred objects and regalia. Unfortunately, these three remarkable sets of bundles can, for the most part, only now be known from the scanty historical record. Nonetheless, the available evidence is sufficient to constitute an important addition to our growing recognition that native peoples in the region modified many features of the landscape to create monumental sacred tableaus through the patterned placement of bundles and rock art. Hence, it seems a



FIGURE 8. Comb style grave, Old Sparta Cemetery, White County, Tennessee (*Photograph, Kevin E. Smith*).



FIGURE 9. Comb style grave, end view, Old Sparta Cemetery, White County (*Photograph, Kevin E. Smith*).

workable hypothesis to suggest that the possible concentration of diminutive graves containing bundled adult remains along that same western escarpment is a related phenomenon.

One other pattern of burial -- this time historic -- also merits mention, as it leads one to ponder the extent of interpenetration of the pygmy cemetery

legends into southern Appalachian cultural traditions. Historic graveyards of the Upper Cumberland are noteworthy for a distinctive style of grave covering known to old timers as a "comb grave," but sometimes referred to as "tent graves" (Finch 2004:68). A typical comb grave consists of two flat sandstone slabs leaned together to form a protective roof -- in the White and Warren county area, they are accompanied by triangular end stones to support the side slabs (Figures 8-9).³ As noted by Finch (2004:72): "three questions are inescapable: how did the comb tradition arise, what purpose do the combs serve, and do comb graves exist anywhere else outside this region? Only the last question can be answered with certainty... the Cumberland region of Tennessee... has no significant competition for the comb grave championship." This distinctive grave pattern concentrated in Cannon, Fentress, Overton, Putnam, Warren, and White

counties along the western escarpment of the Cumberland Plateau seems to have emerged about 1822 (Finch 2004:69). Many scholars have speculated on the origins and functions of this unique and largely Upper Cumberland mortuary tradition, including protection from animals or the weather. While I can offer no more compelling proof of causation than earlier speculators, the geographic correlation of this regional mortuary pattern with that of the stories of stone-lined pygmy cemeteries -- and the seeming chronological emergence of both around 1820 -- seems curious if only coincidental.

Perhaps the well educated Turner Lane in his 1820 diggings did discover the skeleton of an ancient Native American exhibiting the effects of dwarfism. He may also have found the skeleton of a revered dog buried in a similar stone-lined grave. And perhaps amongst his other discoveries were the bodies of children, adults buried in flexed position, and secondary bundle burials. Most of those questions cannot today be answered -- the "pygmy remains" in question were discarded or misplaced, the sites and cemeteries have been plowed and pillaged in search of pygmy skeletons, and most of their explorers have long since departed this world. Perhaps Turner Lane's interpretations were influenced by beliefs in "wee folk" brought with him from his homeland in Ireland -- or perhaps not. Perhaps the local Native American stories of Little People mixed and mingled with Irish and other European folks beliefs in the Southern Appalachians -- or perhaps not. Whatever their origins, during her study of White County folklore In the 1960s, Edwina Doran (1969:39) noted that "the White County... pygmy legends have persisted to some degree in the oral and written tradition." As one of her informants noted, "I believe these were

some of the Little People -- some kind of midgets or pygmies. Dr. Richards thought they were Indian babies, but I'd seed 'em and he hadn't, and he just had to take my word for it" (Doran 1969:38). The discovery of a prehistoric stone sculpture in White County in 1903 was quickly interpreted within the context of the pygmies. The heavily worn stone statue depicting a female quickly became known locally as "The Rock Woman" (Figure 10; Smith and Miller 2009:116-121). Local consultants described the stone statue as "It was bound to have been of the little race... She was probably one of the Mound Builders or one of the Little People" (Doran 1984:136). William Lynwood Montell (2004:122), folklorist and oral historian of the Upper Cumberland, deems "stories [or narratives] to be the strongest force in creating and maintaining a strong sense of identification with state, region, community, and home place that most of us know, appreciate, and understand." The pygmies of the Upper Cumberland underscore the strength and resilience of the local culture -- despite the relentless incursions of the "outsider." The periodic lure of Tennessee's primordial pygmies speaks to the failure of scientific stories to penetrate local lore. Recurrent statements about the lack of investigation of the pygmies by Science and Scientists underscores that failure. In her examination of *In the Stranger People's Country*, Marjorie Pryse (2000:202, 205) noted: "[Murfree's] interest in archaeology characterizes the encounter between science and legend as itself a contact zone for exploring competing claims to the authority over the interpretation of Appalachia.... Does the archaeologist's interest in the stranger peoples' graves represent the 'disinterested' claim of scientific inquiry or a version of cultural

disrespect that may be understood as a kind of theft?"

For nearly two centuries, all parties involved in this "contact zone" brought with them preconceptions and biases that colored their perceptions, interpretations, and actions. We can perhaps learn from their failures to appreciate and understand differing perspectives -- and move forward to protect, preserve, and expand our understanding of the prehistory of this important region in Middle Tennessee. Unless and until archaeologists can successfully produce and transmit an equally interesting story about the remarkable native inhabitants of the Caney Fork River drainage, it seems unlikely that this story will fade. Until the prehistoric peoples of the Caney Fork -- and more broadly the southeastern United States -- are historicized, they will more frequently be treated as the stuff of romance, legends and myth than of historical fact.

Tennessee's Pygmies remain alive and well today.

Notes

- ¹ The majority of dictionaries consulted cite "pygmy" as the preferred modern spelling with "pigmy" as a variant spelling. I have used "pygmy" in the text, but have retained the original spelling in direct quotations.
- ² *Zion's Herald* was one of the "oldest and greatest of the Methodist weekly magazines" (Chronicling America: Historic American Newspapers, Electronic document, accessed 23 Jun 2013, <http://chroniclingamerica.loc.gov/lccn/sf89090991/>)
- ³ No doubt coincidentally, the comb grave illustrated here is only a few yards away from the graves of Turner Lane and William Anderson, whose farms contained the earliest reported of the "pygmy cemeteries."

Acknowledgements. My initial interest in the story of Tennessee's pygmies emerged during a 1986 conversation with Stephen Williams at the

Southeastern Archaeological Conference in Nashville. The Pygmies remained a topic of intermittent research for almost three decades -- I particularly acknowledge the assistance of Stephen T. Rogers of the Tennessee Historical Commission over those years in forwarding relevant articles. Most recently, the widespread availability of on-line and searchable newspaper archives facilitated completion of the article at hand. Part of my interest also stems from my own deep roots in the southern Appalachians -- with thanks to Granny and Papa. I also extend thanks to George Lankford for his comments on an earlier draft of this article and to an anonymous reviewer whose comments helped to improve the content.

References

- Alden, W.L.
1876 Tennessee Pygmies. *New York Times*, March 24, 1876. [Republished in two W.L. Alden collections: 1878, *Domestic Explosives and Other Sixth Column Fancies*, pp. 81-83, R. Worthington, New York; and 1882, *The Comic Liar: A Book Not Commonly Found in Sunday Schools, With Many Harrowing Illustrations*, pp. 81-83, G.W. Carleton & Co., New York].
- Bahuchet, Serge
1993 L'invention des Pygmees. *Cahiers d'etudes africaines* 33(129):153-181.
- Ballard, Chris
2006 Strange Alliance: Pygmies in the colonial imaginary. *World Archaeology* 38(1):133-151.
- Berkeley, Edmund and Dorothy Berkeley
1988 *George William Featherstonhaugh: The First U.S. Government Geologist*. University of Alabama Press, Tuscaloosa.
- Birdwell, Michael E. and W. Calvin Dickinson
2004 Introduction. In *Rural Life and Culture in the Upper Cumberland*, edited by Michael E. Birdwell and W. Calvin Dickinson, pp. 1-14. University Press of Kentucky, Lexington.

- Brown, Ian W.
1981 A Study of Stone Box Graves in Eastern North America. *Tennessee Anthropologist* 6(1):2-26.
- Corgan, James X.
1998 Gerard Troost. *Tennessee Encyclopedia of History and Culture*, edited by Carroll Van West, pp. 992-993. Tennessee Historical Society and Rutledge Hill Press, Nashville.
- Craddock, Charles Egbert
1891 *In the "Stranger People's" Country: A Novel*. Harper & Brothers, New York.
1899 *The Story of Old Fort Loudon*. The Macmillan Company, New York
1917 Mountain Treasure Seekers. *The Youth's Companion* 91(10):131.
- Doran, Edwina B.
1969 *Folklore in White County, Tennessee*. PhD Dissertation and Peabody Contributions to Education Number 747. George Peabody College, Nashville.
1984 The rock woman & the little people-- White County legends. *Tennessee Folklore Society Bulletin* 50:136-140.
- Dowd, John T.
2008 The Cumberland Stone-Box Burials of Middle Tennessee. *Tennessee Archaeology* 3(2):163-180.
<http://www.mtsu.edu/~kesmith/TNARCH/tennesseearchaeology.html>.
- Duncan, Barbara Reimensnyder (editor)
1998 *Living Stories of the Cherokee*. University of North Carolina Press, Chapel Hill.
- Featherstonhaugh, George W.
1844 *Excursion through the Slave States*. Harper, New York.
- Feder, Kenneth L.
2011 *Frauds, Myths, and Mysteries: Science and Pseudoscience in Archaeology*. 7th edition. McGraw-Hill Companies, New York.
- Fell, Barry
1976 *America BC: Ancient Settlers in the New World*. Pocket Books, New York.
1982 *Bronze Age America*. Little Brown and Co., Boston.
1983 *Saga America: A Startling New Theory on the Old World Settlement of America Before Columbus*. Times Book, New York.
- Finch, Richard C.
2004 Ashes to Ashes: Burial Upper Cumberland Style. In *Rural Life and Culture in the Upper Cumberland*, edited by Michael E. Birdwell and W. Calvin Dickinson, pp. 66-72. University Press of Kentucky, Lexington.
- Frederick, Duke Alolphus
1912 A Land of Giants and Pygmies. *National Geographic Magazine* 23(4): 369-388.
- Henshaw, Henry W.
1905 Popular Fallacies Respecting the Indians. *American Anthropologist New Series* 7(1):104-113.
- Glenn, L.C.
1905 Gerard Troost. *American Geologist* 35:72-94
- Haliburton, R.G.
1897 *How a Race of Pygmies was found in North Africa and Spain*. Arbutnot Bros. Company, Ltd, Toronto.
- Hand, Wayland D.
1981 Fairy Lore in the New World. *Folklore* 92(2):141-148.
- Haywood, John
1823a *The Natural and Aboriginal History of Tennessee*. Published by George Wilson, Nashville.
1823b *The Civil and Political History of Tennessee*. Publishing House of the Methodist Episcopal Church, South, Nashville.

- Jones, Joseph
 1869 The Aboriginal Mound Builders of Tennessee. *The American Naturalist* 3(2):57-73.
 1876 *Explorations of the Aboriginal Remains of Tennessee*. Smithsonian Contributions to Knowledge 259. Washington, Smithsonian Institution.
- Kelly, James C.
 1998 Ralph E.W. Earl. In *Tennessee Encyclopedia of History and Culture*. Tennessee Historical Society, Nashville.
- Kilpatrick, Jack Frederick and Anna Gritts Kilpatrick
 1964 *Friends of Thunder: Folktales of the Oklahoma Cherokee*. University of Oklahoma Press, Norman.
- King, Lynn and Ernie Lossiah
 2001 *Cherokee Little People: The Secrets and Mysteries of the Yunwi Tsunsi*. Cherokee Publications, Cherokee, NC.
- Lillard, John B.
 1884 The Small Stone Graves in White County, Tenn. *Proceedings of the American Numismatic and Archaeological Society of New York*. 26th Annual Meeting, March 18, 1884, pp. 28-29.
- Loyd, Dennis
 1970 Tennessee's Mystery Woman Novelist. *Tennessee Historical Quarterly* 29(3):272-277.
- Marsh, Peter
 2004 Catastrophes and Prehistory. Electronic document <http://www.users.on.net/~mkfenn/Catastrophes.htm>. Accessed February 20, 2009.
- Mason, Otis T.
 1876 The So-Called Pygmy Graves in Tennessee. *Harper's New Monthly Magazine* 54(319):43-49.
- Montell, William Lynwood
 2004 "That's Not the Way I Heard It": Traditional Life and Folk Legends of the Upper Cumberland. In *Rural Life and Culture in the Upper Cumberland*, edited by Michael E. Birdwell and W. Calvin Dickinson, pp. 122-139. University Press of Kentucky.
- Mooney, James
 1900 Myths of the Cherokee. *Nineteenth Annual Report of the Bureau of American Ethnology*, Washington, Government Printing Office. pp. 3-548.
- Moore, Michael C. and Kevin E. Smith
 2009 *Archaeological Expeditions of the Peabody Museum in Middle Tennessee, 1877-1884*, Tennessee Division of Archaeology, Department of Environment and Conservation, Report of Investigations No. 16. Nashville. Revised (2012) electronic edition: <http://www.tn.gov/environment/arch/publications.shtml>.
- Morton, Samuel George
 1842 Remarks on the so called Pigmy race of the Valley of the Mississippi. *Journal of the Academy of Natural Sciences of Philadelphia* VIII(II):205-207.
 1843 Proceedings, November 1841. *Proceedings of the Academy of Natural Sciences of Philadelphia* I(8):121-122. Printed for the Academy, Philadelphia.
- Noyalas, Jonathan A.
 2003 "My will is absolute law": General Robert H. Milroy and Winchester, Virginia. M.A. thesis, Department of History, Virginia Polytechnic Institute and State University, Blacksburg.
- O'Brien, Michael J.
 2004 *Conjectures of Order: Intellectual Life and the American South, 1810-1860. Volume 2*. University of North Carolina Press, Chapel Hill.

- Owsley, Harriet Chappell
1970 The Tennessee Historical Society: Its Origin, Progress, and Present Condition. *Tennessee Historical Quarterly* 29(3):227-242.
- Panhuys, L.C. van
1905 Are there Pygmies in French Guiana. *Proceedings of the International Congress of Americanists*, 13th Session, New York, 1902. pp. 131-133.
- Prajznerova, Katerina
2001 Cultural Inter marriage in Southern Appalachia: Cherokee Elements in Four Selected Novels by Lee Smith. Ph.D. dissertation, Department of English, Baylor University.
- Pratt, Mary Louise
1992 *Imperial Eyes: Travel Writing and Transculturation*. Routledge Press, London.
- Pryse, Marjorie
2000 Exploring Contact: Regionalism and the "Outsider" Standpoint in Mary Noailles Murfree's Appalachia. *Legacy* 17(2):199-212.
- Putnam, A.W.
1859 *History of Middle Tennessee or the Life and Times of General James Robertson*. Southern Methodist Publishing House, Nashville.
- Reed, Jeannie (editor)
1991 *Stories of the Yunwi Tsundi, the Cherokee Little People*. Cherokee, North Carolina.
- Scobie, Alex
1975 The Battle of the Pygmies and the Cranes in Chinese, Arab, and North American Indian Sources. *Folklore* 86(2):122-132.
- Simek, Jan F.; Alan Cressler, Nicholas P. Hermann, and Sarah C. Sherwood
2013 Sacred Landscapes of the Southeastern USA: Prehistoric rock and Cave Art in Tennessee. *Antiquity* 87(336):430-446.
- Smith, Kevin E.
2012 Forgotten Middle Tennessee Mummies, Part 1. *Middle Cumberland Archaeological Society Newsletter* 37(6):2-6.
2013a Forgotten Middle Tennessee Mummies, Part 2. *Middle Cumberland Archaeological Society Newsletter* 38(1):2-6.
2013b 1858 Excavations at the Two Rivers Site (40DV41), Davidson County, Tennessee. *Middle Cumberland Archaeological Society Newsletter* 38(2):2-6.
- Snow, Clyde E.
1943 Two Prehistoric Indian Dwarf Skeletons from Moundville. Alabama Museum of Natural History, *Museum Paper No. 21*.
- Starr, Frederick
1896 Pygmy Races of Men. *The North American Review* CLXII:414-423.
- Stengel, Marc K.
2000 The Diffusionists Have Landed. *The Atlantic Monthly Online*. Digital edition accessed April 26, 2013, <http://www.theatlantic.com/past/docs/issues/2000/01/001stengel.htm>.
- Summers, Lewis Preston
1903 *History of Southwest Virginia, 1746-1786, Washington County, 1777-1870*. J.L. Hill Printing Company, Richmond VA.
- Thruston, Gates P.
1890 *The Antiquities of Tennessee and the Adjacent States*. Robert Clarke & Co., Cincinnati.
1897 *The Antiquities of Tennessee and the Adjacent States*. Second Edition. Robert Clarke & Co., Cincinnati.

Toplovich, Ann

- 1999 The Tennessee Historical Society at 150: Tennessee History "Just and True." *Tennessee Historical Quarterly* 58:194-215.

Troost, Gerard

- 1845 An Account of Some Ancient Indian Remains in Tennessee. *Transactions of the American Ethnological Society* 1:355-365.

United States National Library of Medicine

- 2011 Achondroplasia. *A.D.A.M. Medical Encyclopedia*. United States National Library of Medicine.
<http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0002544/>. Accessed July 9, 2012.

Williams, Stephen

- 1986 Pioneers in the Archaeology of Middle Tennessee. Paper presented to the Southeastern Archaeological Conference, Nashville.
- 1990 *Fantastic Archaeology: The Wild Side of North American Prehistory*. University of Pennsylvania Press.

Witthoft, John and Wendell S. Hadlock

- 1946 Cherokee-Iroquois Little People. *The Journal of American Folklore* 59(234):413-422.

Wood, Edward J.

- 1868 *Giants and Dwarfs*. Robson and Son, Great Northern Printing Works, London.

Kevin E. Smith

Department of Sociology and Anthropology
Middle Tennessee State University
Murfreesboro, Tennessee 37132-0001

X-RAY FLUORESCENCE ANALYSIS OF TWO METAL BEADS FROM THE DAVID DAVIS FARM SITE (40HA301), HAMILTON COUNTY, TENNESSEE

Sarah A. Blankenship, Bruce Kaiser, and Michael C. Moore

A 2007 burial removal project at the David Davis Farm site in southern Hamilton County yielded 189 individuals with roughly 550 associated funerary objects. Among these graves were six people buried with evidence of direct or indirect Spanish contact in the form of metal artifacts. Burial 92 comprised a young child interred with two metal beads in addition to a partial shell-tempered vessel and one small discoidal. An analysis of the beads with a portable x-ray fluorescence (XRF) instrument determined these items were manufactured from a lead-bismuth alloy and plated with silver.

The David Davis Farm site (40HA301) represents a Late Mississippian and Protohistoric occupation in Hamilton County, Tennessee. This site was established on a terrace of South Chickamauga Creek that meanders in a generally northwest direction east of downtown Chattanooga. Although originally recorded in 1988, the true nature of site 40HA301 was revealed in February 2007 during extensive grading of the general site area by the landowner, Mr. David Davis, prior to commercial development of the property. No federal or state permits were involved with this land altering action, but all earthmoving activity did stop once human remains were discovered. After considering his legal options, Mr. Davis obtained a court order as required by Tennessee state law (T.C.A. 46-4-101-104) to remove all human burials within the proposed project area. A local archaeological consulting firm (Alexander Archaeological Consultants, Inc.) was hired to conduct the removal that took place during the spring and summer of 2007.

The consultant investigations removed 189 individuals interred with about 550 associated burial objects (Tennessee Division of Archaeology 2013).¹ Among

these individuals were six graves with metal artifacts (Burials 50, 78, 85, 92, 121, and 149) interpreted as evidence of (direct or indirect) Spanish contact. Burial 92 contained the poorly preserved remains of a young child, placed in a flexed position, that was interred with a partial shell-tempered vessel, one small discoidal, and two metal beads (Figure 1).

This report presents the results of an analysis to identify the type of metal used to make these beads. The beads are silver in color, and one was noted on the burial form as being made of an “undetermined type of metal, possible silver or pewter”. To objectively identify the type of metal used to manufacture the beads, we determined their chemical (elemental) composition using a portable x-ray fluorescence (XRF) instrument. XRF is a fast, non-destructive, multi-elemental technique, which makes it ideal for determining the major and minor, as well as some trace, elements in objects of cultural heritage value. Such objects include associated and unassociated funerary objects subject to repatriation under the Native American Graves Protection and Repatriation Act (NAGPRA; PL 101-601; 25 USC 3001-30013).

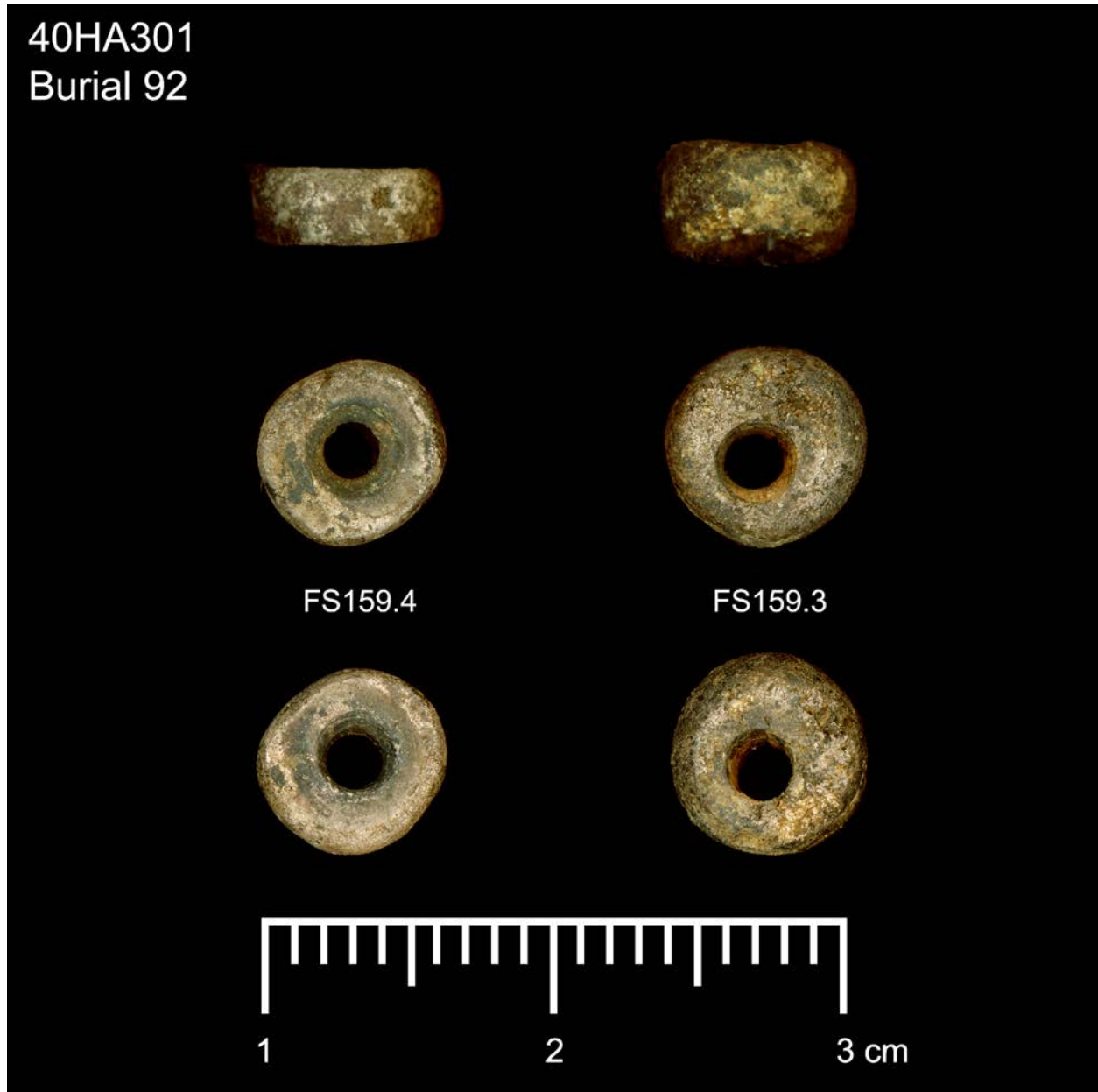


FIGURE 1. Metal beads from Burial 92. Left images: FS 159.4; Right images: FS 159.3.

Analysis Results

The physics and theoretical background behind XRF spectrometry has been described in detail elsewhere (e.g., Guerra 1998; Henderson 2000; Janssens et al. 2000). This study was conducted with a Bruker Tracer III-V Light Element Analyzer portable X-ray fluorescence instrument with a thin rhodium (Rh) target

X-ray tube. Table 1 shows the measurement parameters of the system.

The XRF investigations were carried out to empirically ascertain the metal used to manufacture the David Davis Farm site metal beads (*FS 159.3 Feature 71A Burial 92_metal bead_yellow_no vac_1* and *FS 159.4 Feature 71A Burial 92_metal bead_yellow_no vac_1*). Six elements were detected: silver (Ag), iron (Fe),

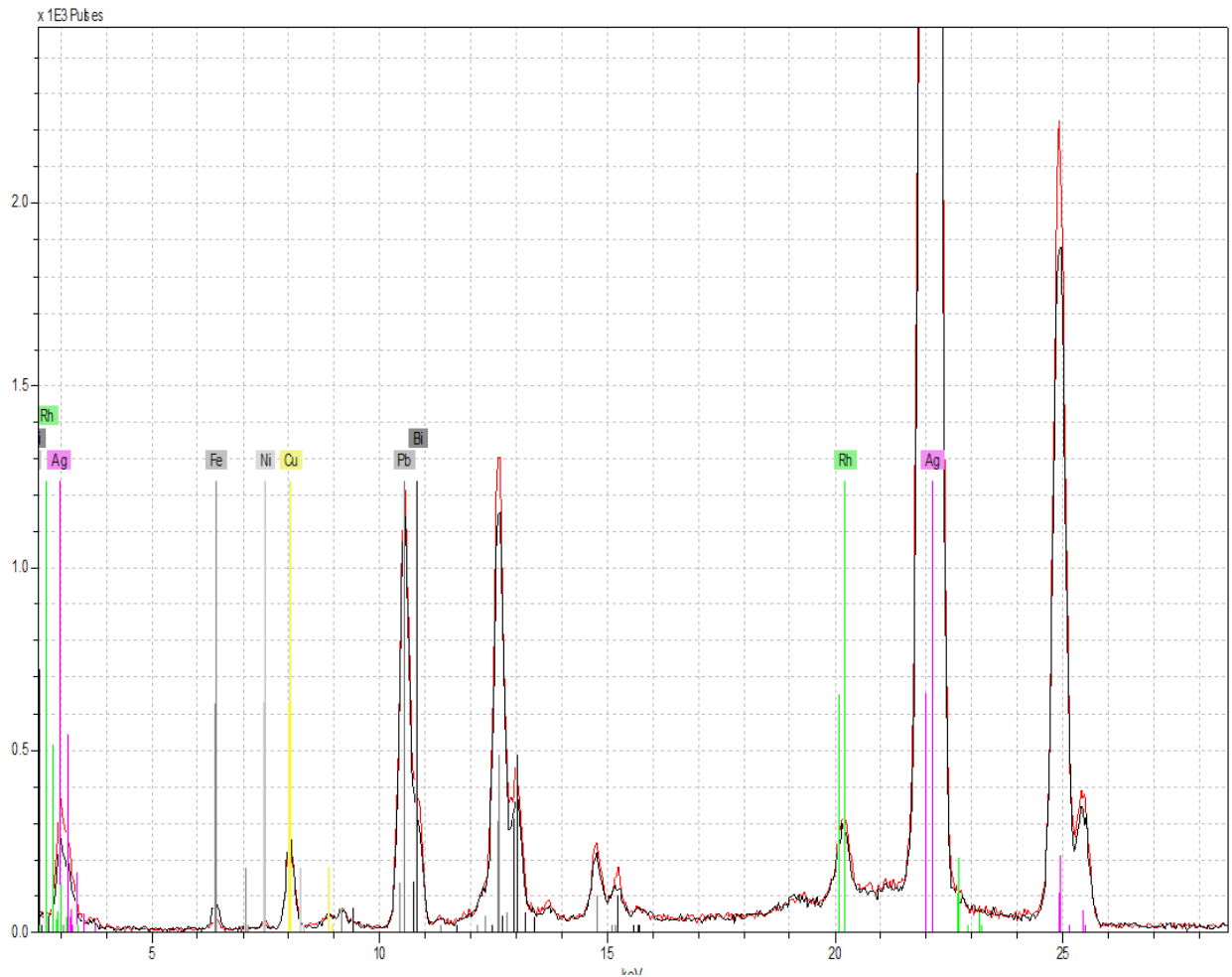


FIGURE 2. Overlay of the analysis spectra of artifact *FS 159.3 Feature 71A Burial 92_metal bead_yellow_no vac_1* (black spectrum) and artifact *FS 159.4 Feature 71A Burial 92_metal bead_yellow_no vac_1* (red spectrum).

Table 1. Measurement conditions of the XRF system.

X-ray tube high voltage and current	40kV, 1.3μA
Filter	Ti-Al
Beam diameter	5mm
Detector	Peltier cooled Ag-free SiPIN with a resolution of ~175eV at 5.9KeV
Measurement time	130s

copper (Cu), lead (Pb), bismuth (Bi), and rhodium (Rh). The Rh peaks visible in the overlay of the analysis spectra (Figure 2) are the inelastic and elastic scatter from the Rh X-ray tube. The overlay of the

analysis spectra shows that the metal beads are fairly uniform in elemental content. Artifact *FS 159.3 Feature 71A Burial 92_metal bead_yellow_no vac_1* (black spectrum) has a slightly higher amount of Fe, while artifact *FS 159.4 Feature 71A Burial 92_metal bead_yellow_no vac_1* (red spectrum) has slightly higher amounts of Ag, Pb, and Bi. The spectra also show that the beads are manufactured from a Pb-Bi (binary) alloy with a silver (Ag) surface treatment (e.g., plating). Pb alloyed with Bi and other elements such as tin (Sn) and cadmium (Cd) can result in alloys with melting points below the boiling point of

water (212 °F or 99.98 °C). These “fusible alloys” are commonly used for soldering (Rahm 1993). The Ag surface treatment is indicated by the fact that the Pb-L α and Bi-L α lines are lower than the Pb-L β and Bi-L β lines. Furthermore, the Ag-L lines are visible at 3keV while the Pb-M and Bi-M lines are not. Corrosion and oxidation layers, evidenced by heterogeneity in the surface elemental content, are not generally present in precious metals such as silver (Ag) and gold (Au) and their alloys (Araújo et al. 1993; Guerra 1995, 1998; Vandecasteele and Block 1993). However, surface treatments such as gilding and plating can result in variations in the surface content of Au and Ag in the metal. The overlay of the spectra shows that the Ag content of the beads is uniform and the Rh scatter from each of the beads is equivalent, which indicates little to no surface corrosion present on the artifacts.

Concluding Statement

The XRF investigations have shown that the two metal beads recovered from the child burial (Burial 92) at the David Davis Farm site were manufactured from a binary alloy of Pb and Bi (possibly a solder), which was plated with Ag. To date, no evidence has been found to indicate that metallurgical techniques beyond cold or annealed hammering (such as alloying, casting, soldering, or plating) were practiced in pre-Hispanic eastern North America (e.g., Laronge 2001; Leader 1988; Martin 1999; Patterson 1971). Such techniques were already well-developed in South and Central America prior to Spanish contact and colonization (e.g., Aldenderfer et al. 2008; Benson 1979; Gordon and Knopf 2007; Ruvalcaba-Sil and Demortier 1996).

It should be noted that silver beads remarkably similar to those analyzed in this study have been recovered from sites in central Florida, including St. Marks, Weeki Wachee Mound, and Tatham Mound (Deagan 1987: Figure 7.5; Mitchem and Leader 1988; Mitchem et al. 1985; Smith 1956). In their discussion of the Tatham Mound specimens, Mitchem and Leader (1988:51, Figure 6) have classified this type as a “barrel bead”. These beads, along with a number of other glass and metal beads and additional European artifacts, were recovered from burials interred within the second stage of mound construction, after A.D. 1528 (Mitchem and Leader 1988:42), contemporaneous with the David Davis Farm site occupation. Based on their qualitative analyses of these beads, Mitchem and Leader (1988:54) argue that although the silver obtained to manufacture the beads were from European sources, the beads were not made using European techniques but, rather, indigenous techniques developed out of a long history of shell and wood working (Leader 1985; Mitchem and Leader 1988:49). At this time, additional analysis is necessary to assess whether the David Davis Farm beads were manufactured using indigenous techniques.

The results of our analysis have provided insight into the manufacturing technology of the David Davis Farm metal beads, principally the elemental composition of the metals and the homogeneity of the alloys. Although at present we are not able to say with certainty whether the metal is the result of direct or indirect contact with the Spanish, the binary Pb-Bi alloy and silver plating certainly indicate that the metal is derived from a European source.

Notes

¹ The David Davis Farm human skeletal remains and associated burial objects were claimed by the Muscogee (Creek) Nation in 2008, even though these remains and objects were removed by a private construction project on private property. The National Native American Graves Protection and Repatriation Act (NAGPRA) office concluded that NAGPRA did apply in this case as the Tennessee Division of Archaeology had agreed in the court order to temporarily hold the remains and objects for reburial as required under Tennessee state law. The consequence of this interpretation is that the Division no longer holds for reburial any human skeletal remains and associated burial objects removed from private property. All human skeletal remains and burial artifacts were transferred from Alexander Archaeological Consultants to the Division in August 2009. Following this transfer, a complete reanalysis of all human skeletal remains removed during the David Davis Farm investigations was performed by the Middle Tennessee State University, Department of Sociology and Anthropology under the direction of Dr. Shannon Hodge. In addition, a complete review of all items submitted as associated burial objects was conducted by Division personnel Mike Moore, John Broster, and Aaron Deter-Wolf. The results of these two studies were combined to generate a revised comprehensive inventory of David Davis Farm human skeletal remains and associated burial objects. The NAGPRA disposition of these remains and objects is still under consideration at this time.

Acknowledgements. The senior authors would like to thank the Tennessee Division of Archaeology for permitting an analysis of the beads. Thanks also to Lynne P. Sullivan for providing information and insight towards this study. We are grateful to Jan F. Simek for access to the Tracer III-V Light Element Analyzer portable X-ray fluorescence instrument housed at the University of Tennessee-Knoxville, Department of Anthropology. The artifact images in Figure 1 were prepared by Aaron Deter-Wolf.

References

Aldenderfer, M., Craig, N.M., Speakman, R.J. and Popelka-Filcoff, R.
2008 Four-thousand-year-old Gold

Artifacts from the Lake Titicaca Basin, Southern Peru. *Proceedings of the National Academy of Sciences of the United States of America* 105(13): 5002–5005.

Araújo, M.F., L.C. Alves, and J.M.P. Cabral
1993 Comparison of EDXRF and PIXE in the Analysis of Ancient Gold Coins. *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms* 75(1-4): 450-453.

Benson, E.P. (editor)
1979 *Pre-Columbian Metallurgy of South America*. Dumbarton Oaks, Washington, D.C.

Ehrhardt, K. I.
2009 Copper Working Technologies, Contexts of Use, and Social Complexity in the Eastern Woodlands of Native North America. *Journal of World Prehistory* 22(3), 213–235.

Deagan, K.
1987 *Artifacts of the Spanish Colonies of Florida and the Caribbean, 1500-1800, Volume I: Ceramics, Glassware, and Beads*. Smithsonian Institution Press, Washington, D.C.

Gordon, R. and R. Knopf
2007 Late Horizon Silver, Copper, and Tin from Machu Picchu, Peru. *Journal of Archaeological Science* 34: 38-47.

Guerra, M. F.
1995 Elemental Analysis of Coins and Glasses. *Applied Radiation and Isotopes* 46(6-7): 583-588.

- 1998 Analysis of Archaeological Metals. The Place of XRF and PIXE in the Determination of Technology and Provenance. *X-Ray Spectrometry* 27: 73-80.
- Henderson, J.
2000 *The Science and Archaeology of Materials: An Investigation of Inorganic Materials*. Routledge, London and New York.
- Janssens, K., G. Vittiglio, I. Deraedt, A. Aerts, B. Vekemans, L. Vineze, F. Wei, I. Deryck, O. Schalm, F. Adams, A. Rindby, A. Knöchel, A. Simionovici, and A. Snigirev
2000 Use of Microscopic XRF for Non-destructive Analysis in Art and Archaeometry. *X-Ray Spectrometry* 29: 73-91.
- Leader, J.M.
1993 *Technological Continuities and Specialization in Prehistoric Metalwork in the Eastern United States*. University of Florida Press, Gainesville.
- Laronge, M.
2001 An Experimental Analysis of Great Lakes Archaic Copper Smithing. *North American Archaeology* 22 (4) 371-385.
- Martin, S.R.
1999 *Wonderful Power: The Story of Ancient Copper Working in the Lake Superior Basin* Wayne State University Press, Detroit.
- Mitchem, J.M. and J.M. Leader
1988 Early Sixteenth Century Beads from the Tatham Mound, Citrus County, Florida: Data and Interpretations. *The Florida Anthropologist* 41(1): 42-60.
- Mitchem, J.M., M.T. Smith, A. C. Goodyear, and R.R. Allen
1985 Early Spanish Contact on the Florida Gulf Coast: The Weeki Wachee and Ruth Smith Mounds. In *Indians, Colonists, and Slaves: Essays in Memory of Charles H. Fairbanks*, edited by K.W. Johnson, J.M. Leader, and R.C. Wilson, pp. 179-219. Florida Journal of Anthropology Special Publications No. 4. Florida Anthropology Student Association, University of Florida, Gainesville.
- Patterson, C.
1971 Native Copper, Silver, and Gold Accessible to Early Metallurgists. *American Antiquity* 36: 286-321.
- Rahm, A.
1993 *The Basics of Soldering*. John Wiley and Sons, Inc., New York.
- Ruvalcaba-Sil, J.L., and G. Demortier
1996 Elemental Concentration Profile in Ancient Gold Artifacts by Ion Beam Scattering. *Nuclear Instruments and Methods in Physics Research B* 113: 275-278.
- Smith, H.G.
1956 *The European and the Indian: European-Indian Contacts in Georgia and Florida*. Florida Anthropological Society Publications 4. Gainesville, Florida.
- Tennessee Division of Archaeology
2013 David Davis Farm NAGPRA Inventory. Copy on file, Tennessee Division of Archaeology, Nashville.

Vandecasteele, C. and C. B. Block
1993 *Modern Methods for Trace Element
Determination*. John Wiley and
Sons, Ltd., West Sussex, England.

Sarah A. Blankenship
Department of Anthropology
University of Tennessee
Knoxville, TN

Bruce Kaiser
Bruker Elemental
Kennewick, WA

Michael C. Moore
Tennessee Division of Archaeology
Nashville, TN

NEGATIVE PAINTED PLATES AND BOWLS FROM THE MIDDLE CUMBERLAND REGION OF TENNESSEE

Emily L. Beahm and Kevin E. Smith

This report presents new information on interior negative painted plates and bowls from the Middle Cumberland region of Tennessee. While these specimens compare favorably to the type Angel Negative Painted, they appear to reflect a distinctive regional variant rather than imports from the more common production areas in the Ohio Valley proper.

On-going research on Mississippian ceramics from the Central Basin of Tennessee includes tabulation of the distribution of chronologically significant "minority types" (see Smith et al. 2004). The "Tennessee-Cumberland region" has long been recognized as a center of production for certain forms of negative painted ceramics:

Only in the Tennessee-Cumberland region, on the lower Ohio, and on the Mississippi below the mouth of the Ohio does [negative painting] occur in sufficient force to be regarded as an important element in local pottery complexes. In the Tennessee-Cumberland and on the lower Ohio it appears to have been virtually the only type of painted decoration; on the Mississippi, particularly in southeast Missouri, it competes with direct painting on approximately equal terms, and is often combined with it... The Tennessee-Cumberland, therefore, both from the standpoint of quality and central location, appears to be the primary center of diffusion... (Willey and Phillips 1944: 175).

Eventually, Philip Phillips, James A. Ford, and James B. Griffin (1951:173-177) defined three negative painted pottery types for the eastern United States -- Nashville Negative Painted, Sikeston Negative Painted, and Angel Negative Painted. These definitions were based primarily on geographic distribution (Tennessee-Cumberland, southeast Missouri, and lower Ohio valley, respectively) but also to some extent on vessel form and the presence or absence

of a slip. Although Phillips (1970:139-141) later reduced these to a single Nashville Negative Painted type with several varieties in his seminal presentation of the Lower Mississippi Valley typology, many if not most researchers continue to use some variant of the 1951 definitions. Generally speaking, Nashville Negative Painted and Sikeston Negative Painted are used in reference to different types of bottles, while Angel Negative Painted refers to the use of the resist technique on plate and bowl forms.¹

It should be emphasized that negative painting seems to be the only form of painted decoration in the Cumberland area. It is also significant that negative painting in the Cumberland is strongly associated with effigy forms which does not seem to be the case at the Angel Site or in southeast Missouri, the two other major Southeastern centers of this technique (Phillips, Ford, and Griffin 1951:175).

Detailed examination of the occurrence of Nashville Negative Painted in the Tennessee-Cumberland region is beyond the scope of this brief report. Here, we restrict our focus to the distribution within the Central Basin of a minority type -- Angel Negative Painted. General knowledge that the Nashville area has yielded some Angel Negative Painted plates is not a new thing -- Phil Phillips acknowledged the presence of "dishes or plates" in his original description of Cumberland ceramics

(Phillips 1939:399-342):

Shapes in Lost Color: Shapes are more varied than appears in the present collection. In general they comprise tall-necked bottles (carafes), dishes or plates with straight flaring sides and effigies in considerable variety, both animal and human...

In brief, with the exception of shallow dishes or plates, of which more anon, lost color decoration seems to have been confined to bottles and kindred shapes that might conceivably have evolved out of bottles...

There are no plates or bowls with lost color decoration in the present collection. One finds, however, some evidence in published descriptions that such a thing occurs, but it is impossible to say very much about it. Later we shall see that the shallow soup plate is commonly associated with lost color decoration in the region of the lower Ohio. Its occasional occurrence here is therefore not surprising...

Phillips, Ford, and Griffin (1951:174-176) further recognized a minority distribution of negative painted plate forms outside the Ohio Valley proper:

A few plates with decoration on the inner rim are found in the Cumberland area around Nashville, but the great center for this shape is apparently at the Angel Site in southwestern Indiana. The most common shape in the negative-painted ware of the Cumberland is the carafe-neck bottle, often with four lobes on the body separated by shallow vertical grooves...

The negative-painted plate illustrated by Thruston from the Nashville area may be from Angel...

These brief notations remained the most comprehensive examination of negative painted plates in the Nashville Basin for over six decades. The discovery of a single well-preserved negative-painted plate rim sherd (Figure 1) during 2005 excavations at the Castalian Springs Mounds (40SU14) prompted a more thorough review of the literature and collections (Beahm and Smith 2008).



FIGURE 1. Angel Negative Painted sherd with Motif 1 from Unit N1000E982, Level 7, Castalian Springs.

Interior Negative Painted Plates and Bowls

Decoration of any form (e.g. incising, engraving, painting, or modeling) is relatively rare on Mississippian ceramics from the Nashville Basin -- most assemblages exhibit in excess of 98% plain surfaced sherds. As a result, any vessel type with surface modification that might potentially serve as a chronological marker becomes exceptionally significant. Negative painted plates from the Nashville Basin generally fit the established type definition for Angel Negative Painted in terms of vessel form, but do not clearly conform to the established varieties at the Angel site or environs. Notable distinctions for most of the Middle

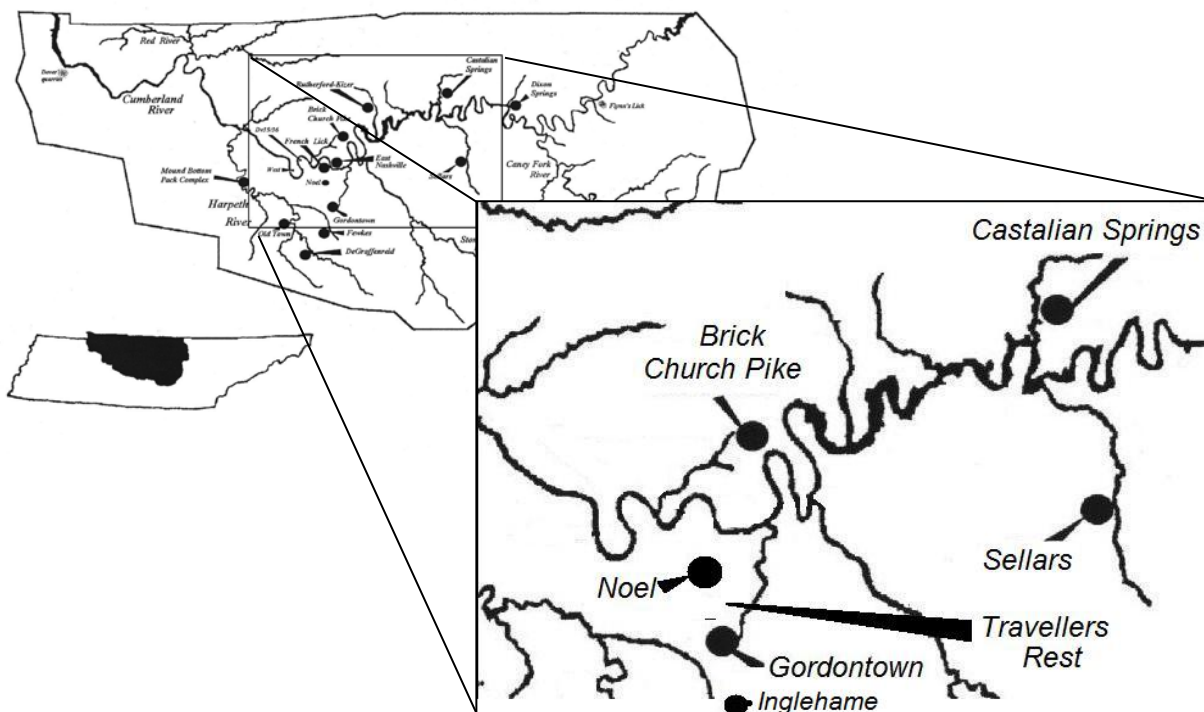


FIGURE 2. Selected Nashville Mississippian Sites and sites yielding Angel Negative Painted vessels/sherds (inset).

Cumberland region (MCR) vessels include: 1) the application of a black/dark brown negative design over an un-slipped paste; and 2) the occasional (frequent?) extension of the negative painted design into the "well" of the vessel.

Research in the Ohio Valley, American Bottom, and Illinois Valley has determined plate morphology to be temporally significant over a relatively large geographic area. The series consists of (from early to later) short rim plates, standard rim plates, and deep rim plates. The temporal sequence of forms established at the Angel site places short rim plates ca. A.D. 1200-1275, standard rim plates ca. A.D. 1275-1325, and deep rim plates ca. A.D. 1325-1450 (Hilgeman 2000). Hilgeman (2000) also summarizes sequences for other areas as paraphrased below.

In western Kentucky ceramic assemblages, O'Byam Incised variety

Adams (short rim plate with incised chevron patterns on rim) predates O'Byam Incised variety *O'Byam* (standard plate with incised line-filled triangular patterns on rim). A late, deep rim plate with engraved line work in this area is O'Byam Incised variety *Stewart*. Variety *Adams* is characteristic of the Dorena (A.D. 1100-1300) and Middle Wickliffe (A.D. 1200-1250) phases. Variety *O'Byam* is associated with the Medley (A.D. 1300-1500), Late Wickliffe (A.D. 1250-1350), and Angelly (A.D. 1200-1300) phases. Deep rim plates are characteristic of the Tinsley Hill phase (A.D. 1300-1450).

Within the American Bottom and Illinois Valley, Wells Incised variety *Broad Trailed* (short rim plate) predates Wells Incised variety *Fine Incised* (standard plate). Both varieties are followed by Crable Deep Rimmed Plates. Variety *Broad Trailed* is characteristic of the earlier part of the Morehead phase (A.D.

1200-1275) as well as the Orendorf phase (A.D. 1200-1275). Varieties *Broad Trailed* and *Fine Incised* occur during the later Morehead and Sand Prairie phases (A.D. 1200-1275 and A.D. 1275-1350) and the Orendorf and Larson phases (A.D. 1200-1275 and A.D. 1275-1325). Crable Incised is associated with the Crabtree (A.D. 1300-1350) and Crable (A.D. 1350-1425) phases.

Angel Negative Painted Ceramics from the Nashville Basin

To date, twenty-three Angel Negative Painted sherds or vessels have been identified from at least four and possibly as many as six Mississippian sites in the Nashville Basin (excluding a questionably provenienced whole vessel reportedly from the Cumberland Plateau). With the exception of Travellers' Rest (40DV11) and Inglehame (40WM342), each of the sites are large towns with one or more platform mounds (Table 1; Figure 2).

Over half of the known examples ($n=14$; 61%) derive from excavation at the Castalian Springs Mounds (40SU14) located northeast of Nashville in Sumner County, Tennessee. (Figures 1,3-8). The single whole vessel was excavated by William Edward Myer during 1891 from one of the final burials in Mound 1, the site's primary mortuary mound (Figure 9). Modern excavations recovered a single sherd from a structure atop Mound 3, the small platform mound located on the northwestern corner of the plaza, with the remaining sherds from modern excavations deriving from midden deposits throughout the southwestern portion of the site (Figure 10).

William Myer also recovered fragments from at least three negative painted plates during his 1920 excavation at the Gordontown site (40DV6) located in

Davidson County, Tennessee (Moore and Breitburg 1998; Moore et al. 2006; Myer 1928). In his published report, he provided only "reconstruction drawings," prompting later scholars to disregard those vessels as mis-interpretations (Figures 11-12). Recent examination of the Gordon collections housed at the Smithsonian Institution indicates that while Myer's interpretations of the design elements may not be entirely accurate, the sherds certainly derive from exceptionally well made negative painted plates (Figures 13-14). The sherds were recovered from three structures – one adjacent to platform mound A (House 1) and the others in the residential area to the south. In fact, Myer recovered sherds from all of the structures investigated at Gordontown with the exception of House Circle 18 (Figure 15).

Examples of Angel Negative Painted plates have also been identified at several additional sites in the Nashville area, including a large vessel rim sherd from the Brick Church Pike Mounds in Davidson County (40DV39; Figure 16). Two sherds were also identified during re-analysis of materials excavated in 1977 from the Sellars site in Wilson County (40WI1; Figure 17). Both of these sherds came from a probable residential structure located in the eastern village (Figure 18). A single rim sherd was recovered during 1996 excavations at Travellers' Rest, a large probably palisaded town site in Davidson County (40DV11; Figure 19). The context was heavily disturbed by tree roots, but falls within a presumed residential area of the site (Figure 20). Finally, at least two negative painted plate or bowl sherds were recovered during limited investigations at Inglehame, a substantial village site in Williamson County (40WM342; Figure 21; Dicks 2004).

Table 1. Contextual Data for Angel Negative Painted Sherds from the Middle Cumberland Region

Provenience	Vessel form and Comments	Contextually Associated Radiocarbon Dates
40DV6 "House Circle 1"	Wide-rim plate; brownish-red exterior, decorations are white on a black ground; "Small fragments" from single partially reconstructible vessel "scattered in black loam."	
40DV6 "House Circle 3"	Wide-rim plate; black on exterior and cream on interior; decorations were black on a cream background; "Small fragments" from single partially reconstructible vessel "scattered in black loam."	
40DV6 "House Circle 23"	Wide-rim plate; whitish cream on both exterior and interior; decorations are cream on a black ground; "Small fragments" from single partially reconstructible vessel "scattered in black loam."	
40SU14 N1000E982/L7	Wide-rim plate; black-on-cream decoration; Single rim sherd from deeply buried midden on southern edge of site; rim is 67 mm in width.	UGCAG 08-022 V1; RCYBP 745±70; <u>A.D. 1160-1330 (0.86)</u> . Sample directly adjacent to sherd
40SU14 Fea. 100 (Pit)	Plate; black/brown-on-buff decoration; Rim sherd.	Beta 32129; RCYBP 590±30; <u>A.D. 1300-1370 (0.71)</u> . Near base of the pit feature containing Angel sherd.
40SU14 N1108E752/L5	Plate, black/brown on buff; One rim and three body sherds.	
40SU14 Fea. 119/L6 (Pit)	Plate, black/brown on buff; Rim sherd.	Beta 322130; 550±30; <u>AD 1310-1360 (0.42)</u> . Ca. 10 cm above sherd in Fea. 119 Beta 322134; 620±30; AD 1290-1400 (1.0). Ca. 20 cm below sherd within Feature 119
40SU14 N1060E808/L3	Plate, black/brown on buff; Three rim and one body sherd.	
40SU14 N1066E804/L6	Plate, black/brown on buff; One rim.	
40SU14 Mound 1, Grave 1	Shallow bowl or plate "12 inches in diameter and 3 inches in height"; Extended adult; buried with one of the final interments in Mound 1. Bowl was located to left of the feet. Negative painted carafe neck bottle to right of the hand; bone awl near pelvis; shell bead bracelets on both wrists.	
40SU14, Mound 3, N1167E792/L3	Plate, black/brown on buff; Partial rim sherd, equal arm cross in circle.	a) Beta 322136; 770±30; AD 1220-1280 (1.0). Directly associated with Angel sherd; b); Beta 322134; 620±30; A.D. 1290-1400 (1.0). From arbitrary level ca. 20 cm below sherd; c) Beta 322135; 670±30; A.D. 1280-1320 (0.55). From arbitrary level approximately 10 cm above sherd; d) Beta 322142. 610±30. A.D. 1300-1400 (1.0). Feature 377, hearth/firepit located approximately 30 cm beneath sherd.
40DV39	Wide-rim plate/deep-rim bowl; One large rim sherd recovered by collector from utility trench excavation.	
40WI1, Trench 3	Wide-rim plate? Rim sherd and body sherds from "midden" in 8-10 m section, Trench 3, Level 3; 1981 excavations by Tennessee Division of Archaeology.	UGA-4552; RCYBP 730±80; A.D. 1150-1410 (0.99). Structure 3, Feature 67 Hearth
40WM342	Plate/shallow bowl? Two sherds; three "possible" sherds.	
40DV11	Wide-rim plate? Rim sherd from disturbed midden, 1996 excavations by Vanderbilt University field school.	
Cumberland Plateau Site Unknown	Wide-rim plate. Reportedly dug by private individual from undisclosed rockshelter near the Cumberland River.	



FIGURE 3. Partial rim and well sherd exhibiting Motif 2 (Feature 100, N1108E702/704/706, N1106E704, Level 5), Castalian Springs.



FIGURE 4. Castalian Springs, N1108E752, Level 5.



FIGURE 5. Motif 1 sherd (N1108E742, Level 6, Feature 119, Castalian Springs).



FIGURE 6. Castalian Springs sherd exhibiting Motif 2 (N1066E804, Level 6).



FIGURE 7. Castalian Springs sherd exhibiting Motif 3 (N1060E808, Level 3).



FIGURE 8. Plate rim fragment with Motif 3, Castalian Springs, Mound 3, N1167E792, Level 3 (CSAP 11-4-174).



FIGURE 9. Reconstruction drawing of Angel Negative Painted bowl from Grave 1, Mound 1, Castalian Springs (Myer 1928).

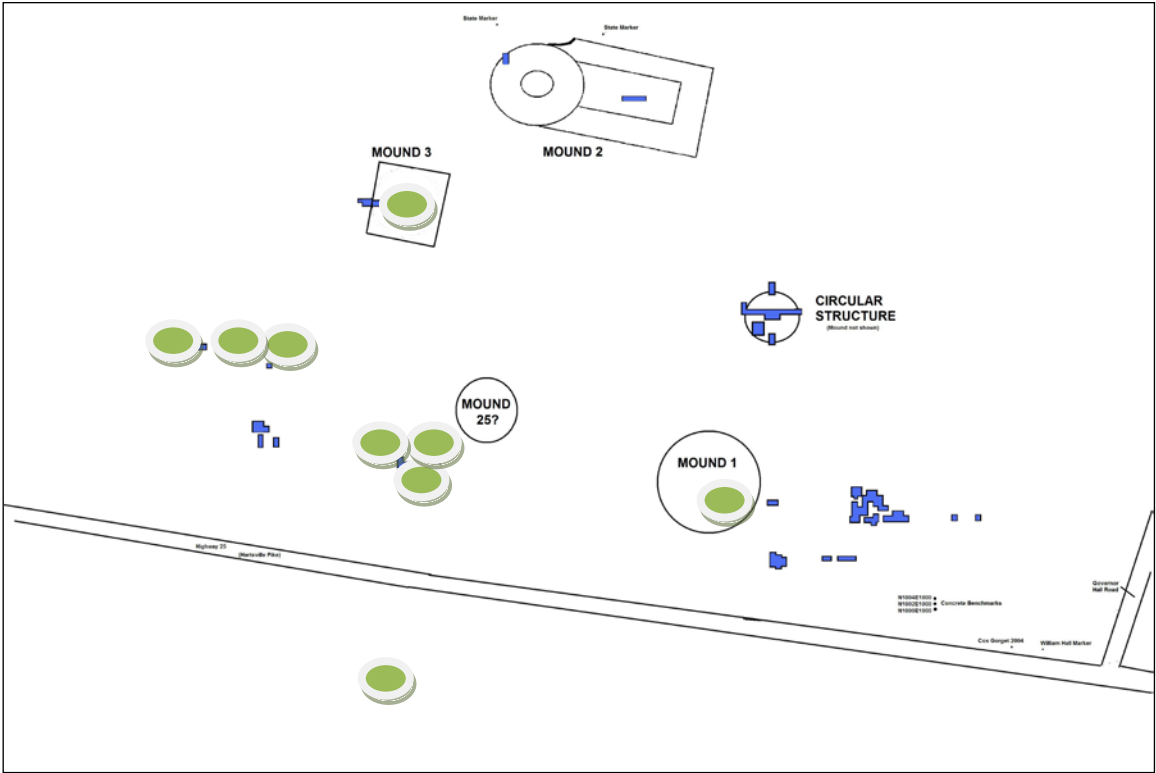


FIGURE 10. Locales yielding Angel Negative Painted sherds at Castalian Springs (40SU14).

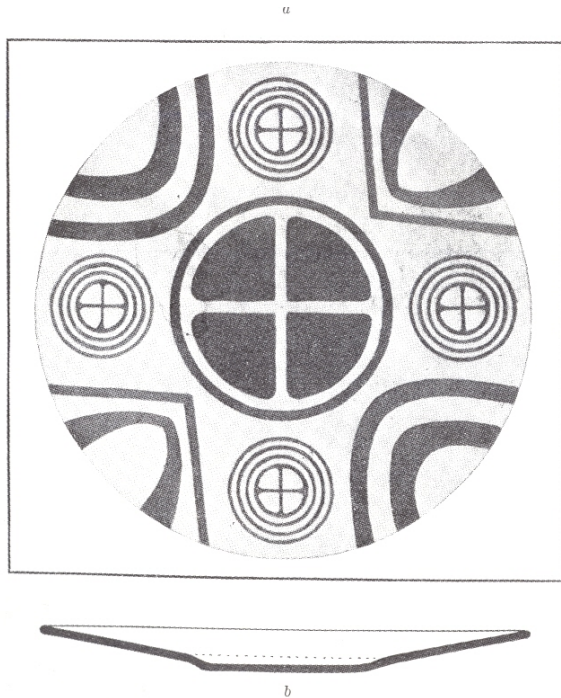


FIGURE 11. Reconstruction drawing of Angel Negative Painted Plate from "House Circle 3," Gordontown (Myer 1928)

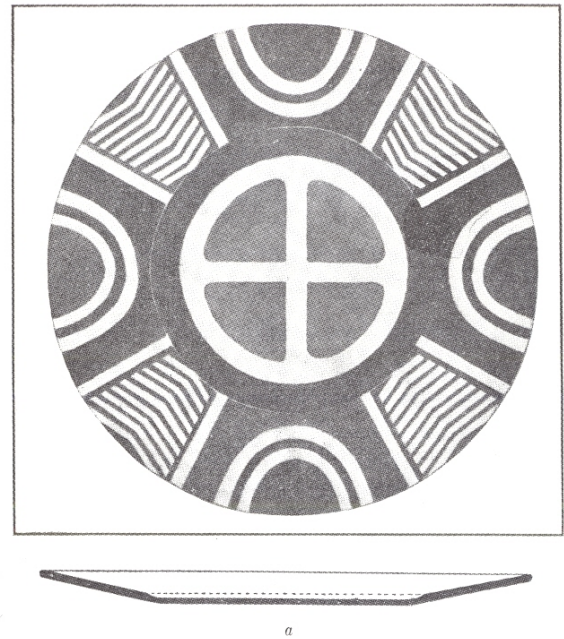


FIGURE 12. Reconstruction drawing of Angel Negative Painted plates from "House Circles" 1 and 23, Gordontown (Myer 1928)



FIGURE 13. Negative painted plate sherds, Gordontown (40DV6), Davidson County, Tennessee. Left: House Circle No. 3; Right: Either House Circle No. 1 or 23 (Photograph by Kevin E. Smith; Courtesy Department of Anthropology, National Museum of Natural History, Smithsonian Institution).



FIGURE 14. Negative Painted plate rim from Gordontown (40DV6) exhibiting Motif 2, probably from either House Circle No. 1 or 23. (Photograph by Kevin E. Smith; Courtesy Department of Anthropology, National Museum of Natural History, Smithsonian Institution).

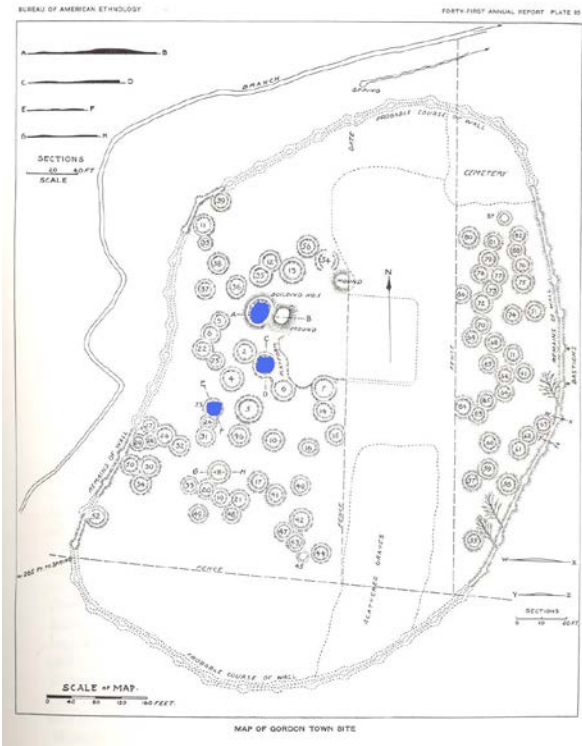


FIGURE 15. Provenience of Angel Negative Painted from Gordontown (after Myer 1928).



FIGURE 16. Angel Negative Painted sherd from Brick Church Pike Mounds exhibiting Motif 1 (Courtesy, Michael C Moore).



FIGURE 17. Angel Negative Painted rim sherds from Sellars (40W11), Trench 3, 8-10 m section, Level 3 -- left motif 3, right motif 1.

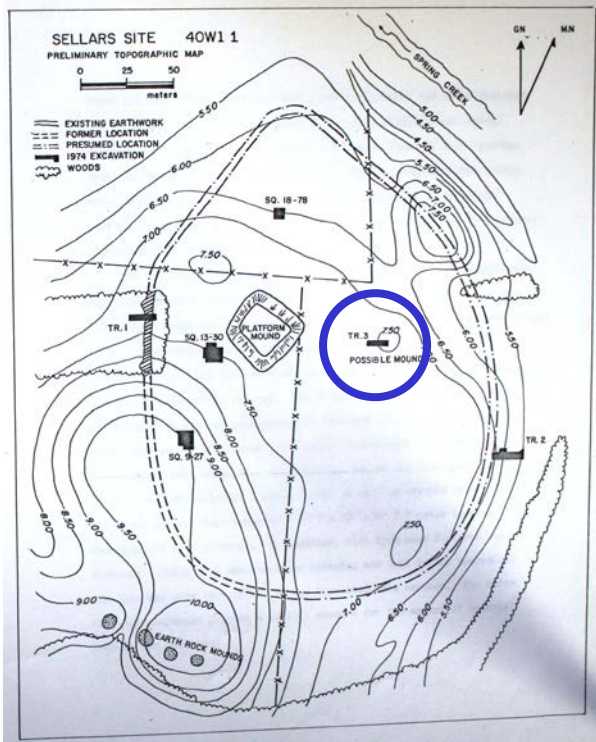


FIGURE 18. Sellars site showing location of Trench 3 (Site Information Files, Tennessee Division of Archaeology, Nashville).

FIGURE 19. Angel Negative Painted rim sherd from Traveller's Rest (40DV11).

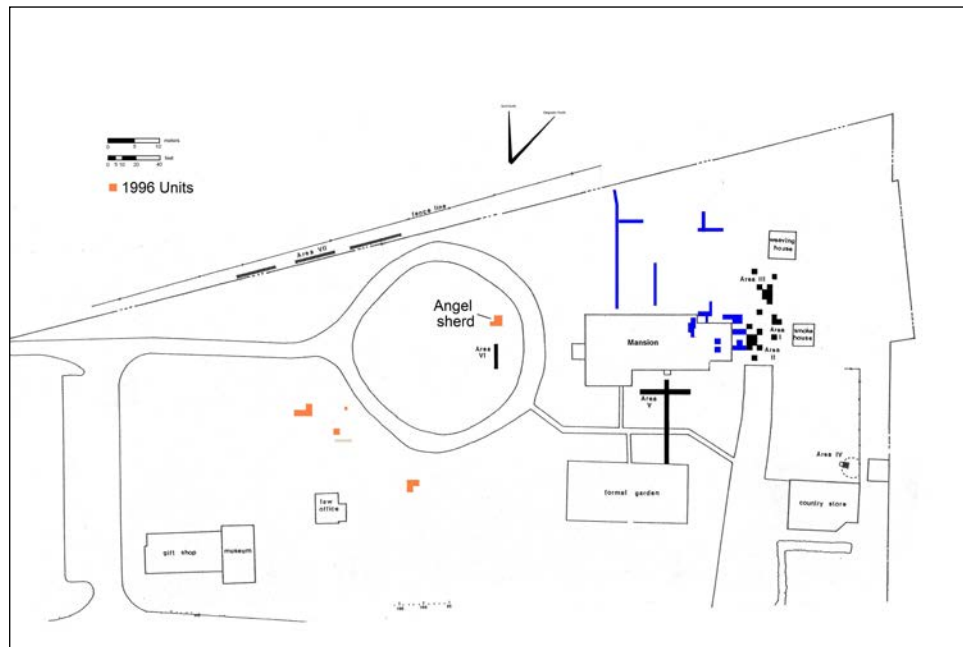


FIGURE 20. Provenance of sherd from Travellers Rest (40DV11).

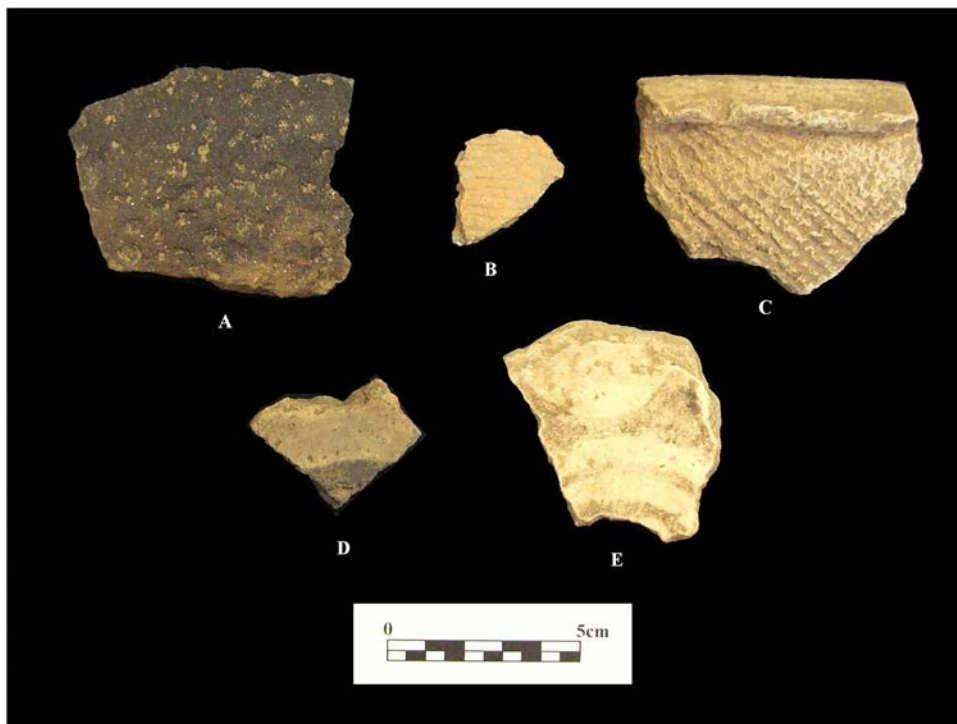


FIGURE 21. Negative painted plate sherds from Inglehame site (40WM342), Williamson County, Tennessee (D and E; Dicks 2004).

Two additional whole vessels from the Middle Cumberland region have been documented. The first is that mentioned by Phillips (1939) -- an apparent deep rim bowl recovered by Thruston's workers from the "Noel Cemetery" during the late 19th century (Figure 22).² The Noel site (40DV3) appears to have initially been comprised of a small mound-village complex later used as a stone-grave "necropolis" (Smith and Moore 2009; Smith et al. 2010). The final example is a poorly provenienced vessel (current whereabouts unknown) that was reportedly "dug" from a rockshelter somewhere along the Cumberland River on the plateau (Figure 23).

While our examination of other Tennessee collections and literature has not been exhaustive, negative painted plates are mentioned in passing from other contexts in the Tennessee River drainage. For example, Baldwin (1953:11-12) reported on an "unusual" plate found

surface collecting on the Long Island site (40RE17) in Roane County, Tennessee (Figure 24). In addition, during examination of Works Progress Administration collections from the Lower Tennessee valley, Quentin Bass defined Type 36D (negative painted plates) as "fifteen plate fragments, three examples with distinguishable sun, circle and cross motif" (Bass 2006:290). Of the twelve with provenience, nine are from the Gray Farm site (40SW1) including all three examples with distinguishable cross and sun-circle motifs (Figure 25). The sherds were recovered from the plowzone ($n=2$), Level 1 ($n=5$), Level 2 ($n=3$ -- including two sun-circles), Level 3 ($n=1$, sun circle), and Level 5 ($n=1$). The remaining three with provenience were from the Patterson site (40HS12) -- Unit 70, Level 4: Phase A ($n=2$), and Phase B ($n=1$).

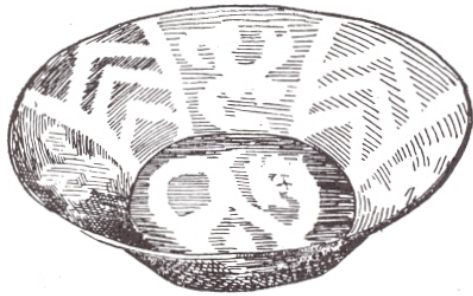


FIGURE 22. Negative painted deep rimmed bowl. Noel Cemetery (Thruston 1897, Figure 41).

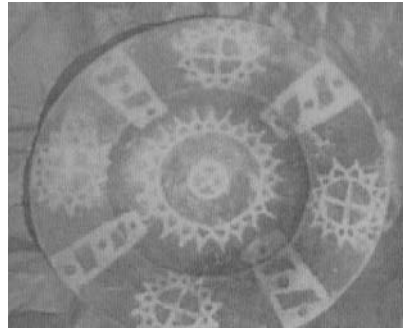


FIGURE 23. Angel Negative Painted plate reportedly from rockshelter on the Cumberland Plateau (Courtesy, Tom Des Jean).

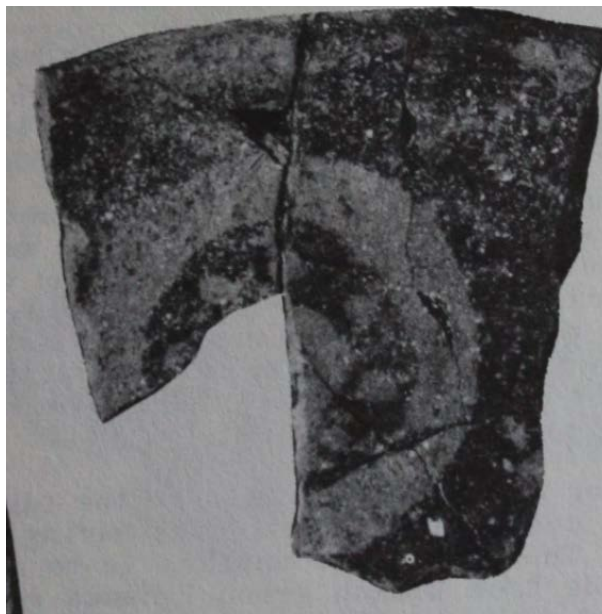


FIGURE 24. Negative painted plate rim sherd from Long Island, Roane County, Tennessee (Baldwin 1954:12).

In sum, while the sample of twenty sherds and three whole vessels from the MCR seems small – relatively speaking, these quantities are significant. The sample from modern excavations at Castalian Springs alone is larger than the combined sample of all such sherds known from other sites in Indiana (excluding Angel). While the meaning of this pattern will require additional research to elucidate, the observation of a significantly broader geographic

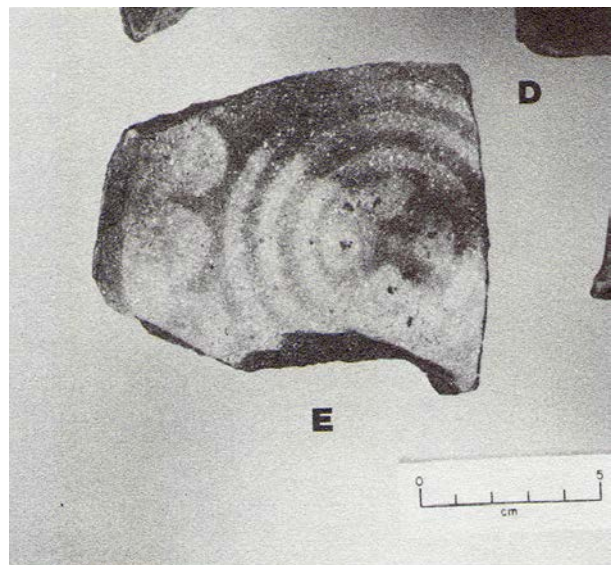


FIGURE 25. Negative Painted plate from lower Tennessee River Valley ("E" on figure; Bass 2006: Figure A-13).

distribution of this vessel form is significant in and of itself. Additional similarities can be noted in the intra-site distribution – all of the sherds from the MCR derive from midden deposits while the only two well-documented whole vessels were recovered from stone-lined graves.

Prior to this study, no Middle Cumberland radiocarbon dates from contexts directly associated with negative painted plate were available. Recent

reanalysis of the 1981 ceramic assemblage from Sellars (40WI1) yielded two sherds from a previously dated context (Table 1). Here, we report eight additional dates from Castalian Springs that are directly relevant to negative painted plates (Table 1). Interpretation of the contexts from which the sherds derive suggests a relatively tight period of deposition from A.D. 1250 to 1350. While directly associated dates are not available at the other sites yielding Angel Negative Painted sherds, each site has occupations overlapping at least part of this time range (Moore and Smith 2009). At the Angel site, this corresponds primarily to the latter part of the Angel 2 phase (A.D. 1200-1325). As discussed further below, the majority of the MCR negative painted flatwares are short rim or standard rim plates -- dated to between A.D. 1200 and 1325 at the Angel site (Hilgeman 2000). More recent research at Angel suggests that the negative painted plate horizon at Angel probably dates to after A.D. 1250 (Monaghan and Peebles 2010). Taken as a whole, we propose the currently available data support production of negative painted plates and bowls in the MCR between A.D. 1250 and 1350, with the possibility that they might be produced slightly earlier and later.

Vessel Forms and Motifs

Negative painting in the MCR appears to occur on several related but distinct vessel forms comparable to those identified at the Angel site: short rim plates, standard rim plates, and deep rim plates (sometimes referred to as flared-rim bowls). Although not attested in modern excavations, interior negative painting may also occur on a form better described as a pan (if Myer's profile drawing is indeed accurate; see Figure 9).

Unfortunately, most of the rim sherds are only partial and do not permit accurate measurement of the rim width prior to the well break. However, the majority appear to derive from short and standard rim plates, with a possible representation of deeper rim plates/flared rim bowls (Figure 22).

Motifs appear to fall into at least three categories: 1) a double fringed line associated with plain lines (possibly a variant of the striped and/or dotted pole; see Figures 1, 5, 16 and 17); 2) a dotted field bordered by lines (Figures 3, 6, and 14); and 3) an equal arm cross within a circle or concentric circles (Figures 7, 8, and 17). Motif 1 is currently known only from Nashville area sites, although a potential but not entirely convincing comparison can be made with a few examples from the Angel site ($n=8$) where a similar "pole" with petaloid border serves as the separator for crested birds on cruciform design plates (see Hilgeman 2000:Figure 5.8E). The association of crested birds with a "pole divider" may be of some importance, given our assertion that Castalian Springs was probably one of the centers of production for the Cox group marine shell gorgets (Smith and Beahm 2011). A second potentially analogous example is illustrated on the Ramey tablet from Cahokia, which although broken in half, presumably originally illustrated four crested birds separated by a striped pole on one side and four agnathous human heads also separated by a striped pole on the other.

The available sherds do not permit a coherent evaluation of design structure, but a few observations can be made. The most common design structure at the Angel site involves triangular design fields either descending from the rim or ascending from the well (frequently alternating). None of the sherds from the

MCR suggest bounded triangular designs. While tentative at this point, the basic design field appears to consist of a possibly cruciform layout with cross-in-circles separated by "fringed pole" motifs. The design layout of the sherds exhibiting dotted areas bounded by lines remains unclear, but the handful of available sherds again do not appear to conform to a triangular design field. In sum, our available data suggest that the MCR plates are more comparable to the cruciform design plates at Angel exhibiting "Southeastern Ceremonial Complex" motifs with different types of line dividers. The other significant difference between the Angel site negative painted plates and those from the Central Basin of Tennessee is that at least several of the MCR sherds clearly show that negative painting continues into the well of the vessel -- a pattern not noted at Angel and one that leads us to suggest the MCR vessels are a distinctive variant.³

Conclusions

While the Angel site clearly remains the preeminent center of production for negative painted plates in the Mississippian world, the geographic distribution of negative painted plates also clearly includes a significant representation in the Middle Cumberland region between about A.D. 1250-1350 -- and potentially in the Tennessee River valley as well on a similar timeframe. The apparent distinctions between the design fields and motifs of the MCR plates and those of the Angel site and environs suggests local production rather than import, although further examination of that hypothesis is in progress. Nonetheless, we suggest that the current observations are of particular significance -- they underline a long pondered but

poorly documented relationship between the Angel site and several sites in the MCR, particularly during the A.D. 1200-1325 period. While the nature of that relationship remains unclear, on-going research programs in both regions should recognize and consider the potential ramifications as time proceeds. Our re-examination of older collections also suggests that negative painted plates have been overlooked or under-reported from Tennessee ceramic assemblages -- where only a sherd or two is present, these are often relegated to a brief mention. In other instances, we suggest that the negative painted designs are so fugitive that they have gone unnoticed during analysis. As our personal experience indicates, the negative painting from the MCR is often so faded that it is often only noticeable to a trained eye that is specifically "watching for it." In many instances, the negative painting is "invisible" on both bottles and plates unless the sherds are damp -- in other words, unless noted in the field when being recovered from moist soils or while being washed in the lab, the negative painting is not visible to the untrained eye. As a result, we suggest that re-examination of plate sherds from many sites in Tennessee and Kentucky might yield previously unnoted examples.

Additionally, we note another pattern that may be of significance. In the MCR, only a single site (Castalian Springs, 40SU14) has yielded examples of both Angel Negative Painted and O'Byam Incised. O'Byam Incised is also a rare type in the Nashville area and has been proposed as restricted to the A.D. 1300-1420 timeframe in the region (Smith et al. 2004). Prior to this report, all known examples from the MCR were assigned to var. *Stewart*. The singular clearly identifiable incised rim plate from



FIGURE 26. O'Byam Incised var. *Adams* plate rim sherd from Castalian Springs (Feature 94, N1108E708/710).

Castalian Springs is most comparable to O'Byam Incised var. *Adams* based on the apparent short rim and wide lines (Figure 26). Hence, we suggest the likelihood of a general shift from (negative) painting to incising on plate forms in the Middle Cumberland region took place between about A.D. 1300-1350. This mirrors a similar shift in frequency of negative painted bottle forms to incised bottle and jar forms at approximately the same time. While the limited sample of both does not permit strong conclusions to be drawn, the pattern revealed by examination of these two minority ceramic types is suggestive of a broad shift in decorative styles within the MCR, with negative painting dominating in the period prior to A.D. 1325-1350 and incising dominating thereafter.

Finally, the context for well-provenienced sherds indicates they were most frequently discarded in residential midden contexts. Similar to the pattern observed at Angel, deposition as whole vessels in mortuary contexts is apparently extraordinarily rare. Despite the excavation of tens of thousands of stone graves throughout the Middle Cumberland region, only a single example has been

noted (in Mound 1 at Castalian Springs). With few exceptions, the majority of decorated vessel types from the MCR are commonly found in both residential and mortuary contexts. Why Angel Negative Painted is treated differently remains unclear at this point in our analysis. At Castalian Springs, negative painted plates have been found in middens associated with all investigated residential housing clusters. A single sherd was recovered from the summit of Mound 3 (northwest corner of the plaza). Finally, inclusion of a whole or nearly whole negative painted plate with the final or near-final interment in Mound 1 (and not with any of the ca. 100 earlier burials in that monument) could be interpreted as part of the series of ritual events that accompanied the abandonment of the center around A.D. 1350. Equally notable are the places where negative painted plates have *not* been recovered. Despite relatively extensive investigations, these plates were not identified in the large and presumably communal Circular Structure at the northeast corner of the plaza; the large rectangular special-purpose building outside the southeast corner of the plaza; or on the summit or flanks of Mound 2.⁴

In conclusion, our primary goal herein is to expand the known geographic distribution of negative painted plate production through documentation of the small but significant quantities from the Cumberland River valley of Middle Tennessee (with notation of examples from portions of the Tennessee River valley as well). While Angel remains the preeminent locale for negative painted plate production, the two dozen examples from the Nashville area are comparable to the quantities known from regions of the Ohio valley outside of Angel proper. In addition, the diversity of motifs and treatments present in this minority type

adds some intriguing new questions about potential interaction spheres and chronology within the Middle Cumberland region.

Notes

- ¹ Sherri Hilgeman provides a useful overview of the history of negative painted type designations in *Pottery and Chronology at Angel* (Hilgeman 2000:163-165).
- ² While this bowl may survive as one of the deep-rim bowls in the Thruston collection curated by the Tennessee State Museum, the negative painting was apparently not visible during the 1965 or 1982 inventories of the collection.
- ³ Although Curry (1949) notes in reference to her study of the Angel ceramics that "with but few exceptions the decoration is confined to the rim of the vessel. On one large fragment the design goes over the entire inside of the vessel, both rim and base."
- ⁴ The distribution of negative painted plate fragments at Castalian Springs is not inconsistent with Hilgeman's suggestion (2000:191-203) that these plates functioned in an ancestral version of the "New Fire Ceremony" The presence of a single sherd on the summit of Mound 3 is also not inconsistent with such as assertion, since one of the structures atop this earthwork may have housed the "sacred fire" of the community (Smith et al. 2012). However, as noted by an anonymous reviewer, the limited sample size even at the Angel site does not permit adequate testing and evaluation of this hypothesis.

Acknowledgements. The authors thank Michael C. Moore and Tom Des Jean for providing information for two of the Angel Negative plates/bowls. Funding for radiocarbon dates was provided in part by grants from the Office of the Dean, College of Liberal Arts, the Tennessee Council for Professional Archaeology, the Tennessee Division of Archaeology, and the Castalian Springs Archaeological Project fund. While retaining responsibility for any errors or omissions herein, we thank the anonymous reviewers for comments and suggestions on an earlier version of this paper.

References

- Baldwin, W.H.
1953 Salvage at Long Island in Roane County. *Tennessee Archaeologist* 9(1):11-12.
- Bass, Quentin
2006 Sociopolitical and Economic Aspects of the Mississippian Occupation in the Lower Tennessee River Valley. Published by the author. Copy on file, Middle Cumberland Mississippian Survey, Department of Sociology and Anthropology, Middle Tennessee State University, Murfreesboro.
- Beahm, Emily L. and Kevin E. Smith
2008 Preliminary Report of the 2005 Archaeological Field Season at the Castalian Springs Mounds (40SU14). *Report of Archaeological Investigations No. 3*, Department of Sociology and Anthropology, Middle Tennessee State University, Murfreesboro.
- Curry, Hilda J.
1949 Negative Painting of Angel Site and Southeastern United States. *Proceedings of the Indiana Academy of Science* 59:25-27.
- Dicks, A. Merrill
2004 Archaeological Investigations at the Inglehame Farm Site (40WM342), Williamson County, Tennessee. Report on file, Tennessee Division of Archaeology, Nashville.
- Hilgeman, Sherri L.
1985 Lower Ohio Valley Negative Painted Ceramics. *Midcontinental Journal of Archaeology* 10:195-213.

- 1991 Angel Negative Painted Design Structure. *Midcontinental Journal of Archaeology* 16:3-33.
- 2000 *Pottery and Chronology at Angel*. University of Alabama Press, Tuscaloosa.
- Monaghan, G. William and Christopher S. Peebles
- 2010 The Construction, Use, and Abandonment of Angel Site Mound A: Tracing the History of a Middle Mississippian Town Through Its Earthworks. *American Antiquity* 75(4):935-953.
- Moore, Michael C. and Emanuel Breitburg (editors)
- 1998 *Gordontown: Salvage Archaeology at a Mississippian Town in Davidson County, Tennessee*. Tennessee Department of Environment and Conservation, Division of Archaeology, Research Series No. 11. Nashville.
- Moore, Michael C., Emanuel Breitburg, Kevin E. Smith, and Mary Beth Trubitt
- 2006 One Hundred Years of Archaeology at Gordontown: A Fortified Mississippian Town in Middle Tennessee. *Southeastern Archaeology* 25(1):89-109.
- Myer, William Edward
- 1928 Two Prehistoric Villages in Middle Tennessee. *41st Annual Report, Bureau of American Ethnology 1919-1924*, pp. 485-614. Smithsonian Institution, Washington D.C.
- Phillips, Philip
- 1939 Introduction to the Archaeology of the Mississippi Valley. PhD dissertation, Department of Anthropology, Harvard University, Cambridge.
- 1970 *Archaeological Survey in the Lower Yazoo Basin, Mississippi, 1949-1955*. Papers of the Peabody Museum of Archaeology and Ethnology, Volume 60. Harvard University, Cambridge.
- Phillips, Phillip, James A. Ford, and James B. Griffin
- 1951 *Archaeological Survey in the Lower Mississippi Valley: 1940-1947*. Papers of the Peabody Museum of Archaeology and Ethnology Volume 25. Harvard University, Cambridge.
- Smith, Kevin E.
- 1992 The Middle Cumberland Region: Mississippian Archaeology in North-Central Tennessee. PhD Dissertation, Department of Anthropology, Vanderbilt University. UMI Number 9231006.
- 2012 Two Centuries of Archaeology at Travellers' Rest, Davidson County, Tennessee: 1805-1996). Draft manuscript in possession of the author.
- Smith, Kevin E. and Emily L. Beahm
- 2009 Mound 1 and the Southeastern Ceremonial Complex at the Castalian Springs Site, Tennessee. Manuscript in possession of the authors.
- 2011 Through the Looking Glass: Mississippian Iconography through the Lens of the Castalian Springs Mounds, Sumner County Tennessee. Paper presented to the Southeastern Archaeological Conference, Jacksonville, Florida.

Smith, Kevin E., Emily L. Beahm, and
Michael K. Hampton
2012 The Castalian Springs Mounds
Project 2011: Preliminary
Interpretations of the Investigations
of Mound 3. Paper presented at the
24th Annual Meeting on Current
Research in Tennessee
Archaeology, Nashville.

Smith, Kevin E., Daniel Brock, and
Christopher Hogan
2004 Interior Incised Plates and Bowls
from the Nashville Basin of
Tennessee. *Tennessee
Archaeology* 1(1):49-57.

Smith, Kevin E. and Michael C. Moore
2009 The Enigma of the Noel Cemetery:
Thruston's "Ancient Metropolis of
the Stone Grave Culture." Paper
presented to the Southeastern
Archaeological Conference,
Mobile, Alabama.

Smith, Kevin E., Michael C. Moore, and
Stephen T. Roger
2010 New Insights from Old Records of
the Noel Cemetery, Thruston's
"Ancient Metropolis of the Stone
Grave Race." Paper presented at
the 22nd Annual Meeting on Current
Research in Tennessee
Archaeology, January, Nashville.

Emily L. Beahm
Department of Anthropology
University of Georgia
Athens, GA

Kevin E. Smith
Department of Sociology and Anthropology
Middle Tennessee State University
Murfreesboro, TN