EXCHANGE AND SOCIAL INTERACTION IN THE TENNESSEE RIVER VALLEY: A GEOSPATIAL APPROACH TO THE ANALYSIS OF LATE ARCHAIC ARCHAEOLOGICAL SITES

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DEDICATION

This thesis is dedicated to the memory of my late grandfather, Edward M. Satkoski Jr., a modest, principled farmer who knew what it meant to be resilient, for instilling the values of education and travel. And to my mother, Jacqueline M. Bailey for your unconditional love and support and for ensuring homework took priority over play.

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ABSTRACT

The cultural manifestation known as the Shell Mound Archaic persisted in the lower Midwest and Midsouth region of the Eastern United States for over four millennia beginning in the Middle Archaic ca. 8900 cal BP and terminating at the end of the Late Archaic ca 3200 cal BP. A geospatial approach is applied to the analysis of exotic material exchange of the Late Archaic (ca. 5800-3200 cal BP) to assess how foraging peoples in the Tennessee River Valley interacted and persisted during this time. Exotic material items manufactured from copper, marine shell, steatite, and other nonlocal materials demonstrate distinct spatial patterns. The results suggest the long-distance exchange networks developing in the Late Archaic varied between the lower and upper Tennessee River and reveal a regional awareness that likely contributed to increased interaction, sociability, and cultural exchanges beyond materiality.

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CHAPTER 1: INTRODUCTION

Archaeologists consistently argue that the Late Archaic period (5,800-3,200 cal B.P.) in the southeastern United States (U.S.) was a time of increased social complexity. This has been supported by a plethora of evidence such as increasing population sizes, heightened sedentism, mound-building, burial designation, territoriality, status differentiation, interpersonal conflict, the emergence of cultivated plants to diets, food storage, communal feasting events, and interregional long-distance exchange and interaction, among other notable cultural changes and continuities occurring during this time (Anderson 1996: 166, 175; 2014: 924; Anderson and Sassaman 2012; Bender 1985: 54; Bissett 2014; Charles and Buikstra 1983; Claassen 2010: 1-10, 200-201; Goad 1978: 26, 1980; Jefferies 2009; Jefferies et al. 2005; Moore 2011; Sassaman 2010, 2011; Schmidt et al 2010; Smith 1995, 1996a, 1996b, 1997; Steponaitis 1986: 373; Thomas and Sanger 2010; Thompson and Turck 2009: 269). Within the Late Archaic archaeological time frame, researchers especially point to the Shell Mound Archaic (SMA), a specific cultural phenomenon geographically confined to the lower Midwest and upper Midsouth region of the Eastern Woodlands, as exemplary of increasing social complexity.

Despite an extensive history of research in the southeastern United States, the Late Archaic period and its associated socio-cultural manifestations still require considerable archaeological attention. As noted since the 1990s, researchers are still working to refine its chronology, settlement/land use patterns, cultural diversity, and regional exchange and interaction (Anderson 2010: 275-277; Bisset 2014; Claassen 1991: 289, 2010: 219-223; Sassaman 2004: 255, 2010; Thomas and Sanger 2010). This thesis aims to add to knowledge about these areas of inquiry, especially regional exchange and interaction, within the broader regional context of the SMA.

While discussed in more detail in Chapter 2, the SMA is an embedded subregional group of assemblages of the Late Archaic period and represents a social and cultural phenomenon with potential affiliation with wider regional shell mounds and rings found throughout much of the southeastern United States (see **Figure 1.1**). It should be emphasized here that the SMA has only been archaeologically identified as a phenomenon primarily within the boundaries illustrate din **Figure 1.1** on a few select segments of major rivers such as the Ohio River, Green River, Tennessee River, and their tributaries (see Claassen 2010: 19-29 for a complete listing). Furthermore, the only documented shell mounds within Tennessee are exclusively located on the lower Tennessee River in Western Tennessee and on the Cumberland, Duck and Harpeth rivers and hence no shell mounds have been recorded in eastern Tennessee. Temporally, the SMA begins circa 8,900 cal BP and roughly coincides with the beginning of the Hypsithermal warming conditions in the early Holocene and changes in river systems within this region that created attractive habitats for mollusk species and human inhabitants alike (Anderson 2001: 158-163). The SMA, as its name implies, is marked by the construction of numerous mounds filled with shells, soil, and burials. The most characteristic features of the SMA mounds are the abundance of shells derived from local riverine mollusk populations and the presence of items made from exotic or non-local materials, often associated with burials. By *exotic* or *non-local* I mean an artifact whose raw material source is derived from a considerable distance from where an artifact is discovered and thus implicates the item in some form of networked exchange.

Networks of regional long-distance exchange in exotic materials during the Late Archaic period (5,800-3,200 cal BP) of the southeastern United States, while discussed frequently in the literature as a notable feature of this period, have a low spatial and temporal resolution. Early archaeologists working on the initial excavations carried out along the Green River in Kentucky

Figure 1.1. Shell Mound Archaic (SMA) with dotted line noting Benton Interaction Zone and shell ring sites of the Carolinas and Florida/Gulf coasts (after Kidder and Sassaman 2009: 676).

and the lower Tennessee River in western Tennessee in the early to middle twentieth century were quick to identify nonperishable exotic materials sourced from great distances, often discovered with human burials (see for example Moore 1915, 1916; Lewis and Kneberg 1947, 1959, 1961; Webb 1946). Marine shells obtained from the Atlantic and Gulf coasts and raw copper sourced from either ore deposits in the Great Lakes region or smaller “float” deposits from glacial till carried to its furthest extent of the Last Glacial Maximum (LCM) (Goad 1978, 1980)[1] are most notable among these exotic materials. From at least the beginning of the Late Archaic (ca. 5,800 cal BP) through the Mississippian period, the long-distance exchange in copper and marine shell has had an extensive, albeit episodic, history in the southeastern United States (see Johnson 1994 for a summary). In addition to copper and marine shell, soapstone bowls along with other items manufactured from Carolina slates and minerals such as olivine are implicated as non-local trade items. The source of these materials was derived from outcroppings east of the Appalachian Mountains within the Piedmont Physiographic Province of northeastern Georgia and western North and South Carolina and introduced into the Lower Little Tennessee River Valley during the Late Archaic (Chapman 1981: 154, 1985: 151; Greene 1995; Wells 2006: 1-3). These raw materials were crafted into a diverse set of ornamental objects, including pendants, gorgets, crescents, rings, beads, and tubes, as well as utilitarian items including copper points, knives, awls, celts, adzes, fishhooks, and shell and soapstone vessels (Chapman 1985; Goad 1979: 90; also see sample illustrations in Lewis and Kneberg 1947: 31-32 and Lewis and Kneberg 1959: 171). Researchers have interpreted exotic materials in reconstructing social organization, mortuary behavior, division of labor, status differentiation, gender roles, and the

[1] Goad (1978: 46-54) provides an overview history of other plausible copper source locations, namely the Southwestern United States in Arizona and New Mexico and the Appalachian Piedmont from Anniston, Alabama to Frederick, Maryland.

nature of long-distance exchange; most of these studies were conducted in the context of the Green River sites, such as Indian Knoll and Carlston Annis (Claassen 1996; Morse 1967; Rothschild 1979; Winters 1968).

The accumulated data from excavations that occurred in the last century and data generated through explorations by recent cultural resource management (CRM) firms have been immense. Quantification, broad-scale analysis, and mapping of these data at a regional scale are lacking, however. Such regional analysis provides finer resolution of the distribution and densities of artifacts, including the geographic distribution of both exotic and local materials in addition to their use. Moreover, the collection and mapping of artifactual data and their context at high resolution are critical in inferring the patterns of long-distance exchange for the Late Archaic. At the center of this thesis is the question of whether the peoples of the Late Archaic engaged in long-distance trade and how the evidence of such trade was manifest spatially. The advancement of models for long-distance exchange patterns of distribution and the discussion of exchange mechanisms date to the last forty years (see, for example, Goad 1978; 1980), and have only accelerated with the advent of internet-accessible databases and digitization of written excavation records, e.g., the Paleoindian Database of the Americas (PIDBA) (Anderson et al. 2010), the Digital Index of North American Archaeology (DINAA) (Wells et al. 2014), the Digital Archaeological Record (tDAR) (McManamon et al. 2017). Writing on the paucity of Late Archaic exchange studies, Goad (1980: 6) remarked that "…none have utilized data with sufficient geographic scope to characterize and elaborate upon the overall nature of Late Archaic patterns of exchange." This is still largely the case more than forty years later. Part of the explanation as to why patterns of distribution have remained coarse-grained in much of pre-contact history, and especially so with the Archaic, is likely due primarily to (1) the lack of geospatial methods of storing, quantifying, and mapping large datasets in conjunction with (2) the lagging efforts of academia to incorporate CRM-generated data.

Therefore, in this thesis, I quantify and illustrate pertinent archaeological site file data from a sample of Late Archaic sites along the upper and lower Tennessee River using modern geospatial techniques to investigate the presence of nonlocal artifacts as an indicator of long-distance trade and interaction. While the scale of the current project is subregional and limited to the contemporary state political boundaries of Tennessee, the overall aim is to improve our understanding of the regional variation in the patterns and processes of long-distance exchange in documented exotic nonperishable material items in the southeastern United States. The contributions toward a regional database on exotic materials will enable us to better test hypotheses on the mechanisms of exchange as well as infer the kinds of social organization and interaction taking place during the Late Archaic period throughout the Eastern Woodlands.

Theoretical Reorientation: From Collapse to Resilience

The research paradigm of this thesis reconsiders the context of resilience and persistence in past societies (see for example Faulseit 2015; Redman 2005; Schlanger 1992; Temple and Stojanowski 2019; Thompson 2010) along with landscape archaeology (see for example Crumley and Marquardt 1990; Ingold 1993). Namely, what constitutes human resilience and cultural persistence, and how are these reflected by materials in the archaeological record across the southeastern landscape? Resilience—the ability of people to withstand gradual and sudden social and environmental perturbations to their social organization and lifeways over generations—is not the same as cultural persistence—the maintenance of a cultural tradition over time—although cultural persistence may be a measure of resilience (Bollig 2014; Rashidian 2021). The Late Archaic presents as a persistent cultural period by which cultural traditions such as mound construction and mortuary practices emerged in the Middle Archaic and were practiced and sustained for a substantial amount of time. Additionally, such practices as the exchange of long-distance exotic materials emerged during this time and became more prevalent in later Woodland and Mississippian times. This long-term persistence of culture leads to the question: how did Archaic hunter-gatherer communities manage social and environmental risks across the landscape? Working under the assumption that interaction and trade networks require stability to exist and be maintained (see below), how were these communities connected, how did those relationships change over time, and how did the people inhabiting this wider region occupy and transform this landscape into a persistent place (*sensu* Schlanger 1992; see also Thompson 2010: 217-228)?

The theoretical framework used in this thesis derives from resilience theory and the concept of risk is, in part, developed from the perspective of human behavioral ecology (HBE) which will be more thoroughly explored in Chapter 2. Although definitions of human resilience and cultural persistence and how to measure them are nascent within the disciplines of archaeology and anthropology, and are not without their critics (see Bollig 2014 and Rashidian 2021 for reviews), such phenomena as sustained practices in cultural identity and prolonged signals of population growth, mortuary construction, and the maintenance of exchange and interaction networks may be argued to represent plausible measures of resilience (see Temple and Stojanowski 2019 and Buikstra 2019: 376). As the Late Archaic period in the southeastern United States demonstrates all these features, questions about resilience appropriately lend themselves to investigating these phenomena. Thus, the hypothesis for this thesis is that long-distance exchange was an important aspect taking shape during the Late Archaic and may have aided with resilience strategies as groups became more sedentary and were establishing long-distance connections with other communities across the landscape to buffer against various environmental and social risks.

Relative to the preceding Paleoindian, Early Archaic, and Middle Archaic periods, and the subsequent Early Woodland period, the Late Archaic is argued to be a more socially complex time. This complexity starkly contrasts with the Early Woodland, when the unambiguous decline in long-distance interaction and exchange of prestige items and material is interpreted as a sign of diminished social complexity (Anderson 2010: 277, 2013: 924; Kidder 2006; Thomas and Sanger 2010: 24; Thompson 2010: 217; Thompson and Turck 2009). Late Archaic material culture and site characteristics appear to decline or are completely absent archaeologically in the interval from 3,200-2,400 cal B.P. (Thomas and Sanger 2010). The construction of shell mounds also ceases during this time (Claassen 2010). Thus, a dramatic cultural and demographic change (some suggesting collapse, see Thompson 2010: 227-228; Thompson and Turck 2009) seems to have occurred across much of the Southeast at the end of the Late Archaic with several environmental and cultural explanations being proposed. For instance, climate change variability at short, intermediate, and long-term intervals (see Anderson 2001; 2010: 282-284) resulted in cooler temperatures and increased precipitation which are argued to have caused more frequent and substantial storms and flooding events throughout the region. Unpredictable climate potentially influenced the displacement and abandonment of subregions in the Southeast (Anderson 2001, 2010: 278; Anderson et al. 2007; Claassen 1991: 290-291, 2015: 45-48; Fiedel 2001; Kidder 2006, 2010; Sassaman 2016; Thompson 2010: 226). Indeed, flooding events were recognized from geoarchaeological analysis in the deposits of many of the Archaic sites excavated during the 1930s and 1940s and have long been argued to have likely impacted various aspects of life such as food acquisition, travel, and settlement for groups living at the time (Lewis and Kneberg 1947, 1959: 166). The termination of certain ritual practices and belief systems may also have been linked to the relocation of settlements away from floodplains to upland areas during the Early Woodland (Claassen 1991: 290-291, 2015: 45-48; Thompson 226-227). Traditions associated with and occupation of shell and earthen sites along the Green River in Kentucky, a major Shell Mound Archaic nexus, ended around 3400 cal BP and were not reoccupied until the Mississippian period (Thompson 2010: 226); this was likely a result of population relocation and the loss of ancestral sacred space. Such superimposition of cosmologies on the same landscape may be reflected by the persistence or replacement of artifacts and site construction over generations.

While such inflection points of (relatively) rapid social, cultural, and political change and notions of collapse in history have captured public and academic interest alike, recent interpretive approaches in both archaeology (Faulseit 2016; Redman 2005) and bioarchaeology (Temple and Stojanowski 2019) have proposed reorienting discussions that concentrate on aspects of past human resilience and socio-cultural persistence. Instead of homing in exclusively on the shorter intervals or instances and causes of societal collapse, a reframing of this discussion asks how cultural features and social organizations persist over time and how people buffer their environmental and social challenges. Researchers find productive discussions in understanding what actions people were taking to sustain their culture and society for long periods; i.e., how did people remain resilient and buffer against uncertainty and risks?

Applying this thinking to the current project, we can ask how Shell Mound Archaic peoples on the lower Tennessee River and neighboring Late Archaic communities on the upper Tennessee River persisted for approximately 2,600 years in a region that came to be imbued with millennia of historical, social, and cultural continuity and meaning? What kept this momentum of Archaic lifestyles going and what made this region of the lower Midwest and Midsouth a "persistent place" (*sensu* Schlanger 1992; see also Thompson 2010: 217-228)? What challenges were people facing and how did varying cultures maintain resilience despite their social and environmental risks and uncertainty? In short, how do we test for resilience during the Archaic and how much did long-distance exchange play a role in that resilience?

Consultation with Tribes

The land upon which the University of Tennessee-Knoxville is built is part of the traditional territory of the Tsalagi peoples (now Eastern Band of Cherokee Indians, Cherokee Nation of Oklahoma, and United Keetoowah Band of Cherokee Indians in Oklahoma), Tsoyahá peoples (Yuchi, Muscogee (Creek) Nation), and Shawnee peoples (Absentee Shawnee Tribe of Oklahoma, Eastern Shawnee Tribe of Oklahoma, and the Shawnee Tribe). When accounting for the larger political state boundaries of Tennessee, nine additional Tribes consider the various parts of the land a part of traditional territory including the Alabama-Coushatta Tribe of Texas, the Alabama Quassarte Tribal Town, the Chickasaw Nation, the Coushatta Tribe of Louisiana, the Jena Band of Choctaw Indians, the Kialegee Tribal Town, and the Thlopthlocco Tribal Town.

With guidance from our Director of Repatriation and Curator of Archaeology, Dr. Ellen M. Lofaro, I made efforts in the summer of 2021 to contact and establish a series of discussions with the above-mentioned Tribes to listen and hear their thoughts on the initial thesis proposal. A personal letter was drafted and sent on July 23, 2021, and follow-up emails were sent on August 20, 2021, and September 20, 2021, respectively. This letter has been provided in **Appendix D** as a document that can hopefully help guide future researchers in the process of improving the consultation and collaboration process with Tribes and establishing lasting relationships.

These discussions granted me the ability to seek guidance and valuable feedback on where our mutual research interests were. From these conversations, I gathered that many Tribes are deeply interested in historically tracking the development and roles of their clan structures. Thus, the process of my thesis development and the questions presented below along with the geospatial approach developed in this study have been influenced by these discussions. A brief review of clan systems is provided in Chapter 2. I have a strong sense that helping to develop the methods for storing, organizing, and tracking important information on material culture will enhance Tribal members’ abilities to trace this history.

Presentation of the Questions

The purpose of this research is to address the relationship between Late Archaic site types, level of archaeological survey, and exotic material locations across a sample of sites situated along the lower and upper Tennessee River Valley. Specifically, this research addresses the following three interrelated questions:

(1) What is the spatial distribution of all macroscopically identified exotic materials across a sample of 150 lower and upper Tennessee River Late Archaic sites?

(2) From this sample, where were burials distributed along the lower and upper Tennessee River during the Late Archaic, and were they the sole repository of exotic materials? In other words, what are the relationships between exotic material, burial locations, and Late Archaic site types?

(3) What is the relationship between archaeological survey level intensity, period of archaeological investigation, and exotic material type? Have we found exotics in other archaeological assemblages in recent years as survey methodologies have

changed? What kinds of biases may be influencing our interpretations of long-distance exchange?

Regarding the first question, fewer than 25 copper artifacts had been discovered in the Southeast by 1979 (see Goad 1979:93) and thus the question is meant to evaluate whether additional artifacts have been reported since this time. Regarding the last two topics, the question posed by Johnson (1994: 117) helps to further elaborate on the problem: “When relatively rare trade goods like copper or shell are considered, the problem comes to a head. Do these items concentrate at the major mound sites because more excavation has been done at these sites or is it because these materials served as status markers and burial contexts are the prime locations for recovering status markers?” In other words, is there a selection bias taking place? Thus, incorporating more recent CRM-generated data across various survey levels and site types may help to shine a light on this problem and improve the spatial resolution of exotic material distributions in the Tennessee River Valley.

Many fundamental questions remain inadequately answered for long-distance exchange during the Late Archaic, some of which are addressed in this thesis or will be considered in the context of the results in Chapter 5. For instance, what was the nature of Late Archaic exchange and interaction? What exactly constitutes a “long-distance” exchange? What was being exchanged *for* the marine shell, copper, steatite/soapstone, and other exotic material items? Besides marine shells, copper, steatite/soapstone, and exotic lithics, are there other exotic materials that we may be overlooking? What routes on the landscape were people utilizing at the time to participate in this exchange? Where and to what extent was long-distance exchange and interaction taking place over the 2,600 years of the Late Archaic? Did exchange and interaction differ across the Tennessee River Valley, specifically between the lower and upper Tennessee

River, and how might we explain this variation? Lastly, did such activities of long-distance exchange and interaction promote resilience and reduce risk, and if so, how?

Outline of Thesis

The thesis is organized into six chapters including this introductory chapter. Chapter 2 details the archaeological and environmental context of the Late Archaic period in the region. Additional sections will define and explore resilience theory, the concept of risk, and clan systems in North America. Chapter 3 describes the materials and methods used in this study which include documentation of the academic and cultural resource management (CRM) sources of data along with the details of the geospatial approach applied in this study. Chapter 4 presents the results of the geospatial analysis of the 150 Late Archaic sites chosen for the study. Chapter 5 discusses the significance and limitations of the results, comments on the process of tribal consultation, proffers future directions on a geospatial approach to archaeological data and concludes the thesis by summarizing the study.

CHAPTER 2: ARCHAEOLOGICAL AND ENVIRONMENTAL CONTEXT FOR THE LATE ARCHAIC

Before addressing the questions set out in Chapter 1, it is necessary to outline the archaeological, bioarchaeological, climatological, and environmental context of the Late Archaic period of the lower Midwest and Midsouth region of the eastern United States. This chapter reviews this context and provides an overview of the SMA cultural phenomenon. The SMA is a portion of the much longer Archaic period which spanned 11,500 to 3,200 calendar years before the present (cal BP); the SMA comprises the Middle Archaic (8,900-5,800 cal BP) and Late Archaic (5,800-3,200 cal BP) subperiods within the lower Midwest and Midsouth (Anderson 2001: 156-163; Anderson and Sassaman 2012: 66; Kidder and Sassaman 2009: 668; Sassaman 2010: 20-21). Additional sections of the chapter will address the definitions, theory, and conceptual framework of risk and resilience along with a brief review of clan systems in North America. As one goal of this thesis is to establish a more fine-grained spatial patterning of Late Archaic sites and exotic materials therein, the content below is meant to provide readers with an understanding of the theory and evidence supporting the geospatial approach I will apply to infer social interaction and exchange occurring along the lower and upper Tennessee River.

General Archaeological and Bioarchaeological Context of the Shell Mound Archaic

A considerable amount of archaeological fieldwork and analyses of the Archaic period has been conducted in the southeastern United States over the last 130 years. Early contributors made conjectures that mounds were formed by a “lost Moundbuilder race,” an idea Cyrus Thomas helped to refute and dismantle with the publication of his *Twelfth Annual Report of the Bureau of Ethnology* in 1894 (Willey and Sabloff 1980: 41-43; Trigger 2006: 185). Clarence Bloomfield Moore further developed knowledge about southeastern sites with popular monographs that reported on an extensive amount of sites along major riverways of the southeastern U.S., including those along the Tennessee River (Polhemus 2002). Depression-era excavations carried out by the Works Progress Administration (WPA) and Tennessee Valley Authority (TVA) expanded knowledge about these sites, including construction, burial practices, and subsistence, and so laid a solid foundation for southeastern archaeology; the reports and excavated materials from this period remain an invaluable resource for our present studies (Steponaitus 1986). Since the passage of federal legislation in the 1960s and 1970s, cultural resource management (CRM) or “contract archaeology” has substantially improved our understanding of the southeastern archaeological record (see Figure 1 of Steponaitus 1986: 365-366; see also Anderson and Sassaman 2012: 7-35).

The southeastern United States contains thousands of earthen and shell mounds constructed over a 6,000-year history. These mounds vary and change in their physical sizes, designs, construction phases, and functions as well as in their political, economic, and socio-cultural value and meanings (Anderson 2012; Anderson and Sassaman 2012: 76-86; Bissett 2014: 50; Claassen 1991: 294, 1996: 236-240, 2015: xii; Jefferies et al. 2005: 9; Kassabaum 2021; Kidder and Sassaman 2009: 672, 675; Sassaman 2004: 253, 255-258; Saunders 2017: 4-8; Saunders et al. 1997; Sherwood and Kidder 2011: 69, 71, 83). Of this millennia-long effort to build mounds, the Shell Mound Archaic (SMA) represents a specific cultural manifestation starting sometime after 8,900 cal BP, which coincided with the Holocene Climate Optimum (Hypsithermal) period during which temperatures were warmer than the preceding and following periods (until the modern industrial warming era) (see Anderson 2001). An abundance of shells derived from local riverine mollusk populations is a hallmark feature within SMA mounds, though shell-free deposits are also demonstrated within mound strata (Bissett 2014).

The debate about the use of shell mounds ranges from arguments that the mounds are simply long-accumulated refuse heaps or middens (Milner and Jefferies 1998) to being deliberate mortuary complexes and/or territorial markers and to the mounds serving as ceremonial locations whereby peoples met seasonally for annual shell-feasting events (Claassen 1991, 1992, 1996, 2010, 2015; Sassaman 2010, 2011). Regionally, the SMA demarcated a period of historical and cultural continuity along some major rivers and their tributaries in the lower Midwest and Midsouth until the end of the Late Archaic ca. 3,200 cal BP (Anderson and Sassaman 2012: 109; Bisset 2014: 50-70; Claassen 1991; 287; 1992: 1, 1996: 236, 2010; Marquardt and Watson 1983; Sassaman 2001: 230-232, 2010: 42-3, 50-59, 2011: 189-197; Saunders 2017: 4-8) (**Figure 1.1**). It is worth emphasizing here that what makes the shell-bearing mortuary sites of the Shell Mound Archaic so interesting is that they are only located along a few select rivers in clusters even though many other river systems across the Eastern Woodlands also had an abundance of shellfish that were exploitable (Claassen 2010: 35-36). Archaeologists investigating the Little Tennessee River Valley in the 1970s found the absence of shell mounds in the area enigmatic as shellfish would have been abundant and accessible during the Late Archaic (Chapman 1981: 154-155). Indeed, the water systems of Eastern North America contain nearly one-half of the world's freshwater bivalve species (Claassen 2010: 51) and so the question that remains open to debate is why only a select number of rivers were chosen for shell mound mortuaries.

Burials are another distinctive and nearly ubiquitous feature of SMA mounds with an estimated 18,000 individuals interred over 5,000 years from the Middle to Late Archaic (Claassen 1991: 289, 2010, 2015: 1, 20-21,43; Sassaman 2010: 92). Over 3,000 of these individuals were concentrated among the Green River sites in western Kentucky which comprise one of the world's largest and most significant concentrations of hunter-gatherer skeletal remains

(Anderson and Sassaman 2012: 96-97; Claassen 2010:106; Haskin and Herrmann 1996: 107, 110-111). As illustrated by Claassen (2010: 106-108; 2015: 21), the figure of 18,000 is likely a conservative estimate when considering the total deceased over this spatial and temporal region amounting to an average of 3.6 burials per year. This would translate to only six burials per year in the Late Archaic's ~3,000-year timespan to which most burials subsequently date (Claassen 2015: 43). Bissett (2014: vi-vii, 8-9) echoed this observation that burials should be interpreted as being sporadically or occasionally interred over a long time, rather than viewing burials as representing a continuous use of occupation. Thus, only a subset of people was selected to be buried in this specific mortuary tradition with other historically contingent methods of burial likely also being practiced such as exposure or water, practices that may stretch back to the Paleoindian period (Claassen 2015: 21). Burials located in and around caves, rock shelters, and sinkholes may have also served as designated places for exclusive members of society such as ritual specialists (Claassen 2015: 159, 175-177, 278-281, 283-289, 297-298). In addition to the large sample sizes of human remains, the incredible preservation of organic material facilitated by the acid-neutralizing calcium carbonate contained within the freshwater shell at many SMA sites cannot be overstated; this is especially true when considering the rarity of preserved fetal and infant remains for this period of time and region that provide rare and important insight into questions of paleodemography and other bioarchaeological inquiries for the little understood Archaic time (Haskins and Herrmann 1996: 113; Sassaman 2004: 255). Inadequate sample sizes and poor bone preservation have been two widely recognized problems in paleodemography and paleopathology (Wood et al. 1992: 357) and therefore is what makes the data from SMA burials even more extraordinary and grants us small clues into past hunter-gather lifeways (Haskins and Herrmann 1996: 110, 112).

Late Archaic Climate and Environmental Setting

Before further summarizing knowledge about the lifeways expressed by humans during the SMA, it is useful to contextualize the climate experienced during this period. Much of this record is reconstructed at a global scale from oxygen isotopes preserved in ice cores (Scarre 2013) and from an extensive analysis of fossil-pollen data for the northern and eastern regions of North America (Neotoma 2022); together these reveal the environmental history and dynamics of late Quaternary species taxa and biomes over the last 21,000 years (Williams et al. 2004). The Late Archaic is comprised of approximately twenty-six centuries dating from 5,800-3,200 cal BP or 5,000-3,000 radiocarbon years ago) and is geologically referred to as the Initial Late Holocene (Anderson 2001: 161; Anderson and Sassaman 2012: 66). At the onset of the Early Archaic, which started at the end of the Younger Dryas (approximately 11,500 cal BP)—the end of which demarcates the approximate terminal Pleistocene-early Holocene boundary—global temperatures increased and brought about the northward expansion of hardwood oak and hickory forests across the lower Southeast, and the retreat of non-deciduous trees (Anderson 2010: 275; Anderson and Sassaman 2012: 71; Williams et al. 2004). The warmer and wetter conditions of this interstadial period of the Holocene are markedly stable in climate relative to the previous terminal Pleistocene (Cummings 2014) (see **Figure 2.1**).

Following the initial warming associated with the early Holocene, a dry period (the Hypsithermal) lasted from approximately 8,000-5,000 years BP (Lapham 2011: 408). Climate and vegetation approach modern conditions during the end of this period and coincide with the

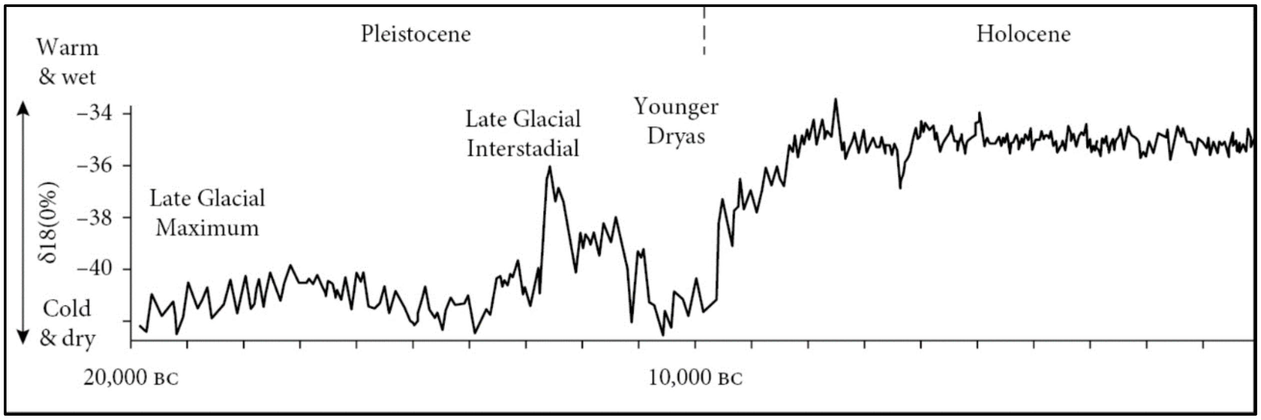

Figure 2.1. Oxygen isotope levels from ice cores reveal contrasting climatic conditions for the late glacial terminal Pleistocene and post-glacial Holocene periods (after Scarre 2013).

advent of the Late Archaic period (approximately 5,800 cal BP) (Anderson 2001: 161; Anderson et al. 2007: 459; Anderson and Sassaman 2012: 74; Jefferies 2009: 653, 657; Kidder and Sassaman 2009: 677; Lapham 2011: 409). The inferred vegetational biome distribution of the lower Midwest and Midsouth regions from Williams et al. (2004: 312-313) shows that from approximately 7,000-3,000 years cal BP the predominant biomes were warm mixed conifer forests in the Midsouth region and temperate deciduous forests in the lower Midwest region which have been relatively stable and slow to change up to the present day. It is worth noting that land-use practices from European colonization during the last 500 years have significantly altered vegetational land cover across much of the region from extensive land clearing, logging, and agricultural development which subsequently has caused significant soil erosion (Springer et al. 2010: 275; Williams et al. 2004: 321). This bears mentioning because such contrasting modern developments can obscure our ability to envision what the region's biome looked like in historic and pre-contact times and what this landscape and ecology would have provided Archaic groups in terms of their opportunities for subsistence, mobility, and settlement.

With this last note in mind, the climate and vegetation of the Late Archaic are therefore comparable to modern temperature, precipitation, and lake, sea, and riverine levels (Anderson 2001: 161). However, Kidder and Sassaman (2009: 682) mention that such sweeping generalizations should still not be casually made and caution that:

> …[R]esearchers should be wary of the idea that the Late Archaic was a time of so-called modern climate conditions. Late Holocene climates were highly variable, and evidence for periodic climate perturbations is abundant. Large-scale atmospheric reorganization after ca. 3150 cal B.P. demonstrates that modern conditions did not truly emerge during the Late Archaic.

Perhaps one of the more notable recent paleoenvironmental studies for the climate within the time and region of interest comes from cave data recovered from southeastern Tennessee. Speleothem data (both U-Th isotopes and ultraviolent fluorescence, or UVf layers) recovered from Racoon Mountain Cave in Chattanooga, Tennessee revealed that, relative to the middle Holocene, the late Holocene experienced overall wetter conditions with rainfall oscillating from low to high more consistently over 50-100 year cycles (Driese et al. 2015: 15). Arguably the most significant finding from this study was that UVf layers revealed that thinner UVf layers and more negative δ13C values corresponded with cooler, wetter conditions while the thicker UVf layers and less negative δ13C values corresponded with warmer, drier conditions (Driese et al. 2015: 13). Furthermore, drought conditions were not as long in duration (5-50 years) as in previous times of the middle Holocene (Driese et al. 2015: 15). Such high-resolution seasonal and annual rainfall data is novel and is increasingly important for archaeology in determining when events like droughts and floods occurred and how they may have affected past peoples' responses.

Another important series of recent studies on past climate and vegetation of the area of interest comes from Anderson Pond located in north-central Tennessee. Micromorphological analysis of a 1.5-meter core from Anderson Pond was analyzed to test hypotheses on past climate and vegetation of the late Pleistocene and Holocene and to reevaluate previous studies conducted there (Driese et al. 2017). Data confirms a warm dry period existed during the middle Holocene thermal maximum and that increased fire activity occurred at this time (8,200-5,600 cal BP) (Driese et al. 2017: 91). A significant discovery of this study, countering previous interpretations of the geochronology at Anderson Pond (and unfortunate for those researchers looking into the Late Archaic), found that the record from 160-5600 cal BP is absent and represents a hiatus in sedimentation, being plausibly eroded or oxidized (Driese et al. 2017: 88, 91; Horn et al. 2019: 519). Although the hiatus for most of the Late Archaic period limits knowledge about this period, especially when we consider the paucity of lake sediment data in the southern United States, important context is nevertheless available for the early Late Archaic and preceding climate of the Middle Archaic. More importantly, this revelation of this missing data in the sedimentary record of Anderson Pond, which has been central to climate models in the region, helps us recalibrate our models. That said, additional cave and lake sediment data are still greatly needed to improve the resolution of climate models for the Late Archaic in the southeastern United States.

Late Archaic Subsistence

Considering the warmer and more stable climate of the Hypsithermal period, a variety of resources for subsistence was likely widely available during the SMA. The southeastern United States has a rich biodiversity that represents a key element in understanding the subsistence practices of Late Archaic groups as well as providing evidence that in part may explain human resilience and cultural persistence during this time. Significant harvesting of freshwater shellfish across the region dates as early as 8,000 cal BP and persisted well into the Late Archaic (Anderson 2001:159; Anderson et al. 2007: 460; Claassen 1992: 1, 1996: 240; 2010). The preceding Hypsithermal event of the mid-Holocene is argued to have enhanced riverine habitats for aquatic species due to rivers becoming stabilized and aggraded, which created an environment promoting population explosions in riverine shellfish to be exploited (Claassen 1996: 240; Lapham 2011: 409).

As pointed out at the beginning of the chapter, the spatial distribution of the shell and earthen mounds of the Late Archaic were notably aggregated unevenly and clustered along segments of some of the major river networks across the Midsouth and lower Midwest including the Tennessee, Green, and Ohio river valleys. This is notable because the distribution of mounds does not reflect the abundance or accessibility of riverine shellfish or other resources. Such distribution may therefore indicate that settlement patterns and population concentrations were influenced by regional social and political conditions (Anderson 2001: 159; Claassen 1992: 1, 1996: 240). As noted in Chapter 1, shell mounds have only been discovered on the lower Tennessee River, Cumberland River, Harpeth River, and Duck River in Tennessee.

Settlement and population size seem to be linked to the reliance on mollusks which provided not only subsistence but also ritual use in ceremonialism, and as a potential building material for the shell mounds subsequently influencing the social, cultural, and political systems of foraging peoples from the Middle to Late Archaic (Claassen 1991, 1992, 1996, 2010, 2015). Along with the increased use of aquatic resources, white-tailed deer were also an increasing staple in the diets of Late Holocene populations (Anderson and Sassaman 2012: 105; Chapman et al. 1982: 118-120; Lapham 2011: 409; Styles and Klippel 1996). The Hypsithermal is suggested to have affected the body size of deer causing them to decrease due to environmental shifts that altered their foraging quality and timing but does not appear to have significantly altered their exploitation by Late Archaic populations (Lapham 2011: 409). Other animals targeted during this time included squirrels, rabbits, raccoons, wild turkeys, eastern box turtles, and channel catfish (Lapham 2011: 409).

During the Late Archaic, populations increased selection of a variety of local plant species that led to their domestication such as sunflower, squash, sumpweed, goosefoot, maygrass, marshelder, chenopod, knotweed, and little barley. This early independent domestication has been termed the “Eastern Agricultural Complex” (Anderson 2001: 161;

Anderson et al. 2007: 460, 463-464; Anderson 2002: 254; Chapman et al. 1982: 118; Delcourt et al. 1998: 266-268; Anderson and Sassaman 2012: 101; Hollenbach 2009; Hollenbach and Carmody 2018, 2019; Lapham 2011: 410; Smith 1990). At least four native species—sunflower, marshelder, squash, and chenopod—are considered to have been domesticated sometime between 5,000 and 3,800 cal BP (Anderson and Sassaman 2012: 104). It has also been suggested that with the domestication of these species came a decline in the use of shellfish in some areas of the SMA (Anderson et al. 2007: 464; Claassen 2010).

Nuts from hickory, oak, black walnut, butternut, and chestnut trees, along with various fruits from trees and shrubs also complemented the diets of Archaic peoples throughout the region; such resources have likely served as an important staple in the diets of peoples throughout much of the Holocene (Abrams and Nowacki 2008: 1123-1124; Anderson 2001: 162; Anderson and Sassaman 2012: 102-103; Delcourt et al. 1998: 266; Hollenbach 2009; Hollenbach and Carmody 2018: 56; Jefferies et al. 2005: 7). Furthermore, the use of mast resources increased during the Late Archaic and is associated with a range of artifacts including groundstone mortars and pestles, nutting stones, fire-cracked rock, and storage vessels and pits (Anderson and Sassaman 2012: 102). Some researchers (see Springer et al. 2010: 276 for a summary) have suggested that indigenous populations altered the landscape and managed their resources intentionally via fire regimes and other land management practices that significantly impacted vegetation biomes beginning in the Late Archaic (Abrams and Nowacki 2008: 1123-1124; Delcourt et al. 1998: 276; Springer et al. 2010: 276). Such observations remind archaeologists to stay ecologically mindful and privy to areas on the landscape that boast larger densities of nut and fruit-producing trees than normal as they may indicate past locations of habitation or gathering or intentional propagation of these species (Anderson 2004: 276). In other words, the agency and resiliency of past peoples may be subtly embedded not just in the material record, but in aspects of the legacy living in the landscape as well.

Domestication of plants, and land management practices associated with mast-producing trees such as the use of controlled burns, girdling, and felling or culling of non-mast trees, therefore have been argued, with caution, to have potentially contributed to the early domestication and development of agricultural systems (Abrams and Nowacki 2008: 1124; Anderson and Sassaman 2012: 70,102-104). As is commonly known, increased reliance on such food items also likely increased risk (as defined later in this chapter) as many of these early cultigens and wild nuts were susceptible to climate shifts (Anderson 2001: 162). Diversification in diets such as those seen with fish, shellfish, nuts, and seeds is argued to have changed and improved because of changes in environment, demography, and technology (Anderson and Sassaman 2012: 101). Together, this context has implications for social organization and the movement of materials across the Late Archaic.

Late Archaic Social Organization, Exchange, and Interaction

The formation of hunter-gather-fisher tribal societies during the Middle and Late Archaic coincided with the development of long-distance interaction and exchange throughout much of the Southeast. Group affiliation and distribution may be inferred from the dispersal of utilitarian and ritual/ceremonial diagnostic artifacts across the landscapes such as hypertrophic bifaces, stone effigy beads, and bone pins found in caches and burials (Anderson and Sassaman 2012: 87-91; Deter-Wolf 2004: 18, 29; Johnson and Brooks 1989; Jefferies 1995b: 133, 1997, 2004; Kidder 2012: 467-468; Kidder and Sassaman 2009: 671). A brief regional overview of the SMA as illustrated in **Figure 1.1** will suffice for an archaeological summary of the basis of the evidence for exchange and interaction.

It is useful to define the concepts of interaction and exchange within an archaeological context. For this study, *exchange* should be conceived of in terms of the movement of people, ideas, and objects in a reciprocal and redistributive fashion more akin to the gift economies and long-distance interaction described by Mauss (1990[1925]). The term ‘trade’, while extensive in the literature, appears problematic as it has a connotation with modern economic theory in the trade in goods and services, an embedded “this-for-that” transaction. Likely, this latter form of networking is not how exchange operated in pre-contact societies, especially when we reflect on Native American tribal histories, ethnography, and ethnohistory and the role clan systems played in social interactions (more on this below). Lastly, as noted in Chapter 1, by *exotic* or *non-local* I mean an artifact whose raw material source is derived from a considerable distance from where an artifact is discovered and thus implicates the item in some form of networked exchange.

In the southern region of the SMA, the lower Mississippi Valley and rivers of the Midsouth are located near navigable riverways that may have fostered interactions among communities and cultures across the region, indicated archaeologically by the prolonged development of monumentality (Anderson 2002: 264, 267). The evidence suggests that marine shell was exchanged as raw material and finished beads, perhaps via “middlemen,” from western and southern areas of the Southeast to more central and northern regions of the SMA after 4,000 cal BP (Goad 1978: 89-106, 1980; Marquardt and Watson 1983: 333-334; Marquardt 1985: 80; Jefferies 1995a: 74; Sassaman 2010: 200). For example, sites positioned along the Green River contained marine shell beads in association with burials that were sourced as far away as the Gulf of Mexico and have been reported to be more abundant than in other regions throughout the Eastern Woodlands (Anderson and Sassaman 2012: 98). Another example occurs in what has been termed the “Benton Interaction Sphere,” where a distribution network of high-quality chert and artifacts of distinct points, bifaces, and hypertrophic blades are argued to represent two levels of extensive exchange (ritual/ceremonial and utilitarian) (**Figure 1.1)**. Such hypertrophic blades have been found in caches and burials (both inhumations and cremations) (Claassen 2015: 153; Deter-Wolf 2004: 18, 30-32; Kidder and Sassaman 2009: 671; see also Figure 1 in McNutt 2008: 46). This exchange network is thought to have been present during the terminal Middle Archaic and continued into the early Late Archaic from 5,800-5,000 cal BP in the Southeast along the lower Tennessee River Valley, extending from northern Alabama's Pickwick Reservoir to the middle Tombigbee drainage(Claassen 2010: 159-160; see also Figure 3 in McNutt 2008: 53). The Benton Interaction Sphere, like the marine shell exchange pattern, connected communities of the Shell Mound Archaic and Gulf Coast, although boundaries and settlement patterns beyond the Benton Interaction Sphere are still not well understood (Anderson and Sassaman 2012: 88-90; Deter-Wolf 2004: 28; Jefferies 1995a: 92; Johnson and Brooks 1989; Kidder and Sassaman 2009: 676; McNutt 2008: 57). It is suggested that this broad exchange network may have helped facilitate alliances as a mechanism for minimizing and distributing risk within this southern portion of the SMA (Johnson and Brooks 1989: 142). It should be emphasized here that the Benton Interaction Sphere does not likely intersect with the later appearance of exotic items such as copper, marine shell, and soapstone which appear during the Terminal Archaic (4,500-3,200 cal BP), but does suggest these historical ties in exchange were occurring during the Middle Archaic along the southern region of the SMA.

In the more centrally located parts of the SMA, particularly around the Green River and its tributaries in west-central Kentucky, exchange networks were well-established by the Late Archaic (Jefferies 1995a: 74; Marquardt and Watson 1983: 333-334). Archaeologists have reported evidence that copper, sourced from the Great Lakes, and marine shell, sourced from the

Gulf and South Atlantic Coasts, were being exchanged or obtained by the inhabitants living along the Green River and its tributaries, particularly those at Indian Knoll and some other shell-midden sites where this material was discovered in burials (Jefferies 1995a: 74; Marquardt and Watson 1983: 333-334). However, as pointed out by both Marquardt and Watson (1983: 334) and Jefferies (1995a: 75, 2009: 643, 657), there was considerable inequity between these externally sourced materials of copper and marine shell, with the latter being more abundant. Thus, this may suggest exchange may have occurred more frequently or over longer durations with people to the south compared with neighbors to the north. It is also worth pointing out that the overall presence of these two material types in SMA burials is still rare with notable issues in shell quantification and taxonomy (Claassen 1996: 252-257; Marquardt and Watson 1983: 334; Moore 2011: 142). Claassen (2015: 44) argues that such minuscule amounts of shell likely did not support exchange relationships and that cult/ritual behavior is a more likely hypothesis for foreign shells in the region. Nonetheless, such exotic materials were still present and may have represented important symbols of status in addition to being clear empirical evidence for some level of interaction and exchange, not to mention an emerging cognizance of the greater region occurring at this time.

In the northern region of the SMA along and on each side of the Ohio River, two very distinct mortuary practices are documented that have been argued to possibly represent separate cultural traditions, which Sassaman categorized as Ancestry I and II populations (see Sassaman 2010: 43). There are also signs of interpersonal violence or post-mortem acts of mutilation that vary across time within this region (Schmidt et al. 2010). Together with the evidence from the central and southern SMA, there is evidence for interactions over widespread regions, and, in the case of the northern extent of the SMA, support for the presence of potentially distinct cultural communities in adjacent regions. The interpretation of these patterns with respect to exchange, migration, and other forms of interaction remains unresolved but is important to understand in establishing the basis of the research following this chapter.

In a review of Archaic settlement organization Jefferies (1995b) summed up the work of McElrath (1993) to illustrate that at some point during the Late Archaic there are potential signs of migrations of peoples from the Midsouth areas of central Tennessee and northern Alabama into the American Bottom, suggesting this region may have shared cultural affinity with communities in the Midsouth (Jefferies 1995b: 130). Alluding to the tentativeness of the data at the time, Jefferies (1995b) stated, “if this migration can be verified, it would indicate that while the American Bottom is generally considered to be part of the Midwest during much of prehistory, it may have been culturally tied to the Midsouth at certain times” (Jefferies 1995b: 130). It should also be emphasized here that the archaeological consensus seems more favorable to viewing exchange as being more open along the southern part of the Shell Mound Archaic with some contending a strict boundary may have existed that would have discouraged exchange along and across the Ohio River in the north (Claassen 2010: 159-161; Jefferies 2009: 657; Saunders 2017: 6).

Although projectile points can be used to distinguish broad patterns of interaction on the landscape, carved bone pins and other artifacts can be incised and decorated to convey greater details of social information. Such artifacts have been argued to have a higher potential for identifying cultural expression, identity, and long-distance contact and may have served as “badges” for regional group membership (Jefferies 1995a: 83-85, 90). Bone pins, along with other artifacts such as bannerstones, fishhooks, and plummets that were developed and exchanged during the late Middle Archaic (6,900-5,800 cal BP) manifested regional distinctions that archaeologists have used to demarcate possible boundaries or buffer zones. These types of artifacts appear across the lower Midwest but rarely crossed south of the Ohio River into the Shell Mound Archaic territory in this northern region (Anderson and Sassaman 2012: 91; Claassen 2010: 159-161; Jefferies 1997, 2004). Indeed, bone pins were only recovered at three Green River sites—Indian Knoll, Carlston Annis, and Ward— which indicates limited interaction between people in the Green River Valley and those farther to the north (Claassen 2015: 156-157). Such findings support claims for the establishment of geographic boundaries between the Green River region with the area to the north where distinct cultural traditions inferred from mortuary behaviors and burial items are argued to be possible evidence for two "ethnic cores" or cultural boundaries (Anderson and Sassaman 2012: 91; Claassen 2015: 1; Moore 2011: 142-143; Sassaman 2010). Such boundaries may have affected the exchange of materials from farther regions, such as the Great Lakes, where copper used in objects was sourced.

From the above evidence, foraging groups from the SMA exhibited an increase in interconnection throughout the Archaic period via presumptive social and economic exchange networks, mostly to the south and west and more limitedly to the north (Sassaman 2010). Such exchanges may indicate distributed networks of interaction among Late Archaic hunter-gatherers, which would have fostered cultural buffering against varying environmental and social risks (as defined in the next section) and permitted responses to these challenges in ways that promoted resilience/adaptation and cultural persistence (Temple and Stojanowski 2019). The outcomes of these interactions mean that a variety of interconnected historical trajectories were unfolding throughout the Archaic. Adopting Wolf's (1982) historic approach to thinking about ancient processes of interaction, Sassaman (2010, 2011: 206-7) argues that the Archaic was a period of interrelated complexity and interaction, wherein cultural changes amongst various populations and communities occurred across the landscape over the ensuing millennia. As Sassaman (2011: 206-207) states:

> Everyday Archaic life experiences were punctuated with intercultural encounters, displacements, emplacements, ethnogenesis, resistance movements, diasporas, and coalescences. We ought not to assume that these ancient populations were more isolated and self-contained than modern ones, or that the conditions of encounters and history-making in ancient times were so radically different than those of modernity.

We can therefore expect an archaeological record to reflect many aspects of these phenomena. Growing evidence and interpretations for greater complexity by archaeologists over the past quarter-century suggest that that is the case (Anderson 2004; Jefferies 1995; Sassaman 2010, 2011; Saunders 2017). Concluding a review of Midwestern Archaic research of the then previous twenty years, Jefferies (1995b: 136) stated that, "[i]t is now clear that Late Archaic groups were well along the road to cultural complexity and that traits once thought to be diagnostic of later, more complex societies, such as sedentism, population aggregation, plant domestication, social differentiation, and long-distance exchange, were already developing." Such traits of complexity, therefore, lend themselves to changes and continuity in socio-cultural responses/buffering mechanisms to risk, namely, various strategies in mobility/migration, subsistence practices, storage of resources, and establishing exchange networks (Halstead and O'Shea 1989: 3-4).

The sustained continuity of the Shell Mound Archaic foraging lifeways throughout the 2,600 years of the Late Archaic may therefore constitute cultural persistence and an active case study in human resilience. The central idea here is that Shell Mound Archaic peoples were not only cognizant of groups that occupied a large swath of the southeastern North American continent but likely interacted with neighboring groups in different ways and thus possessed an intricate knowledge of the social relations and resource structure that existed over such an expansive landscape. These relationships would have contributed to mitigating risks and promoting resilience in times of social and environmental uncertainties, such as during times of interpersonal conflict or oscillations in precipitation (noted above) that may have inhibited settlement, travel, and exchange. Having a working knowledge of the surrounding territory, monitoring environmental variability, and knowing who occupied the larger region were vitally important for hunter-gatherers; this has been well-documented ethnographically with many foragers being knowledgeable of vast areas on the landscape (Halstead and O'Shea 1989: 3-4; Kelly 2016: 106) and creating social networks to alleviate risk living in precarious environments (Wiessner 1982). Thus, we may be able to propose from this background three general prerequisites to resilience, which would be reflected in the archaeological record by long-distance exchange and interaction: 1) knowing the landscape, 2) knowing the resource structure, and 3) knowing your neighbors. These prerequisites greatly influence how a given group could be buffered against the unpredictable changes in climate and the subsequent effects on resource procurement. Additionally, such factors also facilitate social practices that create exchange networks for information, ideas, and mates, which helps to enhance cooperation and reduce risk and uncertainty (Jefferies 1995: 78-79; Kidder and Sassaman 2009: 677).

Clan Systems in North America

Before considering the parameters of risk and resilience, it is essential to consider how groups have manifested their identity in the Southeast, which has been encapsulated by clan systems and may be useful in conceptualizing group organization, exchange, and interaction in the past. As defined by Tooker (1971), clans are a form of social organization whereby traditionally exogamous membership groups are ascribed to patrilineal or matrilineal affiliation, although she also argues that not all clan systems are necessarily based on genealogical relationships or kinship. Effectively, clans are ritual societies that often relate to various spiritual and ancestral totem animals which serve as the symbol for a given clan. According to Tooker, clans served to bind people together under the aegis of clan structures over larger regional areas that would not otherwise be genealogically related. The role of clan systems has been varied and in general, worked to establish and maintain social relations by providing hospitality to clan members and easing social tensions in times of stress.

Drawing upon the ethnographic and ethnohistoric work among southeastern Tribes such as the Muskogee Creek, Chickasaws, and Cherokees, Tooker reports that clans served much in the realm of diplomacy between nations. She cited an instructive passage from Swanton (1927: 203):

> One of my informants asserted emphatically that the totems were of importance only in international relations, as in dealings with the Creeks, when they determined the position in which visiting Chickasaw and Creeks stood to one another. Those belonging to totemic groups having the same animal names then considered themselves relatives, and hospitalities were exchanged.

Another, similar passage from Goldschmidt (1948: 454) further illustrates this idea:

> The clan serves, as frequently reported, [as] a device for unifying a larger territory. Such unity, when further implemented with ceremonial devices, can serve to inhibit

> inter-village hostility and eventually to weld a larger territory into the semblance of nationhood. The advantage of such action in competitive relationships with neighboring peoples is great.

Thus, clan systems served many important social functions that went beyond local tribal affiliation and territories and helped facilitate movement and relations between peoples across the landscape. The implications of clan structure for social organization, interaction, and long-distance exchange in pre-contact history are likely profound yet remain archaeologically difficult to articulate. As Tooker (1971: 363) remarked, “if it could be established that there was an extensive trading empire in North America, some of the characteristics of North American clans that are now puzzling would be less so.” Based on Tooker’s argument, long-distance exchange and clan systems appear inexorably linked.

The development and role of indigenous clan systems in North America remain a rich topic in need of greater research and discussion within archaeology. Two prevailing questions are (1) where and when did clans begin to develop and (2) what archaeological evidence exists to help substantiate the geographic and temporal range of clans? Current research often highlights the role of the Hopewell Interaction Sphere of the Ohio River Valley which existed from 100 BC to AD 500 in both questions. This extensive trade network consisted of large amounts of exotic items such as copper, mica, marine shell, obsidian, silver, and meteoric iron and zooarchaeological remains such as teeth, jaws, and claws from known clans of the historic post-Old world recontact era in the region such as Deer, Elk, Wolf, Hawk, and Snake crafted into items of adornment which ended up in burials (Carr and Case 2005; Tooker 1979). Such evidence suggests clan systems have deep historic roots. Although it is suspected that clan systems stretched much further into the past in the Eastern Woodlands, it remains open to research and discussion to uncover more of this history. The material evidence for exotic items and the purported increase in population sizes during the Late Archaic indicates some degree of growing reliance on long-distance contact, interaction, and exchange. Were clan systems developing during this time and did they have a role to play in the exchange of peoples, objects, and ideas that ultimately allowed for risk-mitigation among and the resiliency of Late Archaic peoples and the persistence of culture? This idea will be considered in interpreting the archaeological evidence analyzed in this study.

Defining Risk

Within the broad context of lifeways in the Archaic, what do I mean by “risk”? From a human behavioral ecology (HBE) standpoint, *risk* is often defined within the parameters of optimal foraging theory (OFT) and primarily refers to the concerns over resource scarcity/abundance which can vary in intensity, frequency, spatial extent, and predictability (Halstead and O’Shea 1989; Kelly 2013:68). As elaborated by Kelly (2013:68-69), risk is defined in terms of the variability, and hence unpredictability, in resource abundance within ecological and economic settings which can result in undesirable consequences (see also Hegmon 1991: 310; Wiessner 1982: 61). This concept of risk extends itself to other forager behavior and decision-making processes.

Several models have been developed to predict optimal foraging behaviors concerning diet choices, habitat use, mobility, group size, and settlement patterns (Winterhalder 1981). The analytical capabilities of these OFT models have confirmed predictions and demonstrated close similarity between the ethnographic data and chosen models (Kelly 2013: 70). However, it should be noted that the underlying assumptions of these models are not without their criticisms and limitations. First, the conceptualization of what constitutes “work” as a metric for comparing cultural activities is contested and varies across cultures (Claassen 1991: 284). Also, two well-known problematic assumptions of optimal foraging models are 1) that foragers are operating rationally and 2) that foragers have perfect knowledge of their environments (Kelly 2013: 76, 102-103). Neither of these fully holds up to reality; humans rarely, if ever, have a perfect working knowledge of their environments, and are not fully rational creatures, or at the very least do not always perceive "what is reasonable" in the same way. For example, the Naskapi of northeastern Canada, despite being expert hunters, do experience moments of uncertainty and risk in food shortage. To respond to this, they will invoke the practice of "scapulimancy", a form of divination that interprets the cracks and spots on burnt animal scapula bones[2] to reference local topography to guide imminent hunts. Scapulimancy may serve as a "crude 'chance-like' instrument" as the result randomly selects places on the landscape to investigate for hunts (Moore 1979). Such divining practices have been observed cross-culturally throughout the world; it is unlikely that such behavior and cultural responses to risk would be anticipated using OFT models alone (Moore 1979).

Much of the theory on risk applied for the present study of social interaction and exchange during the SMA is based on ethnographic observations of historic and modern hunter-gatherer societies and is especially attributed to the work of Wiessner (1977, 1982, 1983, 1984). Wiessner's notable example of risk-mitigation practice was demonstrated with the !Kung San's reciprocal exchange system known as *hxaro* (see also Halstead and O'Shea 1989: 4; Kelly 2013: 156; Moore 2011: 39, 101). *Hxaro* is an elaborate trade network that, in addition to building and maintaining long-term cross-generational relationships, involves the ritual exchange of items such as arrows, blankets, and beads, and that subsequently ensures all participating members

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[2] Such observations are obvious indications that archaeological analyses of faunal remains should, whenever possible, consult ethnographic and ethnohistoric accounts.

have access to the extended network of reliable waterholes in times of drought. Such theory has informed interpretations of the archaeological record within the time and region of interest for this project. For instance, Jefferies (1995a: 78-79) applied Wiessner's (1982) ethnographic assessments on risk to those of Middle and Late Archaic exchange networks operating along the Green River, and Jefferies et al. (2005: 20) made similar comments regarding Cypress Creek, located within the same broad geographical region of western Kentucky.

As well-formulated as human behavioral ecology is in modeling risk, the HBE definition of risk appears to be too narrowly focused on environmentally determined outcomes while ignoring or downplaying the cultural agency of the groups affected by risk. The four primary categories or "buffering mechanisms" of cultural response to environmental variability are (1) mobility, (2) diversification in diet, (3) development of storage, and (4) exchange (Haldstead and O'Shea 1989: 1-7; Kelly 2013). In general, it is argued that environmental or climate changes in intensity, frequency, duration, or spatial extent cause cultures to respond appropriately through various means according to these four primary risk-mitigation strategies. But risk is not just a product of the environment, e.g., food shortage or scarcity. Risk is also a product of interactions with other individuals and groups. Evidence such as trophy-taking along the Ohio River (Schmidt et al. 2013) and other bioarchaeological evidence for trauma (Smith 1995, 1996a, 1996b, 1997) implicates risk as a social stressor for Late Archaic groups. Nor are these four buffering mechanisms listed above the limits of cultural responses to risk. One might consider the development of territories or distinct cultural boundaries to be another cultural response to risk. Another would be the development of distinct technology.

Some of the cultural responses to risk may be difficult to observe in the archaeological record, such as changes in religions, belief systems, and cosmology. However, a perusal of the anthropological literature on comparative religion demonstrates the variety of ways humans across time and space have responded to risk and uncertainty. Studies present evidence of the development of intricate rituals and practices as means of warding off or mitigating various perceived risks both supernatural and secular (Lessa and Vogt 1979), exemplified by the construction of myths, origin stories, rituals, ceremonies, shamanism, and divination that speak to the inherent risks of life. For instance, Lessa (1979: 169-173) recorded the formation of a myth among the Ulithi people of Micronesia whereby the ghost of a person known as Marespa died in infancy in the early 1800s and was deified, returning to the earth as a ghost with powers that enabled him to "predict typhoons, reveal the fate of voyagers at sea, warn of impending epidemics, forecast an abundance of fish, describe events in distant places…" Such risks correspond remarkably to the types of risks faced by people inhabiting this corner of the world and shed light on the underlying insecurities that prompt such cultural responses. Leach (1979) argued that many hunter-gatherer groups across the globe living in seemingly precarious environments (e.g., the arctic) and who were traditionally illiterate had to possess an elaborate mechanism for remembering all the subtle details of survival in the absence of writing systems. He posited that many groups used various rituals to culturally embed knowledge such as information about the local topography that was critical for survival. Thus, rituals serve as another cultural response to risk. Lowie (1979) discussed the uses of the vision quest and the invocation of shamans among North American native groups as means of curbing social and environmental risks such as curing diseases, promoting successful hunts, ensuring revenge on and protection from enemies, and various other powers that fundamentally operate to mitigate an individual or groups' risks. Shamans were therefore risk mitigators, whether the concern was individual illness or rain for growing crops, using ceremonies and annual events (Shweder 1979).

For example, Evans-Pritchard (1979) revealed the practicability of witchcraft in making sense of unfortunate or risky events among the Azande, and ethnohistoric accounts regarding the oral traditions of the Tareumiut and Nunamiut of Alaska have recorded folktales and creation myths surrounding the risks of food shortage and famine and the cultural responses of ritual, taboos, and beliefs (Minc and Smith 1989). The case of the Naskapi's use of divination stated above is another case in point. Such practices speak to the diversity of social, cultural, and spiritual responses to risk that likely extend far into human history beyond the ethnohistoric and ethnographic records.

Thus, it is proposed here that the definition of risk be broadened for this project to mean: all the ways the environment could harm an individual or group (environmental risks) plus all the ways other humans could harm an individual or group (social risks). When we reflect on our modern life for a moment and consider the behaviors, technologies, and socio-cultural means that we consciously or unconsciously utilize daily, we will find a panoply of our decisions inherently linked to reducing our risks. Practices that range from personal hygiene to locking our doors in the evening to paying taxes to support collective institutions (e.g., education, health care, and the military) can be argued to be behaviors in risk mitigation. Risk is ultimately an inherent feature of human life that prompts (and has prompted) human behavior to cultivate socio-cultural strategies and responses that may promote resilience in various social organizations. Although the material remains of many of these behaviors will remain elusive or non-existent in the archaeological record, the role of risk in human decision-making and cultural responses in the past remains a problem for archaeology to contend with. How do we think about such praxis in risk avoidance or mitigation in the context of past hunter-gatherer-fisher societies?

What *outcomes* of risk might be materially represented in the archaeological, zooarchaeological, paleoethnobotanical, or bioarchaeological records?

Sustained interaction and exchange networks are argued (by some) to be one type of risk-minimization strategy or risk-sharing mechanism that worked to buffer against social risks such as potential conflicts and ease environmental risks such as local subsistence uncertainties or failures by linking people together in cooperative systems based on reciprocity (Anderson 2002: 263; Anderson and Sassaman 2012: 93; Halstead and O'Shea 1989: 4; Jefferies 1995a: 78, 92; Johnson and Brooks 1989: 142; Kidder and Sassaman 2009: 677, 684). As summed by Anderson and Sassaman (2012: 79), "The more typical strategy for reducing risks among hunter-gatherers worldwide is to participate in networks of reciprocal exchange that crosscut environmental regimes to ensure access to resources when local sources are inadequate, often by relocating." Furthermore, the ritual trading of artifacts simultaneously would have promoted information flow and enhanced cooperation (Kidder and Sassaman 2009: 677). Consequently, a multitude of benefits exists for groups that establish cooperative exchange networks, which include mutually beneficial information, annual social meetings for ceremonies coupled with mate and resource exchanges, and locations of refuge in times of local or regional stressors such as changes in climate or social conflict.

This multiplicity of incentives seems to have compelled groups to link up with surrounding groups and would have become increasingly important as groups grew and fluctuated in scale and complexity from the Middle to Late Archaic. As stated by Jefferies (1995a: 78-79):

> Exchange networks may have been a way of maintaining intergroup affiliation and information flow that was previously accomplished during normal seasonal movement.

> As Middle Archaic groups became more sedentary, the flow of social and environmental information may have been maintained by individuals establishing ties, perhaps as trading partners, with members of distant groups.

Yet what needs to also be emphasized is that exchange networks also have their limits and are not a foolproof buffering mechanism. They also carry risks of their own if stress conditions become severe and affect the entire region, such as prolonged drought and flooding events. The two-sided nature of exchange as a coping strategy is explained by Minc and Smith (1989):

> Exchange networks can expand to dilute the impact of subsistence stress. Intra-societal exchange or sharing evens out short-term, localized differences in hunting success through the pooling of resources. In a long-term or regional resource failure, however, where survival depends on access to resources and goods outside the normal network of reciprocal obligations, social access will be maintained through increasingly formalized means of exchange, such as training partnerships, or through delayed obligations inherent in 'social storage'. In the absence of accepted, mutualistic avenues of exchange, necessary resources may be acquired through negative reciprocity, in the form of raiding and theft.

There is likely a complex balancing act that takes place in the establishment, maintenance, and cessation, i.e., collapse, of exchange networks. To understand this, the conceptual framework of resilience theory will be explored below.

Ultimately, the conditions for social organization, population scale, and levels of interaction are shaped by several variables, but importantly have much to do with (1) resource availability and structure to support larger population levels; (2) the surrounding topography and barriers on the landscape such as mountains and rivers that can either hinder or facilitate interaction; and (3) the organization and presence of people over the landscape (Anderson 2002: 267). Such conditions are also key factors that facilitate the cultural responses to uncertainty and risk. More succinctly, resources and people, their locations, and their abundance on the landscape are our limiting factors to consider for analysis of interaction and exchange (Halstead and O'Shea 1989: 2-3). Archaeologically, we ought to have enough data to generally assess where people were located and what resources were available during the Late Archaic spatially and temporally. As described above, the evidence suggests people were interconnected and thus were likely making decisions by using such networks to buffer against their social and environmental challenges. What was it about these hunting, gathering, and fishing communities that enabled cultural persistence in this region for 2,600 years? Could part of the answer to this question have anything to do with exchange networks? The consequent materials used in exchange that have been left to the archaeological record are a means or proxies for gauging various aspects of interaction and exchange.

In sum, the theory of risk argues that individuals distribute or pool their risks across a population in various social and economic ways as a means of buffering against their risks along with other important factors such as building social capital and unsuspectingly increasing fitness. By staying connected with others over vast distances, these groups ensured several means of enhancing group solidarity and cooperativeness through forms of ceremonialism and the exchange of important information, goods, food, and mates. In general, theory and evidence suggest that as Archaic hunter-gatherers began to favor forms of sedentism, they were balancing their risk-mitigation strategies, reducing residential mobility while expanding and maintaining exchange networks. The purpose of the theory on risk then can perhaps lead us to answer more detailed questions about the variability in how different groups coped with risks and promoted resilience both within the Shell Mound Archaic region and those groups on the outskirts. The main hypothesis here is that the establishment of long-distance exchange networks was a critical component that promoted resilience in SMA groups and enabled the persistence of culture in the region for as long as it did. Further analysis of the geospatial patterning of sites, exotic materials used in exchange, and landscape features may grant us a unique ability to compare the broad patterns of variability in cultural persistence across the Tennessee River Valley during the 2600-year history of the Late Archaic.

Defining Resilience

Given the context provided in describing risk, how is resilience defined? Resilience is defined as the capacity of an ecosystem to respond to disturbance and damage through recovery and regeneration (Holling 1973, 2001; Holling and Gunderson 2002). From an ecological perspective, where the concept originated, resilience is measured by the persistence of variables and relationships among participants in a system withstanding disturbances (Holling 1973). Since its inception in the 1970s, resilience theory has been refined and expanded its framework beyond ecology into a variety of fields including psychology, sociology, and anthropology, where researchers have applied it to understanding the complexity of economic, biological, social, and political systems (Bollig 2014; Holling 2001; Redman 2005; Redman and Kinzig 2003). In its simplest sense resilience is the capacity to be flexible (Redman and Kinzig 2003).

In archaeology, resilience theory has been argued to be a useful framework for interpreting the role of change or stability in past socio-ecological systems as well as providing relevant context and prescriptions to contemporary issues such as climate change (Peeples et al 2006; Redman 2005; Redman and Kinzig 2003). The application of resilience theory has recently been applied to hunter-gatherer studies and modifies the original definition of resilience as “the capacity of relationships within a system to absorb external stressors and persist” (Temple and Stojanowski 2019: 7). In this context, resilience is primarily assessed through various analyses of mortuary treatment, skeletal markers of stress and disease, demography, and interpersonal violence (Temple and Stojanowski 2019). Bioarchaeological analyses dually assist the capacity to understand both past peoples’ responses to social and environmental changes as well as provide timely contemporary insight into the lasting physiological and societal effects of climate change, infectious disease, urbanization, human migration, and human displacement. Understanding past human resilience has also been stated as one of the primary grand challenges for archaeologists in the 21st century (Kintigh et al. 2014). The discipline of archaeology is argued to be well-suited to inform our understanding of long-term changes and dynamics in socio-ecological relationships in the past due because of its “deep time” perspective; archaeology has also been argued to advise global sustainability practices and human decision-making utilizing resilience theory (Hegmon et al 2008; Redman 2005; Redman and Kinzig 2003; Thompson and Turck 2009), which affords opportunities to collaborate with other disciplines in the social and natural sciences (Peebles et al. 2006).

Fundamentally, the theory of resilience was designed to be integrative and cross-disciplinary to serve both as (1) a conceptual model to understand change, continuity, and complexity in various systems (e.g., economic, ecological, and social) and (2) a means of developing policy for sustainability practices (Holling 2001). It bears mentioning that this model for resilience “theory” is not a true scientific theory since it lacks explanatory power as to why certain phenomena occur within a system but is more of a useful metaphor or heuristic for conceptualizing the change and stability via adaptive cycles (Faulseit 2016: 14; Peebles et al 2006). A system is argued to go through various adaptive cycles in four stages that form a self-reinforcing loop, namely a growth/exploitation/colonization phase (r), a maintenance/conservation phase (K), a release/collapse phase (Ʊ), and a regrowth/reorganization phase (α) and is configured as a "figure eight" or infinity symbol as illustrated in **Figure 2.2.** Furthermore, the model is meant to be perceived as a three-dimensional object with three properties that condition the adaptive cycle, namely the inherent potential for change in the system (y-axis), the degree of connectedness within a system (x-axis), and the resilience of the system (z-axis) as illustrated in **Figure 2.3**.

Taking a broad perspective, a simplified application of the resilience model at the scale of the SMA region from the Middle Archaic (ca. 8,900 cal BP) until the Late Archaic-Early Woodland transition (ca. 3,200 cal BP) might be a single adaptive cycle ordered as follows: the adaptive cycle would "begin" in the Middle Archaic around 8,900 cal BP with a reorganization phase (α) of small band-level societies moving into the region and gradually increasing their population densities along major rivers and tributaries followed by a long growth phase (r) of groups forming tribal societies, reducing their residential mobility and becoming semi-sedentary, establishing long-distance exchange networks, constructing mortuary shell mounds, and gradually transitioning to a maintenance and conservation phase (K) of this continued lifeway ending with an abrupt release phase (Ʊ) occurring around the Late Archaic-Early Woodland transition (beginning ca. 3,400 cal BP), which would have demarcated the collapse of the SMA socio-ecological system. A similar model of this adaptive cycle has been argued and outlined elsewhere for the Late Archaic-Early Woodland period along the Georgia coast

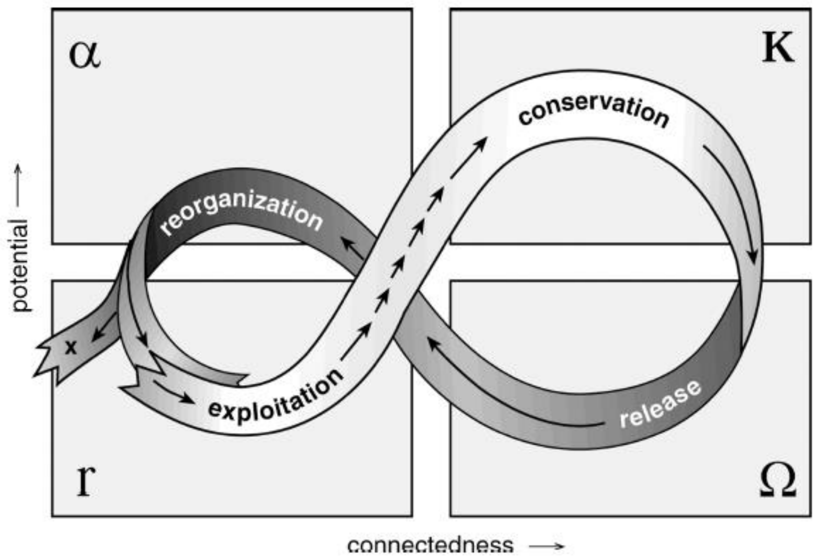

Figure 2.2. The adaptive cycle model of four ecosystem functions (r, K, Ʊ, and α) (after Holling and Gunderson 2002).

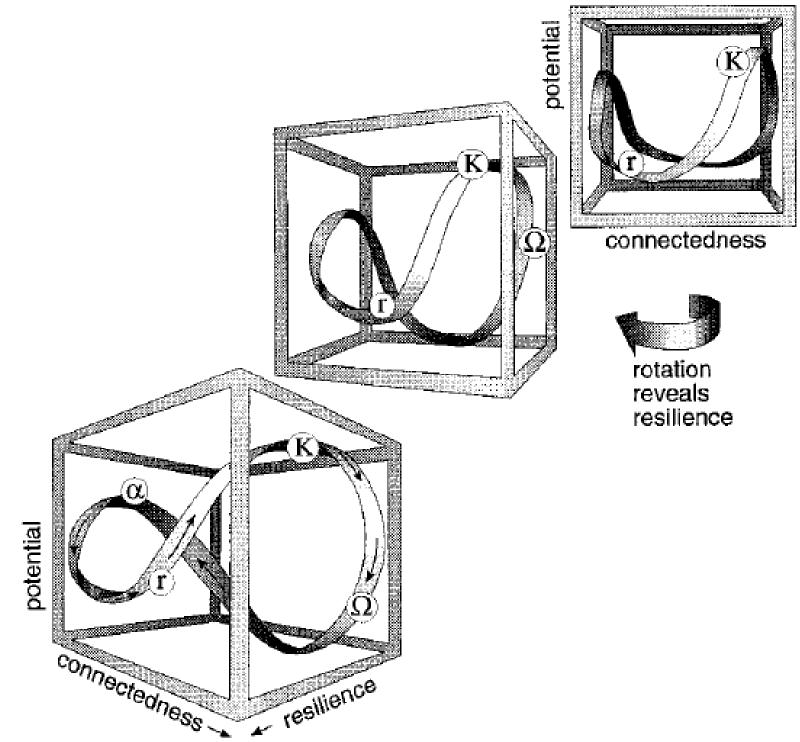

Figure 2.3. The three-dimensional aspect of an adaptive cycle showing the dimension of resilience (after Holling 2001).

(Thompson and Turck 2009). Other researchers in the southeastern United States have applied resilience theory to understanding socio-ecological systems in the Lake Okeechobee Basin (Thompson 2016) and the Mississippi River Delta (Rodning and Mehta 2016).

In summary, the primary interest of this project is to explore the r to K phase and study what features of the Shell Mound Archaic social, cultural, and ecological system might have enabled such a seemingly prolonged phase of cultural persistence. It is argued that utilizing the adaptive cycle of resilience theory helps archaeologists understand the cultural evolution of hunter-gatherer groups at a regional scale, and already has been demonstrated for coastal hunter-gatherers in Georgia (Thompson and Turck 2009). As stated above, the hypothesis is that the long-distance exchange of resources and the social interaction that was a consequence of these exchange networks are what enabled people to maintain resilience and persist culturally for a lengthy period.

Caution is necessary for hypothesizing that resilience best explains the evidence, however. As Redman and Kinzig (2003) asked, in interpreting the evidence, artifacts and site manifestation may cause a mistaking of longevity for resilience. For this reason, I ask whether there is enough data indicating exchange and interaction during the Late Archaic in the region to support the claim for resilience? We may pose some additional questions to consider moving forward: What was the nature of Late Archaic interactions? How were people connected and how did those connections vary across the region? What was being exchanged, over what period(s), and across what geography? Based on this evidence, what different resilience strategies might have been operating on the landscape simultaneously? And was this interaction and exchange a key component to upholding resilience and reducing risk? These questions are considered in light of the evidence analyzed in Chapter 4 and discussed in Chapter 5.

CHAPTER 3: MATERIALS AND METHODS

To address the questions raised in Chapters 1 and 2, in this chapter I provide details of the archaeological data collected and the geospatial methods used to organize, analyze, and visualize the data. The principal archaeological data used relate to site type, periods of occupation, lithic types, and exotic materials. Additional data were collected that pertains to the level of archaeological site exploration that took place at a given site, and when the site was investigated. The geospatial approach here is designed to be data-driven whereby the goals are: 1) to accumulate a summary of data as it pertains to variables for long-distance exchange during the Late Archaic in the Tennessee River Valley along the lower and upper Tennessee River; and 2) to use maps generated through ArcGIS Pro to assess patterns of shared site construction and artifacts between the lower and upper Tennessee River Valley during the SMA, followed by statistical analysis.

To provide further context for the kinds of data I analyze, one goal of this archaeological investigation is to build a dataset that affords researchers an ability to reconstruct both the details of sites and the contexts in which they were identified. As this research depends on recorded information from sites, both unpublished and published, the study has further implications for the strategic collection, formatting, storage, sharing, and ultimately a representation of the data. Ideally, data ought to be as organized, accessible, intuitive, and intelligible as possible with all interested parties in mind. This is not only beneficial for other academic researchers, but also for those working throughout the private sector in CRM who frequently engage with many other professional disciplines as well as the public at large. Thus, I will be providing a meta-analysis of the results of this study to consider how well this goal is achieved given the available literature.

One method for achieving this is the use of geographic information systems (GIS) software. GIS software provides a powerful tool to communicate a broad perspective about archaeological data both effectively and efficiently. The use of GIS has become an increasingly popular way to conveniently store, portray, and communicate archaeological spatial data. Thus, exploring ways to organize, synthesize, and visualize large amounts of available archaeological data has been an embedded goal of this project.

Materials

To start the work on this study, all eligible sites from the SMA needed to be identified. Initial site file data were retrieved from the Digital Index of North American Archaeology's (DINAA 2022) online database. DINAA is an open context database aimed at collaboratively aggregating archaeological and historic data across state and federal institutions in the United States (Anderson et al. 2017; Kansa et al. 2018; Wells et al. 2014. The primary source of this project's data is derived from and provided by the Tennessee Division of Archaeology (TDOA). Next, Late Archaic sites were filtered from the 25 counties that border the lower and upper Tennessee River (**Figure 3.1** and **Figure 3.2**). Within the upper Tennessee River watershed, the Little Tennessee River, the Holston River, and the French Broad River are included in addition to the Tennessee River. A total of 560 Late Archaic sites were queried within these 25 counties (**Table 3.1)**. Out of the total, a sample of 150 Late Archaic sites[3] was selected for this study which amounts to approximately 27% of all recorded Late Archaic sites in the chosen 25 counties (see **Table 3.1**). As I discuss below, these sites were nonrandomly selected but are

[3] One set of sites (40BN13, 40BN17, 40BN61) was combined in July 2010 as a single site (40BN13) according to the TDOA site form. A second set of sites (40BT89, 40BT90, 40BT91), i.e., the Townsend Sites, were combined for this study and considered a single site due to their concurrent contemporaneity, spatial proximity, and time of archaeological investigation.

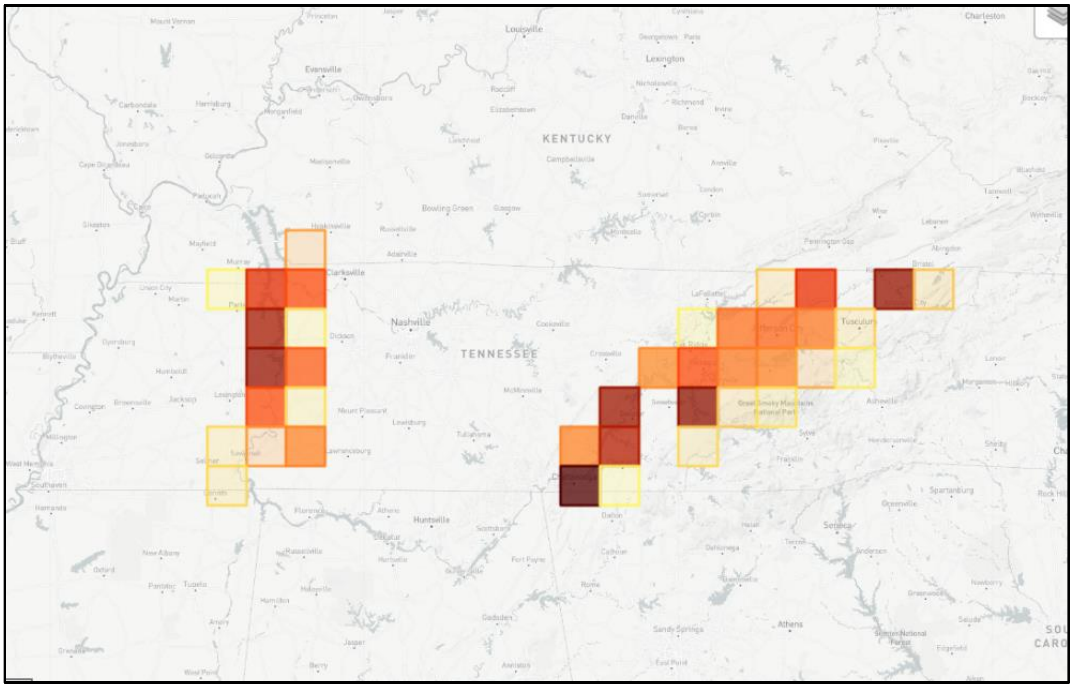

Figure 3.1. Overview of the 25 counties selected from the DINAA (2022) online database, which records sites over a uniform grid (ca. 16 x 16 km) rather than county boundaries. Colors indicate the density of sites within each county, lighter indicating fewer sites and darker indicating a greater number of sites.

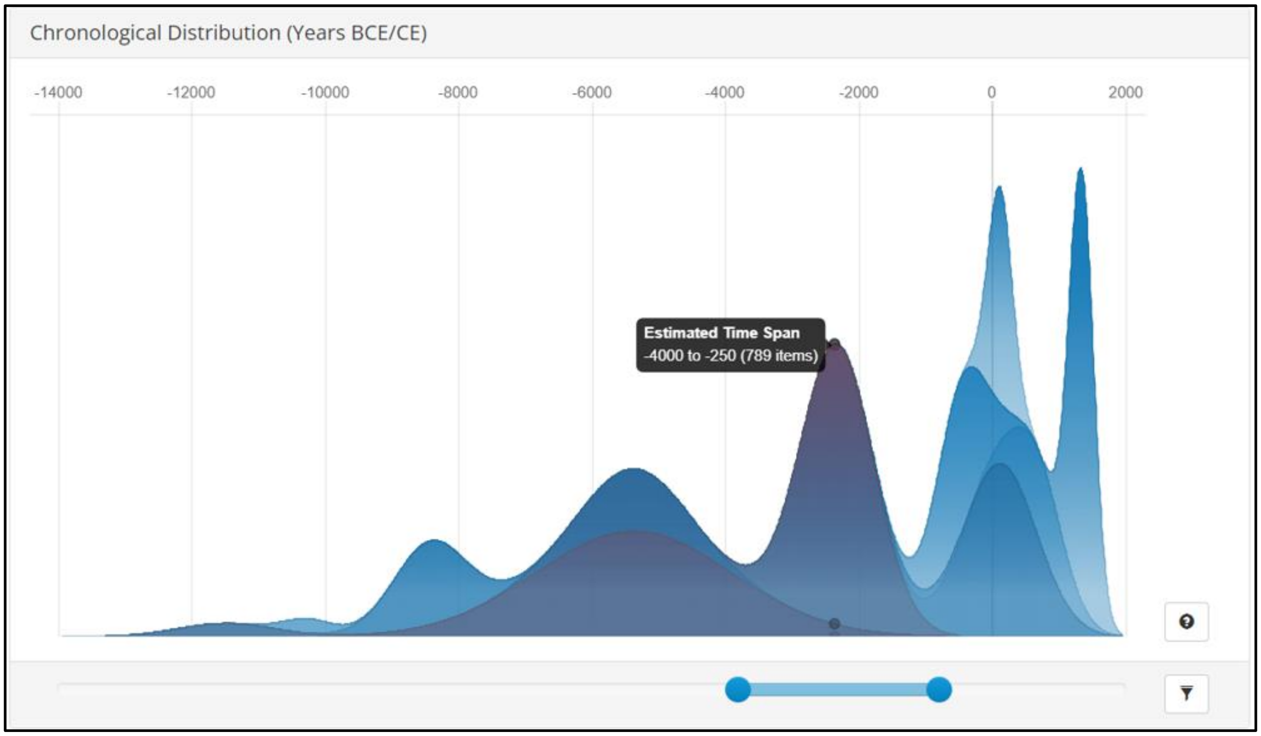

Figure 3.2. Chronological distribution of archaeological sites from DINAA (2022) online database with slider feature filtered for Late Archaic sites. Note: DINAA did not have a y-axis available at the time of the study. The peak number of sites for these 25 counties estimated from 4000 BC to AD 250 is 789 as indicated by the hover feature.

Table 3.1. Lower and upper Tennessee River counties with Late Archaic sites used in this study. Sites are categorized by the nature of the archaeological survey: Reconnaissance (Recon.), Phase I, Phase II, or Phase III, as defined below.

County	**Number of Sites Total**				**Number of Sites Sampled**			
	Recon.	*Phase I*	*Phase II*	*Phase III*	*Recon.*	*Phase I*	*Phase II*	*Phase III*
Upper Tennessee River								
Blount	5	4	0	1	0	4	0	1
Cocke	2	3	3	1	0	1	3	1
Greene	0	4	2	0	0	3	2	0
Grainger	3	13	0	0	1	4	0	0
Hamilton	6	49	3	4	0	4	3	4
Hamblen	3	12	0	0	0	5	0	0
Hawkins	8	17	0	0	0	2	0	0
Jefferson	5	2	0	0	3	2	0	0
Knox	10	19	4	0	0	4	4	0
Loudon	0	13	3	3	0	2	3	3
Meigs	3	30	2	0	0	3	2	0
Monroe	1	23	1	4	0	3	1	4
Roane	0	13	0	1	0	4	0	1
Rhea	6	14	6	0	1	3	6	0
Sevier	5	4	4	1	0	2	4	1
Sullivan	26	15	0	0	1	5	0	0
Lower Tennessee River								
Benton	7	33	4	6	2	1	4	6
Decatur	0	17	1	1	0	5	1	1
Hardin	5	5	2	0	1	2	2	0
Henry	1	16	0	0	0	5	0	0
Houston	1	2	0	0	1	2	0	0
Humphreys	7	29	1	1	2	1	1	1
Perry	1	6	2	0	0	2	2	0
Stewart	5	25	3	0	0	1	3	0
Wayne	6	7	2	1	0	1	2	1
TOTAL	**116**	**376**	**43**	**24**	**12**	**71**	**43**	**24**

representative of the range of site occupations (e.g., mounds, open habitations, small encampments) and temporal range of the SMA, as well as all phases of archaeological investigation and site excavation.

Sites are classified based on the intensity of archaeological excavation and study that took place. Four types of survey level intensity were assigned in this project that corresponds to modern CRM survey classifications[4]: Reconnaissance; Phase I; Phase II; and Phase III. Out of the 150 sites, 12 sites (8%) were listed as documented by reconnaissance surveys, 71 (47%) by Phase I surveys, 43 (29%) by Phase II surveys, and 24 (16%) by Phase III surveys (TDOA SHPO Standards and Guidelines 2018). Field methodologies for reconnaissance surveys often consist of a pedestrian survey, opportunistic shovel testing, and/or general surface collections with the primary goal to identify, record, and report the location of new archaeological resources to the State Historic Preservation Office (SHPO). Phase I survey methodologies often consist of controlled surface collection, controlled pedestrian survey, systematic shovel testing, and/or hand auguring with the primary goal to evaluate the presence, nature, and degree of integrity of archaeological resources within a modern infrastructure project's area of potential effects (APE). If archaeological resources are discovered, sufficient information should be recovered to determine if a further archaeological investigation is warranted and to assess the eligibility status of the site for the National Register of Historic Places (NRHP). Phase II survey methodology often adds a further level of archaeological investigation and implements a series of controlled excavation units to delineate the horizontal and vertical dimensions of a known archaeological site. A Phase II investigation aims to determine whether the site in question is eligible for the

[4] These four classifications are meant to be generic categories and were obviously not in place prior to the changes in archaeological field methodologies that were initiated by U.S. legislation in the 1960s and 1970s that brought about cultural resource management (CRM) guidelines.

NRHP and if further archaeological testing is warranted to mitigate the destruction of the site. Phase III survey methodologies can vary depending on the potential impacts on the known archaeological site and the site's significance. In general, Phase III surveys are typically extensive excavations with the intent to recover as much archaeological data as possible and/or take measures to mitigate the impact on archaeological resources. Combined Phase II and Phase III archaeological surveys analyzed in this study totaled 67 sites. It is important to note here that these 67 sites encompass all the reported sites recorded in Phase II and Phase III archaeological surveys among the 560 Late Archaic sites within the selected 25 counties. Thus, while the sites analyzed in this study that were explored with Phase I or reconnaissance level survey represent fewer than 20% of the total SMA sites surveyed at this level, 100% of sites surveyed at Phase II and Phase III levels are included. This decision was made to enable the most amount of data on Late Archaic exotic raw material use along Tennessee's largest waterways by selecting the most intensively surveyed sites. The remaining 83 sites that were subjected to reconnaissance or Phase I archaeological surveys were selected randomly for each of the 25 counties where each county ranged from having 1-6 sites per county. Thus, all 25 counties have minimally one site represented and at most six sites represented. The decision to include these 83 sites was made to evaluate the visibility of exotic items on less extensively surveyed sites without swamping the analysis with sites surveyed at these levels.

Efforts were made to gather all data on exotic materials recorded from the selected sample of 150 sites from all available sources which included site survey forms, technical CRM site reports, academic publications, and other archaeological documents such as field specimen forms (FS logs), burial forms, and excavation/field reports. All site survey forms were retrieved from the Tennessee Division of Archaeology's (TDOA) archives in Nashville, Tennessee. All available site reports were retrieved from either the TDOA, the Tennessee Valley Authority (TVA) based in Knoxville, Tennessee, or the Archaeological Research Laboratory (ARL) at the University of Tennessee, Knoxville. Early sites from TVA and Works Progress Administration (WPA)-era excavations from the 1930s and 1940s yielded numerous excavation/field reports, field specimen forms, and burial forms. This set of data was retrieved from the Frank H. McClung Museum of Natural History and Culture at the University of Tennessee, Knoxville. All references used in this study are listed by site number in **Appendix C** and all technical site reports reviewed are listed in a separate reference section below after the primary references section.

Methods

Once all available sources of data[5] were obtained, data were recorded in an Excel spreadsheet. The Excel spreadsheet was formatted as a comma-separated values (CSV) file which could later be imported into ArcGIS Pro for analysis. All data recorded included: the Tennessee site number; site name[6]; county; site location by latitude and longitude in decimal degrees[7]; survey level intensity; the presence/absence of a mound; archaeological site type (open habitation, shell mound, cave, earthen mound); the presence/absence of exotics; type and quantity of exotic artifacts (detailed below); earliest and latest Late Archaic C14 dates, if available, and the average (mean) C14 date calculated from these; the number of distinct diagnostic Late Archaic projectile points; the presence/absence of burials; the number of burials;

[5] Not all sources of data could be gathered due to reports not being available or unable to be located at TDOA at the time of this research. In sum, 15/150 (10%) of sites were recorded as not having all references/data obtained.
[6] Not all sites have been assigned a common name. If no common name was listed, 'unknown' was assigned.
[7] True latitude and longitude were used for the purposes of this study, but actual coordinates are not publishable. Typically, available coordinates are faux coordinates such as those obtained from DINAA which plot each site's location within 16km of the site's true location.

and year(s) in which each site was surveyed and/or excavated. Below I provide details about how these data were coded and synthesized by category. All recorded data used for analysis are provided in **Appendix A** and **Appendix B**.

All data variables mentioned above were extracted from all reviewed site forms, all available unpublished field reports, field specimen forms, burial forms, and relevant sections of all available site reports. Relevant sections of site reports included results and appendices containing artifact inventories. Keyword searches were also utilized to flag any mention of exotic materials when optimized documents permitted. The types of exotic materials that have been discovered are well-documented, namely marine shell, copper, steatite, soapstone, and other forms of nonlocal chert. Keywords used to identify these included: ‘exotic’; ‘nonlocal’; ‘non-local’; ‘non local’; ‘copper’; ‘marine shell’; ‘steatite’; and ‘soapstone’.

Data that were ambiguous or could not be obtained were each given a column in the spreadsheet and coded as a ‘0’ (no ambiguous data) or ‘1’ (ambiguous data) to keep track of which sites had ambiguous data or did not have all data available at the time of this study. Ambiguous data included records that lacked clarity on artifact provenience or were vague on the site records which failed to list specific diagnostics used to evaluate temporality/cultural affiliation. For example, sites that were excavated before 1950 that mentioned an exotic material on the field specimen forms and/or burial forms but didn’t quantify the exotic material were listed as ‘indeterminate’ under the columns specified for the quantity of the exotic material type.

Once all data were compiled into the spreadsheet, the CSV file was imported into ArcGIS Pro. Base-level data for state topography, geology, geography, and hydrology were downloaded from the United States Department of Agriculture’s (USDA) Geospatial Data Gateway. Next, site types, exotic material types, period of archaeological investigation, and survey level intensity were organized and symbolized for geospatial analysis. Summary statistics and all maps and tables of the data are provided and described in the following chapter.

Definitions of Site Types and Exotic Material Types

Sites were coded for their archaeological context, survey level, and excavation timing. Survey level intensity was coded 1 to 4; ‘1’ for reconnaissance surveys, ‘2’ for Phase I surveys, ‘3’ for Phase II surveys, and ‘4’ for Phase III surveys. The year(s) in which each site was surveyed and/or excavated were then organized into three general periods of archaeological investigation, namely ‘Pre-1950’, ‘1950-1990’, and ‘Post-1990’. These three time periods were selected because they broadly encapsulate periods of significant changes to archaeological survey methodologies (see Chapter 2).

Four site types were categorically designated in this study: *open habitation sites, shell mound sites, earthen mound sites,* and *cave sites*. *Open habitation sites* are a general term for pre-contact open-air archaeological sites and can include camps and villages. *Shell mound sites* are pre-contact archaeological sites that were deliberately constructed with the primary material being sourced from the mineralized shell of local freshwater mollusk populations but also included nearby soils and other locally derived organic material. Theories on the social and cultural significance of shell mounds are explored in Chapter 2. It should be noted here that every shell mound site was also listed as an open habitation site on the site forms. *Earthen mound sites* are pre-contact archaeological sites that were deliberately constructed with the primary construction material being locally derived soils and other organics. Earthen mounds are likely attributed to later Woodland and Mississippian times and should not be considered Late

Archaic site types unless otherwise specified.[8] Similar to the shell mound sites, every earthen mound site was also listed as an open habitation site on the site forms. *Cave sites* are archaeological sites contained within natural settings such as along cliffs and hillsides that have been weathered to create an opening and interior chamber whereby people utilized the space for various social and cultural activities.

As noted above, four exotic material types were designated in this study based on their abundance and clear categorization as coming from other regions (see **Figure 4.3**): *copper*, *marine shell*, *soapstone/steatite*, and *exotic other*. *Copper* refers to the specific mineral ore deposits or glacial till "float" deposits that pre-contact peoples exploited to manufacture various artifacts; in the case of this study, the presence of any copper was counted, regardless of artifact type. The social and cultural significance of copper is briefly detailed in Chapter 1 and reviewed further in Chapter 2. Goad (1978) identified the primary sources of copper outcroppings available to pre-contact peoples in the eastern United States as being in the Lake Superior and Isle Royale areas of Michigan with smaller deposits located in parts of Wisconsin, Illinois, and other parts of Michigan. *Marine shell* refers to mineralized shell that derives from marine-shelled gastropods that pre-contact peoples exploited to manufacture various artifacts and sourced from the Atlantic or Gulf Coasts of the southeastern United States. The social and cultural significance of marine shells is briefly detailed in Chapter 1 and reviewed further in Chapter 2. *Soapstone/Steatite* is a type of metamorphic rock and raw material with sources stretching along the Appalachians from Rhode Island to Alabama (Johnson 1996: 103). Soapstone/Steatite was exploited by pre-contact groups for various cultural purposes but appears to have primarily been

[8] When filtering sites using the DINAA online database, Late Archaic queried sites that indicate the presence of a mound do not necessarily correspond to this specific time. In other words, there is an overlap in cultural and temporal affiliation with regards to mounds which may lead to confusion over a mound's temporality/cultural affiliation.

used as vessels during the Late Archaic and was exchanged over great distances during this time (see Wells 2006 for a review). *Other Exotics* included other material types mentioned in site forms and site reports that were macroscopically identified as being (or potentially being) nonlocal artifacts. These included greenstone, mica, kaolin (a type of nonlocal clay, see Graham 1964: 29), and nonlocal lithics. Nonlocal lithic materials identified in site forms and reports included chalcedony, rhyolite, jasper, and several specific cherts including Brassfield Chert, Dover Chert, Ft. Payne Chert, Kanawha Black Flint, and St. Louis Chert.[9]

The number of distinct Late Archaic lithic projectile point types recovered from each site was recorded. Late Archaic projectile point types were verified based on the classifications designated in Justice (1987) and projectilepoints.net (when unavailable from the former source). The number of distinct Late Archaic projectile point types ranged from 1-10 and a map illustrating graduated categories (unknown, 1-3, 4-7, 8-10) of these points is presented in Chapter 4. A median of two distinct Late Archaic points was present across the sample. I assessed the number of distinct Late Archaic point types between upper and lower Tennessee River sites, as well as compared the number of distinct Late Archaic point types between open habitation, shell mound, and earth mound sites using χ^2 tests, the results of which are presented in the following chapter. Not all available site forms or site reports recorded diagnostic artifacts but still attributed the site to the Late Archaic temporal/cultural period. In these cases, 'unknown' was assigned to the site's number of distinct Late Archaic projectile point types. A total of 41 sites were listed as having an 'unknown' status and only one site (40DR1) had radiocarbon dates that confirmed the Late Archaic attribution. Therefore, it is unclear how temporality/cultural affiliation was

[9] There is confusion on the term 'non-local' as it pertains to lithic materials since it is ultimately defined in arbitrary and relative terms of distance from source. For the purposes of this study, the determination of a lithic material being non-local was delegated to the principal investigator or author of the provided site report.

originally assigned and will require further archaeological investigations, if possible, to determine the true temporal/cultural status of these sites. Furthermore, earlier site records, i.e., before 1950, typically did not differentiate point typologies to the same degree as would later become the practice in archaeology post-1950. Therefore, sites excavated before the 1950s, which totaled 36 sites, likely have inaccurate numbers of distinct point types recorded and caution is advised when interpreting these results. Further investigations beyond the scope of the current study will be required to differentiate these earlier site diagnostics or, if analyses have been conducted since these original site reports, such research was not uncovered in the process of obtaining reports and publications by the time of this study.

The reason to include the number of distinct Late Archaic projectile point types is that differentiated points may be argued to signify areas of lesser and greater social interaction on the landscape. That said, this inference is problematic as greater amounts of point types may also simply reflect the degree to which the site was excavated and/or looted[10] or occupied in the first place. Sites with greater levels of archaeological investigation will tend to yield greater amounts of data. Additionally, sites that are apparent on the landscape (such as mounds and dense artifact concentrations) have likely been disturbed, with artifacts like lithics removed, since their construction, whether intentionally by multiple groups reinhabiting the same spaces or through directed or opportunistic looting. Also, different point styles may reflect underlying technologies that have more to do with hunting and procuring strategies rather than distinct cultural ways of manufacturing tools. In simpler terms, the same group of people could be manufacturing all the different points for different purposes; equating lithic types, which are categories created by

[10] Modern day looting is a pervasive activity that has definitively distorted our view of the archaeological record. In the process of this research, several site forms had lists of landowner private collections that were shockingly extensive and provides an important caution to researchers on the implications of archaeological interpretations.

archaeologists, to cultural identities of past groups is problematic and, therefore, may have little to do with the exchange of ideas and interaction. Thus, caution should be applied to this inference of social interaction correlating with the range of distinct point types. Nevertheless, distinct point types may be one of the few variables widely available for the Late Archaic period that we have for signifying important cultural information relevant for evaluating exchange and interaction. As discussed in Chapter 2 and illustrated in **Figure 1.1**, the Benton Interaction Sphere has been hypothesized as an area where high-quality cherts and specific hypertrophic point types, i.e., Bentons, were being exchanged. Thus, sites that identified Benton projectile points were mapped and analyzed as another proxy for long-distance exchange. The presence and distribution of Benton points are illustrated in the next chapter.

Analysis

All data were imported into ArcGIS Pro as a 'Standalone Table'. Attribute data were then used to generate the spatial distributions relevant for answering the proposed research questions presented in Chapter 1 and which will be revisited in Chapter 5. The spatial distributions were generated using geoprocessing tools that allow for selected attribute data to be linked to XY or location data (latitude and longitude). The attribute data connected to location data included site types (open habitation, cave, shell mound, earthen mound), exotic material types (copper, marine shell, soapstone/steatite, exotic other), the presence of burials, number of distinct Late Archaic projectile points, the level of archaeological survey methodology, and the period of archaeological investigation (as defined above). Attribute data were also combined with other feature data to allow for the examination of specific phenomena. For example, specific site types (e.g., shell mound) can be combined with the presence or absence of exotic materials to differentiate shell mounds with and without exotic material objects on the landscape. Each of these variables was then ordered in a series of layers and symbolized accordingly.

With all variables assigned to their unique groups and layers, a systematic examination of each variable's spatial distribution could be analyzed to differentiate how these variables were clustered, what the relationships between site types, exotic objects, burials, archaeological survey levels, and periods of archaeological investigation were, and therefore answer the proposed research questions. In addition, as noted above, a series of χ^2 tests for significance or, in two cases, Fisher's exact test, with a critical alpha for p-values of 0.05 was performed using RStudio to evaluate differences in the presence and absence of exotic materials. Fisher's exact tests were used in instances when the expected value for tables was fewer than 2, as χ^2 tests are unreliable under such conditions. These analyses assessed the absence and presence of materials between upper and lower Tennessee River sites, as well as differences in the abundance of distinct Late Archaic points between upper and lower Tennessee River sites, the results of which are presented in the following chapter.

CHAPTER 4: RESULTS

One hundred and fifty Late Archaic sites were reviewed in this study and their distribution along the lower and upper Tennessee River is illustrated in **Figure 4.1**. Out of the total number of sites, 50 (33%) are located along the lower Tennessee River and 100 (66%) are located along the upper Tennessee River (including the Little Tennessee River, the Holston River, and the French Broad River). Most Late Archaic sites have been designated as open habitation sites (n = 148). As noted in Chapter 3, shell mound sites (n = 8) and earthen mound sites[11] (n = 16) are also designated as open habitation sites on the site forms. The final Late Archaic site type consisted of two cave sites. Radiocarbon dating of sites is uncommon; sites with Late Archaic radiocarbon dates (n = 15) are listed in **Appendix A**. Late Archaic sites with burials (n = 13) totaled 845 inhumations, and notably, were all excavated in the Pre-1950 time of archaeological investigation.

The spatial distribution of archaeological survey level intensity, i.e., Reconnaissance, Phase I, Phase II, and Phase III, by the period of archaeological investigation, i.e., Pre-1950, 1950-1990, and Post-1990, is illustrated in **Figure 4.2**. Some notable patterns emerge from this analysis. For instance, in **Figure 4.2A**, much archaeological investigation is concentrated along the northern two-thirds of the lower Tennessee River during the Pre-1950 phase with predominant survey levels being Phase II and Phase III. This pattern reflects the construction of Kentucky Dam from 1938 to 1944 and the anticipated flooding of the region's archaeological

[11] As noted in Chapter 3, most, if not all, earthen mound sites are likely attributed to the Woodland and Mississippian yet appear to have earlier Late Archaic components designated as open habitations. Thus, the decision to include this site type is meant to illustrate the importance of examining diachronic settlement patterns that can be the basis of future research.

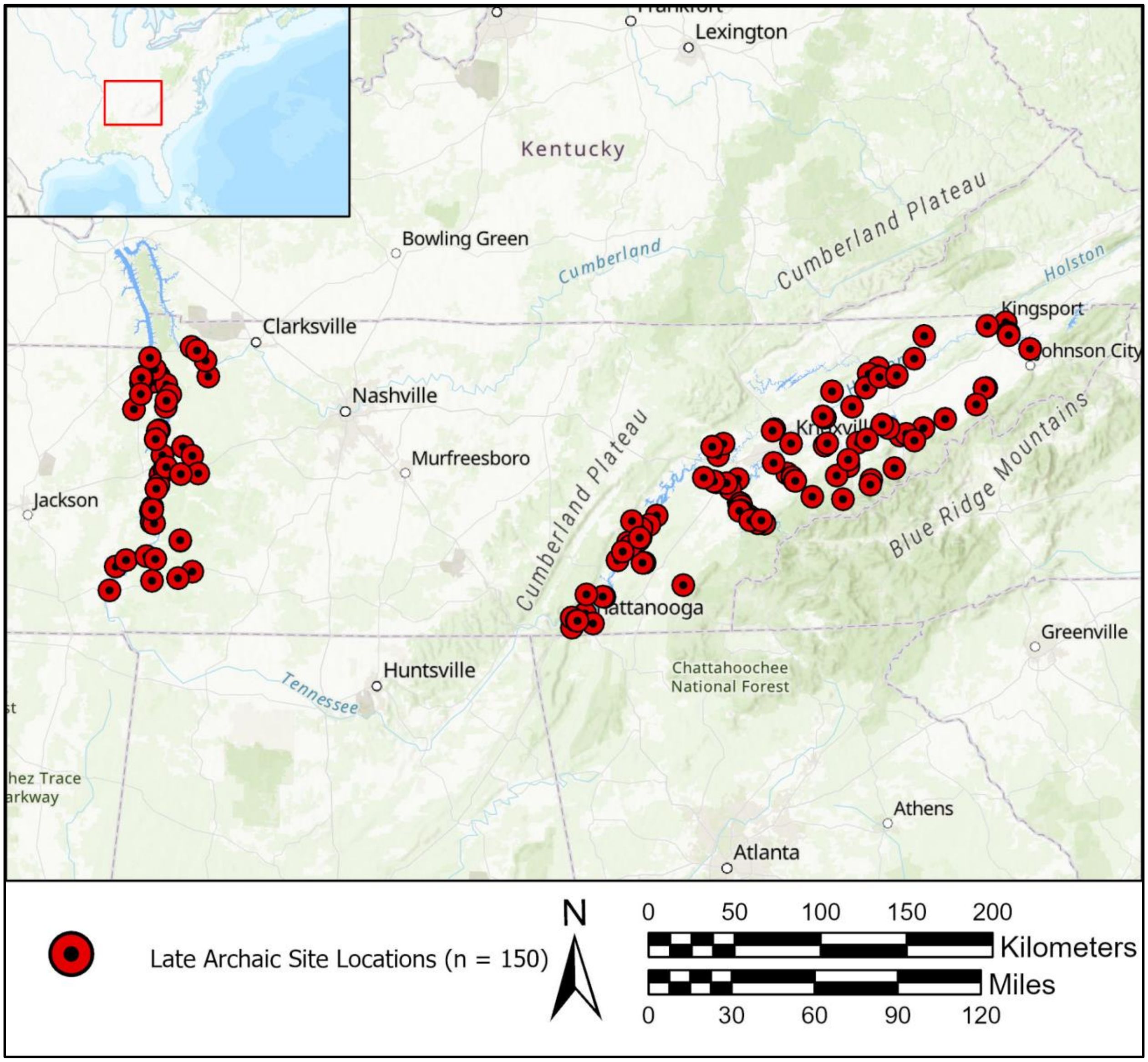

Figure 4.1. Spatial distribution of all Late Archaic site locations along the lower and upper Tennessee River reviewed in the study.

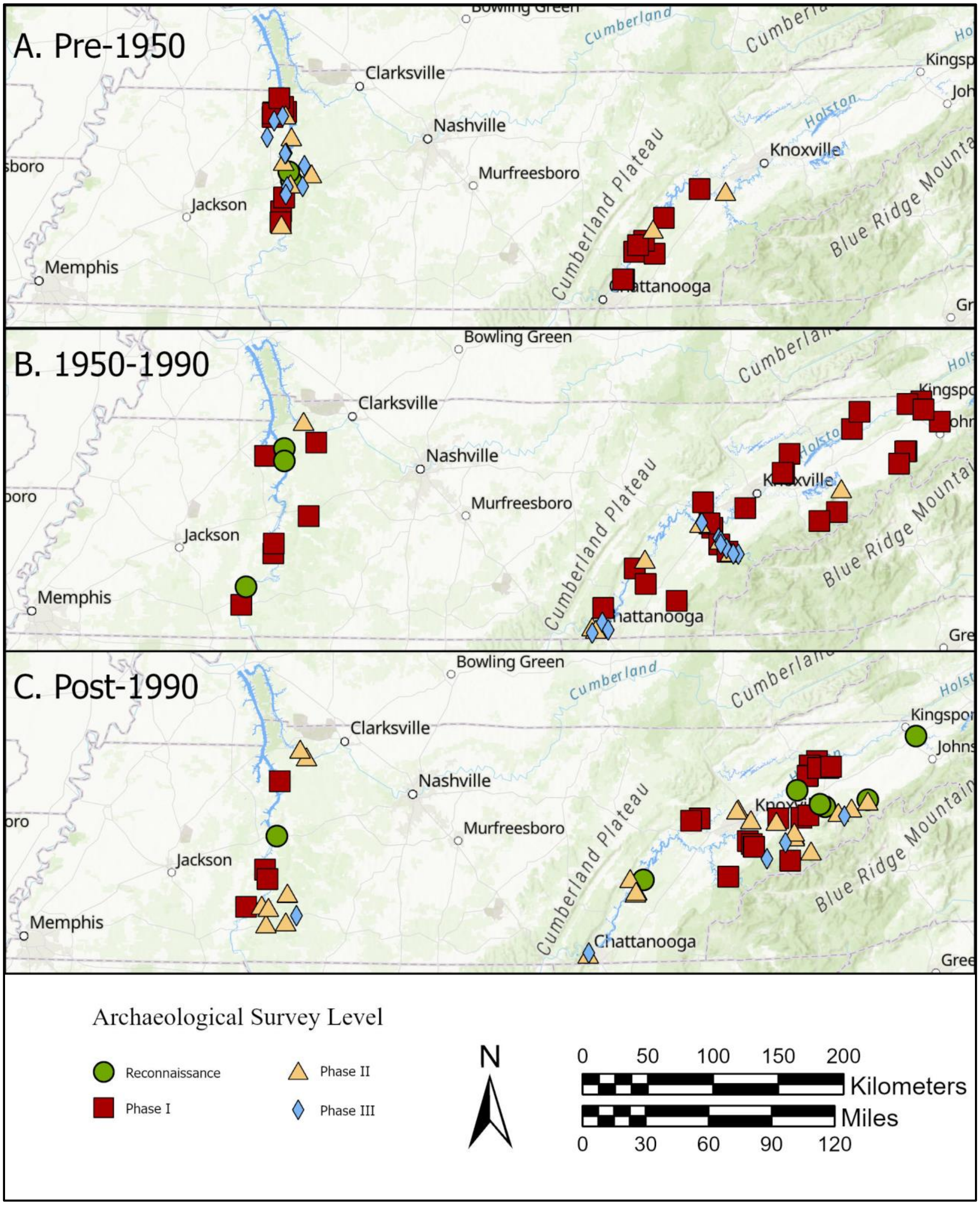

Figure 4.2. Spatial distribution of archaeological survey level intensity by the period of archaeological investigation.

sites including virtually all the shell mound sites known in the state of Tennessee. During this time, there were only minimal Phase I and Phase II surveys conducted along the upper Tennessee River. During the 1950-1990 period (**Figure 4.2B**), survey investigations predictably diminish along the lower Tennessee River with survey levels predominately being Reconnaissance and Phase I. Greater survey level intensities, i.e., Phase II and Phase III, become heavily concentrated in two distinct areas along the upper Tennessee River, around Chattanooga in Hamilton County and along the Little Tennessee River; again another area that drew archaeological “salvage” efforts with the anticipated construction of Tellico Dam from 1967 to 1979. During the Post-1990s (**Figure 4.2C**), all survey levels increase and become more diffuse across the region, spreading further south along the lower Tennessee River as well as east along the French Broad River and the Holston River. Much of this patterning reflects modern economic development projects and demographic changes that have facilitated public infrastructure expansion and hence CRM activities especially in and around the Knoxville area in Knox, Blount, Sevier, Jefferson, and Loudon counties.

Sites with Exotics

The total number of sites with exotic materials present and absent between survey level intensity is provided in **Table 4.1.** A chi-squared (χ^2) test evaluated whether there was a significant difference in the presence and absence of exotic materials between all four survey levels. The results indicate a significant difference in the presence of exotic materials ($p <$ 0.001). Based on expected values, this may be interpreted as Reconnaissance and Phase I surveys having fewer exotic materials present than expected, and Phase II and Phase III surveys having more exotic material than expected. That said, it follows that Reconnaissance and Phase I

Table 4.1. Observed values of χ^2 test comparing the presence and absence of exotic material by survey level intensity. ($p < 0.001$).

	Reconnaissance	*Phase I*	*Phase II*	*Phase III*
Presence	0	12	16	16
Absence	12	59	27	8

surveys are less likely to recover exotic materials than more intensive Phase II and Phase III excavations.

A total of 44 sites or 29% of the total sample of sites in the study (*n* = 150) contained exotic artifacts. Three maps were created to depict the spatial distributions of exotic materials examined in this study. The general regional sources of copper, marine shell, and soapstone and their general locations of discovery within the Tennessee River Valley are illustrated in **Figure 4.3**. It should be noted that the fourth category of 'exotic other' was not included in this map since the sources of most of the material i.e., nonlocal lithics, that were macroscopically identified in site reports have a variety of purported source locations that will be discussed further below. The spatial distributions of each material type along the lower and upper Tennessee River is illustrated in **Figure 4.4**. The spatial distribution of site types showing the presence and absence of exotic artifacts are shown in **Figure 4.5**. It should be noted that the fourth site type included in this study, i.e., cave sites, did not report exotic material items and were therefore excluded from this illustration. The total number of sites with exotic materials present and absent between upper and lower Tennessee River sites is provided in **Table 4.2**. A chi-squared (χ^2) test evaluated whether there was a significant difference in the presence and absence of exotic materials between lower and upper Tennessee River sites. The results indicate a significant difference in the presence of exotic materials ($p = 0.049$). Based on expected values, this may be interpreted as more sites with exotic materials present in the upper river valley than expected, and fewer sites in the lower river valley with exotic materials than expected. As explored below, though, the types of exotic materials in the lower river valley differed from materials in the upper river valley, and so bring nuance beyond simple counts.

Figure 4.3. Map showing general regional locations of sources of copper, marine shell, and soapstone artifacts and their general locations of discovery in the lower and upper Tennessee River.

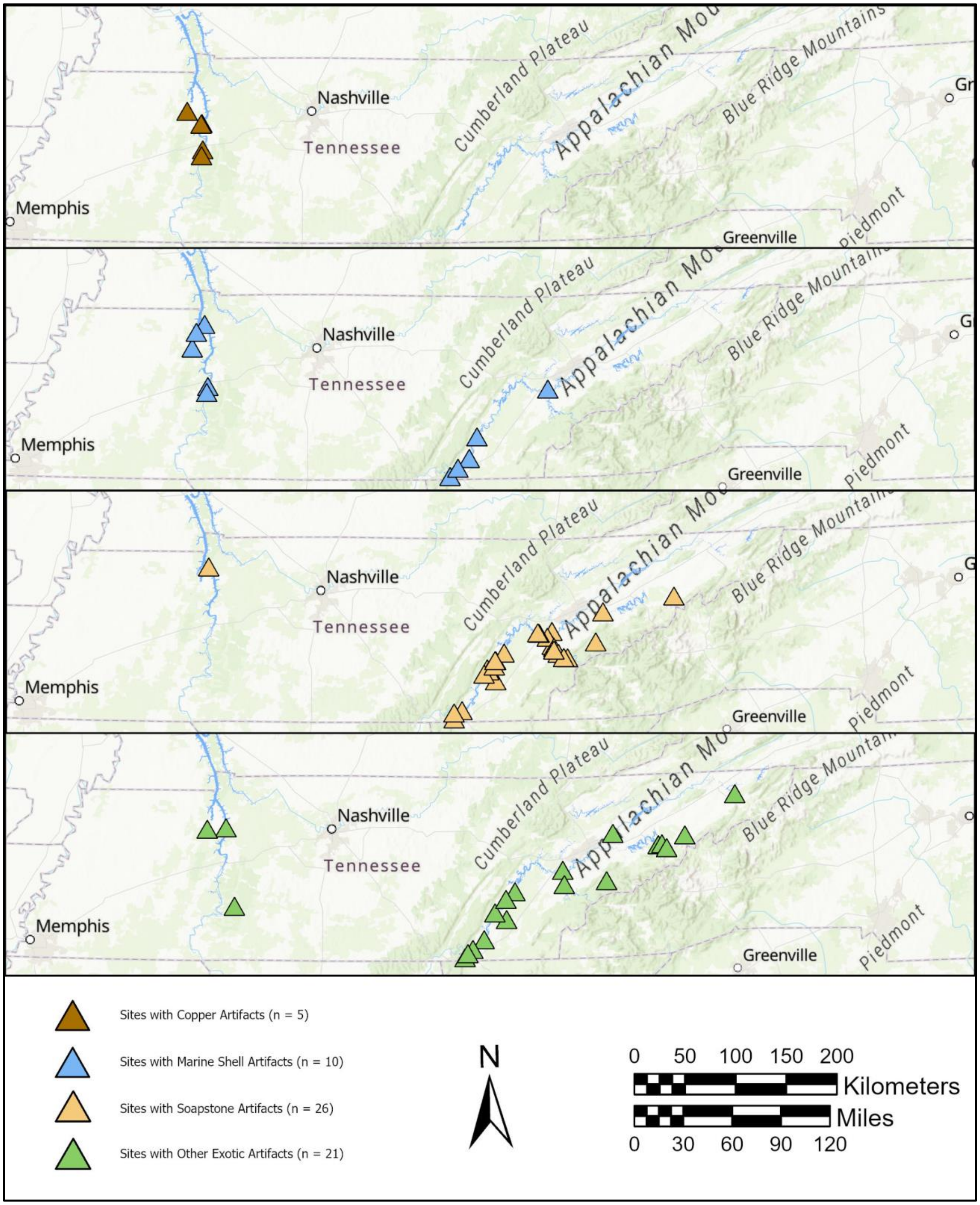

Figure 4.4. Spatial distribution of sites with each exotic material type.

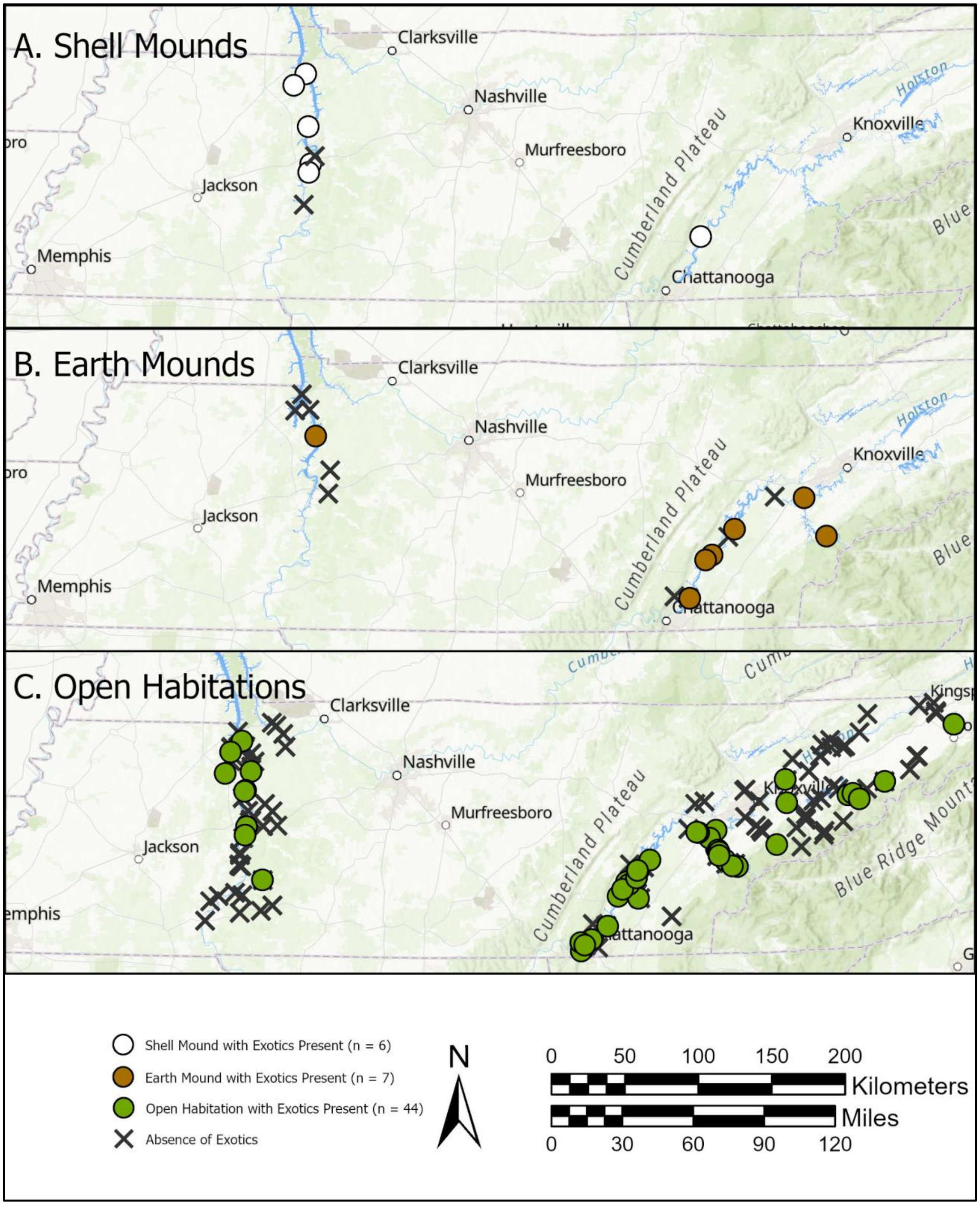

Figure 4.5. Spatial distribution of site types showing presence and absence of exotic artifacts.

Table 4.2. Observed values of χ^2 test comparing the presence and absence of exotic artifacts between upper and lower Tennessee River sites (p = 0.049).

	Lower TN River Sites	*Upper TN River Sites*
Presence	9	35
Absence	41	65

Sites with Copper

As seen in **Figure 4.4**, sites with copper artifacts (*n* = 5) are exclusively clustered along the lower Tennessee River in Benton and Decatur counties and are all within 50 km of one another as the crow flies. These five sites include Thomas (40BN11), Eva (40BN12), Ledbetter Landing (40BN25), Cherry (40BN74), and Oakview Landing (40DR1) and collectively had a total of 14 copper artifacts. Cherry is the only site not situated on the Tennessee River and is the most remote site, located along the Big Sandy River near the confluence of this river and a small tributary. The other four remaining sites are all situated on the Tennessee River proper. Out of these five sites, three (Eva, Ledbetter Landing, and Oakview Landing) are listed as shell mound sites and the remaining two sites (Thomas and Cherry) are considered open habitations. Out of the five sites with copper artifacts, Thomas is notable as the only site that did not have burials. Only two sites have radiocarbon dates attributed to the Late Archaic; Ledbetter Landing has a mean date of 3562±88 cal BP and Oakview Landing has a mean date of 4451±76 cal BP. Additionally, Ledbetter Landing, Cherry, and Oakview Landing were the only three sites that also had other exotic materials—marine shell—present (see below for additional analysis of this). Even with these two dates, this indicates that the exchange of copper and marine shell, or at least their presence in the lower river valley, persisted at least for one millennium in the region. The unpublished 1941 site report by Douglas Osborne for Cherry also mentions porphyritic jasper being found during surface collection and as a possible exotic item.

Sites with Marine Shell

Sites with marine shell artifacts (*n* = 10) are situated along both the lower and upper Tennessee River. Like the sites with copper, five of these sites are clustered along the lower

Tennessee River in Benton, Decatur, and Henry counties and are all within 70 km of one another. These sites include Cherry (40BN74), Ledbetter Landing (40BN25), Oakview Landing (40DR1), Kays Landing (40HY13), and Big Sandy (40HY18). Again, all had shell mounds except for Cherry. All five of the sites with marine shell artifacts had burials present, and three (Ledbetter Landing, Cherry, and Oakview) also had copper as explored above. In addition to the radiocarbon dates for Ledbetter Landing and Oakview Landing reported above, Kays Landing has a mean date of 4310±82 cal BP. Interestingly, Kays Landing had a single soapstone artifact and was the only site on the lower Tennessee River with soapstone present (see **Figure 4.4**). The other five sites from which marine shell was recovered are located in the upper river valley; four sites are clustered in Hamilton County within 40 km of one another and one site is in Loudon County. These sites include Davis (40HA2), Sale Creek (40HA10), Moccasin Bend (40HA63), Fishing Center Site (40HA102), and Bussell Island (40LD17). None of these five sites located on the upper Tennessee River have radiocarbon dates. Soapstone, largely absent in the lower river valley sites, was found at Moccasin Bend, Fishing Center Site, and Bussell Island, and exotic other materials were also present at all sites except Sale Creek.

Moccasin Bend and Fishing Center Site are listed as open habitations. Davis and Bussell Island are listed as earthen mounds. Sale Creek is listed as a shell mound on some site records. Collectively, these ten sites have a minimum of 47 marine shell artifacts. Out of these ten sites, three had an indeterminate amount of marine shell artifacts and would require revisiting collections to determine the precise quantity. Sale Creek's status as a shell mound requires additional attention. It is not mentioned in the academic literature as being a Shell Mound Archaic mound, but if it is, it would be significant given its unprecedented location on the upper Tennessee River. Excavation reports refer to the site as a "shell bank" and a mound and one of the site forms lists the site type as being constructed from “shell beds.” Adding further to the disagreement about the nature of the mound at Sale Creek, the unpublished 1941 excavation report by Stuart Neitzel reads “the low rise which first attracted excavation was not, in reality, a shell bed, but seemed to have been originally a series of concentrated shell deposits.” The site is also considered a multicomponent site dating to the Woodland and Mississippian and the temporality of the site’s exotic items was unclear based on the available site records at the time of this study. To which time periods the exotic items found at this site belong and whether the site should be designated as a shell mound or is simply naturally deposited shell requires further research beyond the scope of what is possible in this study.

As noted in Chapter 2, there have been limitations in marine shell quantification and taxonomy (Claassen 1996: 252-257; Marquardt and Watson 1983: 334; Moore 2011: 142). Taxonomically, the marine species from which artifacts were manufactured were identified as *Busycon perversum*, *Marginella* species, and *Cassis* species. Several artifacts such as beads, pendants, gorgets, and containers were mentioned as being manufactured from marine shells or simply “shell” on the site records, but no specific taxonomy was listed on the site forms or reports. For instance, records for Kays Landing mention a burial containing a “coral-like” material in the excavation report, and records for Cherry mention “trianguloid marine shell” pendants, a “shell” pendant, “worked shell” and a conch shell. In some cases, it is unclear whether the “shell” being described is local freshwater shell or nonlocal marine shell; in these instances, I did not classify the shell described. The temporality of many marine shell artifacts is also difficult to ascertain from site records alone and requires further research of excavation profiles to determine provenience. This is especially the case for the five sites along the upper Tennessee River which may date to the later Woodland and Mississippian, as I noted that many of those sites are multicomponent. Thus, nearly all sites with marine shell artifacts have ambiguities across site records in terms of taxonomic identification, quantity, and temporality that require further analysis of the original collections to determine better dates and classification.

The total number of sites with marine shell artifacts present and absent between three site types (open habitations, shell mounds, and earthen mounds) is provided in **Table 4.3**. Results from a chi-squared (χ^2) test suggest there was a significant difference in the presence of marine shell among the types of sites ($p < 0.001$). Though the statistical test is not necessary to confirm this, these results indicate that sites with marine shell among the Late Archaic localities along the Tennessee River Valley are very uncommon.

Sites with Soapstone/Steatite

Soapstone or steatite artifacts (minimum n = 1726) were recovered from 26 sites. One site (40RH92) had steatite listed on the site form, but the quantity was not given. It should be noted that out of the 1726 artifacts, 1512 came exclusively from the Townsend Sites (40BT89, 40BT90, and 40BT91) in Blount County. Nearly all sites with soapstone/steatite artifacts (n = 25) are located along the upper Tennessee River in Blount, Greene, Hamilton, Knox, Loudon, Meigs, Monroe, and Rhea counties. Two primary clusters of soapstone were evident; one cluster contains eight sites within 30 km of one another and is located along the upper Tennessee River approximately halfway between Chattanooga and Knoxville (see **Figure 4.4**); the second cluster contains ten sites located within 40 km of one another and located along the Little Tennessee River and at the confluence of the Little Tennessee River and the Tennessee River. As noted above, Kays Landing (40HY13) in Henry County on the lower Tennessee River was the only site to contain a single piece of soapstone. Of the 26 sites with soapstone present, five were classified

Table 4.3. Observed values of χ^2 test comparing the presence and absence of marine shell artifacts between open habitation, shell mound, and earth mound sites $p < 0.001$).

	Open Habitations	*Earth Mounds*	*Shell Mounds*
Presence	3	2	5
Absence	145	14	3

as earthen mounds: Leuty (40RH6), Gillespie Landing (40RH30), Spivey (40RH92), Bussell Island (40LD17), and Citico (40MR7). As noted previously, the presence of earthen mounds may indicate sites occupied during more recent cultural periods (e.g., Woodland or Mississippian), and so it is likely these five sites represent multiple periods of occupancy and use. Eight of the 26 sites are less ambiguous as they have Late Archaic radiocarbon dates and are listed in **Appendix A**. In addition to soapstone or steatite, four of these sites also had marine shell, as noted above, and eight sites also had exotic other materials present.

The total number of sites with soapstone present and absent between three site types (open habitations, shell mounds, and earthen mounds) is provided in **Table 4.4**. Results from Fisher's exact test ($p = 0.175$) suggest that, while there are more sites without soapstone or steatite, there was no difference in the number of sites where it was present among the three site types.

Sites with Exotic Other Material

Twenty-one sites were present on both the lower and upper Tennessee River that had other exotic material artifacts. Three sites with other materials were located on the lower Tennessee River in Benton and Perry counties, while eighteen were located on the upper Tennessee River, the Little Tennessee River, the Holston River, and the French Broad River in Blount, Cocke, Greene, Hamilton, Knox, Loudon, Meigs, Rhea, and Sullivan counties. Collectively these sites have a minimum of 1532 artifacts identified as exotic or nonlocal materials such as greenstone, nonlocal lithics, mica, or kaolin (a type of nonlocal clay, see Graham 1964: 29). It is important to note that the eighteen sites on the upper Tennessee River contained nearly all exotic other material items ($n = 1529$). A total of three exotic other material

Table 4.4. Observed values of Fisher's exact test comparing the presence and absence of soapstone artifacts between open habitation, shell mound, and earth mound sites (p = 0.175).

	Open Habitations	*Earth Mounds*	*Shell Mounds*
Presence	20	5	1
Absence	128	11	7

artifacts (one at each site) were found at the three lower river valley sites: 40BN7, 40BN74, and 40PY290. A single bead made from a stalactite was recovered at Bussell Island (40LD17), but it is unclear if this qualifies as an exotic given the karst landscape abundant in the area nor was the temporality of this item clear. Nonlocal lithic materials identified in site forms and reports included chalcedony, rhyolite, jasper, and several specific cherts including Brassfield Chert, Dover Chert, Ft. Payne Chert, Kanawha Black Flint, St. Louis Chert. Two sites (40CK197 and 40SL28) contained nonlocal lithic materials, but quantities were not specified on the site forms and/or site reports and, therefore, the quantity was indeterminate. As mentioned in Chapter 3, much of this material requires additional research to determine distance from source to verify whether lithics have been properly identified as exotic.

The types of sites from which other exotic materials were recovered match a pattern similar to what was reported for soapstone and steatite. Out of the 21 sites with other exotic materials, five were classified as earthen mound sites—Sulphur Creek (40BN7), Davis (40HA2), Bussell Island (40LD17), Leuty (40RH6), and Spivey (40RH92); the remaining 16 sites were classified as open habitations. Four of these sites have radiocarbon dates that place the site occupation during the Late Archaic: Thomason (40PY290) has a mean radiocarbon date of 3150±40 cal BP; the Townsend Sites (40BT89, 40BT90, 40BT91) have a mean radiocarbon date of 3350±30 cal BP; Leuty (40RH6) has a mean radiocarbon date of 3330±40 cal BP; an unnamed site (40CK197) has a mean radiocarbon date of 4088±56 cal BP. The coinciding of other exotics with soapstone/steatite artifacts was uncommon among the sites (*n* = 8), as was the coincidental presence of marine shell with other exotic artifacts (*n* = 5). The only site on the lower Tennessee River that contained both an exotic other material and marine shell was Cherry. The four sites on the upper Tennessee River that had both exotic other materials and marine shell were Moccasin

Bend, Davis, Fishing Center Site, and Bussell Island. Unlike soapstone, the distribution pattern of sites with other exotic materials present or absent was not equally distributed among site habitation types (see **Table 4.5**). When they were present, such materials occurred exclusively, though uncommonly, among sites with open habitations and earthen mounds, though the difference in quantities of sites with or without other exotic materials was not statistically significant ($p = 0.057$).

Sites with Burials

Of the total number of sites with burials ($n = 13$), only three sites (40BN13, 40BN47, and 40BN77), all located in Benton County on the lower Tennessee River, did not contain exotic materials. Thus, 77 percent of sites with burials had at least one of the four exotic material types present. The spatial distribution of sites with burials and the associated exotic materials at those sites along the lower and upper Tennessee River are illustrated in **Figure 4.6**. As seen in **Figure 4.6A**, sites clustered along the northern portion of the lower Tennessee River are all within 70 km of one another. Three of the sites with burials had copper present, five sites had marine shell present, and one site each had soapstone or other exotic materials present. Three of the sites with burials lacked any exotic materials. As seen in **Figure 4.6B**, exotic materials were present at all four sites with burials on the upper Tennessee River. As stated above, copper was absent from all upper Tennessee River sites and was only concentrated at five sites on the lower Tennessee River. Two sites with burials had marine shell present, and the upper river valley also had soapstone and exotic other materials present.

Of the eight shell mound sites, six of them had burials present. The two shell mounds lacking burials deserve further mention. One was Sale Creek (40HA10), though its ambiguous status was discussed above under ‘Sites with Marine Shell’ and will not be described further

Table 4.5. Observed values of Fisher's test comparing the presence and absence of exotic other material between open habitation, shell mound, and earth mound sites (p = 0.057).

	Open Habitations	*Earth Mounds*	*Shell Mounds*
Presence	16	5	0
Absence	132	11	8

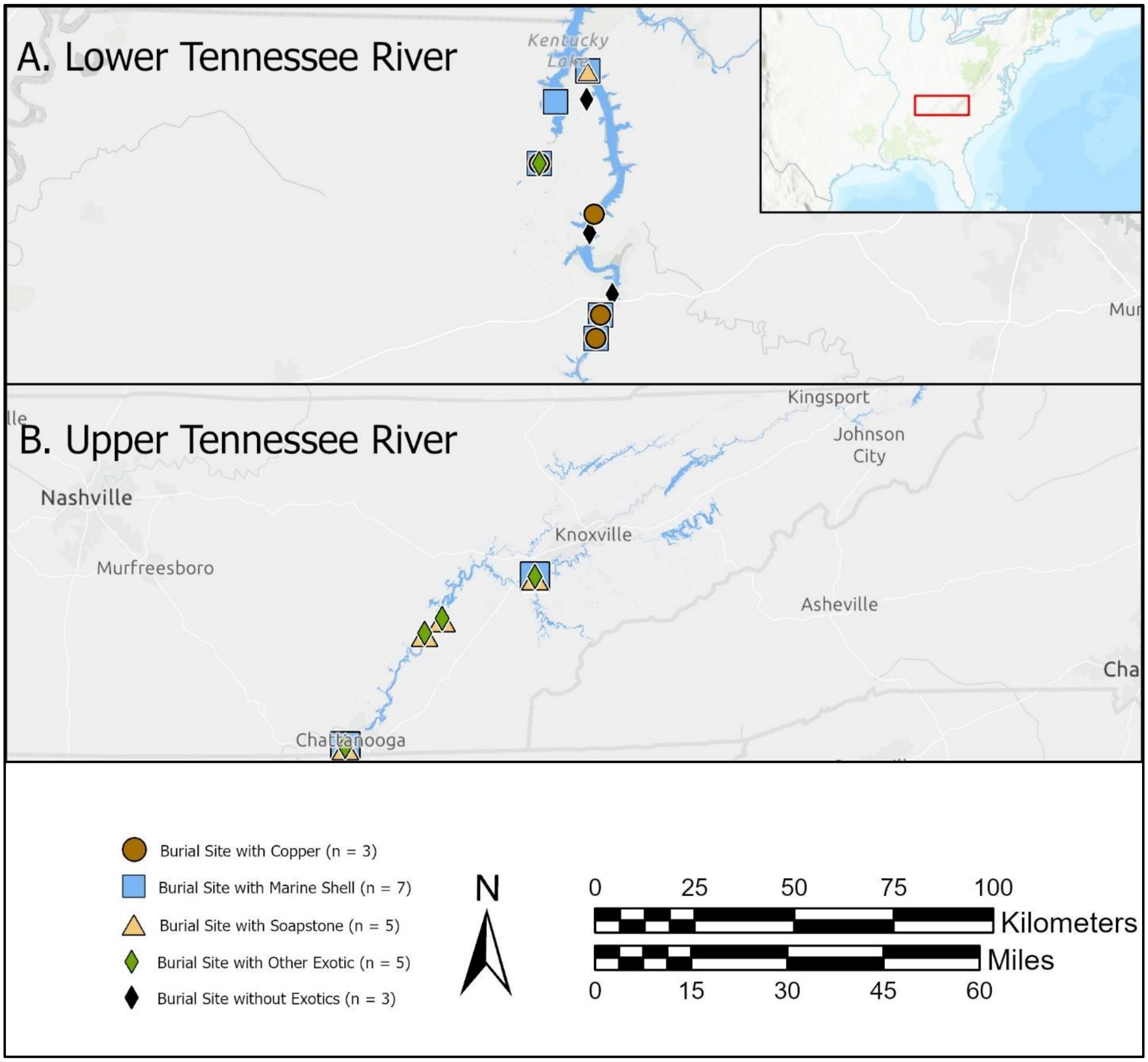

Figure 4.6. Spatial distribution of burial sites with exotic materials along the Lower and Upper Tennessee River.

here. Hern Hollow (40DR12), located in Decatur County on the lower Tennessee River, was the other site classified as a shell mound. Notably, the site not only lacked burials but also lacked exotic materials. Like Sale Creek, Hern Hollow is not discussed in the academic literature as a SMA shell mound, though site reports make its status uncertain. Records from 1941 describe a "shell deposit," but a site revisit form in 1991 mentions that a Memphis State University survey during the 1970s described "[the site] as a shell midden that was 20 yards by 50 yards in size." The Phase II report by Deter-Wolf (2002) contains photographs of shell deposits in the excavation profiles (see Figures 13 and 14) and the report concludes that the site's "data has a high probability of answering a variety of important research questions concerning the Shell Mound Archaic" (Deter-Wolf 2002:52). Given its proximity to the other shell mound sites further north downstream, further research is required to evaluate the status of Hern Hollow and whether it should be considered a part of the Shell Mound Archaic phenomenon. In contrast to the prevalence of burials among shell mounds, only two (Leuty and Bussell Island) of the 16 earthen mound sites had burials present.

Burials were uncommon or were generally not recovered, among sites classified as open habitations that were not considered shell mounds or earthen mounds. Only five of the 126 open habitation sites had burials. These included three sites in Benton County on the lower Tennessee River—McDaniel (40BN77), Cherry (40BN74), and Gatewood (40BN47)—two sites on the upper Tennessee River, Moccasin Bend (40HA63) in Hamilton County, and an unnamed site (40RH198) in Rhea County.

Late Archaic Point Types

Lithics were often the diagnostic artifacts that were used to classify sites as temporally associated with the Late Archaic period, and so at least one lithic point type was recovered from nearly all of the sites included in this study. Up to ten distinct Late Archaic projectile point types were recovered from a single site. **Figure 4.7** presents a map illustrating three graduated categories (1-3, 4-7, 8-10 lithic point types) of the number of point types recovered at each site. As detailed in Chapter 3, not all available site forms or site reports recorded diagnostic artifacts but still attributed the site to the Late Archaic temporal/cultural period. These 41 sites are included in **Figure 4.7** with the designation of an 'unknown' number of lithic point types. Only one of these latter sites (40DR1) had radiocarbon dates that confirmed its Late Archaic attribution. Therefore, it is unclear how temporality/cultural affiliation was originally assigned; further archival research will be necessary to determine the reasons they were attributed to the Late Archaic, and additional archaeological investigations will likely be necessary to better determine the true temporal or cultural period of these sites.

The tendency for investigators to differentiate lithic point types is a more recent phenomenon in archaeology along the Tennessee River Valley. Earlier site records, i.e., namely those from before 1950, typically did not differentiate point typologies to the same degree as would later become the practice in archaeology. Therefore, among sites excavated before the 1950s, the number of distinct point types recorded likely used different criteria than more recent identification methods, making the categorization of point types potentially incompatible with more recent approaches. Caution is advised when interpreting the results presented herein. With this caveat in mind 87 sites had up to three distinct Late Archaic projectile points, while 19 sites were recorded as having 4-7 distinct points, and three sites with 8-10 Late Archaic lithic types. **Appendix B** provides the lithic type count numbers for each site.

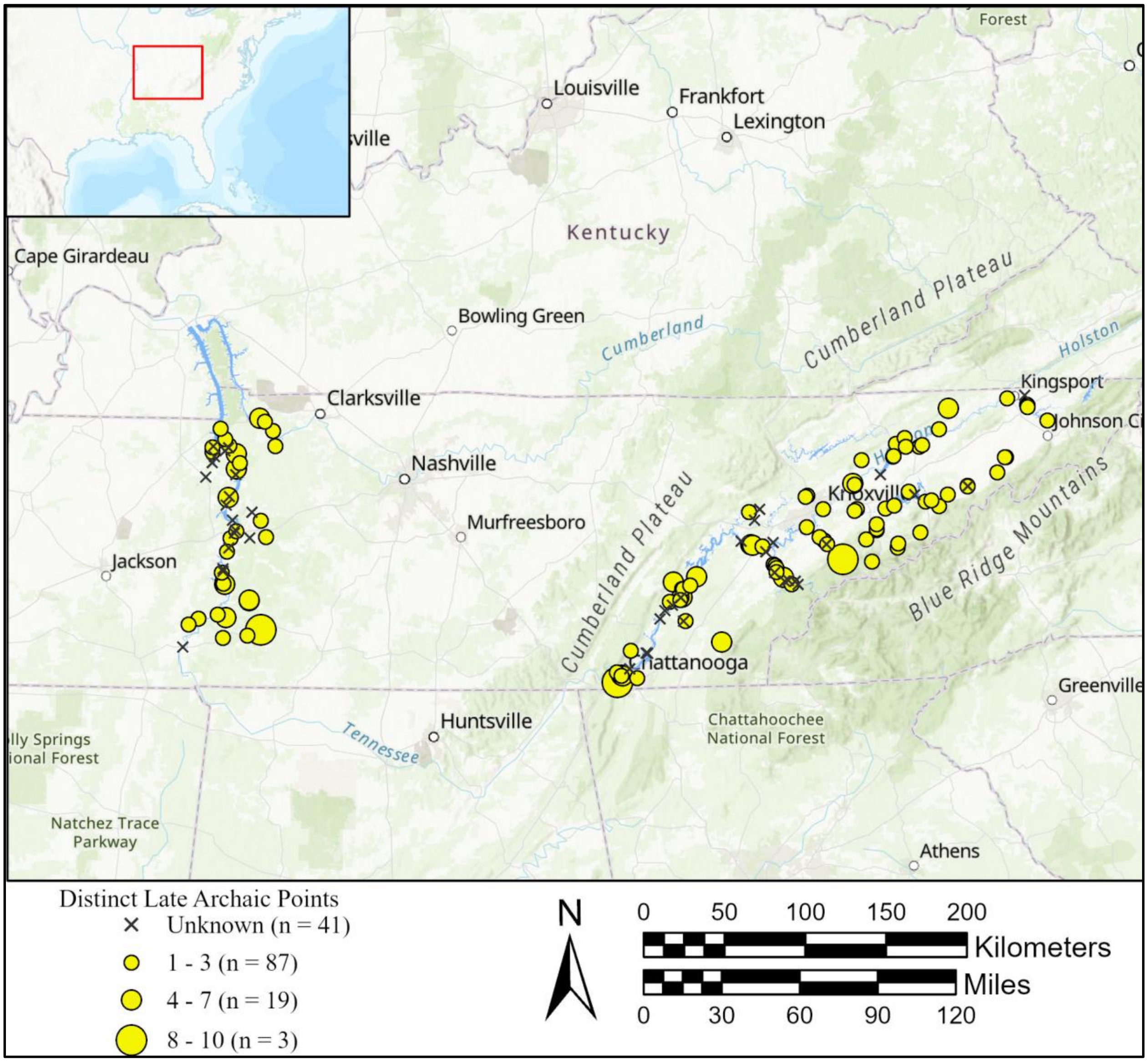

Figure 4.7. Graduated spatial distribution of distinct Late Archaic projectile point types.

A median count of two lithic point types was present among all sites, and so this value makes a useful datum for comparing the abundance of lithic point types between regions and site types. Chi-squared tests indicate that a significantly different abundance pattern in lithic type diversity was present between the lower and upper Tennessee River Valley sites (**Table 4.6**; $p = 0.041$), but no difference among site types (**Table 4.7**; $p = 0.554$). An equal number of lower valley sites had lithic point types greater and less than the median number, while point diversity greater than two types was significantly less common in the upper valley.

Lastly, the spatial distribution of Benton projectile points is illustrated in **Figure 4.8**. There is a noticeable discrepancy between the number of sites with Bentons on the lower Tennessee River ($n = 12$) compared to the upper Tennessee River ($n = 4$). Recall that the total number of sites sampled on the lower Tennessee River was 50 and the total number of sites sampled on the upper Tennessee River was 100. If Benton projectile points were being used as exchange items, the results help support the idea that the lower Tennessee River was engaged in an exchange network as discussed in Chapter 2.

Table 4.6. Observed values of χ^2 test comparing the number of distinct Late Archaic point types between Upper and Lower Tennessee River sites (p = 0.041).

	Lower TN River Sites	*Upper TN River Sites*
≤ 2	16	54
> 2	17	22

Table 4.7. Observed values of χ^2 test comparing the number of distinct Late Archaic point types between open habitation, shell mound, and earth mound sites (p = 0.554)

	Open Habitations	*Earth Mounds*	*Shell Mounds*
≤2	2	3	69
>2	3	2	39

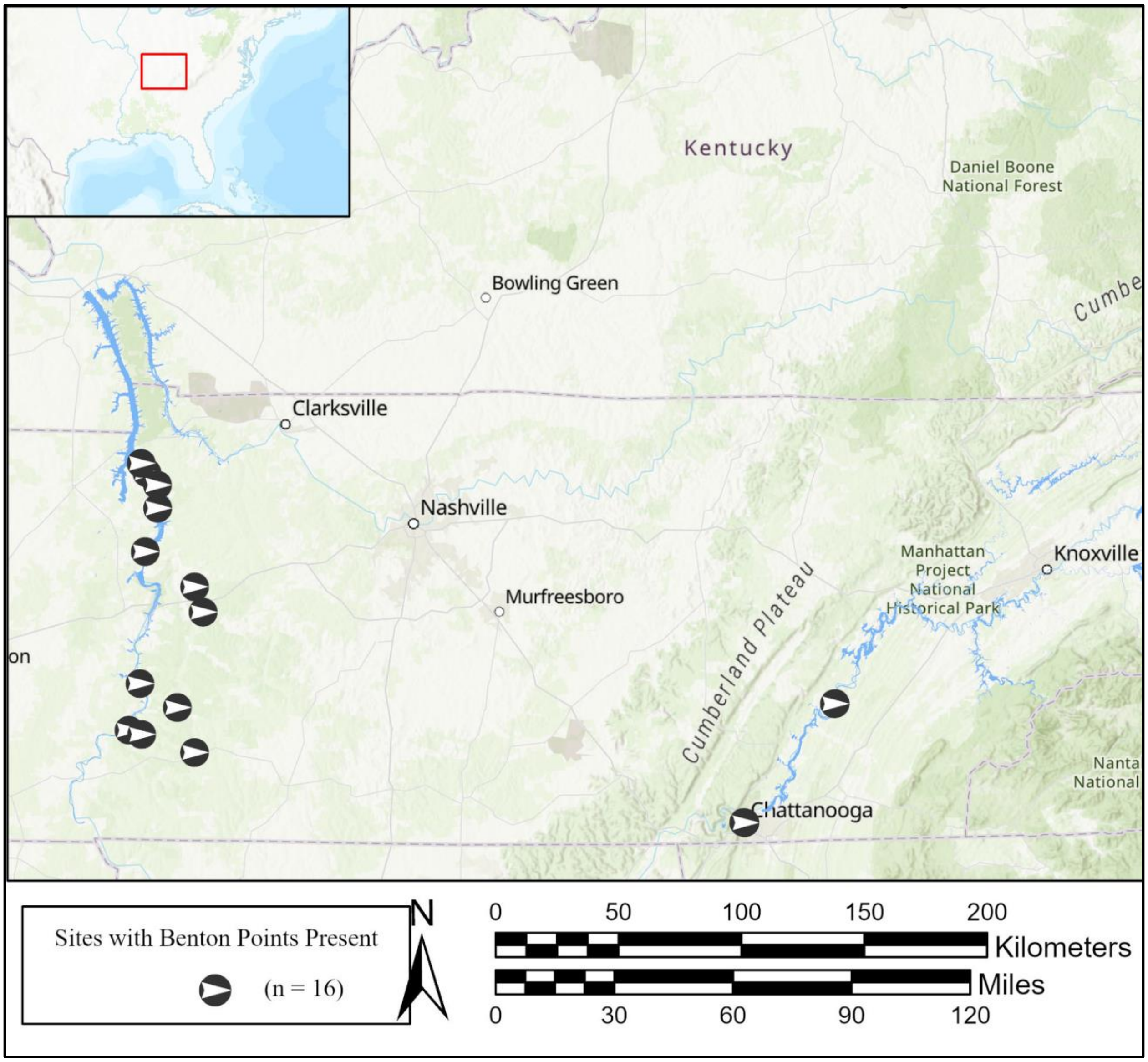

Figure 4.8. Spatial distribution of Benton projectile points on the lower and upper Tennessee River. Note: Four sites are represented on the upper Tennessee River and are obscured due to the map scale, two are nearby in Hamilton County and two are nearby in Rhea County.

CHAPTER 5: DISCUSSION AND CONCLUSION

The results of the analyses of site types, artifact distribution, and burial patterns among the sites of the lower and upper Tennessee River Valley demonstrate that the Late Archaic was not uniform among sites occupied during the period. As I consider in more detail below, there are clear distinctions in the distribution of exotic materials, the construction of mounds, and the diversity of lithic point types between these two regions. Curiously, the patterns of variation are not as clear within the upper or lower river valley, which may indicate more regional continuity with bordering areas than across the full length of the area surveyed in this analysis. Physiographic and cultural reasons may have contributed to this pattern, as explored in more detail below.

In general, returning to the primary hypothesis for this thesis—that long-distance exchange of materials was an important aspect of Late Archaic culture, and may have aided with resilience among these peoples—there is evidence that long-distance exchange did take place more than once and with more than one distant origin. Thus, the hypothesis is supported. As is considered in more detail below, how often exchange occurred is difficult to assess, but in many instances may not have occurred frequently. In addition, as noted above, the archaeological evidence herein indicates aspects of regional differentiation, and therefore perhaps differences in identity may have been established by the Late Archaic period as indicated by the presence of the Shell Mound Archaic cultural phenomenon in the lower Tennessee River Valley. How these results may be interpreted with respect to resilience and risk among these peoples is considered in more detail later in this chapter.

Broad Context for Interpretation of Results

Overall, this study highlights the importance of and challenges in aggregating archaeological investigation data spanning over a century of excavations. Archaeological investigations in the southeastern United States over the last 130 years have produced a substantial amount of data that still require considerable organization, synthesis, and interpretation. This is especially true for the Archaic period (11,450-3,200 cal BP), an extensive time of pre-contact history (~8,300 years) that has seen the least amount of archaeological attention relative to earlier Paleoindian and later Woodland, Mississippian, and Historic periods of research (Sassaman 2010: 5-6). The Archaic was once presumed to be a long period inhabited by people that were simple and homogenous hunter-gatherers. Only in the last three decades has there been a shift in the archaeological perspectives and expansion of research questions concerning the Archaic period where cultures and societies of this time are now viewed as more complex than once previously thought (Anderson 2004, 2010: 275; Anderson and Sassaman 2012; Bissett 2014: 51; Claassen 1996: 258, 2010: 1-10, 2015: 11; Kidder and Sassaman 2009: 667-668, 682; Sassaman 2004, 2010; Thompson 2010: 217). Sassaman (2010: 1-10) goes to some length to explain the historic disregard of the Archaic in archaeological thought, remarking that this outlook was due to the existence of a long-running conceptual bias that assumed the Archaic period essentially represented primitiveness, simplicity, and a precursor to more complex social, cultural, and technological sophistication.

As detailed in Chapter 2, many features of these kinds of complexity, including the establishment of long-distance exchange and interaction networks, were emerging during the Archaic. Perhaps these revelations of Archaic complexity are not all that surprising given improved methods, theory, and attention. Similar trends in archaeological thought have been noted elsewhere. For instance, the European Upper Paleolithic is also now “recognized as being widespread, dynamic, complex, and continuously innovative” with the Archaic sharing many of the same defining elements that are ascribed to the Upper Paleolithic, namely “long-distance exchange, art and symbolism, burial, semi-sedentism, storage, and intensive relationships with wild resources” (Pettitt 2014: 280-281). Given that these previously overlooked periods and locations were the very contexts by which researchers developed these defining features of complexity, it is therefore paramount to continue research efforts to explore and further refine these contexts. One of the motivations for this project has therefore been to serve in the interest of contributing toward theory and methods on the archaeology of the Archaic period, with special concentration on the Shell Mound Archaic, an area of research still underrepresented.

The purpose of this research was to address the relationships between Late Archaic site types, level of archaeological survey, and exotic material locations across a sample of 150 sites in the Tennessee River Valley. The following interrelated questions were presented in Chapter 1:

(1) What is the spatial distribution of all macroscopically identified exotic materials across a sample of 150 lower and upper Tennessee River Late Archaic sites?

(2) From this sample, where were burials distributed along the lower and upper Tennessee River during the Late Archaic, and were they the sole repository of exotic materials? In other words, what are the relationships between exotic material, burial locations, and Late Archaic site types?

(3) What is the relationship between archaeological survey level intensity, period of archaeological investigation, and exotic material type? Have we found exotics in other archaeological assemblages in recent years as survey methodologies have

changed? What kinds of biases may be influencing our interpretations of long-distance exchange?

The intent of the first question is meant to investigate where each Late Archaic site type with exotic artifacts is located, in what quantities are each of these types represented, and how exotic material artifacts are clustered in the Tennessee River Valley. The intent of the second question is meant to explore the broader context of Late Archaic site types with and without burials and whether spatial distributions of exotic materials can be differentiated between lower and upper Tennessee River sites. The third question is meant to evaluate how changing survey methodologies over time influence the sampling of the archaeological record and hence our interpretations. Thus, by tracking the forces that dictate where excavations occurred, to what degree (i.e., survey level intensity), and for how long they were investigated, we can reveal how archaeological data were gathered and the biases that may result in the process.

To examine these questions, I used a geospatial approach to construct a database that georeferenced archaeological site locations and pertinent archaeological variables for long-distance exchange and interaction. In this chapter, a summary of the findings is provided and the three research questions are addressed in the context of the results from Chapter 4. Following this, a review of resilience and risk, the limitations of the study, notes on Tribal consultation, and recommendations for future research will be discussed.

Contextualizing Results

In interpreting results, it is important to reflect on the context provided by the physiographic landscape of the Tennessee River Valley and where sites were located in relation to the primary waterways (see **Figure 4.1**). Due in part to the uplifted barrier of the Cumberland

Plateau in eastern Tennessee, the Tennessee River's watershed is directed south from northeastern Tennessee at the confluence of the French Broad River and the Holston River, bends into northern Alabama and then flows north until merging with the Ohio River in Paducah, Kentucky. When we consider that the Tennessee River is the primary artery of water by which settlements were located and was used by individuals to extract year-long resources as well as travel for millennia, we should expect the density of occupation and fostering of cultural regionalization in this landscape indicated in the results present in Chapter 4.

It is equally important to have in mind how archaeologists have excavated and investigated sites in the Tennessee River Valley and the impact of this on the kinds of data available. As seen in **Figure 4.2** and described in Chapter 4, the spatial distributions of the number of sites by archaeological survey level intensity—Reconnaissance, Phase I, Phase II, and Phase III—and by the period of archaeological investigation (Pre-1950, 1950-1990, and Post-1990) show clear patterns of where archaeological interests have been guided over the last hundred years by modern industrial and commercial developments and as federal legislation has mandated the cultural resource management (CRM) assessment, mitigation, and protection of cultural resources. Reconnaissance investigations are absent before the 1950s, and though Phase I excavations occurred during the earliest time period, these were more prevalent in the upper river valley. Also, it should be emphasized here again that all Phase II and Phase III surveys were nonrandomly selected for this study, and so the sample likely contains the bulk, if not the entirety, of information on exotic materials collected along the lower and upper Tennessee River to date, since Reconnaissance and Phase I studies are less likely to present exotic materials than Phase II and Phase III excavations.

Moreover, there is a spatiotemporal bias in where these Phase II and Phase II excavations occurred; most were in the lower valley before 1950, with the majority occurring after 1950 taking place in the upper river valley. The major archaeological salvage efforts of the 1930s and 1940s excavations along the lower Tennessee River concentrated on areas that were in danger of being impacted by the construction of high dams and reservoirs by the Tennessee Valley Authority (TVA) and, secondarily, by other public works projects being conducted by the Civilian Conservation Corps (CCC) from 1933 to 1942. The excavations during this time yielded some of the most abundant archaeological data in this region to date though their occurrence before modern archaeological methods were developed imposes several limitations on what may be interpreted from the archaeological record. First, the time to conduct thorough surveys and excavations was restricted due to the primary social and political interest being to alleviate severe contemporary social, environmental, and economic problems such as unemployment, soil erosion, deforestation, and flooding. Thus, projects such as the construction of dams and putting people to work given the economic impacts of the Depression took precedence. As a result, not enough time was available to carry out a thorough survey of all cultural resources, and not all sites could be fully excavated. A consequence is that the archaeological record of these now-submerged sites is incomplete. Second, archaeological training and excavation techniques at the time were less precise than more recent methods. For example, the size of apertures in mesh screens used in the 1930s, if utilized at all, was much larger than those used today, which would have resulted in the loss of more artifacts during screening. Furthermore, the workforce carrying out the fieldwork was largely from a labor pool that lacked archaeological training. Therefore, although the efforts of salvage archaeology of the time are commendable for their ability to mobilize and manage a workforce that retrieved an impressive amount of data, it was in an error-prone context that was compelled to be fast-paced, professionally limited, and highly selective in the types of sites excavated and materials recovered before permanent inundation. This concern is also relevant to the sites in the upper river valley that correspond with dam construction and inundations from the 1950s onwards.

The landscape and social, political, and economic forces bear mentioning because they help illustrate the backdrop to which archaeological data has been shaped and recovered within this region of the southeastern United States. These are some of the factors that can bias the archaeological record. Addressing Research Question Three, the locations of where sites were selected for archaeological investigation were influenced by the political, economic, social, and cultural values and decisions of the time, and not necessarily investigations motivated by specific questions about lifeways during the Late Archaic. What dictates the selection of archaeological investigations is often guided by public works or infrastructure projects such as the construction of dams, highways, and energy facilities. It is within this context, then, that results may be interpreted, but emphasize for the reader that, as the archaeological record is inherently incomplete, future excavation and discovery in the Tennessee River Valley (motivated often by construction) may reshape the conclusions drawn below.

Prevalence of Exotic Materials and Implications for Long-Distance Exchange

In the absence of other forms of data to detect the movement of individuals or objects (e.g., stable isotopes or geochemical analysis), the presence of materials from nonlocal (e.g., exotic) locations is the best method to determine if long-distance exchange took place among the peoples and settlements of the Late Archaic in the Tennessee River Valley. The spatial distributions of three groups of materials were examined as indicators for long-distance exchange and interaction: 1) the presence of exotic artifact types (copper, marine shell, steatite/soapstone, and exotic other materials as defined in Chapter 3) (**Figures 4.4** and **4.5**); 2) the quantity of distinct Late Archaic projectile point types at each site (**Figure 4.7**); and 3) the presence of a Late Archaic point type, Benton projectile points, that has been hypothesized as an exchange item (**Figure 4.8**). Taken together, maps of the distribution of these materials depict notable patterns and differences between the lower and upper Tennessee River and demonstrate that exchange and interaction differed markedly between sites on the lower and upper Tennessee River.

Before examining these results in more detail, the further context for both the origins of these materials and how they may have related to exchange requires consideration. As shown in **Figure 4.3**, the sources and the locations of imported exotic materials to the Tennessee River Valley have been investigated and broadly determined (see Goad 1978, 1980 for copper and marine shell; see Wells 2006 and Truncer 2004a, 2004b for soapstone/steatite). However, the term *exchange* implies something was given in return for the copper, marine shell, soapstone, and other exotic materials; whether this was in another form such as information, mates, or other material goods remains unclear. From the literature reviewed in Chapters 1 and 2, there is little mention of the material evidence, aside from perhaps nonlocal lithic material, that anything was being exported from the Tennessee River Valley during the Late Archaic[12]. Without an integrated regional database to compile more of these data, these questions remain difficult to answer; it is thus premature to conclude that materials were not exported from the Tennessee River Valley at this time. That said, it should not be assumed that exchange operated the same as it does under modern economic theory in terms of a general marketplace of goods and services.

[12] Here we can emphasize the need to continue to strive for a shared regional, national, and (perhaps eventually global) infrastructure database (Wells et al. 2014, Anderson et al. 2017, Kansa et al. 2018) that can easily store and filter archaeological data and hence more easily answer such questions of regional exchange and interaction.

As briefly argued in Chapter 2, terms like "trade" are problematic and may not be the best descriptor for explaining what occurred throughout much of the Archaic or more recent time periods, as it imposes a Western notion of exchange. For example, some of the most abundant evidence for exotic materials being transported across the landscape during the Late Archaic comes from the Poverty Point in Louisiana. In steatite alone, approximately 7,000 sherds have been recovered making it the largest concentration of vessels and vessel fragments (Truncer 2004a: 135; Sassaman and Brookes 2017). Significantly, the evidence appears unidirectional, flowing into the region with no obvious counterpart materials flowing back out of the area to their respective source areas. This pattern also seems in line with the evidence for copper, marine shell, steatite, and other non-local items in other regions of the Late Archaic such as the Green River Valley in Kentucky and the Tennessee River Valley sites explored in this study (Claassen 1996, 2010; Jefferies 1995b; Morse 1967; Rothschild 1979; Winters 1968).

As I discussed in Chapter 2, exchange likely operated in Archaic societies more in terms of the movement of people, ideas, and objects in a reciprocal and redistributive fashion like the gift economies and long-distance interaction described by Mauss (1990[1925]). Exchange networks may have functioned to mitigate environmental and social risks similar to the !Kung San's reciprocal exchange system known as *hxaro* as described by Wiessner (1977, 1982, 1983, 1984; see also Halstead and O'Shea 1989: 4; Kelly 2013: 156; Moore 2011: 39, 101). Whether they were like these ethnographically documented systems or were unique to the Archaic peoples, exchange networks were not like contemporary concepts of trade rooted in modern economic theory. Rather, they operated in a dynamic and complex social, cultural, political, economic, and spiritual milieu that worked to tie groups together over vast distances, promoting resilience. Furthermore, the creation of persistent places on the landscape, as evidenced by the distribution of shell mounds, demonstrates sustained continuity of cultural practices. Additionally, with groups becoming more sedentary increased interactions over greater distances would have become incentivized and thus clan systems may have developed and, in general, served to establish and maintain important social relations between clan members and ease social tensions in times of stress (Tooker 1971). Whether or not clans developed during the Archaic is still an open question because it is difficult to argue using the available archaeological evidence, though the presence of some exotic materials at a regional scale has implications for distinguishing group identity.

The discovery of copper artifacts for the Late Archaic has been rare. Only 14 were identified from the total sample herein, found clustered exclusively in the lower Tennessee at five sites. This aligns with the observation presented in Chapter 1, namely that fewer than 25 copper artifacts had been discovered in the Southeast by 1979 (see Goad 1979:93) and helps partially answer the third research question: no new copper artifacts have been reported in recent years as survey methodologies have changed. Out of these five sites with copper present, three (Eva, Ledbetter Landing, and Oakview Landing) are listed as shell mounds and the remaining two sites (Thomas and Cherry) are considered open habitations. The provenience and chronology of some of these artifacts are problematic and were difficult to ascertain from the available evidence in site reports. For example, the only instance of copper discovered at Eva (a predominantly Middle Archaic site) were four copper beads found within a plow zone associated with an adult burial in poor condition that had been disturbed by modern agricultural activities (Lewis and Kneberg 1961: 103). Lewis and Kneberg (1961: 118) noted the presence of a splinter bone awl and a green slate gorget in addition to the copper beads and assumed association among them despite being disturbed. It is worth pointing out that all available radiocarbon dates for Eva predate the Late Archaic, and outside of the single instance noted above no other copper was recovered from the site. Another challenging example is the Thomas site where the unpublished 1941 excavation report by Douglas Osborne mentions “copper awls or needles” being attributed to F.S. # 162 and 163. The available records are unclear about the cultural and temporal context of these items. As noted in the previous chapter, Thomas was an open habitation site that lacked burials and radiocarbon dates, so these copper artifacts may date to a more recent temporal period. Lastly, the other open habitation site, Cherry, had three copper artifacts, two awls and a rolled sheet of copper made into a tube. From the available records, it is unclear what the provenience and cultural/temporal affiliation of these items are.

Despite this ambiguity, there is evidence from Ledbetter Landing and Oakview Landing that copper was present in the form of beads during the Late Archaic, and so lends credibility to the associations made in the aforementioned chronologically ambiguous sites. From Ledbetter Landing, two copper beads and two pieces of copper embedded in marine shell pendants were discovered with burials and the site had a mean radiocarbon date of 3562±88 cal BP, placing it toward the end of the Late Archaic (Autry and Hinshaw 1981; Bissett 2014; Lewis and Kneberg 1947). It is worth pointing out that this would mean that of the 129 burials discovered, two of the burials each had two copper items present. From Oakview Landing, copper beads were associated with a single burial out of a total of 83 burials discovered. The site has a mean radiocarbon date of 4451±76 cal BP. Thus, out of the three shell mound sites, copper beads were associated with four burials out of the combined 410 burials discovered from those three sites (Autry and Hinshaw 1981; Kanaski 2015). In addition, copper may not be exclusively found at shell mounds given that Cherry was an open habitation and copper may be found in other contexts besides burials given the awls or needles found at Thomas.

Like the sites with copper artifacts, sites with marine shell artifacts present are also rare during the Late Archaic. As reviewed in Chapter 4, five sites on the lower Tennessee River and five sites on the upper Tennessee River collectively had a minimum of 47 marine shell artifacts discovered[13]. The five sites on the lower Tennessee River—Cherry, Ledbetter Landing, Oakview Landing, Kays Landing, and Big Sandy—are all shell mound sites except for Cherry. Note also that the three sites of Cherry, Ledbetter Landing, and Oakview Landing were previously identified as having copper artifacts present as well. Although precise quantities could not be determined from the available site records at the time of this study, there were a minimum of seven marine shell artifacts found at these five sites, all of which were associated with burials. There was a combined total of 442 burials recorded for these five sites and it appears that at least seven individuals were associated with some form of marine shell artifact, i.e., pendant, beads, gorget, or vessel/dipper. Thus, in a partial answer to Research Question Two and from the sites sampled, all marine shell artifacts to date for the Late Archaic discovered on the lower Tennessee River have exclusively been found associated with burials.

The five sites on the upper Tennessee River with marine shell artifacts present were Davis, Sale Creek, Moccasin Bend, Fishing Center Site, and Bussell Island. There was much ambiguity and confusion in the interpretation of site records for these five sites. Problems in recording and data management are not unfamiliar to researchers (see Chapman 1982 for problems with Bussell Island). All five sites are multicomponent and span the Archaic to Mississippian. Both Bussell Island and Davis are listed as open habitations that date to the Archaic and later periods, along with earth mounds that are attributed to the later Woodland and

[13] As mentioned in Chapter 4, the sites with marine shell present had several ambiguities in terms of taxonomy, quantification, provenience, and chronology that require additional research and analysis. Thus, the interpretations of marine shell sites for this study should be treated with caution.

Mississippian periods. Fishing Center Site and Moccasin Bend are listed as open habitations, and as discussed in Chapter 4, Sale Creek is listed as an open habitation and potential shell mound. In addition to marine shell artifacts, these five sites also recorded 25 artifacts of steatite and a wide variety of exotic other materials (~157 artifacts) including nonlocal cherts, greenstone, mica, and kaolin (a type of nonlocal clay; see Graham 1964: 29). Given the heightened quantities and the association with earthen mounds and pottery, it is suspected that most of this exotic material is attributed to later Woodland and Mississippian times; further research using dating methods for associated organic materials, if available, would be required to appropriately assess their provenience, chronology, and cultural temporality. All of these sites except Moccasin Bend and Fishing Center Site were investigated pre-1950, and the two exceptions were explored before 1990. Thus, addressing Research Question 3: no new marine shell artifacts have been reported in other assemblages in recent years as survey methodologies have changed. The marine shell found at the sites on the upper Tennessee River likely does not correspond to the Late Archaic but to the later Woodland and Mississippian cultural periods. Given this uncertainty, evidence from the study's sample can only support that the marine shell artifacts can only be unambiguously associated with burials on the lower Tennessee River during the Late Archaic.

Taken together, copper and marine shell were almost exclusively found in shell mounds clustered on the lower Tennessee River. This could be interpreted as the emergence of status differentiation or social hierarchy as has been argued elsewhere such as in Mississippi (Charles and Buikstra 1983) and the Green River shell mound sites (Claassen 1996, 2010; Jefferies 1995b; Morse 1967; Rothschild 1979; Winters 1968). However, as previously noted by other researchers, these exotic items are rare (Claassen 1996: 252-257; Marquardt and Watson 1983: 334; Moore 2011: 142) and are found only within a handful of burials; out of the nearly 700 burials found on the lower Tennessee River, fewer than 10 individuals were observed with copper and/or marine shell artifacts. Additionally, there is little evidence elsewhere to suggest political centralization or social hierarchy for this time and region (compare with Sassaman 2010). Thus, the idea of social hierarchy formation seems unlikely, and another hypothesis for the rarity and placement of these artifacts would be speculative. These rare items that appear primarily as objects for ornamentation or ceremonial purposes may simply reflect community identity whereby the few items that were adorned in life and/or death were worn by individuals who were associated with or perhaps originated from the north (for copper) or south (for marine shell) (see section 'Resilience and Risk' below for models and hypotheses for exchange). Another possibility is that individuals from the north or south brought these items as gifts that facilitated the type of reciprocal exchange as described above and in Chapter 2.

Although speculative, it is plausible that these items could have also been more widespread than the evidence suggests and other factors could explain the rarity of these items and why they evade the archaeological record. For instance, some objects could have been subject to various taphonomic processes such as geochemical weathering if they were deposited in assemblages other than within the well-preserved contexts of shell mounds; the preservation of abundant freshwater shell in the mounds was facilitated by acid-neutralizing calcium carbonate from the shell itself. Furthermore, items made of copper such as awls and fishhooks and items like marine shell vessels suggest a utilitarian nature that could have been lost, discarded, or destroyed in numerous quotidian events. It is important to note, that in the context of when these sites were explored, the size of many of these items is quite small, and early excavations could have mistakenly discarded or completely missed such objects given the error-prone contexts of the 1930s and 1940s excavations as described above.

Another type of bias is worth noting at this point and also helps to answer part of the third research question. The types of materials with inherent properties that enable them to preserve over long periods and hence recover, lend themselves to a preservation or selection bias of certain material culture. All the material types reviewed in this study can typically withstand thousands of years of weathering and other taphonomic processes of degradation whereas other organic and inorganic objects are more susceptible to degradation. We can speculate on many other crafted objects and items made of organic materials such as wood, clothing, bags, seeds, spices, herbs, and other plant materials that may have also been frequently used in exchange over great distances but are not likely to preserve in many contexts within the temperate climate of the Tennessee River Valley. Many of these items may further implicate gendered roles in exchange networks and require further research.

Focusing now on the upper Tennessee River and referring to **Figure 4.4**, both soapstone and exotic other materials are almost exclusively concentrated on the upper Tennessee River with no apparent relationship with site type. There is only one soapstone artifact found on the lower Tennessee River at the shell mound site of Kay’s Landing, but detailed provenience could not be ascertained from available records at the time of this study. Also, as stated in the previous chapter, there were only three nonlocal pieces of chert found at three sites (one piece of nonlocal chert per site) in the lower valley. Why do we not see more of these types of exotic items making their way to the lower Tennessee River, especially non-local cherts? And vice versa, why are there no copper or marine shell artifacts on the upper Tennessee River during the Late Archaic? When we consider that soapstone was distributed intensively to Poverty Point and sparsely throughout Alabama and Georgia (see Wells 2006 Figure 2), that copper was making its way nearly 500 kilometers from the north, and that the marine shell was coming from the Atlantic or

Gulf Coasts, it was not a matter of distance or geographical obstacles inhibiting exchange of these materials between the lower and upper Tennessee River. This pattern supports the idea that Archaic groups with different identities were living on the landscape and developing localized resilience strategies toward the end of the Late Archaic.

The diversity of Late Archaic projectile points as illustrated in **Figure 4.7** does not have any apparent spatial pattern, though the abundance of sites with more than two types of lithic points relative to those with two or fewer was greater in the lower Tennessee River Valley. This may reinforce the idea that, with the presence of copper and unambiguously associated marine shell, there was greater exchange or interaction in the lower than the upper river valley, but this assumes, as noted in Chapter 3, that different lithic point types indicate different cultural traditions and not utilization. There could also be a bias presented by the pre-1950 sites, which did have numerous Late Archaic point types, but because typologies were not as well-defined at the time, their quantities are not fully represented in this study. Given this ambiguity, I focused on one lithic point type to assess differences in abundance. The presence of Benton projectile points shows a clear pattern (**Figure 4.8**), with most Benton points concentrated on the lower Tennessee River; Benton projectile points were recovered from only four sites on the upper Tennessee River. If these items were long-distance exchange items and not knapped locally, then the points add further evidence that exchange in the lower Tennessee River Valley was conducted on a north-south axis between shell mound communities of northwestern Alabama and northeastern Mississippi and those on the lower Tennessee River, paralleling the same trade axis suggested by copper and marine shell.

In summary, copper, marine shell, and Benton projectile points are almost exclusively concentrated along the lower Tennessee River, thus reinforcing what has been previously argued regarding exchange and interaction, that exchange was emerging along a north-south axis from the Great Lakes region to the Gulf and Atlantic coasts. Soapstone and exotic other materials were most concentrated on the upper Tennessee River with exchange and interaction occurring to the east in the Carolinas and northern Georgia although some nonlocal cherts appear to have originated from central Tennessee. Further construction of a database that can georeference all this exotic material is needed to visualize the larger regional pattern of exotic material sources and locations of discovery across the landscape. The emerging evidence for long-distance contact, especially when we factor in the abundance of exotic materials found at such places as Poverty Point, suggests that peoples of the Late Archaic were cognizant of large swaths of the continent and its peoples and capable of transporting material over extensive distances, either through networks or long-distance movement of groups or individuals. A lingering question that persists is that given that the SMA phenomenon occurred for millennia over a large geographical area, why do we only begin to see such exotic items appear in long-distance exchange networks during the Terminal Archaic (4,500-3,200 cal BP)? Likewise, why does freshwater shell cease to be incorporated into mound construction after the Late Archaic while the use of these exotic materials in long-distance exchange eventually increases in the later Woodland and Mississippian after a decrease in the Early Woodland? Although the data are limited, the patterns described here support the idea that the Archaic was not a monolithic culture but had different cultural groups on the landscape devising different exchange and interaction networks and hence cultivating different resilience strategies.

Implications for Resilience and Risk

As foregrounded in Chapter 1, and as formally presented in Chapter 2, the hypothesis for this thesis was that activities of long-distance exchange and interaction promoted resilience and reduced risk during the Late Archaic. Based on the results of analyses presented above, the archaeological record for the Late Archaic in the Tennessee River Valley can be argued to demonstrate long-term resilience in Native American settlement patterns and the creation of persistent places on the landscape as exemplified by shell mounds. That said, these results are tentative and represent only one possible interpretation; long-distance exchange occurred multiple times during the Late Archaic and took different forms across the region as demonstrated between the lower and upper Tennessee River, yet more research is required to bolster the argument for resilience and risk-mitigation. As defined in Chapter 2, resilience is the ability of people to withstand gradual and sudden social and environmental perturbations to their social organization and lifeways over generations while persistence is the maintenance of a cultural tradition over time. The shell mounds reflect long-term and relatively large-scale occupations. They represent some of the oldest evidence for mound construction in the southeastern United States, beginning in the Middle Archaic ca. 8,900 cal BP, and enduring as a cultural phenomenon for millennia until declining during the Terminal Archaic (4,500-3,200 cal BP). Socially and culturally, the shell mounds served as persistent places that reinforced important long-term ritual activities including mortuary ceremonialism and annual gathering locales for feasting events as argued by Claassen (2010). The shell mounds, therefore, embody recurring commitments by peoples of the SMA on the lower Tennessee River to these significant places on the landscape.

Such persistent places promoted resilience in a dynamic environmental setting that was vulnerable to the risks of rapid changes such as unusual fluctuations in temperatures and severe storms that brought about periodic and episodic flooding. Although annual and seasonal storms and flooding events are predictable to some degree and were presumably expected by the local inhabitants, the nature of their timing, intensity, location, and spatial extent, is not as easily predicted and would have created uncertainty for people to anticipate and respond. The SMA peoples lived through these recurring landscape changes, but large-scale storms and floods subsequently would have intermittingly restricted food, made travel by water more precarious (or perhaps momentarily impossible), and temporarily engulfed important ritual and habitation areas. Geoarchaeological evidence has long attested to temporary inundation of shell mounds and habitation sites as indicated by laminated soils or horizons of alluvial deposits (Lewis and Kneberg 1947, 1959: 166). Although the shell mounds are now permanently submerged, they were interestingly located relatively close to the river at low elevations and therefore susceptible to inundation to begin with. This draws into the question of whether SMA peoples intentionally constructed these mortuary complexes in such locations and therefore ties into the cosmological rituals of renewal as described by Claassen (2010: 6-7). Further social stressors may have occurred as groups made collective decisions in the aftermath (or anticipation of) such flooding events. This cascading of unpredictable events from time to time introduced levels of environmental and social risk and uncertainty by which people needed to cope and certainly would have influenced settlement patterns, mobility, and lifeways. A significant strategy to alleviate such risks would have been to devise, and more importantly, sustain long-distance exchange networks that would have facilitated interaction that incentivized benefits of cooperation, such as places to momentarily move to for refuge and/or take part in rituals of exchange in information, goods, or mates. The artifactual evidence discussed in this study gives further support for the establishment of long-distance exchange networks during the Terminal Archaic, which, following the above argument, would have been a means of promoting resilience and reducing risk. Also, given the lack of SMA mounds in east Tennessee, it is an open question as to whether persistent places can be archaeologically distinguished in eastern Tennessee. Additionally, research into the earthen mounds located on both the lower and upper Tennessee River may help to support the notion of persistent places in these regions. Thus, resilience theory and the concept of risk are useful frameworks that add nuance for interpreting the archaeological data presented in this thesis. Out of this social, cultural, political, economic, and spiritual milieu, clan systems may have emerged, though, as mentioned, this is difficult to prove; the distinctions between the lower and upper Tennessee River Valley do indicate differences in exchange territories and limited exchange along the length of the Tennessee River.

As I reviewed in Chapter 2, it is necessary to be wary when hypothesizing that resilience best explains the evidence. Redman and Kinzig (2003) asked, in interpreting the evidence, artifacts and site manifestation may cause a mistaking of longevity for resilience. For this reason, I asked whether enough data are indicating long-distance exchange and interaction during the Late Archaic in the region to support the claim for resilience. As much more data needs to be incorporated into the geodatabase to properly answer such a question, the answer is little more than a speculative and hesitant yes. As stated throughout this thesis, more data, hypothesis-testing, and discussions are required to refine the edges of the theory and archaeological evidence for resilience and cultural persistence.

What was the nature of Late Archaic interactions? How were people connected and how did those connections vary across the region? What was being exchanged, over what period(s), and across what geography? Lastly, what different resilience strategies might have been operating on the landscape simultaneously, and was this interaction and exchange a key component to upholding resilience and reducing risk? As explored above, the distinct locations of the shell mounds and the contrast of where certain exotic materials appear on the landscape between the lower and upper Tennessee River indicate that groups used different resilience strategies, especially toward the end of the Late Archaic which most, if not all, of this material is inferred to date. Peoples of the SMA on the lower Tennessee River appear to have established ties with peoples further south as indicated by marine shell artifacts and Benton projectile points, and had perhaps minor connections with people somewhere in the north as indicated by the few copper artifacts discovered. Likewise, the Late Archaic groups on the upper Tennessee River were connected to regions across the Appalachians to the east where they were obtaining steatite and thus presumably were connected with groups living in these regions.

Models of exchange explored by Goad (1978: 35-45) supported that hand-to-hand or down-the-line exchange was most effective, whereby exotic materials made their way sporadically in various directions from their source changing hands over short distances, many times, and over a long period. This model supports the observation that with a greater distance from the source, fewer items will be expected. The spatial patterning of copper and marine shell explored in this thesis concurs with this hypothesis. However, the spatial patterning of steatite and exotic other material is distinct from the hand-to-hand exchange hypothesis. Together, the greater quantity of this exotic material, the more dispersed patterning of this material, and the presumed way in which this material was used for utilitarian objects (vessels and tools) suggest increased social interaction was taking place between the upper valley and the east and south in some form of interregional exchange toward the end of the Late Archaic although the nature of these exchanges remains unclear. There is not sufficient evidence to assess if individuals from the upper Tennessee River traveled directly to these sources or if indirect means of obtaining steatite vessels and nonlocal cherts occurred through exchange or distribution centers.

In summation, it has been argued that the inhabitants of the SMA in the Tennessee River Valley sustained themselves because of several factors. The environment along the Tennessee River provided a productive amount of resources that attracted local inhabitants. Climate was amenable to long-term habitation which is reflected in the shell mounds themselves indicating a persistent place that drew peoples for millennia to the area for rituals of feasting and mortuary ceremonialism. It is curious that these shell mounds were, with one inconclusive exception, limited to the lower river valley, and thus may indicate differences in cultural practices, cosmologies, or means of engagement with the local environment, since freshwater mollusks were abundant in the upper river valley but not used to construct mounds. Though exotic items are rare and emergent during the Late Archaic, they do indicate a level of connection to great distances in the region and a cognizance of the wider landscape, something that is crucial for resilience, specifically knowing neighbors and resource structure as argued in Chapter 2. A final anthropological question can be submitted for further research inquiries and reflection: how much of life is structured based on the anticipation and responses to various environmental and social risks? The premise is that human social life is a response to the practical problems of real and perceived risks.

Limitations of Study

As outlined in Chapter 1, two primary obstacles to piecing together patterns of regional exchange and interaction in pre-contact times have likely been due to (1) the lack of geospatial methods of storing, quantifying, and mapping large datasets in conjunction with (2) the lagging efforts of academia to incorporate CRM-generated data. This project has been an experiment in tackling these two issues and demonstrating the utility of aggregating large regional datasets, which may then be explored through GIS visualization and analysis. I contend that if we cannot easily obtain, visualize, and interact with our data, then we also cannot succinctly contextualize, synthesize, and interpret our data, which is the whole point of doing archaeology in the first place.

In a sense, part of this project has been an audit of how archaeological sites have been recorded, stored, managed, and shared. There have been noticeable steps during the development of this project that encumbered the research process and thus should be discussed. Some of these issues can likely be improved with efforts to better organize data and update the methods by which we store information, e.g., digitizing and optimizing all site records. Other issues in terms of accessibility of information may be more difficult when site records contain sensitive information. That said, if we are to conduct thorough archaeological analyses of something on the scale of regional exchange and interaction in the past, several of these fundamental limitations will need to be acknowledged and reconciled.

Problems in Data Procurement

Despite improved methods of digitization and open context that allow greater capabilities in sharing and accessing data, lingering problems with accessibility, retrieval, and the basic organization of large amounts of data persist. The data collection process included an initial phase of downloading original site file data from the Digital Index of North American Archaeology's (DINAA) online database and was an incredibly useful tool for identifying candidate sites for this project. However, the next phase of accessing and retrieving all site records was problematic and time-consuming. Although most site records can, in theory, be retrieved from official institutions like TDOA and the McClung Museum, these institutions do not have the personnel or resources to fully scan, optimize, organize, and make accessible all site file data to the researcher in a digital format. Multiple in-person trips to TDOA were required for scanning the remaining reports not yet in PDF format and some reports are in bindings that prevent efficient automated scanning.

Four months were spent procuring these original sources—many of which were obtained only because of my affiliation with the TVA—which took important time away from preparing and organizing the data, construction of the database, analysis, and interpretation. This process of gathering reports and research papers could be greatly enhanced by simply having an accessible database of all reports and publications ordered by site number and/or county. Researchers could then be easily vetted and granted temporary access to this data if there are extant security or legal issues and thus making grey literature more accessible to the academic world. Other options to expedite this process likely exist and merit further investigation by archaeological repositories.

Problems with Initial Recording of Data

The problems with the initial recording of data have sporadically been noted throughout this thesis but will be summarized here. When reviewing older documents, e.g., excavation and field reports, F.S. forms, burial forms, and older survey forms, there are noticeable ambiguities in such data as the number of artifacts and the descriptions of artifacts. Some text and handwritten forms are completely illegible or nearly indecipherable. In several cases, it is unclear how many of a given item such as a copper or marine shell bead were recovered. In other cases, it could not be inferred whether the "shell" written on the forms referred to local freshwater or nonlocal marine shell. Furthermore, the distinct number of Late Archaic point types could not be inferred from older documents which often have outdated general terms and shorthand that requires further decryption. Thus, to assess true quantities and identification of these characteristics, original collections, if available and with Tribal permission, would need to be revisited for additional research and analysis. Even under these ideal circumstances, contextual or provenience data will ultimately be unrecoverable when it was not recorded at the time of retrieval.

Suggestions for Improving Exotic Material Identification

Greater detail of analysis is warranted to determine the provenience and temporality of exotic materials. As a result of this study, it was clear that many items could not be easily discerned from artifact summaries alone and additional descriptions of exotic materials were sometimes lacking. Artifact analyses do not always assess the lithic material type, especially for older sites excavated before 1950. Thus, the only way to verify extant data tables and thoroughly document all raw materials would be to revisit the physical collections and conduct further analysis. Ideally, this would span the verification of items in collections to geochemical analysis to trace the source of materials.

The lack of proper raw material identification in the field is understandable given the numerous logistical and time-sensitive concerns in conducting modern fieldwork. However, one suggestion is for principal investigators to be familiar with nonlocal materials and that they impart that knowledge to field technicians operating in their region.[14] As the nature of CRM is to have field technicians working from many different regions, it is unreasonable to expect them to be familiar with all the regions or locations in which they may find themselves. Thus, the onus of responsibility falls on the CRM firm via the principal investigator to properly inform and train

[14] Mentorship and basic guidance from senior CRM field technicians, crew chiefs, field directors, or principal investigators are highly variable in the CRM world and often unfortunately nonexistent. I can personally attest that, as an incoming field technician for various archaeology and environmental firms, little to no hands-on training was given to our field crews for all kinds of necessary knowledge whether it be in regional geoarchaeology or geomorphology, lithic material, and point types, or even proper shovel testing and excavation techniques. Too much expertise is assumed of new field technicians who likely have only experienced a single field school which amounts to perhaps 4-6 weeks of suboptimal training within a university setting which is often detached from the reality of CRM and is by no means equivalent to doing CRM work.

their crews for both in-the-field and post-field processing of nonlocal materials. There is much to be said for CRM firms and universities to build better relationships to alleviate labor shortages, poor working conditions, a failing field school model, etc., but suffice it to say that these institutions have more to benefit from one another in cooperating than acting independently.

Notes on Tribal Consultation

This study shows that researchers need to be able to return to collections and/or inventories and other documentation if we are to verify artifacts both qualitatively and quantitatively. Under NAGPRA, many artifacts are being returned to Tribal nations throughout the United States. This signifies the importance of efforts to not only consult but collaborate with Tribes and continue the effort to strengthen relationships. I greatly appreciated the opportunities I had to coordinate this project with some of the Tribes in the Southeast and listen to their initial thoughts on the project. I was thrilled to receive positive feedback and support. Under the duress of a pandemic, I only wished there had been more opportunities to come together in person to discuss and share our ideas because I believe there is a lot of important conversation yet to be had. But these questions can occur in the future.

I hope researchers can continue to improve guidelines and best practices that more easily facilitate these conversations. Much of this process is nascent and therefore understandably ambiguous. As an incoming graduate student, this was initially a bewildering and frustrating experience and I must candidly report that this process felt rather unexpected, rushed, and informal and, unfortunately, likely resulted in having fewer conversations and receiving less feedback from Tribes than would have happened had I been informed of this process at the beginning of my graduate research. It was only in the Spring of 2021 that I was informed that I needed to reorient my research and consult with Tribes, and I spent the summer drafting a letter of intent (see **Appendix D**) which was sent in July 2021 to 14 Tribes and their associated THPOs and NAGPRA coordinators. Follow-up emails were sent in August and September. Five Tribes responded with their support and a handful of web discussions were conducted, again with positive feedback and support. I was happy to engage in the consultation process with Tribes and only wished the process could have begun sooner so I could have been more prepared. One suggestion that could help is more co-authored publications with Tribal members and anthropologists and archaeologists that outline overlapping research interests. It is my view that the onus of responsibility for facilitating this has to be on faculty in anthropology departments and to develop clear guidelines and best practices, and most importantly incoming graduate students must be informed of this from the start of their program so they can begin their research with all of this context in mind and plan accordingly. I do hope that my experiences can only serve to improve this process of collaboration with Tribes.

Future Directions

There is an apparent need for developing more integrated GIS systems for archaeology; the capabilities and applications of GIS systems for storing, sharing, analyzing, and visualizing data are exceptional. A goal of this project was to initiate the construction of a database that affords an ability to examine the spatial distribution of Late Archaic sites and the contexts in which exotic or nonlocal materials were identified to evaluate patterns for long-distance exchange and interaction. Part of the motivation for this research was out of frustration with how scattered archaeological data is currently and the exorbitant time a researcher invests in tracking down their sources. Much of this frustration can be alleviated with continued efforts at building and refining GIS systems. The long-term aim of this work is to incorporate all regional data on exotic materials for the analysis of synchronic and diachronic spatial patterns of exchange and interaction.

Before expanding the database to include remaining Late Archaic sites in the Tennessee River Valley (for example, the other Shell Mound Archaic sites along the Cumberland River), the next step would be to first review the current project for areas of improvement, especially to address ambiguous and incomplete data, and determine what additional variables may aid future spatial analysis. For example, such factors as site dimensions, site elevations, and percentage of the site excavated may be added to the list of variables for spatial analysis. Additional methods are also needed to streamline the process of determining the provenience of nonlocal material and verifying cultural/temporal affiliation for these items. With further refinement, a near-term future direction would be to continue incorporating all SMA sites from within the region (see Claassen 2010: 21-34 for a regional review). Lastly, further analyses that may assist in evaluating Late Archaic exchange and interaction may include zooarchaeological analyses, especially of the marine shell that can more accurately identify taxonomy and differentiate local from nonlocal shell material; radiocarbon dates that could refine the much-needed chronology of the Archaic; bioarcheological analyses that could more thoroughly assess burial contexts; oral histories and stories that can speak to the meanings behind such exotic artifacts and perhaps enrich our understanding of the cultural significance of the landscape; paleoethnobotany to better understand the Late Archaic food items that may have been implicated in exchange and interaction; and further geochemical testing and sourcing of nonlocal materials such as lithics to enhance the spatial resolution of exotic material types. It should be emphasized here that any destructive analysis and additional data collection will need to be at the discretion and guided by the interests of Native American group. Partnering with Tribes is essential to this process, not only to obtain consent where required but to fully engage with those communities in dialogues about research questions and broadening context.

This research depends on recorded information from sites, both unpublished and published. Therefore, the study has further implications for the strategic collection, formatting, storage, sharing, and representation of Late Archaic archaeological data. I contend that data ought to be as organized, accessible, intuitive, and intelligible as possible with all interested parties in mind. This work is beneficial not only for academic researchers but also for those working throughout the private sector in cultural resource management (CRM) and with Tribal Historic Preservation Offices (THPOs) and State Historic Preservation Offices (SHPOs) who all frequently engage with each other and many other professional disciplines as well as the public at large. Access to open data sources offers immense opportunities as well as challenges (Anderson et al. 2010; McManamon 2017; Wells et al. 2014) and researchers must reflect on how to serve and enable multiple sources and needs (e.g., archaeological science, Tribal sovereignty, public interest, etc.) In short, there is great potential to develop databases and GIS systems that unify all parties interested in archaeology.

Conclusion

This study has considered the role of persistent places in promoting resilience within the Late Archaic (ca. 5800-3200 cal BP) cultural landscape of the lower and upper Tennessee River Valley within the southeastern United States. The cultural phenomenon known as the Shell Mound Archaic persisted in the lower Midwest and Midsouth region of the Eastern United States for over four millennia beginning in the Middle Archaic ca. 8900 cal BP and terminating near or shortly after the end of the Late Archaic ca 3200 cal BP. A geospatial approach was applied to the analysis of exotic material exchange for the Late Archaic period to assess where and when foraging peoples in the Tennessee River Valley were interacting and engaging in long-distance exchange. Exotic material items manufactured from copper, marine shell, steatite, and other nonlocal materials demonstrate distinct spatial patterns that emerge during the Late Archaic. The results suggest the long-distance exchange networks developing in the Late Archaic varied between the lower and upper Tennessee River and reveal a burgeoning regional awareness at this time that likely contributed to increased interaction, sociability, and cultural exchanges beyond materiality. Many important questions remain for the SMA and the larger Archaic period in evaluating the mobility, landscape use, exchange, and interaction that took place over this extensive time and geography. The geospatial approach applied here represents a minor yet significant first step to compiling the data for exotic material intended for a much larger project of constructing a regional database for synchronic and diachronic analyses of exchange and interaction.

REFERENCES

Abrams, Marc D., and Gregory J. Nowacki
2008 Native Americans as Active and Passive Promoters of Mast and Fruit Trees in the Eastern USA. *The Holocene* 18:1123–1137.

Ahlman, Todd M., J. Michael Elam, and Susan R. Frankenberg
1997 *Phase I Archaeological Survey of the Fall Creek Recreation Area, Hamblen County, Tennessee.* Prepared for Tennessee Valley Authority. The University of Tennessee, Department of Anthropology, Knoxville, Tennessee.

1998 *A Report on Phase II Archaeological Investigations of 40LD179, The Tipton/Dixon House Site, Loudon County, Tennessee.* Report prepared for Mr. Jerry Walter, Vonore, Tennessee by the University of Tennessee, Department of Anthropology, Knoxville.

Ahlman, Todd. M., S.R. Frankenberg, and Erin Pritchard.
1999 *A Report on Phase III Archaeological Investigations at the Tipton/Dixon House Site (40LD179), Loudon County, Tennessee.* Report prepared for Mr. Jerry Walter, Vonore, Tennessee by the University of Tennessee, Department of Anthropology, Knoxville.

Alexander, L.S.

2002 *Phase II Archaeological Testing of Sites 40HS4 and 40HS74 and An Intensive Phase I Survey of the Duck River Flood Plain in Conjunction with the Proposed State Route 13 Bridge over the Duck River, Log Mile 7.72, Humphreys County, Tennessee.* Prepared by Alexander Archaeological Consultants for Gresham Smith and Partners and the Tennessee Department of Transportation.

2006a *Phase I Archaeological Survey of a Proposed 2.5 Acre Development Parcel at Tennessee River Mile 464.5R in Chattanooga, Hamilton County, Tennessee*. Prepared by Alexander Archaeological Consultants, Inc., Wildwood, GA. Submitted to MAP Engineers, Chattanooga, Tennessee, and The Tennessee Valley Authority Office of Natural Resources, Knoxville, Tennessee.

2006b *Phase II Archaeological Survey of a Proposed 2.5 Acre Development Parcel at Tennessee River Mile 464.5R in Chattanooga, Hamilton County, Tennessee*. Prepared by Alexander Archaeological Consultants, Inc., Wildwood, GA. Submitted to MAP Engineers, Chattanooga, Tennessee, and The Tennessee Valley Authority Office of Natural Resources, Knoxville, Tennessee.

2012 *Phase III Archaeological Investigation of Site 40LD221, Loudon County, Tennessee.* Submitted by Alexander Archaeological Consultants, Inc., to Tennessee National, LLC., Loudoun, Tennessee, and Tennessee Valley Authority, Knoxville, Tennessee.

2014 *Phase I Archaeological Survey of A Proposed 4.0-Acre Development on the Tennessee River (RM 455.9) Hamilton County, Tennessee*. Alexander Archaeological Consultants, Inc., Wildwood, GA. Prepared Under contract with Tennessee Aquarium Conservation Institute Chattanooga, Tennessee. Report submitted to TVA, Knoxville, Tennessee.

Alexander, L.S., Azzarello, J.A., and L.C. Thompson
2000 *Phase I Archaeological Survey of Proposed State Route 475, The Knoxville Beltway, Anderson, Knox, Loudon, and Roane Counties, Tennessee.* Alexander Archaeological Consultants, Chattanooga, TN. Report prepared for Tennessee Department of Transportation, Environmental Planning Office, Nashville, TN.

Alexander, L.S., Hoksbergen, B., Azzarello, J., and Thomson, J.
2002 *Phase I Archaeological Survey of Proposed Interstate 140 Extension (Pellissippi Parkway) from West of Cusick Road to State Route 73 (US-321), Blount County, Tennessee.* Prepared by Alexander Archaeological Consultants, Chattanooga, Tennessee.

Alexander, L.S., Minnich, D.J., Stevens, W.D., and H. Russell Campbell
1998 *Archaeological Investigations of Sites 40HA328, 40HA446, and 40HA447 in Coolidge Park, Chattanooga, Hamilton County, Tennessee.* Prepared by Alexander Archaeological Consultants, Inc., Wildwood, GA. Submitted to River Valley Partners, Inc., Chattanooga.

Alexander, L.S., Walling, R., and Heckman, E.
2001 *Phase II Testing of Archaeological Site 40CK184 in Cocke County, Tennessee in Conjunction with the Proposed State Route (US 321/411) from Good Hope Road to East of the Cocke/Green County Line, Cocke and Green Counties, Tennessee.* Prepared by Alexander Archaeological Consultants. Tennessee Department of Transportation. Nashville, Tennessee.

Alexander, Lawrence S., Campbell, Russell H., and Daniel J. Minnich
1997a *Final Report of a Phase I Archaeological Survey of Proposed State Route 29 (US-27) from 16th Avenue in Dayton to State Route 68 in Spring City, Rhea County, Tennessee.* Submitted by Alexander Archaeological Consultants for Chester IDE and Associates.

1997b *Final Report: Phase II Testing of Archaeological Sites 40RH163, 40RH220, 40RH221, 40RH224, and 40RH227 in Rhea County, Tennessee.* Submitted by Alexander Archaeological Consultants for Gresham, Smith and Partners, and Tennessee Department of Transportation.

Alvey, Richard L.
2002 *Phase I Survey for Archaeological Resources of River Islands Plantation Subdivision in Knox County, Tennessee.* Submitted by Center for Transportation Research, the University of Tennessee to Mr. Gregory M. Layman, Sevierville, Tennessee.

Anderson, David G.

1996 Approaches to Modeling Regional Settlement in the Archaic Period Southeast. In *Archaeology of the Mid-Holocene Southeast,* edited by K. Sassaman and D. Anderson, pp. 157–176. University Press of Florida, Gainesville.

2001 Climate and Culture Change in Prehistoric and Early Historic Eastern North America. *Archaeology of Eastern North America*, 29: 143–186.

2002 The Evolution of Tribal Organization in the Southeastern United States. In *The Archaeology of Tribal Societies*, edited by William A. Parkinson, pp. 246-77. Berghahn Books, Ann Arbor.

2004 Archaic Mounds and the Archaeology of Southeastern Tribal Societies. In *Signs of Power: The Rise of Cultural Complexity in the Southeast,* edited by J.L. Gibson and P.J. Carr, pp. 270-299. University of Alabama Press, Tuscaloosa.

2010 The End of the Southeastern Archaic: Regional Interaction and Archaeological Interpretation. In *Trend, Tradition, and Turmoil: What Happened to the Southeastern Archaic?*, edited by David H. Thomas and Matthew C. Sanger, pp. 217-228. Anthropological Papers of the American Museum of Natural History, New York.

2012 Monumentality in Eastern North America during the Mississippian Period. In *Early New World Monumentality,* edited by Richard L. Burger and Robert M. Rosenwig, pp. 78–108. University of Florida Press, Gainesville, Florida.

2013 Paleoindian and Archaic Periods in North America. In *The Cambridge World History*, edited by Paul Bahn and Colin Renfrew, pp. 913-932. Cambridge University Press.

2018 Using CRM Data for “Big Picture” Research. In *New Perspectives in Cultural Resource Management*, edited by Francis P. McManamon, pp 197–212. Routledge Press, New York.

Anderson, David G., Russo M., and Sassaman, K. E.

2007 Mid-Holocene Cultural Dynamics in Southeastern North America. In *Climate Change and Culture Dynamics: A Global Perspective on Mid-Holocene Transitions*, edited by David G. Anderson, Kirk A. Maasch, and Daniel H. Sandweiss, pp. 457–490. Academic Press, Oxford.

Anderson, David G., and Sassaman, Kenneth E.

2012 *Recent Developments in Southeastern Archaeology : From Colonization to Complexity*. Society for American Archaeology Press.

Anderson, D.G., D. Shane Miller, Stephen J. Yerka, J. Christopher Gillam, Erik N. Johanson, Derek T. Anderson, Albert C. Goodyear, and Ashley M. Smallwood.

2010: PIDBA (Paleoindian Database of the Americas) Current Status and Findings. *Archaeology of Eastern North America* 38:63-90.

Anderson, David G., Thaddeus G. Bissett, Yerka, Stephen J., Wells, Joshua J., Kansa, Eric C., Kansa, Sarah W., Myers, Kelsey Noack, DeMuth, R. Carl, and White, Devin A.

2017 Sea-level Rise and Archaeological site destruction: An example from the southeastern United States using DINAA (Digital Index of North AmericanArchaeology) PLoS ONE 12(11): e0188142. https://doi.org/10.1371/journal.pone.0188142

Angst, Michael G.

2010 *An Inventory of Significant Prehistoric Archaeological Sites within the Duck River Unit of the Tennessee National Wildlife Refuge, Benton and Humphreys Counties, Tennessee.* Submitted to Tennessee Valley Authority. Knoxville, Tennessee. Archaeological Research Laboratory, University of Tennessee, Department of Anthropology, Knoxville, Tennessee.

Armelagos, George J.

2003 Bioarchaeology as Anthropology. In *Archaeology as Anthropology*, edited by S. D. Gillespie and D. L. Nichols, pp. 27–41. Archaeological Papers of the American Anthropological Association, No. 13. Washington

Autry, William O., Jr., and Jane S. Hinshaw

1981 *A Cultural Resource Reconnaissance of the Tennessee National Wildlife Refuge with Archaeological Survey of Selected Areas; Benton, Decatur, Henry, & Humphreys Counties, Tennessee*. Submitted to National Park Service and U.S. Fish and Wildlife Service, Region 4, Atlanta. Tanasi Archaeological Research Associates, Report No 1. Nashville, Tennessee.

Bender, Barbara

1985 Emergent Tribal Formation in the American Midcontinent. *American Antiquity* 50(1): 52-62.

Beverly, J. H., and J. David McBride

2006 *A Phase I Archaeological Survey of Portions of Sections One and Three of the Extension of Middle Creek Road, Sevierville, Tennessee.* Prepared by Wilbur Smith Associates, Lexington, Kentucky. Submitted to the City of Sevierville, Tennessee.

Bissett, Thad G.

2014 The Western Tennessee Shell Mound Archaic: Prehistoric Occupation in the Lower Tennessee River Valley between 9000 and 2500 Calendar Year BP." Ph.D. Dissertation, University of Tennessee.

Bollig, Michael

2014 Resilience – Analytical Tool, Bridging Concept or Development Goal? Anthropological Perspectives on the Use of a Border Object. *Zeitschrift für Ethnologie* 139: 253-279.

Bradbury, Andrew P.

1995 *Archaeological Investigations at Six Sites in the Wells Creek Valley, Houston County, Tennessee.* Submitted to Tennessee Department of Transportation by University of Tennessee, Knoxville.

Buchner, Andrew C., and Daniel Cain

2009 *Phase I Archaeological Survey for Pellissippi Parkway Extension (SR 162) from SR 33 to U.S. 321, Blount County, Tennessee.* Panamerican Consultants, Inc. for Federal Highway Administration.

Buikstra, Jane E.

2019 Models, Metaphors, and Measures. In *Hunter-Gatherer Adaptation and Resilience: A Bioarchaeological Perspective*, edited by D.H. Temple and C.M. Stojanowski, pp. 354-383. Cambridge University Press.

Calabrese, F.A.

1976 *Excavations at 40RH6, Watts Bar Area, Rhea County, Tennessee.* Department of Sociology and Anthropology, University of Tennessee, Chattanooga. Submitted to the Tennessee Valley Authority, Norris, Tennessee.

Carr, Christopher and D. Troy Case

2005 *Gathering Hopewell: Society, Ritual, and Ritual Interaction.* New York: Kluwer Academic.

Campbell, Meadow L.

2016 Biological Distance in Middle and Late Archaic Populations of the Mid-South United States. Ph.D. Dissertation, University of Tennessee.

Chapman, Jefferson

1973 *The Icehouse Bottom Site-40MR23.* Department of Anthropology, University of Tennessee, Report of Investigations No. 13.

1974 *Preliminary Report on the Archaeological Investigations at the Rose Island Site-40MR44.*

1975 *The Rose Island Site and The Bifurcate Point Tradition.* Report of Investigations, No. 14, Department of Anthropology, University of Tennessee.

1978 *The Bacon Farm Site and A Buried Site Reconnaissance.* Submitted in accordance with National Geographic Society Grant, National Park Service Contract, and Tennessee Valley Authority Contract. University of Tennessee, Department of Anthropology, Report of Investigations, No. 23. Publications in Anthropology, No. 21.

1979 *The 1978 Archaeological Investigations at the Citco Site (40MR7).* Report prepared in Partial Fulfillment of Tennessee Valley Authority Contract TV 49491 A. Department of Anthropology, University of Tennessee, Knoxville.

1981 *The Bacon Bend and Iddins Sites: The Late Archaic Period in the Lower Little Tennessee River Valley*. Department of Anthropology, University of Tennessee, Report of Investigations 31 for Tennessee Valley Authority.

1982 *A Summary and Assessment of the Archaeological Investigations at Bussell Island 1886-1978.* Prepared in fulfillment of Tennessee Valley Authority. Department of Anthropology, University of Tennessee, Knoxville.

1985 Archaeology and the Archaic Period in the Southern Ridge-and-Valley Province. In *Structure and Process in Southeastern Archaeology*, edited by Roy S. Dickens, Jr. and H. Trawick Ward, pp. 137–153. The University of Alabama Press, Tuscaloosa.

1990 *The Kimberly-Clark Site and Site 40LD207.* Tennessee Anthropological Association. Miscellaneous Paper No. 14. The University of Tennessee, Department of Anthropology, Report of Investigations No. 51.

Chapman, Shawn

1999 *Phase I Archaeological Survey Proposed State Route 15/US 64 from the East Side of Savannah to the Waynesboro By-Pass Hardin and Wayne Counties, Tennessee.* Prepared by Panamerican Consultants, Inc. for the Tennessee Department of Transportation.

2002 *Phase II Archaeological Investigations of Sites 40HR305, 40HR310, and 40WY101, State Route 15/US-64, Hardin and Wayne Counties, Tennessee.* Prepared by Panamerican Consultants, Inc. for the Tennessee Department of Transportation.

Charles, Douglas K., and Buikstra, Jane E.

1983 Archaic Mortuary Sites in the Central Mississippi Drainage: Distribution, Structure, and Behavioral implications. In *Archaic Hunters and Gatherers in the American Midwest* edited by J. Phillips and J. Brown, pp. 117-145. New York: Academic Press.

Childress, Mitchell R.

1993a *Preliminary Report: Phase I Archaeological Investigations Along State Route 30, Bridge and Approaches Over the Tennessee River, Rhea and Meigs Counties, Tennessee.* Submitted to Chester-Davis-Heinz, Inc. and Tennessee Department of Transportation by Garrow & Associates, Inc.

1993b *Preliminary Report: State Route 30 Bridge, Tennessee River: Additional Archaeological Investigations on Hunter Bend, Meigs County, Tennessee: Phase II Testing at 40MG7 and Survey of a Wetland Mitigation Area on McKinley Branch.* Submitted to Chester IDE Associates, Inc. and Tennessee Department of Transportation by Garrow & Associates, Inc.

Claassen, Cheryl

1991 Gender, Shellfishing, and the Shell Mound Archaic. In *Engendering*

Archaeology: Women and Prehistory, edited by J. Gero and M. Conkey, pp. 276–300. Blackwell, London.

1992 Shell Mounds as Burial Mounds: A Revision of the Shell Mound Archaic. In *Current Archaeological Research in Kentucky*, vol 2. edited by D. Pollack and A.G. Henderson, pp 1-12. Kentucky Heritage Council, Frankfort.

1996 A Consideration of the Social Organization of the Shell Mound Archaic. In *Archaeology of the Mid-Holocene Southeast*, edited by K. E. Sassaman and D. G. Anderson, pp. 235-258. University Press of Florida, Gainesville.

2010 *Feasting with Shellfish in the Southern Ohio Valley: Archaic Sacred Sites and Rituals.* Knoxville: University of Tennessee Press.

2015 *Beliefs and Rituals in Archaic Eastern North America: An Interpretive Guide*. Tuscaloosa: University of Alabama Press.

Clute, Richard D., and Lawrence S. Alexander

2007 *Phase II Testing of Sites 40RH166, 40RH167, and 40RH282 in Cottonport Development at Tennessee River Mile 512.5, Rhea County, Tennessee.* Prepared by Alexander Archaeological Consultants, Inc., Wildwood, GA. Prepared for Hayes & Associates Inc., Jefferson City, TN, and Tennessee Valley Authority, Office of Natural Resources, Norris, TN.

Cobb, James E.

1970 *A Preliminary Report on 40KN49: An Early Archaic Site in Knox County.* Southeastern Archaeology 3650. Dr. Charles H. Faulkner.

Coco, Julie J., Schneider, Max F., and Lawrence S. Alexander

2004 *Draft Report: Phase II Archaeological Testing of Disturbance Due to Construction of a River Access Ramp and Shoreline Retaining Wall on Site 40MG210, Meigs County, Tennessee.* Submitted to Bud Moore, Decatur, Tennessee, and Tennessee Valley Authority by Alexander Archaeological Consultants, Inc.

Cohen, Mark N.

1992) Comment on ‘‘The Osteological Paradox,’’ by J. W. Wood et al. *Current Anthropology* 33: 358–359.

Coughlin, S., Jones B. C., Handly M., Coyle, K., and W.P. Athens

2005 *Phase I Cultural Resources Survey and Archaeological Inventory of Approximately 9.6 km (6 mi) Long Section of Tennessee River Shoreline, Moccasin Bend Stream Bank Stabilization Project, Near Chattanooga, Hamilton County, Tennessee.* Prepared by R. Christopher Goodwin & Associates, Inc. Submitted to David Miller & Associates, Inc.

Council, Bruce R.

1989 *The Tennessee Riverpark Excavations: Archaeological Testing at Sites 40HA102 and 40HA233, Chattanooga, Hamilton County, Tennessee.* Department of Anthropology, University of Tennessee, Knoxville.

Cridlebaugh, Patricia A.

1981 *The Icehouse Bottom Site: 1977 Excavations.* Report of Investigations No. 34, Department of Anthropology, University of Tennessee, Knoxville.

Crumley, Carol C., and William H. Marquardt

1990 Landscape: A Unifying Concept in Regional Analysis. In *Interpreting Space: GIS and Archaeology*, edited by Kathleen M. Allen, Stanton W. Green, and Ezra Zubrow, pp. 73-79. Taylor and Francis, London.

Cummings, Vicki

2014 Hunter-Gatherers in the Post-Glacial World. In *The Oxford Handbook of the Archaeology and Anthropology of Hunter-Gatherers*, edited by Vicki Cummings, Peter Jordan, and Marek Zvelebil, pp. 437-455. Oxford University Press.

Cyr, Howard

2011 *Phase II Archaeological Evaluation of 40KN316, River Plain Park and Lincoln Street Landing, Knoxville, Knox County, Tennessee.* Prepared by Archaeological Research Laboratory, University of Tennessee, Department of Anthropology for Tennessee Valley Authority.

D’ Angelo, James

2003 *Phase II Testing of 40MR164 and 40MR691 for Proposed Campground Facility at Smoky Branch on Tellico Reservoir, Monroe County, Tennessee.* Submitted by TRC to Tennessee Valley Authority.

D’ Angelo, J., Wild, M., and Ted Kaypynec

2003 *Phase I Cultural Resources Survey for Proposed Campground and Walking Trail Along Smoky Branch, on Tellico Reservoir, Monroe County, Tennessee.* Submitted by TRC to Tennessee Valley Authority.

Davis, R.P. Stephen

1990 *Aboriginal Settlement Patterns in the Little Tennessee River Valley.* The University of Tennessee, Department of Anthropology, Report of Investigations No. 50. Tennessee Valley Authority, Publications in Anthropology No. 54.

Deter-Wolf, Aaron

2002 *Archaeological Testing of Site 40DR12 on the Tennessee River in Decatur County, Tennessee.* TRC for Tennessee Valley Authority.

2004 The Ensworth School Site (40DV184): A Middle Archaic Benton Occupation along the Harpeth River Drainage in Middle Tennessee. *Tennessee Archaeology* 1(1):18–35.

DeWitte, S.N. and Stojanowski, C.M.

2015 The Osteological Paradox 20 Years Later: Past Perspectives, Future Directions. *Journal of Archaeological Research* 23:4 pp. 397-450.

DINAA (Digital Index of North American Archaeology)

2022 Digital Index of North American Archaeology (DINAA) Publication and integration of North American archaeological site file records. http://ux.opencontext.org/archaeology-site-data/dinaamap// (Accessed 10 May 2022).

Dison, Braden A., Brittney Carnell, and Elin Crook
2020 *A Phase I Archaeological Survey Associated with the City of Chattanooga's Proposed Renovation of the Walnut Street Pedestrian Bridge, Hamilton County, Tennessee.* Prepared by Tennessee Valley Archaeological Research for Federal Highway Administration.

Dragoo, Don W.
1976 Some Aspects of Eastern North American Prehistory: A Review 1975. *American Antiquity* 41(1):3-27.

DuVall, Glyn D.
1996 *An Archaeological Reconnaissance of Approximately 24 Miles of Shoreline within the Cross Creek National Wildlife Refuge, Stewart County, Tennessee.* Report prepared by DuVall and Associates, Inc. for ERM-Southeast, Inc and the US Army Corps of Engineers, Nashville District.

Dye, David H.
2009 *War Paths Peace Paths: An Archaeology of Cooperation and Conflict in Native Eastern North America.* AltaMira Press.

Evans-Pritchard, E.E.
1979 Witchcraft Explains Unfortunate Events. In *Reader in Comparative Religion: An Anthropological Approach*, Fourth Edition, edited by William A. Lessa and Evon Z. Vogt, pp. 362-366. New York: Harper & Row.

Faulseit, Ronald K.
2016 *Beyond Collapse : Archaeological Perspectives on Resilience, Revitalization, and Transformation in Complex Societies*. Southern Illinois University Press.

Fielder, George F., Jr.,
1978 *Archaeological Survey of the Proposed Foothills Parkway, Great Smoky Mountains National Park.* The University of Tennessee, Department of Anthropology for the National Park Service.

Gage, Matthew D.
2006 *Phase II Archaeological Evaluation of Site 40SV183, Sevier County, Tennessee.* Prepared for Mountain Ridge Development, LLC and Tennessee Valley Authority by Archaeological Research Laboratory, Department of Anthropology, University of Tennessee, Knoxville.

Gage, Matthew D., Angst, M.G., Creswell, B.A., Guymon, G.L., Sherwood, S.C., and Sichler, J.A.
2005 *Archaeological Site Identification and Erosion Monitoring for the TVA Reservoir Operation Study: The 2005 Field Season on Portions of Cherokee, Norris, Pickwick, and Wheeler Reservoirs.* Report prepared for Tennessee Valley Authority by Archaeological

Research Laboratory, Department of Anthropology, University of Tennessee, Knoxville, Tennessee.

GAI Consultants, Inc.
1982 *A Preliminary Report of the Results of Backhoe Test Trenches for Buried Archaeological Deposits along the Cumberland River on the Cross Creeks National Wildlife Refuge.* Report submitted by GAI Consultants, Inc., Monroeville, PA. to the Departmental Consulting Archaeologist, National Park Service, and the US Fish and Wildlife Service Regional Office, Atlanta, GA.

Garrow & Associates, Inc.
1995 *The State Route 30, Bridge Project: Archaeological Survey and Testing Near Washington Ferry, Rhea and Meigs Counties, Tennessee*. Submitted to Chester IDE Associates and Tennessee Department of Transportation by Garrow & Associates, Inc.

Gleeson, P.F. (editor)
1970 *Archaeological Investigation in the Tellico Reservoir: Interim Report 1969.* Department of Anthropology, University of Tennessee, Knoxville.

Goad, Sharon Iowa
1978 Exchange Networks in the Prehistoric Southeastern United States. Ph.D. Dissertation, University of Georgia.

1980 Patterns of Late Archaic Exchange. *Tennessee Anthropologist* 5(1): 1-16.

Goldschmidt, Walter
1948 Social organization in native California and the origin of clans. *American Anthropologist* 50: 444-56.

Goodman, A. H., and Martin, D. L.
2002 Reconstructing health profiles from skeletal remains. In *The Backbone of History: Health and Nutrition in the Western Hemisphere* edited by R. H. Steckel, and J. C. Rose, Cambridge University Press, Cambridge, pp. 11–60.

Graham, J.B.
1964 *The Archaeological Investigation of Moccasin Bend (40HA63) Hamilton County, Tennessee.* Submitted to Tennessee Department of Highways by Department of Anthropology, University of Tennessee, Knoxville, Tennessee.

Greene, Robert C.
1995 *Talc Resources of the Conterminous United States*. U.S. Geological Survey. Open-File Report, OF 95-586. Menlo Park, California.

Gregory, D., Southern, L., and Lauren Couey
2016 *Phase III Data Recovery and Geophysical Prospection at 40HA219, Nickajack Reservoir, Tennessee River Chattanooga, Hamilton County, Tennessee.* Report prepared by New South Associates, Inc. Submitted to Tennessee Aquarium Conservation Institute.

Haskins, Valerie A., and Herrmann, Nicholas P.
1996 Shell mound bioarchaeology. In *Of caves and shell mounds*, edited by K. Carstens and P. Watson, pp 107-118. University of Alabama Press.

Halstead, Paul, and O'Shea, John
1989 *Bad year economics: Cultural responses to risk and uncertainty*. Cambridge University Press.

Hegmon, Michelle
1991 The Risks of Sharing and Sharing as Risk Reduction: Interhousehold Food Sharing in Egalitarian Societies. In *Between Bands and States*, edited by Susan A. Gregg, pp. 309-329. Occasional Paper 9. Southern Illinois University, Center for Archaeological Investigations, Carbondale, IL

Hegmon, M., Peeples, M. A., Kinzig, A. P., Kulow, S., Meegan, C. M., & Nelson, M. C.
2008 Social Transformation and Its Human Costs in the Prehispanic U.S. Southwest. *American Anthropologist*, 110(3): 313–324.

Hoksbergen, B.J., and L.S. Alexander
2005 *A Phase I Archaeological Survey of a Proposed Development, Rhea County, Tennessee.* Prepared by Alexander Archaeological Consultants, Inc., Wildwood, GA. Prepared for Hayes & Associates, Inc., Jefferson City, TN, and Tennessee Valley Authority, Office of Natural Resources, Norris, TN.

Hollenbach, Kandace D.
2009 *Foraging in the Tennessee River Valley*, 12,500 to 8,000 Years Ago. University of Alabama Press, Tuscaloosa.

Hollenbach, Kandace. D., and Stephen B. Carmody
2018 The Daily Lives of Early Archaic Foragers in the Mid-South. In *Investigating the Ordinary: Everyday Matters in Southeast Archaeology*, edited by Sarah E. Price and Philip J. Carr, pp. 53-66. University of Florida Press, Gainesville.

2019 Agricultural Innovation and Dispersal in Eastern North America. *Oxford Research Encyclopedia of Environmental Science.* Oxford University Press.

Hollenbach, Kandace D., and Stephen J. Yerka

2018 *Archaic and Woodland Occupations in Tuckaleechee Cove, Blount County, Tennessee.* Report prepared for the Federal Highway Administration and the Tennessee Department of Transportation Nashville, Tennessee. Archaeological Research Laboratory, University of Tennessee, Department of Anthropology, Knoxville Tennessee.

Holling, C. S.
1973 Resilience and Stability of Ecological Systems, Annual Review of Ecology and Systematics 4: 1-23.

Holling, C. S., and Lance H. Gunderson
2002 Resilience and Adaptive Cycles. In *Panarchy: Understanding Transformations in Human and Natural Systems*, edited by Lance H. Gunderson and C. S. Holling, pp. 25-62. Washington, DC: Island Press.

Idol, B., Olson, H., Webb, P., Cleveland Todd, M., and Ted Karpynec
2009 *Cultural Resource Investigation for Foothills Parkway Section 8B, Great Smoky Mountains National Park, Cocke and Sevier Counties, Tennessee.* Report submitted to Arcadis G&M of North Carolina, Inc.

Ingold, Tim
1993 The Temporality of Landscape. *World Archaeology* 25:152-174.

Jefferies, Richard W
1995a Late Middle Archaic Exchange and Interaction in the North American Midcontinent. In *Native American Interactions: Multiscalar Analyses and Interpretations in the Eastern Woodlands*, edited by Michael S. Nassaney and Kenneth E. Sassaman, pp. 73-99. University of Tennessee Press, Knoxville.

1995b The Status of Archaic Period Research in the Midwestern United States. *Archaeology of Eastern North America* 23:119-144.

1997 Middle Archaic Bone Pins: Evidence of Mid-Holocene Regional-Scale Social Groups in the Southern Midwest. *American Antiquity* 62(3):464-487.

2004 Regional-Scale Interaction Networks and the Emergence of Cultural Complexity along the Northern Margins of the Southeast. In *Signs of Power: The Rise of Cultural Complexity in the Southeast*, edited by J.L. Gibson and P.J. Carr, pp. 71-85. University of Alabama Press, Tuscaloosa.

2009 Archaic Cultures of Western Kentucky. In *Archaic Societies: Diversity and Complexity across the Midcontinent*, edited by Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier, pp. 635-666. State University of New York Press, Albany.

Jefferies, Richard W., Thompson, Victor D., and Milner, George R.
2005 Archaic Hunter-Gatherer Landscape Use in West-Central Kentucky. *Journal of Field Archaeology*, 30, (1): 3–23.

Johnson, Jay. K., and Brookes, S. O.
1989 Benton Points, Turkey Tails and Cache Blades: Middle Archaic Exchange in the Southeast. *Southeastern Archaeology* 8: 134–45.

Johnson, Jay K.
1994 Prehistoric Exchange in the Southeast. *In Prehistoric Exchange Systems in North America*, edited by Timothy G. Baugh and Jonathon E. Ericson, pp. 99-126. Plenum

Press, New York.

Jolley, Robert L.

1982 *Archaeological Investigations in the Clinch River Breeder Reactor Project Area 1981-82*. Building Conservation Technology, Inc., Nashville, Tennessee.

Jones, J. S.

1999 *Phase II Archaeological Testing of Site 40WY70, Proposed Improvements to SR128; Clifton, Wayne County, Tennessee.* DuVall and Associates, Inc. for Lose and Associates, Inc. and Tennessee Valley Authority.

Jordan-Green, Krista, James N. Greene, Nicholas Honerkamp, James J. Kocis, and Kandace D. Hollenbach

2009 *Archaic Adaptations at 40HA524: Results of Phase III Data Recovery*. Prepared by The Jeffery L. Brown Institute of Archaeology University of Tennessee at Chattanooga. Submitted to MAP Engineers.

Jorgenson, M., and Daniel Cassedy

2007 *Phase II Archaeological Testing at Sites 40CK14, 40CK192, and 40CK195, State Route 35 from State Route 9 to Saint Tide Hollow Road, Newport, Cocke County, Tennessee; Project #15008-1229-04; PIN #101399.00.* Prepared by URS Corporation, Morrisville, North Carolina for Tennessee Department of Transportation, Nashville.

Jorgenson, M., Cassedy, D., and Kathy Furgerson

2003 *Phase II Archaeological Assessment of Site 40CK197, State Route 9, Bridge and Approaches Over French Broad River at Log Mile 10.57, Cocke County, Tennessee Project #15003-1231-94; BR-STP-9(36).* Prepared by URS Corporation for the Tennessee Department of Transportation.

Justice, Noel D.

1987 *Stone Age Spear and Arrow Points of the Midcontinental and Eastern United States*. Indiana University Press, Bloomington.

Kanaski, Richard S.

2015 *Archaeological Investigations for the Burton's Pond Project, Busseltown Unit, Tennessee National Wildlife Refuge, Decatur County, Tennessee: Interim Report*. U.S. Fish and Wildlife Service, Southeast Region, Hardeeville, South Carolina.

Kansa, Eric C., Sarah Whitcher Kansa, Joshua J. Wells, Stephen J. Yerka, Kelsey Noack Myers, Robert C. DeMuth, Thaddeus G. Bissett, and David G. Anderson.

2018 The Digital Index of North American Archaeology (DINAA): Networking Government Data to Navigate an Uncertain Future for the Past. *Antiquity* 92(362): 490–506.

Kassabaum, Megan

2021 *A History of Platform Mound Ceremonialism: Finding Meaning in Elevated Ground*. University Press of Florida.

Kelly, Robert L.
2013 *The Lifeways of Hunter-Gatherers: The Foraging Spectrum*, Cambridge University Press, Cambridge, U.K.

Kidder, T.R.
2006 Climate Change and the Archaic to Woodland Transition (3000-2500 cal BP) in the Mississippi River Basin. *American Antiquity*:195–231.

2010 Trend, Tradition, and Transition at the End of the Archaic. In *Trend, Tradition, and Turmoil: What Happened to the Southeastern Archaic?*, edited by David H. Thomas and Matthew C. Sanger, pp. 23-32. Anthropological Papers of the American Museum of Natural History, New York.

2012 Poverty Point. In *The Oxford Handbook of North American Archaeology*, edited by Timothy R. Pauketat, pp. 460–470. Oxford University Press, Oxford, UK.

Kidder, T. R., and K. E. Sassaman.
2009 The View from the Southeast. In *Archaic Societies: Diversity and Complexity Across the Midcontinent*, edited by T. E. Emerson, D. L. McElrath, and A. C. Fortier, pp. 667–694. Albany, NY: SUNY Press.

Kimball, Larry R.
1985 *The 1977 Archaeological Survey: An Overall Assessment of the Archaeological Resources of Tellico Reservoir.* Publications in Anthropology No. 39, Tennessee Valley Authority. Report of Investigations No. 40, Department of Anthropology, The University of Tennessee. Tellico Archaeological Survey Report No. 1. Manuscript submitted in 1980 to the National Park Service and the Tennessee Valley Authority.

Kintigh K.W., et al.
2014 Grand challenges for archaeology. *American Antiquity* 79(1):5–24.

Lafferty, Robert H., and Lawrence S. Alexander
2011 *Archaeological Investigations of Site 40LD191, Loudon County, Tennessee.* Submitted by Alexander Archaeological Consultants, Inc., to Tennessee National, LLC and Tennessee Valley Authority. Submitted by TRC to Tennessee Valley Authority.

Laird, Price K., and Jeffrey L. Holland
2011 *Phase I Archaeological Survey of Approximately 181.5 Acres for the Watts Bar Demolition Project in Rhea County, Tennessee.*

Lawrence, William L.
2003 *Archaeological Survey of Five Proposed Water Control Structures and Associated Seasonal Waterfowl Management Impoundments, Yuchi Wildlife Management Area, Rhea County, Tennessee.* Prepared for Tennessee Wildlife Resources Agency.

Submitted to Tennessee Valley Authority. Prepared by Tennessee Division of Archaeology.

Leabo, Regina M., Birdsong, Vincent S., and John E. Cornelison
1996 *Archaeological Investigations at Site 40CK13, Site 40SV5, and Site 40SV7 in Section 8B of the Foothills Parkway Tennessee.* Prepared by Southeast Archaeological Center, National Park Service, Tallahassee NPS.

Leach, Edmund R.
1979 Ritualization in Man in Relation to Conceptual and Social Development. In *Reader in Comparative Religion: An Anthropological Approach,* Fourth Edition, edited by William A. Lessa and Evon Z. Vogt, pp. 229-233. New York: Harper & Row.

Lessa, William A.
1979 The Apotheosis of Marespa. In *Reader in Comparative Religion: An Anthropological Approach,* Fourth Edition, edited by William A. Lessa and Evon Z. Vogt, pp. 169-173. New York: Harper & Row.

Lessa, Willam A., and Evon Z. Vogt
1979 *Reader in Comparative Religion: An Anthropological Approach,* Fourth Edition. New York: Harper & Row.

Lewis, Thomas M. N., and Madeline Kneberg Lewis
1941 *The Prehistory of the Chickamauga Basin in Tennessee*. Tennessee Anthropology Papers 1. Department of Anthropology, University of Tennessee, Knoxville.

1947 The Archaic Horizon in Western Tennessee. University of Tennessee Record, Extension Series, Vol . 23, No. 4, *Tennessee Anthropology Papers* No. 2.

1959 The Archaic Culture of the Middle South. *American Antiquity* 25(2):161-183.

1961 *Eva: An Archaic Site*, University of Tennessee Press, Knoxville.

Longmire, Alan C., and Robert A. Pace
2002 *Phase II Archaeological Testing of Four Sites Within the Proposed Middle Creek Road Expansion Right-of-Way, Sevier County, Tennessee.* DuVall and Associates, Inc. for Wilbur Smith Associates, Inc. and City of Sevierville, Tennessee.

Lowie, Robert H.
1979 The Vision Quest among the North American Indians. In *Reader in Comparative Religion: An Anthropological Approach,* Fourth Edition, edited by William A. Lessa and Evon Z. Vogt, pp. 285-288. New York: Harper & Row.

Manning, Kathy

2005 *Archaeological Survey (Phase I) of the Proposed Inspiration Woods Subdivision, Jefferson County, Tennessee.* Submitted to Rodney Manning and Tennessee Valley Authority.

2006 *Archaeological Survey (Phase I) of the Proposed Cherokee Valley Subdivision, Sevier County, Tennessee.* Submitted to Michael Brady, Inc. and Tennessee Valley Authority.

Marquardt, William H., and Patty Jo Watson
1983 The Shell Mound Archaic of Western Kentucky. In *Archaic Hunters and Gatherers in the American Midwest*, edited by James L. Phillips and James A. Brown, pp. 323–339. Academic Press, Orlando, Florida.

Marquardt, W.H.
1985. Complexity and scale in the study of fisher-gatherer-hunters: an example from the eastern United States. In *Prehistoric hunter-gatherers: the emergence of cultural complexity* edited by T.D. Price and J.A. Brown, pp. 59–98. Orlando, FL: Academic Press.

Matternes, Jennifer H., and Danielle F. Meyers
1995 *Phase I Archaeological Reconnaissance Survey for Cultural Resources in the Proposed State Route 131 (Emory Road) Right-of-Way from Near Gill Road to Near Bishop Road, Knox County, Tennessee.* Submitted to Chester IDE Associates, Inc. by Transportation Center, University of Tennessee, Knoxville.

Mauss, Marcel
1990 *The Gift: The Form and Reasons for Exchange in Archaic Societies.* London: Routledge

McElrath, Dale L.
1993 Mule Road: A Newly Defined Late Archaic Phase in the American Bottom. In *Highways to the Past: Essays in Illinois Archaeology in Honor of Charles T. Bareis,* edited by T.E. Emerson, A.C. Fortier, and D. L. McElrath, pp. 148-157. Illinois Archaeology 5(1 and 2), Kampsville, Illinois.

McKee, Larry
2001 *Phase I Archaeological Survey of the Pearcy Property on the Tennessee River in Decatur County, Tennessee.* TRC Garrow Associates Inc. for Tennessee Valley Authority.

McKelway, Henry S., and Richard Stallings
2002 *Phase I Archaeological Reconnaissance of the Area to be Impacted by Improvements to Greenbrier Road* and *Additional Phase I Archaeological Reconnaissance of the Area to be Impacted by Improvements to Greenbrier Road.* AMEC Earth and Environmental Inc. for National Park Service, Great Smoky Mountains National Park, Sevier County, Tennessee.

McManamon, F.P., Kintigh, K.W., Ellison, L.A. and Brin, A.

2017 tDAR: A Cultural Heritage Archive for Twenty-First-Century Public Outreach, Research, and Resource Management. *Advances in Archaeological Practice* 5(3):238-249. DOI:10.1017/aap.2017.18.

McNutt, Charles H.

2008 The Benton Phenomenon and Middle Archaic Chronology in Adjacent Portions of Tennessee, Mississippi, and Alabama. *Southeastern Archaeology* 27(1): 45-60.

McNutt, Charles H., and J. Bennett Graham

1967 *Archaeological Investigations at Kentucky Lake, Tennessee: 1965*. Memphis State University Anthropological Research Center, Occasional Papers, No. 1. Memphis, Tennessee.

Meyers, Danielle F.

1998 *Phase II Archaeological Testing of Site 40KN150 in the Proposed State Route 131 (Emory Road) Corridor from Near Gill Road to Near Bishop Road, Knox County, Tennessee.* Submitted to Richard Riggins, P.E. by Transportation Center, University of Tennessee, Knoxville.

2001 *Phase III Archaeological Testing of Site 40KN150 in the Proposed State Route 131 (Emory Road) Corridor from Near Gill Road to Near Bishop Road, Knox County, Tennessee.* Submitted to Richard Riggins, P.E. by Center for Transportation Research, University of Tennessee, Knoxville.

Milner, George, and Richard Jefferies

1998 The Read Archaic Shell Midden in Kentucky. *Southeastern Archaeology* 17(2):119–132.

Minc, Leah D., and Kevin P. Smith

1989 The spirit of survival: cultural responses to resource variability in North Alaska. In *Bad year economics: Cultural responses to risk and uncertainty*, edited by Paul Halstead and John O'Shea, pp. 8-39. Cambridge University Press.

Moore, Clarence B.

1915 *Aboriginal Sites on Tennessee River*. Reprinted from the Journal of The Academy of Natural Science of Philadelphia, Vol. XVI. Philadelphia.

1916 *Some Aboriginal Sites on Green River, Kentucky, Certain Aboriginal Sites on Lower Ohio River, Additional Investigation on Mississippi River*. Reprinted from the Journal of The Academy of Natural Science of Philadelphia, Vol. XVI. Philadelphia.

Moore, C.B., and Polhemus, R.

2002 *The Tennessee, Green, and Lower Ohio Rivers Expeditions of Clarence Bloomfield Moore*. Tuscaloosa: The University of Alabama Press.

Moore, Christopher R.
2011 Production, Exchange and Social Interaction in the Green River Region of Western Kentucky: A Multiscalar Approach to the Analysis of Two Shell Midden Sites. Ph.D. Dissertation, University of Kentucky.

Moore, Omar Khayyam
1979 Divination: A New Perspective. In *Reader in Comparative Religion: An Anthropological Approach*, Fourth Edition, edited by William A. Lessa and Evon Z. Vogt, pp. 376-379. New York: Harper & Row.

Neotoma
2022 Neotoma Paleoecology Database. https://www.neotomadb.org/ (Accessed 10 May 2022)

Norton, Mark R., and John B. Broster
1992 40HS200: The Nuckolls Extension Site in *Tennessee Anthropologist* Vol. XVII, No. 1

Oakley, Carey B., Meredith S., Sherwood, S., Creswell B., Avery, P., Perry, R., and Zwilling, S.
2004 *Report of Phase II Archaeological Testing Sites 40GN228 and 40GN229 Greene County, Tennessee.* Prepared by MACTEC Engineering and Consulting, Inc., Birmingham, Alabama for Tennessee Department of Transportation, Environmental Technical Studies Office, Nashville.

Pace, Robert A.
1995a *Archaeological Survey in the Western Tennessee Valley: Cultural Resource Reconnaissance and Testing of Proposed State Route 69 Alternatives in Decatur, Hardin, and Wayne Counties, Tennessee.* Prepared by DuVall & Associates, Inc. for Tennessee Engineering, Inc. and the Tennessee Department of Transportation.

1995b *Archaeological Survey of Proposed State Route 58/95 Modifications, Roane County, Tennessee.* Duvall and Associates, Inc. for the Tennessee Department of Transportation.

1997 *An Archaeological Survey of Proposed Middle Creek Road Alternates, Sevier County, Tennessee.* DuVall and Associates, Inc. for Wilbur Smith Associates, Knoxville, City of Sevierville, City of Pigeon Forge, and Sevier County.

Pace, Robert A., and Matthew Spice
2006 *Phase II Archaeological Testing at the Proposed Seven Islands Pedestrian Bridge Crossing, Knox County, Tennessee: Sites 40KN262 and 40KN287.* Prepared by DuVall & Associates, Inc. for Tennessee Valley Authority.

Parish, Ryan M.
2013 Relationships between Procurement Strategies and Geologic Provenience at the Dover Quarry Site Complex, Tennessee. *North American Archaeologist*, *34*(4), 369–385.

Peeples, M. A., C. M. Barton, and S. Schmich
2006 Resilience lost: intersecting land use and landscape dynamics in the prehistoric southwestern United States. *Ecology and Society* 11(2): 22.

Pettit, Paul
2014 The European Upper Paleolithic. In *The Oxford Handbook of the Archaeology and Anthropology of Hunter-Gatherers*, edited by Vicki Cummings, Peter Jordan, and Marek Zvelebil, pp. 279-309. Oxford University Press.

Polhemus, Richard R.
1999 *Archaeological Survey of the Fort Patrick Henry Reservoir, Sullivan County, Tennessee.* Submitted in accordance with the Tennessee Valley Authority.

2000 *Phase I Archaeological Survey of Selected Portions Below the 1007 Foot Contour of the Swann-Williams Farm in Douglas Reservoir, Jefferson County, Tennessee.* Prepared for Development Services, Sevierville, Tennessee.

2002 Introduction. In *The Tennessee, Green, and Lower Ohio River Expeditions of Clarence Bloomfield Moore*, edited by Richard R. Polhemus, pp. 1-46. University of Alabama Press, Tuscaloosa.

Prescott, Douglas
1977 *Phase II Intensive Survey and Testing of the Proposed Tenna-Tech, Inc. Industrial Site in Rhea County, Tennessee.* For Tenna-Tech Inc.

Redman, C.L.
2005 Resilience Theory in Archaeology. American anthropologist 107.1: 70–77.

Redman, Charles L., and Ann P. Kinzig
2003 Resilience of Past Landscapes: Resilience Theory, Society, and the Longue Dur´ee. *Conservation Ecology* 7(1):14.

Rodning, Christopher B. and Jayur M. Mehta
2016 Resilience and Persistent Places in the Mississippi River Delta of Southeastern Louisiana. In *Beyond Collapse: Archaeological Perspectives on Resilience, Revitalization, and Transformation in Complex Societies*, edited by Ronald K. Faulseit, pp. 342-379. Southern Illinois University Press.

Rothschild, Nan A.
1979 Mortuary Behavior and Social Organization at Indian Knoll and Dickson Mounds. *American Antiquity* 44: 658-675.

Salo, Lawr V. (editor)
1969 *Archaeological Investigations in the Tellico Reservoir, Tennessee, 1967-1968: An Interim Report.* Department of Anthropology, University of Tennessee, Knoxville.

Sassaman, Kenneth E.

2001 Hunter–gatherers and traditions of resistance. In *The Archaeology of Tradition: Agency and History Before and After Columbus,* edited by Timothy Pauketat, pp. 218–236. University Press of Florida, Gainesville.

2004 Complex hunter-gatherers in evolution and history: a North American perspective. *Journal of Anthropological Research* 12: 227–280.

2010 *The Eastern Archaic, Historicized*. AltaMira Press: Lanham, MD.

2011 History and Alterity in the Eastern Archaic. In *Hunter-Gatherer Archaeology as Historical Process*, edited by Kenneth E. Sassaman and Donald H. Holly, Jr., pp. 187–208. University of Arizona Press, Tucson.

2016 A Constellation of Practice in the Experience of Sea-Level Rise. In *Knowledge in Motion: Constellations of Learning across Time and Place*, edited by Andrew P. Roddick and Ann B. Stahl, pp. 271–298. University of Arizona Press, Tucson.

Sassaman, Kenneth E., and Samuel O. Brookes

2017 Situating the Claiborne Soapstone Vessel Cache in the History of Poverty Point. *American Antiquity* 82(4):781–797.

Sassaman, Kenneth E., and Holly, D.

2011 *Hunter-gatherer archaeology as historical process.* Tucson: University of Arizona Press.

Saunders, Rebecca

2017 Archaic Shell Mounds in the American Southeast. *Oxford Handbooks Online*. Oxford University Press.

Saunders, M., Rolfe D., Mandel, Roger T., Saucier, E., Thurman Allen, C. T., Hallmark, Jay K. Johnson, Edwin H., Jackson, Charles M., Allen, Gary L., Stringer, Douglas S., Frink, James K., Feathers, Stephen, Williams, Kristen J., Gremillion, Malcolm F., Vidrine, Reca Jones

1997 A Mound Complex in Louisiana at 5400-5000 Years Before the Present. *Science 277* (5333), 1796–1799.

Scarre, C.

2013 The world transformed: from foragers and farmers to state and empires. In *The human past,* edited by C. Scarre, 176-199. London: Thames and Hudson.

Schlanger, S.H.

1992. Recognizing persistent places in Anasazi. In *Space, time, and archaeological landscapes*, edited by J. Rossignol and L. Wandsnider, 91–113. New York: Plenum.

Schmidt C.W., Sharkey R.L., Newman C., Serrano, A., Zolnierz, M., Plunkett, J.A., Badder, A.

2010 Skeletal Evidence of Cultural Variation: Mutilation Related to Warfare. In *Human Variation in the Americas: The Integration of Archaeology and Biological Anthropology.* Edited by Benjamin M. Auerbach, pp. 215-237. Center for Archaeological Investigations: Southern Illinois University Carbondale, Occasional Paper No. 38 Carbondale, Illinois.

Schroedl, Gerald F.

1973 Radiocarbon Dates from Three Burial Mounds at the McDonald Site in East Tennessee. *Tennessee Archaeologist* 29(1): 3-11.

1978 *Excavation of the Leuty and McDonald Site Mounds*. Submitted to and published by Tennessee Valley Authority.

Sherwood, Sarah C., and Tristram R. Kidder

2011 The DaVinci's of Dirt: Geoarchaeological Perspectives on Native American Mound Building in the Mississippi River Basin. *Journal of Anthropological Archaeology* 30:69–87.

Shweder, Richard A.

1979 Aspects of Cognition in Zincanteco Shamans: Experimental Results. In *Reader in Comparative Religion: An Anthropological Approach,* Fourth Edition, edited by William A. Lessa and Evon Z. Vogt, pp. 327-331. New York: Harper & Row.

Siek, T.

2013 The Osteological Paradox and Issues of Interpretation in Paleopathology. *Explorations in Anthropology* 13.1: 92-101.

Simmons, Scott E.

1997 *Management Summary for Phase II Archaeological Evaluations of Sites 40SW32, 40SW81, 40SW228, 40SW308, 40SW319, 40SW321, 40SW333, 40SW339, and 40SW340 Along the Cumberland River in Cross Creeks National Wildlife Refuge, Stewart County, Tennessee.* Prepared by R. Christopher Goodwin & Associates, Inc. for the US Army Corps of Engineers, Nashville District.

Slaughter, Bernard W., and Shane A. McCorkle

1992 *Archaeological Survey to Provide Additional Data for Management Purposes Tellico Reservoir.* Submitted by Jan F. Simek, Department of Anthropology, the University of Tennessee for Tennessee Valley Authority.

2005a *Phase II Archaeological Investigations at Site 40KN235, Powell, Knox County, Tennessee.* Prepared by DuVall and Associates, Inc. for the Tennessee Department of Transportation.

2005b *Phase II Archaeological Testing on Matlock Bend, Loudon County, Tennessee: Sites 40LD191, 40LD220, 40LD221*. Report prepared for Tennessee National, Jupiter, Florida by DuVall and Associates, Franklin, Tennessee.

Smith, Gerald P.
1999 *Archaeological Investigations of Site 40WY87, Wayne County, Tennessee.* Prepared for DeLeuw, Cather & Co. and Tennessee Department of Transportation by Department of Anthropology, University of Memphis, Tennessee.

Smith, Maria O.
1995 Scalping in the Archaic Period. *Southeastern Archaeology* 14:60-68.

1996a Bioarchaeological Inquiry into the Archaic Period Populations of the Southeast: Trauma and Occupational Stress. In *Archaeology of the Mid-Holocene Southeast*, edited by Kenneth E. Sassaman, David G. Anderson, pp. 134-154. University Press of Florida, Gainesville.

1996b “Parry” fractures and female-directed interpersonal violence: Implications from the Late Archaic Period of west Tennessee. *International Journal of Osteoarchaeology*, 6(1), 84–91.

1997 Osteological Indications of Warfare in the Archaic Period of Western Tennessee Valley. In *Troubled Times: Violence and Warfare in the Past*, edited by Debra L. Martin, David W. Frayer, pp. 241-265. Gordon and Breach, Amsterdam.

Smith, Martin T., Weaver, Guy G., and Charles H. McNutt, Jr.
1990 *A Survey Report of Archaeological Resources in Portions of the Chickamauga Reservoir, Tennessee, 1987, 1988 and 1989 Field Seasons.* Prepared by Garrow & Associates, Inc. for Tennessee Valley Authority.

Stanyard, William F., and Jeffrey L. Holland
2004 *Phase I Archaeological Investigations on TVA Fee-Owned Land at Douglas Lake in Cocke, Hamblen, Jefferson, and Sevier Counties, Tennessee.* Report submitted to TVA by TRC.

Steponaitis, Vincas P.
1986 Prehistoric archaeology in the southeastern United States 1970–1985. *Annual Review of Anthropology 15*: 363–404.

Swanton, John R.
1927 Social and religious beliefs and usages of the Chickasaw Indians. *Bureau of American Ethnology Annual Report* 44: 169- 273.

Taylor, Rick, and Richard L. Josephs
1995 *Results of A Phase I Archaeological Survey: Proposed Impact Areas Associated with Improvements to State Route 15 (Us 64), Located in Wayne County, Tennessee.* DuVall & Associates, Inc. for Neel-Schaffer, Inc. and Tennessee Department of Transportation.

Temple, Daniel H., and Christopher M. Stojanowski

2019 *Hunter-Gatherer Adaptation and Resilience: A Bioarchaeological Perspective.* Cambridge University Press.

Thomas, Cyrus

1894 *Report on the Mound Explorations of the Bureau of Ethnology*. Washington D.C.

Thomas, David H., and Sanger, M.C.

2010 *Trend, Tradition, and Turmoil: What Happened to the Southeastern Archaic?* Proceedings of the Third Caldwell Conference, St. Catherines Island, GA, 9–11 May 2008. Anthropological Papers of the American Museum of Natural History: New York.

Thomas, Larissa A.

1999 *Archaeological Testing of 40LD116, Loudon County, Tennessee.* TRC Garrow Associates, Inc., Atlanta. Manuscript submitted to the Tennessee Valley Authority.

Thompson, Victor D.

2010 The Rhythms of Space-Time and the Making of Monuments and Places During the Archaic. In *Trend, Tradition, and Turmoil: What Happened to the Southeastern Archaic?*, edited by David H. Thomas and Matthew C. Sanger, pp. 217-228. Anthropological Papers of the American Museum of Natural History, New York.

2016 Finding Resilience in Ritual and History in the Lake Okeechobee Basin. In *Beyond Collapse: Archaeological Perspectives on Resilience, Revitalization, and Transformation in Complex Societies,* edited by Ronald K. Faulseit, pp. 313-341. Southern Illinois University Press.

Thompson, V. D., and Turck, J.A.

2009 Adaptive Cycles of Coastal Hunter-Gatherers. *American Antiquity* 74, 2:255 – 278.

Tooker, Elizabeth

1971 Clans and Moieties in North America. *Current Anthropology* 12(3): 357-376.

Trigger, Bruce G.

2006 *A History of Archaeological Thought*, Second Edition. Cambridge: Cambridge University Press.

Truncer, James

2004a *Steatite Vessel Manufacture in Eastern North America*. BAR International Series. Archaeopress, Oxford.

2004b Steatite Vessel Age and Occurrence in Temperate Eastern North America. *American Antiquity* 69 (3):487-513.

2006 Taking Variation Seriously: The Case of Steatite Vessel Manufacture. *American Antiquity* 71 (1):157-163.

Vavrasek, Jessica
2009 *Phase I Archaeological Survey for River Plain Park and Lincoln Street Landing, Areas1 and 2, Knoxville, Knox County, Tennessee*. Report submitted to Hargreaves Associates of Cambridge, Mass., on behalf of the City of Knoxville and on file at the Archaeological Research Laboratory, University of Tennessee, Knoxville.

Versluis, Vincent A.
2000 *Phase I Survey for Archaeological Resources in Four Alternate Corridors Along and Near State Route 131 (Emory Road) from West of State Route 9 (US-25W, Clinton Highway) to Windwood Road in Powell, Knox County, Tennessee.* Great Rivers Archaeological Services for Sain Associates, Inc. Submitted to Tennessee Department of Transportation.

2001 *Phase I Archaeological Survey for Archaeological Resources in Six Proposed Corridor Segments along and near State Route 35 (US 411) in Sevier, Jefferson, Cocke, and Green Counties, Tennessee.* Great Rivers Archaeological Services for Sain Associates, Inc. Submitted to the Tennessee Department of Transportation.

Weaver, G.G., Oster, W. J., Windingstad, J.D., Lunn, A.R., Konkol, Z., and Avery Pribila
2008 *Revised Draft Report: Phase II Testing of Prehistoric Archaeological Sites 40PY288, 40PY289, and 40PY290, State Route 13 Over Buffalo River at LM. 1.73, Perry County, Tennessee.* Submitted by Weaver & Associates, LLC., to Tennessee Department of Transportation, Nashville, Tennessee.

Webb, Paul, and Tasha Benyshek
2005 *Archaeological Investigations in the Elkmont Historic District, Great Smoky Mountains National Park, Sevier County, Tennessee.* TRC Garrow Associates, Inc. Submitted to Great Smoky Mountains National Park, Gatlinburg, Tennessee.

Webb, William S.
1946 Indian Knoll. University of Kentucky, *Reports in Anthropology and Archaeology* 4(3), part 1.

Wells, Edward W., III
2006 *Soapstone Vessel Chronology and Function in the Southern Appalachians of the Eastern Tennessee*. Unpublished Master’s Thesis, Department of Anthropology, University of Tennessee, Knoxville.

Wells, Joshua J., Eric C. Kansa, Sarah Whitcher Kansa, Stephen J. Yerka, David G. Anderson, Kelsey Noack Myers, R. Carl DeMuth, and Thaddeus G. Bissett.
2014 Web-Based Discovery and Integration of Archaeological Historic Properties Inventory Data: The Digital Index of North American Archaeology (DINAA). *Literary and Linguistic Computing* 29(3).

Wiessner, Polly
1977 Hxaro: A regional system of reciprocity for reducing risk among the !Kung San. Ph.D. Dissertation, University of Michigan, Ann Arbor.

1982 Risk, Reciprocity and Social Influences on !Kung San economics. In *Politics and History in Band Societies*, edited by E. Leacock and R. Lee, pp. 61–84. Cambridge University Press.

1983 Style and Social Information in Kalahari San Projectile Points. *American Antiquity* 48(2):253-276.

1984 Reconsidering the Behavioral Basis for Style: A Case Study among the Kalahari San. *Journal of Anthropological Archaeology* 3:190-234.

Willey, Gordon R., and Jeremy A. Sabloff
1980 *A History of American Archaeology*, Second Edition. London: Thames and Hudson.

Winterhalder, B.
1981 Optimal Foraging Strategies and Hunter-Gather Research in Anthropology: Theory and Models. In *Hunter-Gatherer Foraging Strategies: Ethnographic and Archaeological Analyses*, edited by Bruce Winterhalder and Eric A. Smith, pp. 13–35. University of Chicago Press, Chicago, Illinois.

Winters, Howard D.
1968 Value systems and trade cycles of the Late Archaic in the Midwest. In *New perspectives in archeology,* edited by S. R. Binford and L. R. Binford, pp. 175-221. Aldine, Chicago.

Wolf, Eric R.
1982 *Europe and the People without History.* University of California Press.

Wright, L.E., and Yoder, C.J.
2003 Recent Progress in Bioarchaeology: Approaches to the Osteological Paradox. *Journal of Archaeological Research* 11.1:43-70.

APPENDICES

APPENDIX A

Table A-1. Late Archaic Site Information.

Site #	County	µ C14 (Cal BP)	Earliest C14 (Cal BP)	Latest C14 (Cal BP)	Site Type	Survey Level Intensity	Time of Investigation
40BN1	Benton				earth mound	Phase I	Pre-1950
40BN7	Benton				earth mound	Phase II	Pre-1950
40BN11	Benton				open habitation	Phase III	Pre-1950
40BN12	Benton				shell mound	Phase III	Pre-1950
40BN13	Benton				shell mound	Reconnaissance	Pre-1950
40BN18	Benton				open habitation	Reconnaissance	Pre-1950
40BN25	Benton	3562±88	4489±88	2636±89	shell mound	Phase III	Pre-1950
40BN34	Benton				open habitation	Phase II	Pre-1950
40BN39	Benton				open habitation	Phase II	Pre-1950
40BN47	Benton				open habitation	Phase II	Pre-1950
40BN59	Benton				open habitation	Phase III	Pre-1950
40BN74	Benton				open habitation	Phase III	Pre-1950
40BN77	Benton				open habitation	Phase III	Pre-1950
40BT89-91	Blount	3350±30	3350±30	3350±30	open habitation	Phase III	Post-1990
40BT97	Blount				open habitation	Phase I	Post-1990
40BT205	Blount				open habitation	Phase I	Post-1990
40BT208	Blount				open habitation	Phase I	Post-1990
40BT209	Blount				open habitation	Phase I	Post-1990
40CK13	Cocke				open habitation	Phase I	1950-1990
40CK14	Cocke				open habitation	Phase II	1950-1990
40CK184	Cocke				open habitation	Phase II	Post-1990
40CK195	Cocke				open habitation	Phase II	Post-1990
40CK197	Cocke	4088±56	4088±56	4088±56	open habitation	Phase III	Post-1990
40DR1	Decatur	4451±76	4847±84	4056±67	shell mound	Phase III	Pre-1950
40DR7	Decatur				open habitation	Phase I	Pre-1950

Table A-1 (continued)

Site #	County	µ C14 (Cal BP)	Earliest C14 (Cal BP)	Latest C14 (Cal BP)	Site Type	Survey Level Intensity	Time of Investigation
40DR9	Decatur				open habitation	Phase I	Pre-1950
40DR12	Decatur				shell mound	Phase II	Pre-1950
40DR20	Decatur				open habitation	Phase I	Pre-1950
40DR162	Decatur				cave	Phase I	Post-1990
40DR254	Decatur				open habitation	Phase I	1950-1990
40GN13	Greene				open habitation	Phase I	1950-1990
40GN14	Greene				open habitation	Phase I	1950-1990
40GN15	Greene				open habitation	Phase I	1950-1990
40GN228	Greene				open habitation	Phase II	Post-1990
40GN229	Greene				open habitation	Phase II	Post-1990
40GR11	Grainger				open habitation	Phase I	1950-1990
40GR29	Grainger				open habitation	Reconnaissance	Post-1990
40GR224	Grainger				open habitation	Phase I	Post-1990
40GR255	Grainger				open habitation	Phase I	Post-1990
40GR321	Grainger				open habitation	Phase I	Post-1990
40HA2	Hamilton				earth mound	Phase I	Pre-1950
40HA3	Hamilton				earth mound	Phase I	Pre-1950
40HA10	Hamilton				shell mound	Phase I	Pre-1950
40HA63	Hamilton				open habitation	Phase III	1950-1990
40HA102	Hamilton				open habitation	Phase III	1950-1990
40HA202	Hamilton				earth mound	Phase I	1950-1990
40HA219	Hamilton				open habitation	Phase II	1950-1990
40HA301	Hamilton				open habitation	Phase III	1950-1990
40HA328	Hamilton				open habitation	Phase II	1950-1990
40HA446	Hamilton				open habitation	Phase II	Post-1990
40HA524	Hamilton	5061±50	5388±50	4734±50	open habitation	Phase III	Post-1990
40HB15	Hamblen				open habitation	Phase I	Post-1990
40HB137	Hamblen				open habitation	Phase I	Post-1990

Table A-1 (continued)

Site #	County	µ C14 (Cal BP)	Earliest C14 (Cal BP)	Latest C14 (Cal BP)	Site Type	Survey Level Intensity	Time of Investigation
40HB151	Hamblen				open habitation	Phase I	Post-1990
40HB167	Hamblen				open habitation	Phase I	Post-1990
40HB189	Hamblen				open habitation	Phase I	Post-1990
40HO14	Houston				open habitation	Phase I	1950-1990
40HO24	Houston				open habitation	Reconnaissance	1950-1990
40HO67	Houston				open habitation	Phase I	Post-1990
40HR39	Hardin				open habitation	Reconnaissance	1950-1990
40HR51	Hardin				open habitation	Phase I	1950-1990
40HR146	Hardin				open habitation	Phase I	Post-1990
40HR174	Hardin				open habitation	Phase II	Post-1990
40HR305	Hardin				open habitation	Phase II	Post-1990
40HS1	Humphreys				earth mound	Phase III	Pre-1950
40HS4	Humphreys				open habitation	Phase II	Pre-1950
40HS107	Humphreys				open habitation	Phase I	1950-1990
40HS200	Humphreys				open habitation	Reconnaissance	1950-1990
40HS346	Humphreys				open habitation	Reconnaissance	Post-1990
40HW10	Hawkins				open habitation	Phase I	1950-1990
40HW61	Hawkins				open habitation	Phase I	1950-1990
40HY13	Henry	4310±82	5517±76	3104±87	shell mound	Phase I	Pre-1950
40HY18	Henry				shell mound	Phase I	Pre-1950
40HY31	Henry				earth mound	Phase I	Pre-1950
40HY32	Henry				open habitation	Phase I	Pre-1950
40HY108	Henry				open habitation	Phase I	1950-1990
40JE47	Jefferson				open habitation	Reconnaissance	Post-1990
40JE63	Jefferson				open habitation	Reconnaissance	Post-1990
40JE79	Jefferson				open habitation	Reconnaissance	Post-1990
40JE93	Jefferson				open habitation	Phase I	Post-1990
40JE185	Jefferson				open habitation	Phase I	Post-1990

Table A-1 (continued)

Site #	County	µ C14 (Cal BP)	Earliest C14 (Cal BP)	Latest C14 (Cal BP)	Site Type	Survey Level Intensity	Time of Investigation
40KN17	Knox				open habitation	Phase I	1950-1990
40KN49	Knox				open habitation	Phase I	1950-1990
40KN104	Knox				open habitation	Phase I	1950-1990
40KN150	Knox				open habitation	Phase II	Post-1990
40KN235	Knox				open habitation	Phase II	Post-1990
40KN262	Knox	5055±30	5055±30	5055±30	open habitation	Phase II	Post-1990
40KN312	Knox				open habitation	Phase I	Post-1990
40KN316	Knox				open habitation	Phase II	Post-1990
40LD17	Loudon				earth mound	Phase II	Pre-1950
40LD35	Loudon				open habitation	Phase III	1950-1990
40LD57	Loudon				open habitation	Phase I	1950-1990
40LD116	Loudon				open habitation	Phase II	1950-1990
40LD179	Loudon				open habitation	Phase III	1950-1990
40LD191	Loudon				open habitation	Phase III	1950-1990
40LD207	Loudon				open habitation	Phase I	1950-1990
40LD221	Loudon	3725±50	3725±50	3725±50	open habitation	Phase II	1950-1990
40MG7	Meigs				open habitation	Phase II	Pre-1950
40MG37	Meigs				open habitation	Phase I	Pre-1950
40MG58	Meigs				open habitation	Phase I	1950-1990
40MG95	Meigs				open habitation	Phase I	1950-1990
40MG210	Meigs				open habitation	Phase II	Post-1990
40MR7	Monroe				earth mound	Phase III	1950-1990
40MR23	Monroe	3120±140	3120±140	3120±140	open habitation	Phase III	1950-1990
40MR25	Monroe	3825±150	4070±70	3580±225	open habitation	Phase III	1950-1990
40MR44	Monroe				open habitation	Phase III	1950-1990
40MR164	Monroe				open habitation	Phase II	1950-1990
40MR205	Monroe				open habitation	Phase I	1950-1990
40MR237	Monroe				open habitation	Phase I	1950-1990

Table A-1 (continued)

Site #	County	µ C14 (Cal BP)	Earliest C14 (Cal BP)	Latest C14 (Cal BP)	Site Type	Survey Level Intensity	Time of Investigation
40MR540	Monroe				open habitation	Phase I	Post-1990
40PY121	Perry				open habitation	Phase I	Post-1990
40PY260	Perry				open habitation	Phase I	1950-1990
40PY289	Perry	4530±40	4530±40	4530±40	open habitation	Phase II	Post-1990
40PY290	Perry	3150±40	3150±40	3150±40	open habitation	Phase II	Post-1990
40RE4	Roane				earth mound	Phase III	Pre-1950
40RE16	Roane				earth mound	Phase I	Pre-1950
40RE140	Roane				cave	Phase I	1950-1990
40RE229	Roane				open habitation	Phase I	Post-1990
40RE534	Roane				open habitation	Phase I	Post-1990
40RH6	Rhea	3330±40	3480±40	3180±40	earth mound	Phase I	Pre-1950
40RH30	Rhea				earth mound	Phase I	Pre-1950
40RH63	Rhea				open habitation	Phase II	1950-1990
40RH92	Rhea				earth mound	Phase I	Pre-1950
40RH125	Rhea				earth mound	Reconnaissance	Post-1990
40RH166	Rhea	4160±40	4160±40	4160±40	open habitation	Phase II	Post-1990
40RH167	Rhea	3980±40	3980±40	3980±40	open habitation	Phase II	Post-1990
40RH198	Rhea				open habitation	Phase II	1950-1990
40RH220	Rhea				open habitation	Phase II	Post-1990
40RH282	Rhea				open habitation	Phase II	Post-1990
40SL12	Sullivan				open habitation	Phase I	1950-1990
40SL28	Sullivan				open habitation	Phase I	1950-1990
40SL61	Sullivan				open habitation	Phase I	1950-1990
40SL62	Sullivan				open habitation	Phase I	1950-1990
40SL63	Sullivan				open habitation	Phase I	1950-1990
40SL317	Sullivan				open habitation	Reconnaissance	Post-1990
40SV5	Sevier				open habitation	Phase I	1950-1990
40SV61	Sevier				open habitation	Phase II	Post-1990

Table A-1 (continued)

Site #	County	µ C14 (Cal BP)	Earliest C14 (Cal BP)	Latest C14 (Cal BP)	Site Type	Survey Level Intensity	Time of Investigation
40SV66	Sevier				open habitation	Phase II	Post-1990
40SV112	Sevier				open habitation	Phase II	Post-1990
40SV125	Sevier				open habitation	Phase I	Post-1990
40SV183	Sevier				open habitation	Phase III	Post-1990
40SV186	Sevier				open habitation	Phase II	Post-1990
40SW1	Stewart				earth mound	Phase I	Pre-1950
40SW32	Stewart				open habitation	Phase II	1950-1990
40SW308	Stewart				open habitation	Phase II	Post-1990
40SW339	Stewart				open habitation	Phase II	Post-1990
40WY38	Wayne				open habitation	Phase I	1950-1990
40WY70	Wayne				open habitation	Phase II	Post-1990
40WY87	Wayne				open habitation	Phase III	Post-1990
40WY101	Wayne				open habitation	Phase II	Post-1990

APPENDIX B

Table B-1. Late Archaic Exotic Material Information, Presence and Absence of Burials, and Number of Distinct Point Types.

Site #	County	Exotics Present	Copper Present	# of copper artifacts	Marine Shell Present	# of marine shell	Soapstone Present	# of soapstone	Exotic Other Present	# of exotic other	Burial P/A	# of L. Archaic point types
40BN1	Benton	0	0	0	0	0	0	0	0	0	0	3
40BN7	Benton	1	0	0	0	0	0	0	1	1	0	unknown
40BN11	Benton	1	1	2	0	0	0	0	0	0	0	unknown
40BN12	Benton	1	1	4	0	0	0	0	0	0	1	6
40BN13	Benton	0	0	0	0	0	0	0	0	0	1	unknown
40BN18	Benton	0	0	0	0	0	0	0	0	0	0	unknown
40BN25	Benton	1	1	4	1	1	0	0	0	0	1	3
40BN34	Benton	0	0	0	0	0	0	0	0	0	0	unknown
40BN39	Benton	0	0	0	0	0	0	0	0	0	0	unknown
40BN47	Benton	0	0	0	0	0	0	0	0	0	1	unknown
40BN59	Benton	0	0	0	0	0	0	0	0	0	0	unknown
40BN74	Benton	1	1	3	1	3	0	0	1	1	1	unknown
40BN77	Benton	0	0	0	0	0	0	0	0	0	1	unknown
40BT89-91	Blount	1	0	0	0	0	1	1512	1	930	0	8
40BT97	Blount	0	0	0	0	0	0	0	0	0	0	1
40BT205	Blount	0	0	0	0	0	0	0	0	0	0	2
40BT208	Blount	0	0	0	0	0	0	0	0	0	0	unknown
40BT209	Blount	0	0	0	0	0	0	0	0	0	0	1
40CK13	Cocke	0	0	0	0	0	0	0	0	0	0	3
40CK14	Cocke	1	0	0	0	0	0	0	1	60	0	2
40CK184	Cocke	0	0	0	0	0	0	0	0	0	0	3
40CK195	Cocke	1	0	0	0	0	0	0	1	339	0	1
40CK197	Cocke	1	0	0	0	0	0	0	1	indeter.	0	2
40DR1	Decatur	1	1	1	1	1	0	0	0	0	1	unknown
40DR7	Decatur	0	0	0	0	0	0	0	0	0	0	unknown

Table B-1 (continued)

Site #	County	Exotics Present	Copper Present	# of copper artifacts	Marine Shell Present	# of marine shell	Soapstone Present	# of soapstone	Exotic Other Present	# of exotic other	Burial P/A	# of L. Archaic point types
40DR9	Decatur	0	0	0	0	0	0	0	0	0	0	1
40DR12	Decatur	0	0	0	0	0	0	0	0	0	0	1
40DR20	Decatur	0	0	0	0	0	0	0	0	0	0	1
40DR162	Decatur	0	0	0	0	0	0	0	0	0	0	1
40DR254	Decatur	0	0	0	0	0	0	0	0	0	0	3
40GN13	Greene	0	0	0	0	0	0	0	0	0	0	2
40GN14	Greene	0	0	0	0	0	0	0	0	0	0	1
40GN15	Greene	0	0	0	0	0	0	0	0	0	0	3
40GN228	Greene	1	0	0	0	0	0	0	1	27	0	1
40GN229	Greene	1	0	0	0	0	1	3	1	2	0	2
40GR11	Grainger	0	0	0	0	0	0	0	0	0	0	1
40GR29	Grainger	0	0	0	0	0	0	0	0	0	0	unknown
40GR224	Grainger	0	0	0	0	0	0	0	0	0	0	2
40GR255	Grainger	0	0	0	0	0	0	0	0	0	0	1
40GR321	Grainger	0	0	0	0	0	0	0	0	0	0	2
40HA2	Hamilton	1	0	0	1	indeter.	0	0	1	2	0	unknown
40HA3	Hamilton	0	0	0	0	0	0	0	0	0	0	unknown
40HA10	Hamilton	1	0	0	1	indeter.	0	0	0	0	0	unknown
40HA63	Hamilton	1	0	0	1	indeter.	1	14	1	21	1	10
40HA102	Hamilton	1	0	0	1	17	1	3	1	133	0	unknown
40HA202	Hamilton	0	0	0	0	0	0	0	0	0	0	1
40HA219	Hamilton	1	0	0	0	0	1	3	0	0	0	1
40HA301	Hamilton	0	0	0	0	0	0	0	0	0	0	3
40HA328	Hamilton	0	0	0	0	0	0	0	0	0	0	1
40HA446	Hamilton	1	0	0	0	0	0	0	1	3	0	5
40HA524	Hamilton	0	0	0	0	0	0	0	0	0	0	5

Table B-1 (continued)

Site #	County	Exotics Present	Copper Present	# of copper artifacts	Marine Shell Present	# of marine shell	Soapstone Present	# of soapstone	Exotic Other Present	# of exotic other	Burial P/A	# of L. Archaic point types
40HB15	Hamblen	0	0	0	0	0	0	0	0	0	0	3
40HB137	Hamblen	0	0	0	0	0	0	0	0	0	0	1
40HB151	Hamblen	0	0	0	0	0	0	0	0	0	0	2
40HB167	Hamblen	0	0	0	0	0	0	0	0	0	0	1
40HB189	Hamblen	0	0	0	0	0	0	0	0	0	0	1
40HO14	Houston	0	0	0	0	0	0	0	0	0	0	1
40HO24	Houston	0	0	0	0	0	0	0	0	0	0	4
40HO67	Houston	0	0	0	0	0	0	0	0	0	0	1
40HR39	Hardin	0	0	0	0	0	0	0	0	0	0	1
40HR51	Hardin	0	0	0	0	0	0	0	0	0	0	unknown
40HR146	Hardin	0	0	0	0	0	0	0	0	0	0	2
40HR174	Hardin	0	0	0	0	0	0	0	0	0	0	3
40HR305	Hardin	0	0	0	0	0	0	0	0	0	0	1
40HS1	Humphreys	0	0	0	0	0	0	0	0	0	0	unknown
40HS4	Humphreys	0	0	0	0	0	0	0	0	0	0	3
40HS107	Humphreys	0	0	0	0	0	0	0	0	0	0	3
40HS200	Humphreys	0	0	0	0	0	0	0	0	0	0	5
40HS346	Humphreys	0	0	0	0	0	0	0	0	0	0	1
40HW10	Hawkins	0	0	0	0	0	0	0	0	0	0	1
40HW61	Hawkins	0	0	0	0	0	0	0	0	0	0	5
40HY13	Henry	1	0	0	1	1	1	1	0	0	1	3
40HY18	Henry	1	0	0	1	1	0	0	0	0	1	2
40HY31	Henry	0	0	0	0	0	0	0	0	0	0	unknown
40HY32	Henry	0	0	0	0	0	0	0	0	0	0	2
40HY108	Henry	0	0	0	0	0	0	0	0	0	0	unknown
40JE47	Jefferson	0	0	0	0	0	0	0	0	0	0	unknown

Table B-1 (continued)

Site #	County	Exotics Present	Copper Present	# of copper artifact s	Marine Shell Present	# of marine shell	Soapstone Present	# of soapstone	Exotic Other Present	# of exotic other	Burial P/A	# of L. Archaic point types
40JE63	Jefferson	0	0	0	0	0	0	0	0	0	0	unknown
40JE79	Jefferson	0	0	0	0	0	0	0	0	0	0	1
40JE93	Jefferson	0	0	0	0	0	0	0	0	0	0	2
40JE185	Jefferson	0	0	0	0	0	0	0	0	0	0	1
40KN17	Knox	0	0	0	0	0	0	0	0	0	0	2
40KN49	Knox	1	0	0	0	0	0	0	1	1	0	5
40KN104	Knox	0	0	0	0	0	0	0	0	0	0	1
40KN150	Knox	0	0	0	0	0	0	0	0	0	0	2
40KN235	Knox	0	0	0	0	0	0	0	0	0	0	1
40KN262	Knox	1	0	0	0	0	1	1	0	0	0	1
40KN312	Knox	0	0	0	0	0	0	0	0	0	0	2
40KN316	Knox	0	0	0	0	0	0	0	0	0	0	1
40LD17	Loudon	1	0	0	1	23	1	8	1	1	1	unknown
40LD35	Loudon	1	0	0	0	0	1	77	0	0	0	3
40LD57	Loudon	1	0	0	0	0	1	2	0	0	0	unknown
40LD116	Loudon	1	0	0	0	0	0	0	1	2	0	2
40LD179	Loudon	1	0	0	0	0	1	2	0	0	0	1
40LD191	Loudon	1	0	0	0	0	1	6	0	0	0	4
40LD207	Loudon	0	0	0	0	0	0	0	0	0	0	2
40LD221	Loudon	1	0	0	0	0	1	15	0	0	0	6
40MG7	Meigs	1	0	0	0	0	1	7	0	0	0	1
40MG37	Meigs	0	0	0	0	0	0	0	0	0	0	2
40MG58	Meigs	1	0	0	0	0	1	1	0	0	0	1
40MG95	Meigs	1	0	0	0	0	1	2	1	3	0	unknown
40MG210	Meigs	0	0	0	0	0	0	0	0	0	0	1
40MR7	Monroe	1	0	0	0	0	1	2	0	0	0	unknown

Table B-1 (continued)

Site #	County	Exotics Present	Copper Present	# of copper artifacts	Marine Shell Present	# of marine shell	Soapstone Present	# of soapstone	Exotic Other Present	# of exotic other	Burial P/A	# of L. Archaic point types
40MR23	Monroe	1	0	0	0	0	1	42	0	0	0	4
40MR25	Monroe	1	0	0	0	0	1	1	0	0	0	3
40MR44	Monroe	1	0	0	0	0	1	3	0	0	0	1
40MR164	Monroe	0	0	0	0	0	0	0	0	0	0	unknown
40MR205	Monroe	0	0	0	0	0	0	0	0	0	0	unknown
40MR237	Monroe	0	0	0	0	0	0	0	0	0	0	unknown
40MR540	Monroe	0	0	0	0	0	0	0	0	0	0	unknown
40PY121	Perry	0	0	0	0	0	0	0	0	0	0	6
40PY260	Perry	0	0	0	0	0	0	0	0	0	0	unknown
40PY289	Perry	0	0	0	0	0	0	0	0	0	0	4
40PY290	Perry	1	0	0	0	0	0	0	1	1	0	4
40RE4	Roane	0	0	0	0	0	0	0	0	0	0	unknown
40RE16	Roane	0	0	0	0	0	0	0	0	0	0	unknown
40RE140	Roane	0	0	0	0	0	0	0	0	0	0	unknown
40RE229	Roane	0	0	0	0	0	0	0	0	0	0	unknown
40RE534	Roane	0	0	0	0	0	0	0	0	0	0	3
40RH6	Rhea	1	0	0	0	0	1	2	1	3	1	5
40RH30	Rhea	1	0	0	0	0	1	3	0	0	0	unknown
40RH63	Rhea	1	0	0	0	0	1	1	0	0	0	2
40RH92	Rhea	1	0	0	0	0	1	indeter.	1	1	0	unknown
40RH125	Rhea	0	0	0	0	0	0	0	0	0	0	1
40RH166	Rhea	0	0	0	0	0	0	0	0	0	0	6
40RH167	Rhea	1	0	0	0	0	1	1	0	0	0	3
40RH198	Rhea	1	0	0	0	0	1	14	1	1	1	2
40RH220	Rhea	0	0	0	0	0	0	0	0	0	0	7
40RH282	Rhea	0	0	0	0	0	0	0	0	0	0	unknown

Table B-1 (continued)

Site #	County	Exotics Present	Copper Present	# of copper artifacts	Marine Shell Present	# of marine shell	Soapstone Present	# of soapstone	Exotic Other Present	# of exotic other	Burial P/A	# of L. Archaic point types
40SL12	Sullivan	0	0	0	0	0	0	0	0	0	0	unknown
40SL28	Sullivan	1	0	0	0	0	0	0	1	indeter.	0	1
40SL61	Sullivan	0	0	0	0	0	0	0	0	0	0	1
40SL62	Sullivan	0	0	0	0	0	0	0	0	0	0	2
40SL63	Sullivan	0	0	0	0	0	0	0	0	0	0	1
40SL317	Sullivan	0	0	0	0	0	0	0	0	0	0	1
40SV5	Sevier	0	0	0	0	0	0	0	0	0	0	1
40SV61	Sevier	0	0	0	0	0	0	0	0	0	0	1
40SV66	Sevier	0	0	0	0	0	0	0	0	0	0	3
40SV112	Sevier	0	0	0	0	0	0	0	0	0	0	2
40SV125	Sevier	0	0	0	0	0	0	0	0	0	0	1
40SV183	Sevier	0	0	0	0	0	0	0	0	0	0	1
40SV186	Sevier	0	0	0	0	0	0	0	0	0	0	1
40SW1	Stewart	0	0	0	0	0	0	0	0	0	0	1
40SW32	Stewart	0	0	0	0	0	0	0	0	0	0	4
40SW308	Stewart	0	0	0	0	0	0	0	0	0	0	2
40SW339	Stewart	0	0	0	0	0	0	0	0	0	0	2
40WY38	Wayne	0	0	0	0	0	0	0	0	0	0	6
40WY70	Wayne	0	0	0	0	0	0	0	0	0	0	5
40WY87	Wayne	0	0	0	0	0	0	0	0	0	0	10
40WY101	Wayne	0	0	0	0	0	0	0	0	0	0	1

APPENDIX C

Table C-1. Sources of Data by Site Number.

Site #	County	Sources of Data
40BN1	Benton	TDOA Site Form; No other references listed on site form
40BN7	Benton	TDOA Site Form; Exc. Report by Douglas Osborne; F.S. Forms; No site report listed on TDOA site form
40BN11	Benton	TDOA Site Form; Exc. Report by Douglas Osborne; F.S. Forms; Lewis and Kneberg 1947
40BN12	Benton	TDOA Site Form; Lewis and Kneberg 1947, 1961; C.B. Moore 1915
40BN13	Benton	TDOA Site Form; Autry and Hinshaw 1981; Lewis and Kneberg 1947
40BN18	Benton	TDOA Site Form; Autry and Hinshaw 1981; McNutt and Graham 1967
40BN25	Benton	TDOA Site Form; Exc. Report; F.S. and Burial Forms; Autry and Hinshaw 1981; Bissett 2014; Lewis and Kneberg 1947
40BN34	Benton	TDOA Site Form; Autry and Hinshaw 1981
40BN39	Benton	TDOA Site Form; No other references listed on site form
40BN47	Benton	TDOA Site Form; No other references listed on site form
40BN59	Benton	TDOA Site Form; Exc. Report by Douglas Osborne; F.S. Forms; Lewis and Kneberg 1947
40BN74	Benton	TDOA Site Form; Exc. Report by Douglas Osborne; F.S. Forms; Lewis and Kneberg 1947
40BN77	Benton	TDOA Site Form; Exc. Report by Douglas Osborne; F.S. Forms; Lewis and Kneberg 1947
40BT89-91	Blount	TDOA Site Form; Hollenbach and Yerka 2018
40BT97	Blount	TDOA Site Form; Alexander et al. 2002
40BT205	Blount	TDOA Site Form; Buchner and Cain 2009
40BT208	Blount	TDOA Site Form; Buchner and Cain 2009
40BT209	Blount	TDOA Site Form; Buchner and Cain 2009
40CK13	Cocke	TDOA Site Form; Fielder 1978; Leabo et al. 1996; Idol et al. 2009
40CK14	Cocke	TDOA Site Form; Jorgenson and Cassedy 2007; Versluis 2001
40CK184	Cocke	TDOA Site Form; Alexander et al. 2001
40CK195	Cocke	TDOA Site Form; Jorgenson and Cassedy 2007; Versluis 2001
40CK197	Cocke	TDOA Site Form; Jorgenson et al. 2003
40DR1	Decatur	TDOA Site Form; Exc. Report by C.A. Burroughs; F.S. Forms; Bissett 2014; Lewis and Kneberg 1947
40DR7	Decatur	TDOA Site Form; Autry and Hinshaw 1981; Kanaski 2015
40DR9	Decatur	TDOA Site Form; No other references listed on site form
40DR12	Decatur	TDOA Site Form; McKee 2001; Deter-Wolf 2002

Table C-1 (continued)

Site #	County	Sources of Data
40DR20	Decatur	TDOA Site Form; No other references listed on site form
40DR162	Decatur	TDOA Site Form; No other references listed on site form
40DR254	Decatur	TDOA Site Form; No other references listed on site form
40GN13	Greene	TDOA Site Form; No other references listed on site form
40GN14	Greene	TDOA Site Form; No other references listed on site form
40GN15	Greene	TDOA Site Form; No other references listed on site form
40GN228	Greene	TDOA Site Form; (Oakley et al. 2004)
40GN229	Greene	TDOA Site Form; (Oakley et al. 2004)
40GR11	Grainger	TDOA Site Form; No other references listed on site form
40GR29	Grainger	TDOA Site Form; No other references listed on site form
40GR224	Grainger	TDOA Site Form; Gage et al. 2005
40GR255	Grainger	TDOA Site Form; Gage et al. 2005
40GR321	Grainger	TDOA Site Form; Gage et al. 2005
40HA2	Hamilton	TDOA Site Form; Exc. Report by Cooper, Jennings, and Nash; F.S. and Burial Forms
40HA3	Hamilton	TDOA Site Form; Excavation Reports; F.S. and Burial Forms
40HA10	Hamilton	TDOA Site Form; Exc. Report by Stuart Neitzel; F.S. and Burial Forms
40HA63	Hamilton	TDOA Site Form; F.S. Forms; Graham 1964; Couglin et al. 2005
40HA102	Hamilton	TDOA Site Form; Council 1989
40HA202	Hamilton	TDOA Site Form; No other references listed on site form
40HA219	Hamilton	TDOA Site Form; Alexander 2014; Gregory et al. 2016
40HA301	Hamilton	TDOA Site Form; No other references listed on site form
40HA328	Hamilton	TDOA Site Form; Alexander et al. 1998; Dison et al. 2020
40HA446	Hamilton	TDOA Site Form; Alexander et al. 1998
40HA524	Hamilton	TDOA Site Form; Alexander 2006a, 2006b; Jordan-Green et al. 2009
40HB15	Hamblen	TDOA Site Form; Ahlman et al. 1997
40HB137	Hamblen	TDOA Site Form; No other references listed on site form
40HB151	Hamblen	TDOA Site Form; No other references listed on site form
40HB167	Hamblen	TDOA Site Form; No other references listed on site form

Table C-1 (continued)

Site #	County	Sources of Data
40HB189	Hamblen	TDOA Site Form; No other references listed on site form
40HO14	Houston	TDOA Site Form; Bradbury 1995
40HO24	Houston	TDOA Site Form; No other references listed on site form
40HO67	Houston	TDOA Site Form; No other references listed on site form
40HR39	Hardin	TDOA Site Form; No other references listed on site form
40HR51	Hardin	TDOA Site Form; No other references listed on site form
40HR146	Hardin	TDOA Site Form; No other references listed on site form
40HR174	Hardin	TDOA Site Form; Pace 1995a
40HR305	Hardin	TDOA Site Form; Chapman 1999, 2002
40HS1	Humphreys	TDOA Site Form; F.S. and burial forms.
40HS4	Humphreys	TDOA Site Form; Alexander 2002
40HS107	Humphreys	TDOA Site Form; No other references listed on site form
40HS200	Humphreys	TDOA Site Form; McNutt and Graham 1967; Norton and Broster 1992
40HS346	Humphreys	TDOA Site Form; Angst 2010
40HW10	Hawkins	TDOA Site Form; No other references listed on site form
40HW61	Hawkins	TDOA Site Form; No other references listed on site form
40HY13	Henry	TDOA Site Form; F.S. Forms; Exc. Report; Autry and Hinshaw 1981; Bissett 2014; Lewis and Kneberg 1947, 1959
40HY18	Henry	TDOA Site Form; F.S. and Burial Forms; Exc. Report; Autry and Hinshaw 1981; Lewis and Kneberg 1947, 1959
40HY31	Henry	TDOA Site Form; No other references listed on site form
40HY32	Henry	TDOA Site Form; No other references listed on site form
40HY108	Henry	TDOA Site Form; No other references listed on site form
40JE47	Jefferson	TDOA Site Form; No other references listed on site form
40JE63	Jefferson	TDOA Site Form; No other references listed on site form
40JE79	Jefferson	TDOA Site Form; Polhemus 2000
40JE93	Jefferson	TDOA Site Form; Stanyard and Holland 2004
40JE185	Jefferson	TDOA Site Form; Manning 2005
40KN17	Knox	TDOA Site Form; No other references listed on site form
40KN49	Knox	TDOA Site Form; Cobb 1970

Table C-1 (continued)

Site #	County	Sources of Data
40KN104	Knox	TDOA Site Form; No other references listed on site form
40KN150	Knox	TDOA Site Form; Matternes and Meyers 1995; Meyers 1998, 2001
40KN235	Knox	TDOA Site Form; Versluis 2000; Slaughter and McCorkle 2005a
40KN262	Knox	TDOA Site Form; Pace and Spice 2006
40KN312	Knox	TDOA Site Form; Alvey 2002
40KN316	Knox	TDOA Site Form; Vavrasek 2009; Cyr 2011
40LD17	Loudon	TDOA Site Form; Cyrus 1984; Chapman 1982; Polhemus 1994
40LD35	Loudon	TDOA Site Form; Chapman 1978
40LD57	Loudon	TDOA Site Form; No other references listed on site form
40LD116	Loudon	TDOA Site Form; Thomas 1999; Kimball 1985; Davis 1990
40LD179	Loudon	TDOA Site Form; Ahlman et al. 1998, 1999
40LD191	Loudon	TDOA Site Form; Slaughter and McCorkle 2005b; Lafferty and Alexander 2011
40LD207	Loudon	TDOA Site Form; Chapman 1990
40LD221	Loudon	TDOA Site Form; Slaughter and McCorkle 2005b; Alexander 2012
40MG7	Meigs	TDOA Site Form Lewis and Kneberg 1941; Garrow & Associates, Inc. 1995
40MG37	Meigs	TDOA Site Form; Smith et al. 1990
40MG58	Meigs	TDOA Site Form; Smith et al. 1990
40MG95	Meigs	TDOA Site Form; Smith et al. 1990
40MG210	Meigs	TDOA Site Form; Coco et al. 2004
40MR7	Monroe	TDOA Site Form; Salo 1969; Chapman 1979
40MR23	Monroe	TDOA Site Form; Gleeson 1970; Chapman 1973; Cridlebaugh 1981
40MR25	Monroe	TDOA Site Form; Salo 1969; Chapman 1981
40MR44	Monroe	TDOA Site Form; Chapman 1974, 1975
40MR164	Monroe	TDOA Site Form; D'Angelo 2003; D'Angelo et al. 2003
40MR205	Monroe	TDOA Site Form; No other references listed on site form
40MR237	Monroe	TDOA Site Form; No other references listed on site form
40MR540	Monroe	TDOA Site Form; No other references listed on site form
40PY121	Perry	TDOA Site Form; No other references listed on site form

Table C-1 (continued)

Site #	County	Sources of Data
40PY260	Perry	TDOA Site Form; No other references listed on site form
40PY289	Perry	TDOA Site Form; Weaver et al. 2008
40PY290	Perry	TDOA Site Form; Weaver et al. 2008
40RE4	Roane	TDOA Site Form; F.S. and Burial Forms; Exc. Reports by Wendell C. Walker and Carroll A. Burroughs; Schroedl 1973
40RE16	Roane	TDOA Site Form; No other references listed on site form
40RE140	Roane	TDOA Site Form; Jolley 1982
40RE229	Roane	TDOA Site Form; Pace 1995b
40RE534	Roane	TDOA Site Form; Alexander et al. 2000
40RH6	Rhea	TDOA Site Form; Calabrese 1976; Schroedl 1978; Laird and Holland 2011
40RH30	Rhea	TDOA Site Form; No other references listed on site form
40RH63	Rhea	TDOA Site Form; Prescott 1977; Childress 1993a, 1993b; Garrow & Assocites 1995
40RH92	Rhea	TDOA Site Form; No other references listed on site form
40RH125	Rhea	TDOA Site Form; Lawrence 2003
40RH166	Rhea	TDOA Site Form; Hoksbergen and Alexander 2005; Clute and Alexander 2007
40RH167	Rhea	TDOA Site Form; Hoksbergen and Alexander 2005; Clute and Alexander 2007
40RH198	Rhea	TDOA Site Form; Garrow & Associates 1995
40RH220	Rhea	TDOA Site Form; Alexander et al. 1997a, 1997b
40RH282	Rhea	TDOA Site Form; Hoksbergen and Alexander 2005; Clute and Alexander 2007
40SL12	Sullivan	TDOA Site Form; No other references listed on site form
40SL28	Sullivan	TDOA Site Form; No other references listed on site form
40SL61	Sullivan	TDOA Site Form; No other references listed on site form
40SL62	Sullivan	TDOA Site Form; Polhemus 1999
40SL63	Sullivan	TDOA Site Form; No other references listed on site form
40SL317	Sullivan	TDOA Site Form; Polhemus 1999
40SV5	Sevier	TDOA Site Form; Fielder 1978; Leabo et al. 1996; Idol et al. 2009
40SV61	Sevier	TDOA Site Form; Pace 1997; Longmire and Pace 2002
40SV66	Sevier	TDOA Site Form; Pace 1997; Longmire and Pace 2002
40SV112	Sevier	TDOA Site Form; McKelway and Stallings 2002

Table C-1 (continued)

Site #	County	Sources of Data
40SV125	Sevier	TDOA Site Form; Webb and Benyshek 2005
40SV183	Sevier	TDOA Site Form; Manning 2006; Gage 2006
40SV186	Sevier	TDOA Site Form; Beverly and McBride 2006
40SW1	Stewart	TDOA Site Form; Exc. Reports by John Alden and Charles H. Nash; Burial and F.S. Forms.
40SW32	Stewart	TDOA Site Form; DuVall 1996; GAI Consultants Inc. 1982; Simmons 1997
40SW308	Stewart	TDOA Site Form; DuVall 1996; Simmons 1997
40SW339	Stewart	TDOA Site Form; DuVall 1996; Simmons 1997
40WY38	Wayne	TDOA Site Form; No other references listed on site form.
40WY70	Wayne	TDOA Site Form; Jones 1999
40WY87	Wayne	TDOA Site Form; Taylor and Josephs 1995; Smith 1999
40WY101	Wayne	TDOA Site Form; Chapman 1999, 2002

APPENDIX D

Dear Tribal Members,

My name is Justin Bailey, and I am a master's student in the Anthropology Department at the University of Tennessee in Knoxville. I am currently designing a thesis project focused on studying cultural group patterns during the Late Archaic period within the Tennessee River Valley. Specifically, I am interested in learning more about the spatial distributions of the shell mounds located along the Lower Tennessee River and other Late Archaic sites along the Upper Tennessee River, their proximity to known habitation sites, and exploring general questions about how peoples within the region interacted, endured their social and environmental challenges and traveled across the landscape over the 2600 years of the Late Archaic period. I believe the current state of the archaeological and climatological evidence suggests a pattern of cultural persistence and I want to explore these topics within the model or theoretical framework of resilience. Additional project details are described below. Although I have some GIS training, I would like to enhance my GIS skillset through this project by using available locational data for mounds, artifact types, habitation sites, and other landscape data to evaluate such things as site relationships, least-cost pathways for traveling across the landscape, and general ecological changes and human-environment interactions happening during the Late Archaic.

I want to add a personal note on how this research resonates with me and why I think it is important. I share this with you to hopefully illustrate that I am not simply consumed with narrow specializations in archaeology, but that I care a great deal more about exploring the personal lived experiences and meaningful relationships we build with one another and the natural world. I suspect this approach can only help to supplement and enhance our knowledge of archaeology. I believe there is a plethora of diverse topics to explore within the framework of resilience and I hope to discover where our mutual interests overlap. I welcome any thoughts you may have on this project and am curious to know more about your specific research objectives and how those can be incorporated into this project. I look forward to hearing your thoughts.

One of the uncanny features of humans is the depth of their adaptability. Anthropologists and archaeologists use this term with such ease and frequency in their research and discussions that I have often wondered just how much we have personally connected with what that concept ultimately means and what it feels like in practice. The closest I will likely ever get to living a nomadic lifestyle was a four-month 1300-mile thru-hike on the Appalachian Trail from Maine to northern Virginia in the summer of 2014 with my wife Hilary. I had just graduated from Indiana University with my BA in history and anthropology and although I had just spent four years learning all about human biological and cultural adaptability in my anthropology classes and archaeological field schools in Wyoming and Montana, it took several thousand steps backpacking this famous well-trodden corridor to feel and witness the, oftentimes agonizing, physiological and psychological adaptability occurring within my mind and body. I was also taken in by the rather harrowing personal stories I listened to from many of the other modern wanderers I had the fortune to share this experience with. We recorded our experiences in journals and shared our experiences in a blog, *Those Who Wander*, which proved to be a challenging and exciting first exercise for me in communicating personal ideas and experiences to a wider audience.

What I learned from this time was that a lot of the people opting to spend months trekking in the woods had also experienced a great deal of personal suffering and tragedy and were using this trail as a medium of perseverance to overcome their misfortunes, such as war, the death of loved ones, illness, addiction, or divorce. And these epiphanies of human fortitude; of boldly facing risk and adversity; of imbuing time, space, and place with meaning and healing; gave me a surge of hope for the future and a revealing connection with the past that I suspect no amount of degrees likely ever will. I realized from that experience that there is already a deeply embedded capacity for resilience within each one of us that transcends time and can enable humanity to endure despite the many challenges ahead. Understanding the many strategies people use to cope with their risks, create places of meaning, how we channel resilience socially, how we connect with the natural world, and what empowers cultures and people to ultimately persist strikes me as vitally important in today's highly fearful, cynical, and volatile world. It is toward this continued development and refinement of the theories and methods in human resiliency and cultural persistence that I wish to contribute and dedicate my research.

Below you can find more detailed information on the sites and questions about this research.

Additional Project Details

The shell-bearing archaeological sites of interest along the Tennessee River are listed in Table 1. A list of the 16 counties of interest containing Late Archaic sites along the Lower and Upper Tennesse River are listed in Table 2. I am interested in knowing the relationship between contemporaneous sites in the local surrounding area and how those sites were connected to long-distance exchange routes, especially in the relation to the shell-bearing sites. The thesis prompts broad questions and topics relevant to ongoing research programs attempting to investigate resilience and persistence in past societies (see for example Faulseit 2015; Redman 2005; Schlanger 1992; Temple and Stojanowski 2019; Thompson 2010). What constitutes cultural persistence? How did Archaic hunter-gatherer communities manage their social and environmental risks and promote resilience across space and time? How might the material evidence for such complex patterns and behaviors manifest in the archaeological record? What is it about the Late Archaic that makes it such a persistent cultural period?

As coarse-grained as the chronology is for these sites, the evidence still makes clear that there is a long series of occupations and continuities across these sites beginning in the Middle Archaic and extending into the Early Woodland (Bissett 2014). However, as importantly noted by Bissett (2014: 562-563), these shell-bearing sites were only a small sample of the Archaic sites chosen to be partially and rapidly excavated during the New Deal era and the coming of modern damming and flooding which inundated many sites. However, a tremendous amount of survey and site data was recorded before, during, and since this time. Thus, there is still a great deal of research to be asked and answered concerning Tennessee River sites and their spatial distributions. How were these sites connected and how did the people inhabiting this region occupy and transform this landscape into a persistent place?

Table 1 Shell-bearing sites of interest with Late Archaic components.

Site Name	Site #	County	State	River
Eva	40BN12	Benton	TN	Tennessee
Big Sandy	40HY18	Henry	TN	Tennessee
Kays Landing	40HY13	Henry	TN	Tennessee
Cherry	40BN74	Benton	TN	Tennessee
Ledbetter Landing	40BN25	Benton	TN	Tennessee
McDaniel	40BN77	Benton	TN	Tennessee
Oak View	40DR1	Decatur	TN	Tennessee

Table 2 Lower and Upper Tennessee River counties of interest with Late Archaic sites.

Upper TN River Counties	Lower TN River Counties
Knox	Hardin
Blount	Wayne
Loudon	Decatur
Roane	Perry
Rhea	Benton
Meigs	Humphreys
Hamilton	Houston
	Henry
	Stewart

List of Consulting Tribal Nations

Absentee Shawnee Tribe of Oklahoma
Alabama-Coushatta Tribe of Texas
Alabama Quassarte Tribal Town
Cherokee Nation
Chickasaw Nation
Coushatta Tribe of Louisiana
Eastern Band of Cherokee Indians
Eastern Shawnee Tribe of Oklahoma
Jena Band of Choctaw Indians
Kialegee Tribal Town
Muscogee Nation of Oklahoma
The Shawnee Tribe
Thlopthlocco Tribal Town
United Keetoowah Band of Cherokee Indians in Oklahoma

References

Bissett, Thad G.

2014 The Western Tennessee Shell Mound Archaic: Prehistoric Occupation in the Lower Tennessee River Valley between 9000 and 2500 Calendar Year BP." Ph.D. Dissertation, University of Tennessee.

Faulseit, Ronald K.

2016 *Beyond Collapse : Archaeological Perspectives on Resilience, Revitalization, and Transformation in Complex Societies*. Southern Illinois University Press.

Redman, C.L.

2005 Resilience Theory in Archaeology. American anthropologist 107.1: 70–77.

Schlanger, S.H.

1992. Recognizing persistent places in Anasazi. In *Space, time, and archaeological landscapes,* edited by J. Rossignol and L. Wandsnider, 91–113. New York: Plenum.

Temple, Daniel H., and Christopher M. Stojanowski

2019 *Hunter-Gatherer Adaptation and Resilience: A Bioarchaeological Perspective.* Cambridge University Press.

Thompson, Victor D.

2010 The Rhythms of Space-Time and the Making of Monuments and Places During the Archaic. In *Trend, Tradition, and Turmoil: What Happened to the Southeastern Archaic?*, edited by David H. Thomas and Matthew C. Sanger, pp. 217-228. Anthropological Papers of the American Museum of Natural History, New York.

VITA

Justin S. Bailey was born in LaPorte, Indiana on August 31, 1989. He attended Martinsville High School, graduating in 2008. After attending Ivy Tech Community College, he transferred to Indiana University and received a B.A. in anthropology and history in May 2014. He was accepted into the Master's program in the Department of Anthropology at the University of Tennessee, Knoxville, where he received his M.A. in anthropology in 2022. Mr. Bailey is currently employed as an archaeological contractor with the Tennessee Valley Authority.