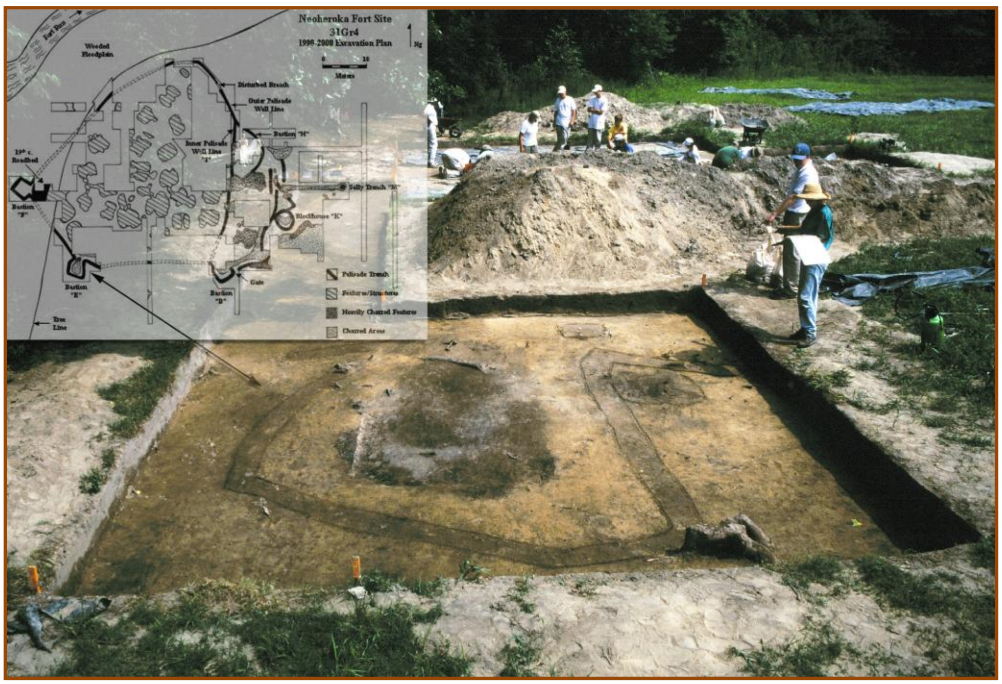
THE ARCHAEOLOGY OF NORTH CAROLINA:

THREE ARCHAEOLOGICAL SYMPOSIA



North Carolina Archaeological Council Publication Number 30
2011

The Archaeology of North Carolina: Three Archaeological Symposia

Charles R. Ewen – Co-Editor
Thomas R. Whyte – Co-Editor
R. P. Stephen Davis, Jr. – Co-Editor

North Carolina Archaeological Council Publication Number 30
2011

TABLE OF CONTENTS

Mountains Symposium Chapters

Piedmont Symposium Chapters

LIST OF FIGURES

LIST OF TABLES

ACKNOWLEDGEMENTS

This volume of very excellent papers has been a while in the making and the result of many people's hard work. I first would like to thank John Mintz and Lea Abbott for conceiving of the symposia and helping make them a reality. The fiscal help of the North Carolina Archaeological Council, Archaeological Consultants of the Carolinas, Environmental Services Incorporated, TRC-Solutions, New South Associates, Tar River Archaeological Consultants and the North Carolina Archaeological Society in producing the Coastal Plain symposium was much appreciated.

I am also obliged to the contributors whose patience was sorely tested as the compilation process inched along. I hope you agree that it was worth the wait. The comments of the anonymous reviewers helped make this an even stronger volume and forced us all to clarify and defend our positions. I would be remiss if I did not acknowledge Tom Beaman's efforts to shepherd this project along and make sure that was posted on-line. Finally I want to thank my graduate assistants, Jennifer Gabriel and especially Amanda Keeny, for assembling, formatting, and copy editing the final contributions.

Charles R. Ewen

TWENTY-FIVE YEARS AND COUNTING: CURRENT ARCHAEOLOGICAL RESEARCH IN THE NORTH CAROLINA COASTAL PLAIN

Charles R. Ewen

In 1983, the publication of *Prehistory of North Carolina: An Archaeological Symposium* summarized what archaeologists had discovered through their decades of excavations throughout the state. The volume, edited by Mark Mathis and Jeffrey Crow, combined the contributions of three archaeologists who were acknowledged leaders in their region. David Phelps prepared the chapter covering the coastal plain, Trawick Ward took the piedmont, and Burt Purrington the mountains. The result was the "blue bible" which became one of NC Historical Publications most enduring and best-selling volumes.

Two decades later the volume had been superceded by Ward and Davis's *Time Before History* (1999), but the pace of archaeology in the state continued to accelerate as universities expanded their archaeology programs and CRM-oriented archaeology struggled to keep pace with development. To expand and further synthesize the archaeological work that had been done, John Mintz and Lea Abbott of the North Carolina Office of State Archaeology, initiated a series of symposia. A separate symposium would take place at a university in each of the three physiographic regions of the state. The first of these was hosted by the Department of Anthropology, East Carolina University, and the Southern Coastal Heritage Program and addressed many topics including: settlement patterns, coastal resource utilization, and ceramic and lithic studies that spanned both the prehistoric and historic periods.

In the previous compendium, Phelps (1983:1) stated that "the North Carolina Coastal Plain has been the least known archaeological region of the state, has received less professional attention, and supported fewer projects than other regions until very recently." Has that assessment changed much in twenty-five years? There has certainly been a lot more archaeology done on the coastal plain. The coastal development boom at the end of the 20th century resulted in many small and large scale, legally-mandated archaeological investigations (see Heather & Tracy Millis, Herbert, Lawrence, and Lautzenheiser et al. this volume). At the same time, David Phelps retired from East Carolina University but was replaced by a prehistoric and historical archaeologist that, with the aid of a legion of graduate students, have expanded the academic investigations of the coastal plain (see Daniel & Moore, and Ewen this volume).

As North Carolina entered the 21st century, there were still many questions relating to the settlement of its coastal plain that remain unanswered. A steady rise in the region's commercial and residential development as well as the rising sea level and resulting coastal erosion lends a sense of urgency to discovering, studying, and protecting coastal North Carolina's rich cultural heritage. The contributors to this volume have examined the state of research and, as the reader will see, have presented a better, though still woefully incomplete, understanding of life on the coastal plain.

However, this volume is more than merely an update to the coastal section of the 1983 Mathis & Crow volume. It adds studies of the historic period (see Ewen, Mintz et al., Luccketti et al., Heath & Swindell, and Samford this volume) underwater archaeology (see Lawrence this volume), as well as the impact of cultural resource management (see Abbott et al., Herbert, Heather & Tracy Millis, Mintz et al., and Lautzenheiser et al. this volume), which have transformed North Carolina archaeology in the past quarter century. The authors, themselves, are comprised of State archaeologists, private contractors as well as academicians. The result is a more comprehensive assessment of the state of archaeology on the coastal plain as we move into the new millennium.

This volume is also different in the way that it is being published. By publishing online in PDF format, the information becomes accessible to all in a way that is both timely and affordable (it's free!). The reader can download the entire volume or individual chapters. They can be printed and bound or simply read them online. The information can be accessed anywhere there is an internet connection on all manner of devices. This will enable archaeologists to readily extract data from the documents and incorporate them (with proper citation) into their own research.

Whether you are reading this book on a Kindle at Starbucks, a computer at work, or a smartphone in the field, one thing has not changed. All these data were still collected by hand, mostly with shovel and trowel. Archaeology today is not that much different than it was twenty-five years ago. We have a few more tools at our disposal, but the most powerful interpretive tool continues to be our brain. Enjoy picking the brains of the contributors to this volume.

ARCHAEOLOGY IN THE NORTH CAROLINA MOUNTAINS

Thomas R. Whyte

The papers that follow under the Mountains Symposium Chapters heading are a sample of the seventeen originally presented at a symposium on North Carolina mountain archaeology held at Appalachian State University in October 2009. Those seventeen covered the gamut of space, method and theory, and time (11th millennium BC through 19th century AD), and they included presentations from academia, cultural resource management, state and federal agencies, and the Cherokee Nation. In these presentations it was revealed that we have learned a great deal more from the archaeological record since the onset of the Cherokee Project conceived by Joffre L. Coe in the 1960s. As Burton L. Purrington noted in his keynote address at the symposium, indeed, much has changed since 1983, when he wrote "Ancient Mountaineers: An Overview of the Prehistoric Archaeology of North Carolina's Western Mountain Region" (in *North Carolina Archaeology* edited by Mark Mathis and Jeffrey Crow). Burt's approach in that synthesis was to present existing evidence and current interpretations, but also to summarize with interesting questions remaining to be answered. The new archaeologists have risen to the challenge. The resulting changes in the practice of archaeology and a tremendous accumulation of new evidence were the impetus for the three symposia that provided the foundation for this volume, intended to serve as an update of the 1983 Mathis and Crow "Blue Book." Growing research programs in archaeology at Western Carolina University, Warren Wilson College, and Appalachian State University, renewed vitality of the Cherokee Project of the Research Laboratories of Archaeology at UNC-Chapel Hill, the booming business of cultural resource management, and an ever changing ontological climate have all contributed new evidence and new ways of looking at old discoveries in the Mountains.

INTRODUCTION TO THE CONFERENCE ON THE ARCHAEOLOGY OF PIEDMONT NORTH CAROLINA: OLD THINGS SEEN IN A NEW LIGHT

R. P. Stephen Davis, Jr.

On September 24–25, 2010, the third and final symposium on the archaeology of North Carolina was held at the University of North Carolina in Chapel Hill. The purpose of this symposium was to present the results of current and recent research, and to take stock of archaeology in piedmont North Carolina since the publication in 1983 of *The Prehistory of North Carolina: An Archaeological Symposium*, edited by Mark Mathis and Jeffrey Crow.

In lieu of a keynote address, an informal gathering was held Friday evening to remember our friend and colleague Trawick Ward, who passed away in June 2010. Trawick, who wrote the chapter on Piedmont archaeology for the Mathis and Crow volume, was to have been the keynote speaker, and no one could have been a better choice to reflect, with memorable humor, on what we have, and haven't, learned about the Piedmont's archaeological past over the last 27 years.

While 27 years isn't a long time, especially to an archaeologist, it is worth noting that of the six contributors to *The Prehistory of North Carolina* — David Phelps, Trawick Ward, Burt Purrington, Joffre Coe, Mark Mathis, and Jeff Crow — only Burt and Jeff Crow, co-editor and a non-archaeologist, are still with us. You could say that we are now fully within a new era of archaeological study in North Carolina.

In preparing my brief opening remarks to the conference, I re-read Trawick's chapter in the Mathis and Crow volume, as it had been more than a decade since I had last looked at it. The purpose of his chapter, titled "A Review of Archaeology in the North Carolina Piedmont: A Study of Change," was threefold: (1) to evaluate what we knew (in 1980) of the archaeology of piedmont North Carolina; (2) to assess the current state of research in the region; and (3) to identify issues important to future study. As I read, I was immediately struck by two things.

First, the issues Trawick considered and the criticism he offered clearly reflect an earlier era in Piedmont archaeology. Almost 30 years ago, an uneasy tension existed between CRM-based and what might be termed "academic" archaeology (with "academic" archaeology largely being a euphemism for Joffre Coe's archaeology program at the University of North Carolina). Prior to the early 1970s, almost all archaeology in North Carolina was undertaken either by universities or by state government. The numbers of yearly field projects were very low and budgets were extremely limited. In situations where more expansive projects were undertaken, such as the survey and salvage projects for Roanoke Rapids Reservoir, Lake Gaston, Lake Norman, Jordan Lake, and Falls of the Neuse Reservoir, the fieldwork was always woefully under-funded and financial support for subsequent analysis and reporting was non-existent. Despite these limitations, a workable culture-chronology had been worked out for much of the Piedmont. As for historical archaeology, most projects before 1970 were on state properties and most were conducted by historic sites archaeologist Stanley South.

All this changed with the passage of historic preservation and environmental legislation in the late 1960s and early 1970s. As cultural resource management came into its own during the 1970s, environmental engineering consulting companies, colleges, universities, and government agencies all hired archaeologists to take advantage of the financial resources that were increasingly available for undertaking and reviewing mandated compliance projects. This was also a time when new investments were being made in public infrastructure — from wastewater treatment plants and sewer lines to the electrical power grid, municipal water reservoirs, and the nation's highway system. In short, archaeologists increasingly were in demand and the money was flowing.

Coincidentally, Americanist archaeology in general was undergoing its own transformation during this period, as proponents of the "new" archaeology, with its focus on ecological issues, systems theory, statistical analysis, and the scientific method, challenged more traditional research emphases on archaeological culture definition and chronology building. In the North Carolina Piedmont, Joffre Coe and his students at UNC represented the traditional, or the status quo. It is no exaggeration that, in 1970, virtually everything known archaeologically about the North Carolina Piedmont was a direct result of archaeology conducted out of Chapel Hill. It is perhaps no surprise, then, that Coe would view with considerable suspicion the newly-arrived archaeologists at Wake Forest, Catawba College, UNC-G, and in both state government and private industry. North Carolina archaeology since the late 1930s had been a one-man show, and during the decade leading up to 1980, the archaeological community in North Carolina (and elsewhere) became much larger and intellectually more diverse. In many ways, Trawick's chapter reflects this uneasy changing of the guard.

As I think most would agree, the old distinctions and dichotomies within archaeology, whether it be contract versus academic, or historic versus prehistoric or precontact archaeology, have become progressively blurred and today have little to do with the true nature of archaeology. We are all interested in what went on in the past, and why; and how we go about conducting our research, or how it is funded, is less important than what we actually learn.

The second thing that struck me about Trawick's chapter was that many of the research problems he identified still remain. Perhaps the most important and relevant point he made is this: Regardless the question we are interesting in investigating, it is first necessary to acquire the appropriate archaeological data. While our theoretical frames of reference and the ways we structure our research questions may change, we will always need good data, because that is our tangible connection to the past. Without it to support our interpretations, we are just telling stories. In his concluding remarks, Trawick noted:

> These comments are made not so much as substantive criticisms, but rather to point out that problems in understanding the cultural-systemic processes operative in the Piedmont do not revolve around whether questions are asked before or after the data are gathered or whether assumptions are called inductive statements or test implications. The problems are with the data base: the extent of what is preserved in a site and the integrity of its spatial context. Southeastern archaeological sites in general and Piedmont sites in particular, under the best conditions, contain only traces of a small fraction of material technology. If the chances for answering the more complex questions are to be maximized, efforts must be concentrated at sites that have maximum data for such questions. Simply rephrasing the questions will only continue to befuddle the issues. [Ward 1983:79–80]

My own take on the situation is that, over the past 30 years, archaeologists working in the Piedmont <u>have</u> heeded this advice, striving to identify and excavate those sites with the greatest potential to address the important questions at hand. And, as we heard in some of the presented papers, important archaeological information also remains to be "excavated" from existing archives and collections.

One final point I would like to make is this: We should never become complacent with what we think we know about the past. When we do, we deny ourselves the opportunity to learn the unexpected. Each project we undertake should challenge us to question the status quo, not to be contrary or dismissive of the interpretations of previous researchers, but to see if our new data bring new insights. My own experiences, from the discovery of the Jenrette site where surface survey indicated there should be very little or nothing, to finding historic Catawba villages in places contrary to prevailing settlement models and conventional wisdom, have been sober reminders that there is always much more to learn about even some of our most basic assumptions.

Trawick's summary of Piedmont archaeology suggested that in 1980 we had a good basic understanding of the contact period, based on lengthy excavations at Upper Sauratown. During the subsequent two decades, Trawick and I, along with a group of remarkable graduate students, would demonstrate through the Siouan Project just how wrong that notion was. And in hindsight, we would be naïve if we thought that 20 years of excavations at a dozen sites was even barely sufficient to firmly grasp the many facets of this dynamic period of Indian history in the Piedmont.

Of the 11 papers presented in Chapel Hill, four are included in this volume under the heading Piedmont Symposium Chapters, and they cover the Piedmont Archaic, the Mississippian period, early Spanish explorations into the western Piedmont, and the archaeology of farmsteads and plantations in the historic era.

The following is a list of all the papers that were presented at the Piedmont Symposium:

A New Look at an Old Sequence: Time, Typology, and Intrusive Traditions in the Carolina Piedmont
I. Randolph Daniel, Jr.

Deep Testing for Archaeological Sites of the North Carolina Piedmont
Keith C. Seramur, Dawn M. Bradley, Loretta Lautzenheiser, and Susan E. Bamann

Schiele Museum Archaeology: Catawba Valley Red Hills and Brown Flood Plains
J. Alan May

Current Town Creek Research: What Do We Know after the First Fifty Years?
Edmond A. Boudreaux

The Burke Phase: Native Americans and Spanish Conquistadores in the Western North Carolina Piedmont
Christopher B. Rodning, David G. Moore, and Robin A. Beck, Jr.
An Update on the Dan River Phase
Jane M. Eastman

What Happens after Lawson? Archaeology of the Catawba Nation in the 18th and early 19th Centuries
Brett H. Riggs

Rediscovering Redwares from Piedmont North Carolina
Linda F. Carnes-McNaughton

Archaeology of Historic Farmsteads and Residential Sites in the North Carolina Piedmont: 1750–1825, Part I
Kenneth W. Robinson and Linda France Stine

GEOARCHAEOLOGICAL INVESTIGATIONS OF STRATIFIED SAND RIDGES ALONG THE TAR RIVER, NORTH CAROLINA

Christopher R. Moore

I. Randolph Daniel, Jr.

More than 25 years have passed since the late David Sutton Phelps wrote his seminal paper on the archaeology of the North Carolina Coastal Plain (Phelps 1983). In that paper, Phelps (1983:50) noted that among the more germane issues facing Coastal Plain archaeology were the need for the "…discovery and excavation of either single-component or stratified Paleo-Indian and Archaic period sites…" Over the last few years, archaeological research at East Carolina University has focused on understanding the geologic contexts of site burial and stratification in the upper Coastal Plain of North Carolina (e.g., Daniel et al. 2008; Moore 2009a, 2009b). The identification of stratified Archaic period sites in the Coastal Plain has great importance for our ability to place the Coastal Plain in its appropriate cultural-historical and environmental context. While it is beyond the scope of this paper to refine the cultural chronology for the region, the discovery and excavation of stratified sand ridges along the Tar River offer the potential to refine a Piedmont-based cultural chronology that is too often uncritically applied to the North Carolina Coastal Plain (Daniel et al. 2008, Phelps 1983).

Recent geoarchaeological investigations in the North Carolina Coastal Plain have shown the potential for locating stratified sites within relict aeolian and fluvial landforms (Choate 2011; Daniel 2002a, 2002b; Daniel et al. 2008; McFadden 2009; Moore 2009a, 2009b; Seramur and Cowan 2002; Seramur et al. 2003; Seramur 2003). Such sites offer the potential for refinement of the cultural-historical sequence for the Coastal Plain and the ability to begin to address substantive issues as diverse as climate change and human adaptation, technological change, subsistence, site function, geochronology, and site formation processes.

While the widespread occurrence of dune fields in Georgia and the Carolinas (Markewich and Markewich 1994; Ivester and Leigh 2003; Ivester et al. 2001) has been the focus of many geological studies—particularly in regards to their paleoclimatic implications—the archaeological potential of these landforms remains unrealized in North Carolina. Evidence for aeolian or wind-blown sedimentation processes has been observed along other Coastal Plain rivers within the Southeast. These studies suggest that dune deposits may be a significant locus for archaeological site burial within coastal riverine environments. On the northern Coastal Plain of North Carolina, archaeological studies of these relict landforms along the Tar River are aimed at contributing to the knowledge of past aeolian/fluvial environments as loci of prehistoric activity in the region (e.g., Daniel et al. 2008; Moore 2009a, 2009b). In particular, it is likely that the sediments and archaeological remains contained within these relict sand bodies are proxy measures of past climates and human activity. The significance of these landforms as a focus of archaeological study lies in their witness to the types of fluvial and climatological changes that occurred during the late Pleistocene and Holocene and the influences these changes had on prehistoric settlement in the area. That said, questions remain regarding the archaeostratigraphic integrity of these landforms and the ages of their cultural deposits. Below, we provide a brief background on the geology and geomorphology of the Tar River Basin along with source-bordering dunes and dune research in the Southeast. Following this, we describe some of the recent geoarchaeological research conducted by East Carolina University on stratified relict aeolian and fluvial sand ridges along the Tar River and will attempt to place these sites in a broader environmental and geoarchaeological context. Finally, we conclude by summarizing our findings and offering suggestions for future research.

LATE QUATERNARY GEOLOGY OF THE TAR RIVER BASIN

The Tar River has received limited geological studies of stratigraphy and terrace sequence development—most recently in the form of geological Masters Theses (e.g., Maddry 1979; Fournet 1990; Johnson 2007) and studies of flood dynamics in the wake of Hurricane Floyd (e.g., Riggs 2001). Many other studies are ongoing and have attempted to broadly define the sequence stratigraphy of the lower Coastal Plain and Tar River with specific reference to relict coastal terraces and scarps reflecting sea-level oscillations during the Quaternary (e.g., Ferrell et al. 2003). Of particular interest for this paper, Maddry (1979) illustrates stratigraphic cross-sections for areas along the Tar River in Greenville and just east of Rainbow Banks that show what appear to be aeolian dunes or aeolian drapes over fluvial braid-bars (referred to as stratigraphic unit Q6a) (Maddry 1979: Figure 1-17). This unit is composed of sand ridges (within the lower paleo-braidplain) that are described as, "...slightly weathered, structureless, light brown, fine to medium quartz sand" (Maddry 1979:49). Underlying unit Q6a is unit Q6. Stratigraphic unit Q6 is described as a sequence of slightly weathered fine to coarse sand and containing pebbles along with minor amounts of cobbles and boulders. This unit is also described as exhibiting braided topography and in many areas appears to be the stratigraphic unit comprising the paleo-braidplain of the Tar River.

The Tar River drainage basin has undergone dynamic changes throughout the late Pleistocene and early Holocene Epochs. These have included fluvial/hydrological changes, changes in sediment flux and discharge, changes in base flow (related to sea level), tectonic changes (e.g., isostatic adjustment) and changes resulting from climate. Within this framework of dynamic processes and constant change, the Tar River has produced a complex sequence of stacked braided and meander-plain terraces, a modern floodplain, and a river channel that is incised into underlying Cretaceous and Tertiary- sequences (Figures 1-1 and 1-2). All of these riverine terraces are superimposed on top of ancient fluvial, estuarine, and marine sequences of the North Carolina Coastal Plain that locally include various Cretaceous and Tertiary formations (e.g., Black Creek, Pee Dee, and Yorktown Formations) (Maddry 1979). Overlying these Cretaceous and Tertiary deposits is a thin cover of Quaternary sediments. These relatively thin Quaternary cover sands have been altered by fluvial and aeolian processes, episodic drought, and vegetational changes. The asymmetry of the Tar River valley is due to the fact that the river has been migrating to the south/southwest, preserving Pleistocene and Holocene sediments east and north of the river—possibly in response to regional neo-tectonic uplift (O'Driscoll et al. 2010).

Source-bordering dunes (discussed below) and/or fluvial (i.e., overbank levee) sand-sheets are present along terrace boundaries or escarpments overlooking either the paleo-braidplain or the modern meandering floodplain of the river. These terrace edges appear to have been vegetated and capable of capturing wind-blown and flood-deposited sediments from exposed braid-bars and meander point-bar deposits during times of drought or after large inputs of sand from storm events. Several smaller terraces are visible along sections of the Tar River

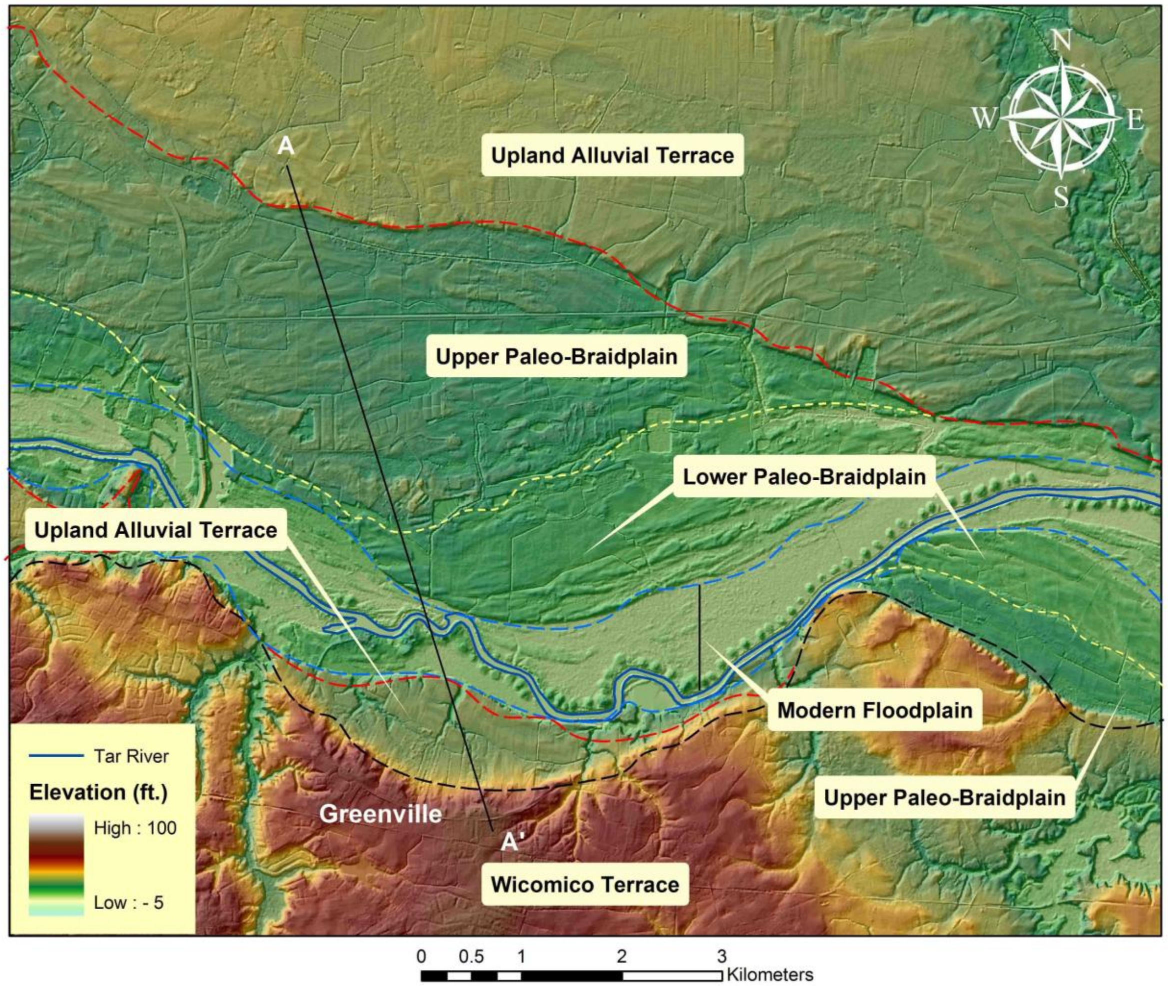


Figure 1-1. A geomorphic map of the lower Tar River Basin in the vicinity of Greenville, NC (Pitt County) based on analysis of LiDAR elevation data for the Tar River Basin produced by the NCDOT Floodplain Mapping Program (http://www.ncfloodmaps.com/). Riverine terrace sequences include: 1) upper alluvial terrace, 2) upper paleo-braidplain, 3) lower paleo-braidplain and 4) modern Tar River floodplain.

Note: Transect A to A' used to develop a generalized topographic and geologic schematic for the Tar River near Greenville, NC (Figure 1-2).

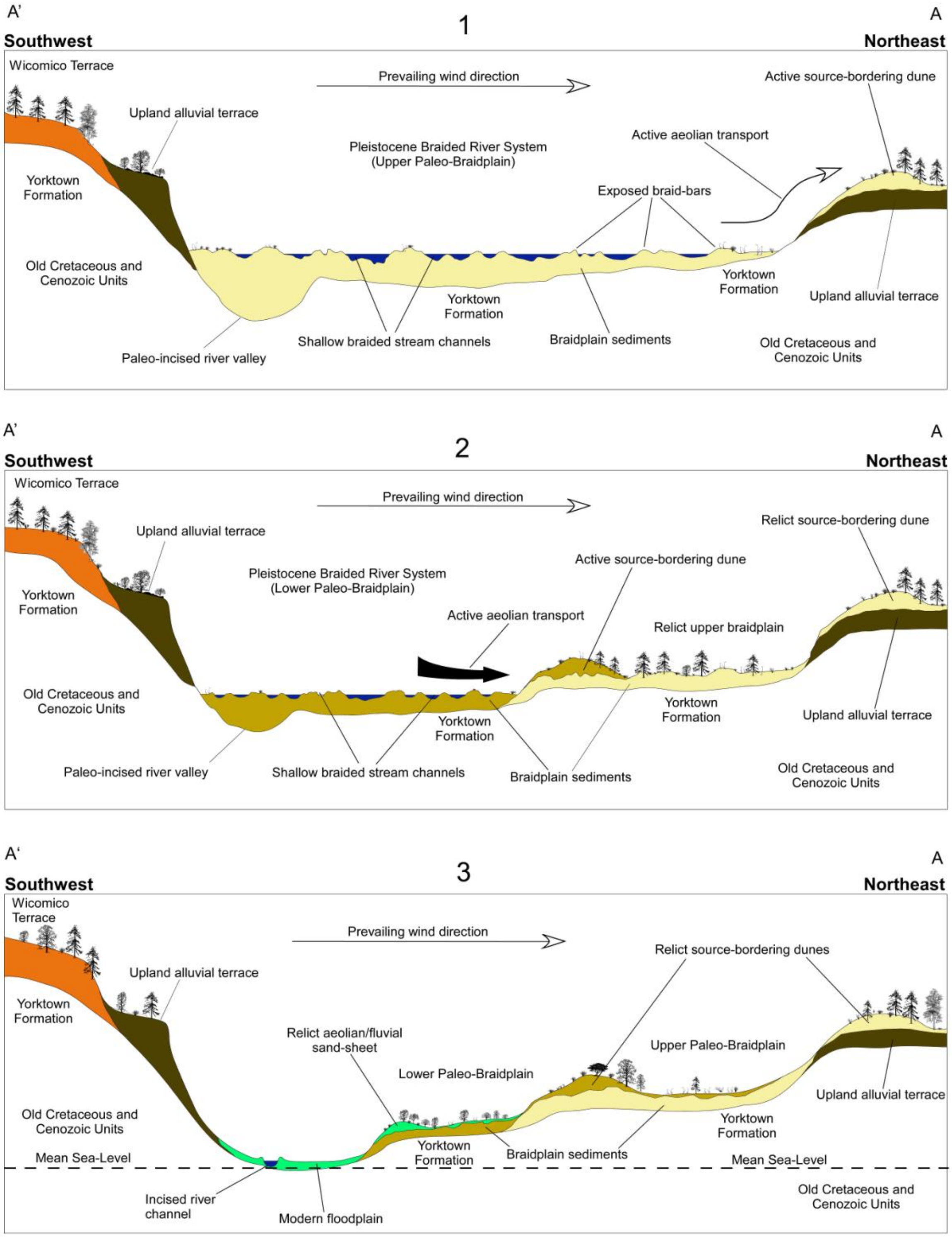


Figure 1-2. A generalized topographic and geologic schematic representing the evolution of the Tar River Basin in the upper Coastal Plain during the 1) Pleistocene, 2) Late Pleistocene and 3) Holocene. (Map is not to scale).

and may represent time-transgressive downcutting with shifts in the fluvial system related to sea level and/or climate change (affecting vegetation and sediment load to the river). These hydrologic and fluvial channel shifts have associated dunes along terrace escarpments that formed during several successive braided river episodes. Terrace deposits, including aeolian dunes and levees decrease in age with decreasing distance to the current location of the river (i.e., more recently deposited aeolian and fluvial sediments are situated on more recent riverine terraces).

Soller (1988) describes aeolian processes and dune fields overlying alluvial terraces for the Cape Fear that are analogous to those along the Tar River and may be of similar ages. Soller also uses radiocarbon (^{14}C) dates from peat and macerated wood to show that younger (early to mid Holocene) dunes are present very close to the current position of the Cape Fear while dunes farther away from the river appear to be much older (i.e., >40ka). This suggests at least two periods of dune formation and may reflect both climate change and changes in flow regime of the river at the time of deposition (i.e., braided vs. meandering) (Figure 1-3). Together, these geological studies provide a baseline for understanding the underlying stratigraphy and geometry of relict terraces along other southeastern rivers and suggest mechanisms for reworking of surface deposits into relict aeolian and fluvial landforms capable of stratifying archaeological occupations.

AEOLIAN DEPOSITION AND SOURCE-BORDERING DUNES

In the Southeast, relict (source-bordering) dunes and sand-sheets occur intermittently along coastal rivers (Markewich and Markewich 1994) (Figure 1-4). Geologists have recognized relict aeolian landforms along southeastern rivers as a potential source of paleoenvironmental data (e.g., Daniels et al. 1969; Ivester et al. 2001). The climatic conditions and processes that led to dune formation, as well as the age of aeolian deposits, have been the subject of recent investigations by both geologists and archaeologists in the region (Gunn and Foss 1992; Ivester et al. 2001; Otvos and Price 2001; Seramur and Cowan 2002, 2003; Seramur et al. 2003; Soller 1988; Zayac et al. 2001). For example, in parts of the Southeast, large-scale aeolian transport was very common between 30,000 and 15,000 years ago (Ivester et al. 2001). This time period is associated with the late glacial period of the Wisconsin and represents a time when the climate was very cool and dry. The Wisconsin glacial environment was characterized by strong unidirectional winds (common to both glacial and transitional glacial-interglacial climates) (Carver and Brook 1989). The combination of a cool/dry climate and strong unidirectional winds resulted in the development of large source-bordering dune complexes immediately adjacent and parallel to many of the coastal rivers in the Southeast (Markewich and Markewich 1994). Relict source-bordering dunes typically formed adjacent to streams and quite often near the confluence of tributaries and major river channels (Daniels et al. 1969; Markewich and Markewich 1994). Typical source-bordering dunes/sand-sheets average from 1-7 meters in height and less than 1 kilometer in length. These aeolian landforms are composed of highly permeable medium to fine quartz sands (Markewich and Markewich 1994).

During the late Pleistocene, the sand source for relict dunes came from sediments carried within the bedload of coastal rivers and from accumulations of sediment as braided stream deposits within river floodplains (Ivester et al. 2001; Leigh 2004, 2006, 2008). Variable and fluctuating discharge would have provided fresh sediment to the floodplain during wet climates or during seasonal monsoonal events (e.g., Goman and Leigh 2004). These sediments may

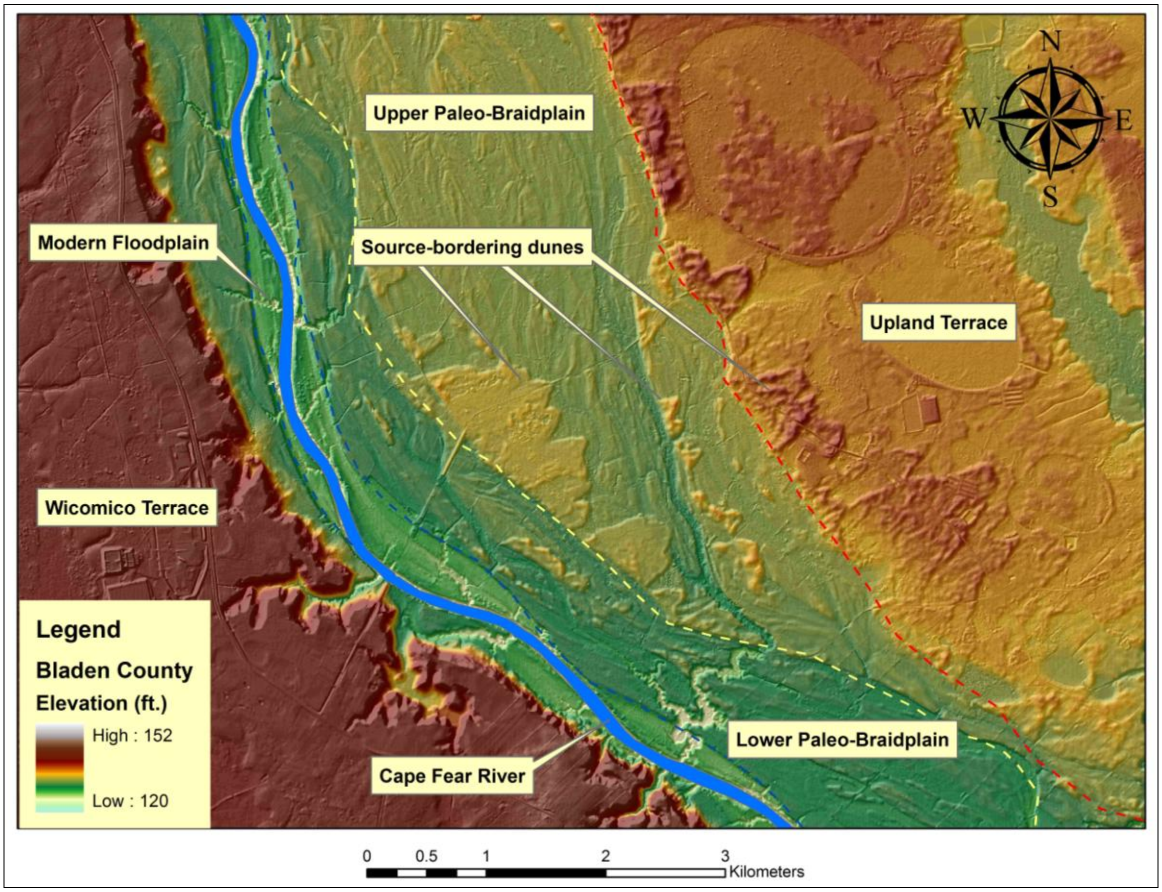


Figure 1-3. A spectacular example of relict source-bordering dunes on river terrace escarpments along the Cape Fear River, Bladen County, North Carolina.
Note: Large parabolic, infilled parabolic, aeolian sand-sheets along terrace escarpments, Carolina bays, and extensive braided river topography are clearly visible on this LiDAR image. LiDAR data were obtained from the North Carolina Floodplain Mapping Program.

remain largely inactive (i.e., locked in by vegetation) except during periods of pronounced climate change events or climatic disequilibrium (e.g., drought, fire, or after large flood events) (e.g., Marlon et al. 2009; Viau et al. 2006). Subsequent droughts or seasonal reductions in water discharge resulted in exposed sediments that provided a source of sand for transport onto adjacent terrace escarpments. Centimeter-scale depositional events may have been localized along lower paleo-braidplain scarps during much of the mid to late Holocene—with little to no aeolian transport away from local point-sources of sands along the river (i.e., thin, source-bordering deposits).

In this scenario, terrace edges would likely be the first place where standing vegetation would be encountered by winds blowing across an otherwise unvegetated braidplain (during the late Pleistocene) or more recently deposited overbank sands or point bars (during the Holocene). Vegetation along terrace scarps would cause sand to settle out and accumulate along the terrace edge as source-bordering aeolian dunes/sand-sheets. This scenario has been argued to be the primary reason why southeastern dunes so often lack any discernable internal aeolian sedimentary structures or layers that represent different depositional events (Daniels et al. 1969; Markewich and Markewich 1994:23). A lack of observable sedimentary structure may also be due to textural homogeneity with dune deposits consisting almost entirely of medium to fine sand.

Depositional events likely varied in both scale and intensity throughout the late Pleistocene and Holocene and in response to cycles in climate. The exact nature of this environmental change, however, remains to be determined. For example, whether depositional events were a result of periodic aridity in the eastern United States during the late Pleistocene to mid Holocene (e.g., Cronin et al. 2005; Zayac et al. 2001), early to mid Holocene increased storminess or overall wetter conditions than present (e.g., Goman and Leigh 2004) (large-scale flood events and aeolian reworking of flood deposited sediments) or Holocene millennial-scale climatic cyclicity (e.g., Bond et al. 1997, 1999, 2001; Mayewski et al. 2004) is uncertain. In any case, climate change was likely involved.

Although the nature of dune development and aeolian processes during the Holocene was on a smaller scale than that which existed during the late Pleistocene (Ivester et al. 2001), limited aeolian activity has been proposed as a significant burial mechanism for archaeological sites within river drainages of the Southeast (e.g., Daniel et al. 2008; Gunn and Foss 1992; Seramur and Cowan 2002, 2003; Seramur et al. 2003; Wagner and McAvoy 2004). While many of the larger dunes are Pleistocene in age (Ivester et al. 2001; Ivester and Leigh 2003), many others appear to be younger with the most recent aeolian activity in the southeast occurring from ~15,000 to 3,000 radiocarbon years ago (Markewich and Markewich 1994; Soller 1988; Zayac et al. 2001). Archaeological and geophysical data (GPR) from the Tar River suggest that many of these aeolian deposits occur as relatively shallow "drapes" of wind-blown sediment overlying remnant Pleistocene stream braid-bars (Moore et al. 2006; Moore 2009b). Evidence that will be discussed below suggests that riverine terraces preserved to the east and north of the Tar River exhibit relict aeolian and aeolian/fluvial deposits of sufficient thickness to have sequentially buried and stratified archaeological cultures spanning the late Pleistocene and Holocene.

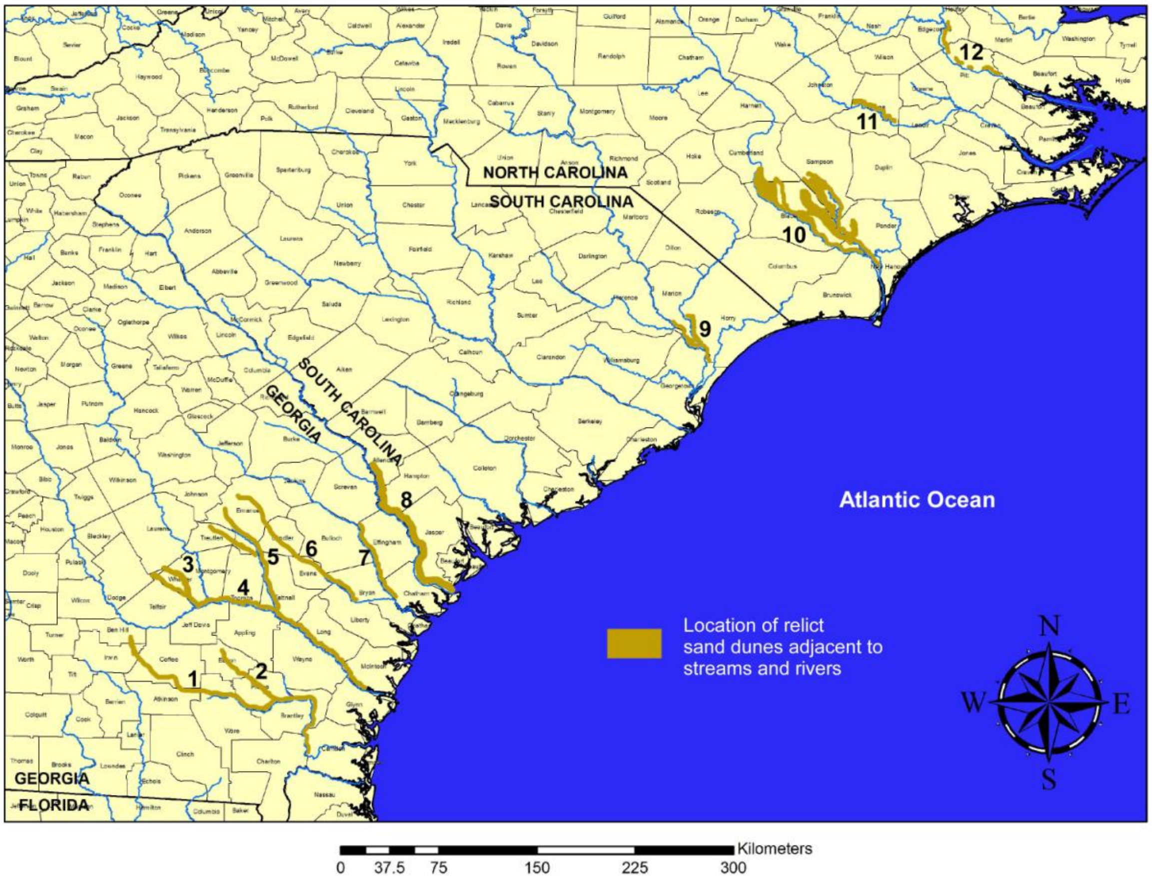


Figure 1-4. Known relict source-bordering dune regions along coastal rivers in Georgia, South Carolina, and North Carolina indicated on map are 1) Satilla River, 2) Alabaha River, 3) Little Ocmulgee River, 4) Altamaha River, 5) Ohoopee and Little Ohoopee Rivers and Pendleton Creek, 6) Canoochee River, 7) Ogeechee River, 8) Savannah River, 9) Great Pee Dee River, 10) Combined Cape Fear and Black Rivers, 11) Neuse River and 12) Tar River. (after Markewich and Markewich 1994:4)

Note: Areas along the Tar River with relict dunes have been added by the authors.

RESEARCH PROBLEMS

Geoarchaeological excavations at the Barber Creek Site (31Pt259) (Daniel 2002b; Daniel et al. 2008) and elsewhere along the Tar River (Moore 2009b) lead to the following general hypothesis: Landform aggradation and archaeological site burial along the Tar River resulted from localized and episodic aeolian deposition during cool/dry climatic events over the Holocene (ca. 11,450 CALYBP–present) [Note: All ^{14}C dates are reported in calendar years BP unless otherwise noted]. Some fluvial contributions from flood events are also evident—particularly for lower paleo-braidplain sites. This research suggests that stratified archaeological remains within these sediments preserve a record of both prehistoric human adaptations to local conditions and changes in depositional processes marking regional climatic change in the southeastern United States. In particular, work has focused on illuminating the stratified Archaic (11,450-3,200 CALYBP) and Woodland (3,200-1,000 CALYBP) period occupations along the Tar River and establishing the respective ages of those components. Understanding potential differences in the age and intensity of site use will allow the modeling of prehistoric hunter-gatherer settlement in the region in response to environmental change during the late Pleistocene to late Holocene.

Research conducted over the last few years has attempted to address specific questions concerning the archaeology and geomorphology of the Tar River Basin (discussed below). The objectives of this research include, 1) refining the existing cultural chronology, 2) assessing site integrity and site formation processes, 3) establishing a landform geochronology, and 4) providing a framework for understanding prehistoric technological change and settlement adaptations to climate change in the North Carolina Coastal Plain. In addition, this research has attempted to characterize the overall lithostratigraphic nature of shallow late Quaternary aeolian and fluvial deposits along the Tar River (Moore 2009b). This was done in order to understand landform geomorphology and site formation processes as they relate to changing fluvial and aeolian depositional environments. Understanding these processes is of critical importance to archaeological and paleoenvironmental studies in the region. Below are a series of research questions with testable implications derived from our hypothesis.

Research Problem 1: Geoarchaeological survey

A geoarchaeological survey was initiated as part of this project to enable the archaeological occupations at Barber Creek (31Pt259) (Daniel et al. 2008) to be placed in a broader environmental context. A transect along the Tar River was surveyed to address the following questions: *Do additional stratified sand ridges occur along the Tar River and where are they located? If other stratified sites are present, what archaeological components are present in them?*

Data collected for this study included extensive archaeological surveys of suspected relict aeolian/fluvial landforms selected from analyses of aerial imagery and high-resolution Light Detection and Ranging (LiDAR) elevation data produced by the North Carolina Floodplain Mapping Program. Suspected source-bordering dunes and landforms with potential for buried/stratified archaeological sites were selected based on the geology and terrace sequences of the Tar River. Final selection of sites for archaeological testing was based on results of archaeological surveys (i.e., shovel testing), distance of landforms from the active river channel or paleo-river channels, and the position of landforms along relict alluvial terraces of the river. Suspected sites containing buried archaeological sequences were sampled with test excavations to examine buried cultural components and archaeostratigraphy, sampled for luminescence and radiocarbon dating, and cored for reconstruction of sedimentological lithofacies. Ground penetrating radar (GPR) was also used to evaluate landform thickness and stratigraphy, as well as to look for evidence of preserved sedimentary structures (e.g., aeolian cross-bedding) (Moore 2009b).

Research Problem 2: Geoarchaeology: site formation and chronology

Three interrelated questions are addressed with respect to geoarchaeology: *First, how were Barber Creek and the other Tar River sites formed and what is the chronology of site formation and prehistoric occupations at these sites? Second, what implications do the archaeological sequences present within buried sites along the Tar River have for understanding the fluvial history of the Tar River Basin? Third, to what degree does sedimentation vs. bioturbation contribute to site formation at Barber Creek and other sites along the Tar River?*

Geoarchaeological investigations thus far, suggest that the upper sand unit at Barber Creek (~1 meter) is a relict aeolian sand-sheet with minor contributions from fluvial deposition (Daniel et al. 2008; Moore 2009b). Further work was done to test this claim at other probable buried/stratified sites located along the Tar River. Sedimentological studies were also performed to evaluate site formation and site burial by aeolian or fluvial processes (e.g., Seramur and Cowan 2002; Daniel et al. 2008).

Cultural material recovered to date, suggests that Early Archaic through Early Woodland components are present at Barber Creek (Daniel 2002a; Daniel et al. 2008). Archaeological excavations were conducted at several other sites along the Tar River to sample their occupation sequences. Chronometric dates were also obtained from several sites to provide absolute dates for those occupations and to help determine the timing of site burial events.

With respect to the fluvial history of the Tar River, the presence of stratified archaeological remains in aeolian or fluvial sediments presumably preserves a record of both prehistoric human adaptations to local conditions and changes in depositional processes. Aeolian and fluvial deposits along coastal rivers may mark regional climatic change in the southeastern United States. The accumulation of wind-blown or aeolian deposits is usually associated with periods of cooler and dryer conditions (e.g., Markewich and Markewich 1994; Ivester et al. 2001; Ivester and Leigh 2003). And while it is not yet certain whether source-bordering aeolian accumulations along the Tar River were a response to overall dryer paleoclimatic conditions (e.g., drought) or periods of rapid climate change leading to ecosystem stress and increased fire (e.g. Marlon et al. 2009), conditions favoring riverine dune or aeolian sand-sheet formation in the Southeast likely included at least seasonal reductions in river discharge (Ivester and Leigh 2003). In addition, it appears likely that periodic and large-scale flood events may also be a contributing factor to site formation processes along the Tar River (e.g., braid-bars and levees).

The depositional events recorded at the Tar River sites and elsewhere in the Southeast (e.g., Zayac et al. 2001) are consistent with recent paleoclimate data indicating rapid climate change events that occur on millennial time-scales for the Holocene (e.g., Bond et al. 1997; Mayewski et al. 2004; O'Brien et al. 1995; Overpeck and Webb 2000; Springer et al. 2008; Steig 1999; Willard et al. 2005; Viau et al. 2002, 2006). Surely, such events—particularly significant droughts—influenced prehistoric use of the area. The timing and magnitude of these wet-dry cycles and their impact on prehistoric settlement along the Tar River can be evaluated by integrating sedimentological and archaeological data. These data can help to distinguish depositional events and to define occupational horizons (e.g., Brooks and Sassaman 1990; Brooks et al. 1996; Leigh 2001).

With regard to our third question, existing archaeological data (e.g., artifact clusters, archaeological features, and stratigraphically correct chronometric dates) suggest that bioturbation (displacement and mixing of artifacts within the soil column) has not greatly compromised the stratigraphic sequence at Barber Creek (Daniel et al. 2008) or at other paleo-braidplain sites along the Tar River where buried sites have been located (Moore 2009b). Further work is needed to substantiate this interpretation since bioturbation can be a problem with respect to the burial and/or translocation of artifacts in some sandy sediments (e.g., Leigh 2001).

Although bioturbation has been offered as the primary mechanism of site burial for sandy coastal environments and upland interfluves in the Southeast (Leigh 1998a, 1998b, 2001, 2004; Michie 1990), it is unclear if bioturbation is a significant factor in site formation in all sandy sites. For example, Michie's (1990) analysis of artifact frequency distributions (suggestive of bioturbation) relies heavily on assumptions of site formation processes but lacks quantitative sedimentological or chronometric data to support bioturbation claims. And while Leigh (1998b) makes a convincing case for bioturbation in upland sandy sites in the North Carolina Sandhills, more work is needed to determine if bioturbation is the principle mechanism of artifact burial for all upland sites, particularly in upland environments with relict dunes (e.g., Moore and Brooks 2011). Indeed, stratified sandy sites such as the Cactus Hill Site in Virginia (Wagner and McAvoy 2004) and Carolina Bay sand rims and relict dunes in South Carolina (Brooks et al. 1996) have demonstrated archaeological sequences in correct stratigraphic order, intact rock clusters and hearths (suggestive of intact occupation surfaces), and sedimentological profiles consistent with episodic depositional events throughout the Holocene (e.g., Brooks 1990; Brooks and Sassaman 1990; Brooks et al. 1996; Gunn and Foss 1992; Wagner and McAvoy 2004). In short, these works belie the notion that artifacts are significantly bioturbated in all sandy sites, and suggest that site integrity at sandy sites should be assessed on a case-by-case basis.

Space does not allow us to explicitly address the issue of bioturbation here. We will do that in a subsequent publication. Suffice it to say that while we acknowledge some stratigraphic mixing of archaeological deposits has occurred to varying degrees in the sites discussed here, we submit that the overall stratigraphic integrity of the sites in our study is relatively good. This inference is borne out by multiple lines of evidence including archaeostratigraphy, granulometry, ^{14}C dating, and geochronology of sediments derived from OSL dating (discussed below). Moreover, if episodic aeolian and/or fluvial sedimentation has occurred over the course of the Holocene (as indicated by these multiple data sets), then the potential exists that the remains of prehistoric occupations have been gradually buried and preserved. Thus, these geologic deposits represent a "time-capsule" for understanding the culture-history of the Tar River and serve as a proxy for understanding climate change and cultural adaptation.

METHODS

A geoarchaeological approach was used to address the questions posed by this research. The methods used include Geographic Information Systems (GIS) analysis, archaeological excavation, close-interval granulometry or grain size analysis, ground penetrating radar (GPR), detailed backplotting of piece-plotted artifacts, and chronometric dating using optically stimulated luminescence (OSL) and radiocarbon (^{14}C) dating of geological and archaeological deposits. These methods were designed to (1) identify potential relict aeolian landforms along the Tar River using LiDAR data within a GIS database, (2) archaeologically test those landforms to determine if they contain buried archaeological remains, (3) analyze archaeological remains to determine the archaeological sequences they might contain, (4) develop a luminescence and radiocarbon geochronology of selected landforms and archaeological occupations, and 5) reconstruct site formation processes.

The recognition of possible relict aeolian dunes and/or fluvial sand ridges along the Tar River was made possible through the use of recently released very high-resolution laser altimetry data made in the wake of Hurricane Floyd to produce more accurate flood prediction maps. Also known as LiDAR (Light Detection and Ranging), these data allow 3D modeling of low elevation/low relief terrain. LiDAR data provide extremely high-resolution (+/- 25 cm) digital elevation models and have allowed the recognition of complex fluvial deposits including a stacked sequence of Pleistocene braided terraces, meander deposits, relict braid-bars, overbank levees, and numerous source-bordering dunes, aeolian sand-sheets, Carolina bays, and paleo-estuarine shorelines within the North Carolina Coastal Plain (e.g., Moore 2009b). Dunes along many southeastern rivers have distinct U-shaped parabolic, transverse, or irregular morphologies (e.g., Figure 1-3). LiDAR reveals these distinct landform signatures in ways not possible before.

An interpretation of the depositional environment(s) for sand ridges along the Tar River was achieved through the use of granulometry or grain size analysis (e.g. Friedman 1961, 1979; Leigh 1998a). Sediments from archaeological sites were compared with modern Tar River alluvium, overbank levee, and known dune sediments with the use of bivariate plots of sediment statistical parameters such as mean grain size, sorting, standard deviation, kurtosis, and coefficient of variation (cv). Detailed gravel, sand fraction, and percent fines (silt and clay) plots were also produced for all sites from the ground surface to just above unconformable boundaries with underlying marine/estuarine sandy clays (Moore 2009b). Although the details of the granulometry study are beyond the scope of this paper, publication of this work is forthcoming. Previous work at the Barber Creek Site (31Pt259) also indicated aeolian burial processes for sediments based on scanning-electron microscopy (SEM) analysis of individual sand grains (Seramur and Cowan 2002).

This research relies heavily on a dating technique known as luminescence or optically stimulated luminescence (OSL) dating (Huntley et al 1985; Murray and Roberts 1997). Generally speaking, OSL provides a measure of the amount of time sediments have been buried since last exposed to sunlight before deposition. During depositional events, exposure to light or heat resets any acquired luminescence signal. After burial, sand grains are exposed to naturally occurring background radiation, causing ionized electrons to become trapped within defects in the crystalline structure of the sand grains (The total amount of radiation received by the sediment since last burial is termed the equivalent dose). Equivalent dose is estimated in the lab by artificially irradiating the sample with a known dose to model the OSL sensitivity of that particular sample (Feathers 2003).

The goal of luminescence geochronology is to establish the timing of burial events (Aitken 1998). Problems with determining the timing of burial events may arise if depositional events occur at night or within water or have very short travel paths. Fluvial deposition of sediments may occur in very turbid conditions and cause attenuation of sunlight and thus incomplete resetting or "zeroing" of previously inherited luminescence. In these cases, partially bleached grains will contribute to age overestimations due to the inherited or residual luminescence signal carried over from a previous depositional site. In many cases, partially bleached grains may be inferred from positively skewed dose distributions (Murray et al. 1995; Olley et al. 1998; Lepper et al. 2000; Lepper and McKeever 2002).

In spite of these problems, OSL dating is particularly well suited to address issues of cultural chronology and timing of depositional events for several reasons. First, OSL dating has demonstrated utility in the Southeast by providing reliable and accurate ages for dune chronologies (Leigh et al. 2004; Ivester et al. 2001). Secondly, OSL dates the actual sedimentary event that buried archaeological materials rather than associated carbon (which may or may not be linked with cultural deposits). Thirdly, close examination of single-aliquot or single-grain equivalent dose distribution data and radial plots can be used to interpret site integrity in ways not possible by traditional radiocarbon dating (Bateman et al. 2003; Boulter 2006; Feathers 2003; Frederick et al. 2002; Rhodes 2011).

Traditional single-aliquot OSL dating looks at small discs covered with several hundred to several thousand sand grains and calculates equivalent dose (De) age estimates based on an average of all grains. More recent developments in single-grain OSL dating (e.g., Bateman et al. 2003; Boulter et al. 2006; Feathers 2003, 2006b; Frederick et al. 2002) offer greater dating precision and the potential for more readily identifying the true time of burial. For example, single-grain dating is particularly appropriate for determining burial age from slightly mixed or bioturbated sediments, sediments with partially bleached grains, or in shallow and slowly accreting deposits, such as source-bordering dunes or fluvial braid-bar and overbank levee deposits (e.g., Feathers et al. 2006b) by clearly defining discrete populations of equivalent dose data.

Burial-age is evaluated based on an examination of equivalent dose distributions along with comparisons with archaeostratigraphy and correlation with radiocarbon dates (where available). Thus, the OSL chronology developed for each site is based on stratigraphic consistency between observed cultural horizons and/or radiocarbon dating along with examination of equivalent dose distributions. Either a central age model or a minimum age model are applied as appropriate based on individual luminescence age distributions for estimating true burial age (Feathers et al. 2006b; Galbraith et al. 1999). Moreover, temporally diagnostic artifacts, recovered from archaeological testing, should provide an independent age control or “ballpark” age range consistent with the OSL dates (e.g., Feathers et al. 2006a).

Use of the minimum age model in OSL dating should not be confused with the use of "minimum age" estimates derived from very old ^{14}C dating. In the latter case, the minimum age implies the potential for much greater antiquity, while the former (OSL minimum age model) is a method for extracting the true age of the desired or studied burial event in question. The minimum age model age estimate is derived from a subset population of sand grains from positively skewed or multimodal equivalent dose distributions in cases were partial-bleaching or bioturbation of 'older' grains into younger sediments is suspected or inferred from analysis of luminescence and or other proxy data (Galbraith et al. 1999). In the later case, the archaeostratigraphy and corroborating ^{14}C dates become paramount to the application of various age models and the development of an OSL geochronology (e.g., Feathers et al. 2006).

DISCUSSION

Archaeological Survey

An approximate 80 km stretch of the Tar River from the confluence of Fishing Creek in northern Edgecombe County to Tranter's Creek in northeastern Pitt County was the focus of this survey (Figure 1-5). Shovel test survey and archaeological testing have identified numerous sites along the Tar River in Pitt and Edgecombe counties in North Carolina with potential for buried/stratified archaeological occupations. Test Unit excavations and geoarchaeological analysis of five of these sites (including the Barber Creek site) indicate site burial by primarily aeolian processes may be more common than once believed. In addition to ongoing archaeological investigations at the Barber Creek Site, Test Unit excavations were conducted at four sites identified during the shovel test survey. These sites are located along a stacked sequence of alluvial terrace formations, including a lower and upper paleo-braidplain and a more elevated upland alluvial terrace. Paleo-braidplain sites include Squires Ridge (31Ed365) and Owens Ridge (31Ed369), while the upland terrace sites include, Hart Ridge (31Pt606) and Taft Ridge (31Pt605). The Barber Creek Site (31Pt259) is located along the same lower paleo-braidplain terrace as Squires Ridge (31Ed365) but is ~40km south by way of the Tar River. Two (2x2 meter) Test Units were excavated at each site using standard archaeological procedures, including flat-shovel skimming of 10 cm arbitrary levels and piece-plotting. Diagnostic artifacts such as projectile points or pottery were piece-plotted *in-situ* when possible along with cobbles, cobble fragments, and obvious lithic tool fragments.

Although no definitive Paleoindian occupations were located, analysis of archaeological data from three of the five sites where Test Unit excavations were conducted revealed the presence of stratified Early Archaic through Woodland occupations (i.e., Barber Creek, Squires Ridge and Owens Ridge) (Figures 1-6, 1-7, and 1-8). While earlier occupations cannot be ruled out, one site produced diagnostic artifacts typical of Middle and Late Archaic occupations (i.e., Taft Ridge), while another produced shallow and generally non-diagnostic Woodland period lithics and ceramics (i.e., Hart Ridge) (Figure 1-8). Given the limited nature of Test Unit excavations conducted at these sites (only exception being the Barber Creek Site), it is likely that all five sites would produce additional components with more extensive testing. Interestingly, while Early Archaic components were identified for the lower paleo-braidplain sites (Barber Creek and Squires Ridge) and the upper paleo-braidplain site (Owens Ridge), no Early Archaic occupations were identified for either of the upper alluvial terrace sites (Hart and Taft Ridge) (see Figure 3-5 in Daniel and Moore, this volume). As stated above, a lack of additional components may simply be due to very limited Test Unit excavations. Based on the presence of undiagnostic cultural material at Taft Ridge below both Late and Middle Archaic occupations, the presence of earlier occupations at this site would not be unexpected with additional excavations.

Sedimentological and luminescence age data indicate that both Taft Ridge and Hart Ridge are relatively stable Pleistocene-age landforms, and, as such, remain potential candidates for late Pleistocene and early Holocene occupations. These landforms were of particular interest due to the fact that they are situated along an ancient alluvial terrace, overlooking relict Pleistocene braided river deposits and would not have been affected by late Pleistocene or Holocene fluvial scouring. Additionally these landforms were, at particular times during the late Pleistocene, immediately adjacent to active braided river channels. Thus, these landforms would

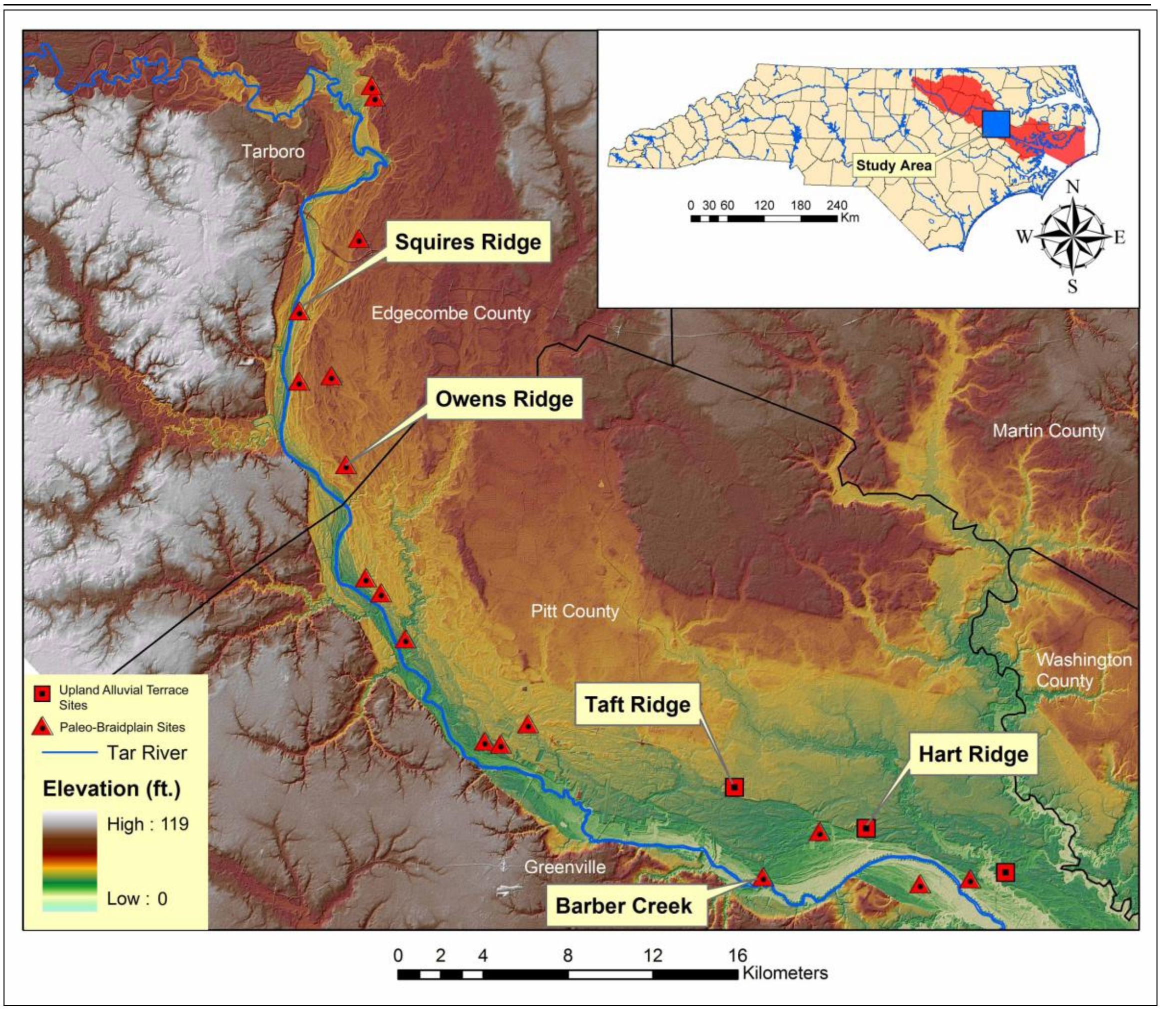
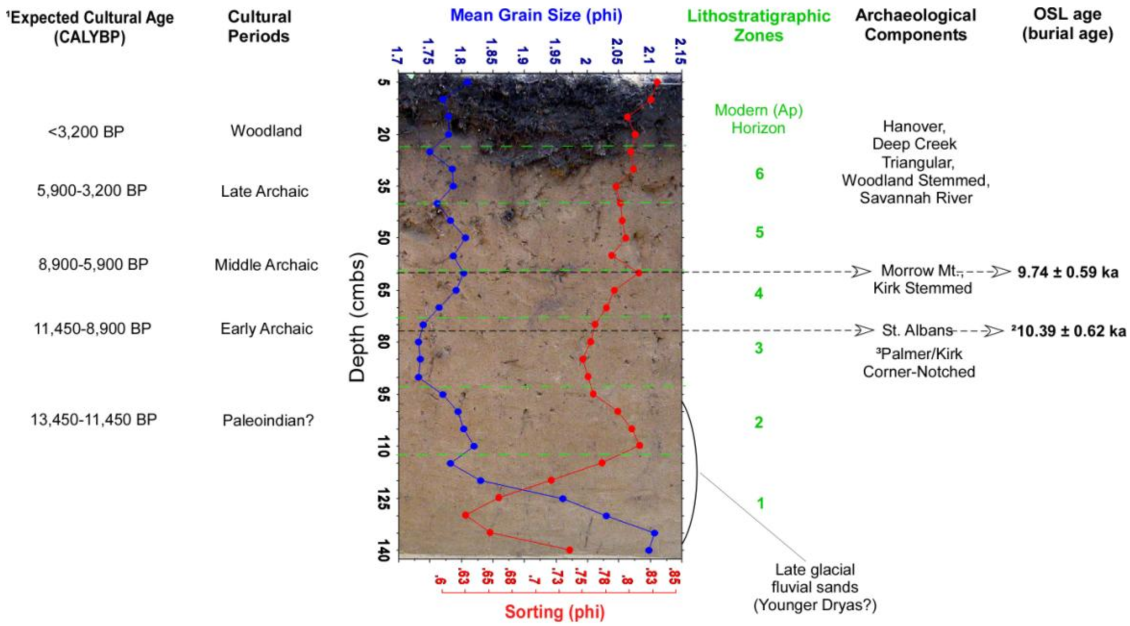


Figure 1-5. Locations of all archaeological sites identified during shovel test survey of selected sand ridges between Tranter's Creek (northeastern Pitt County) and Tarboro, North Carolina.

(A)



(B)

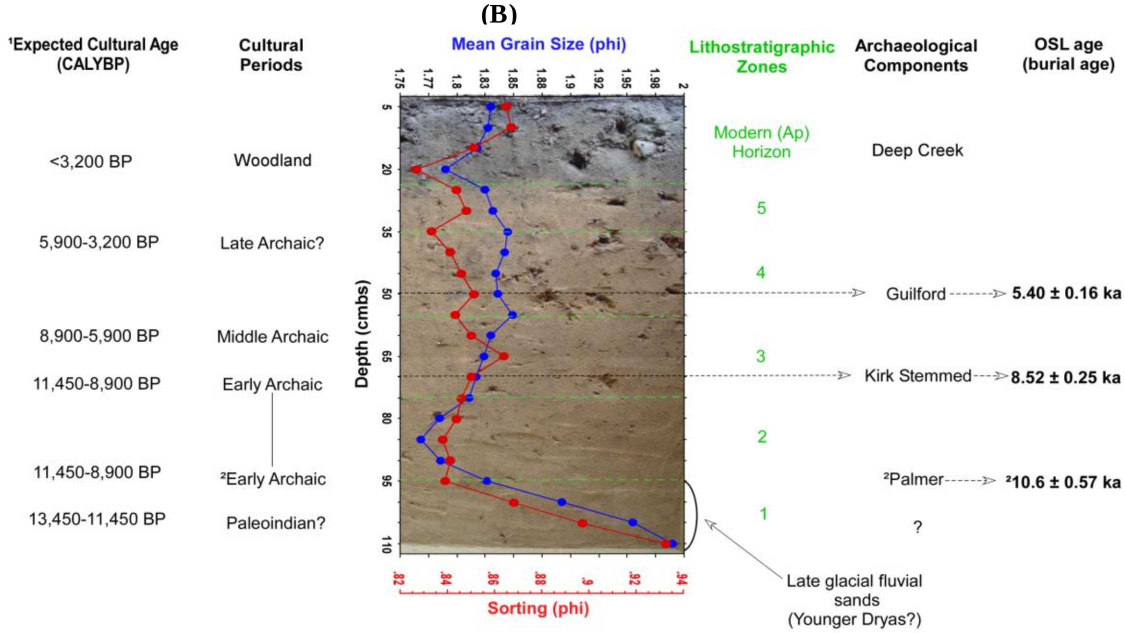


Figure 1-6. Archaeostratigraphy, interpreted lithostratigraphic zones, and luminescence (OSL) geochronology for the (A) Barber Creek Site (31Pt259) and (B) Squires Ridge (31Ed365). [1]Expected cultural age based on established (calendar year) time scale for Paleoindian and Archaic sub-periods (Anderson 2001). [2]OSL samples calculated using minimum age model (Galbraith et al. 1999). See text for explanation. [3]General stratigraphic position for Corner-Notched points at Barber Creek.

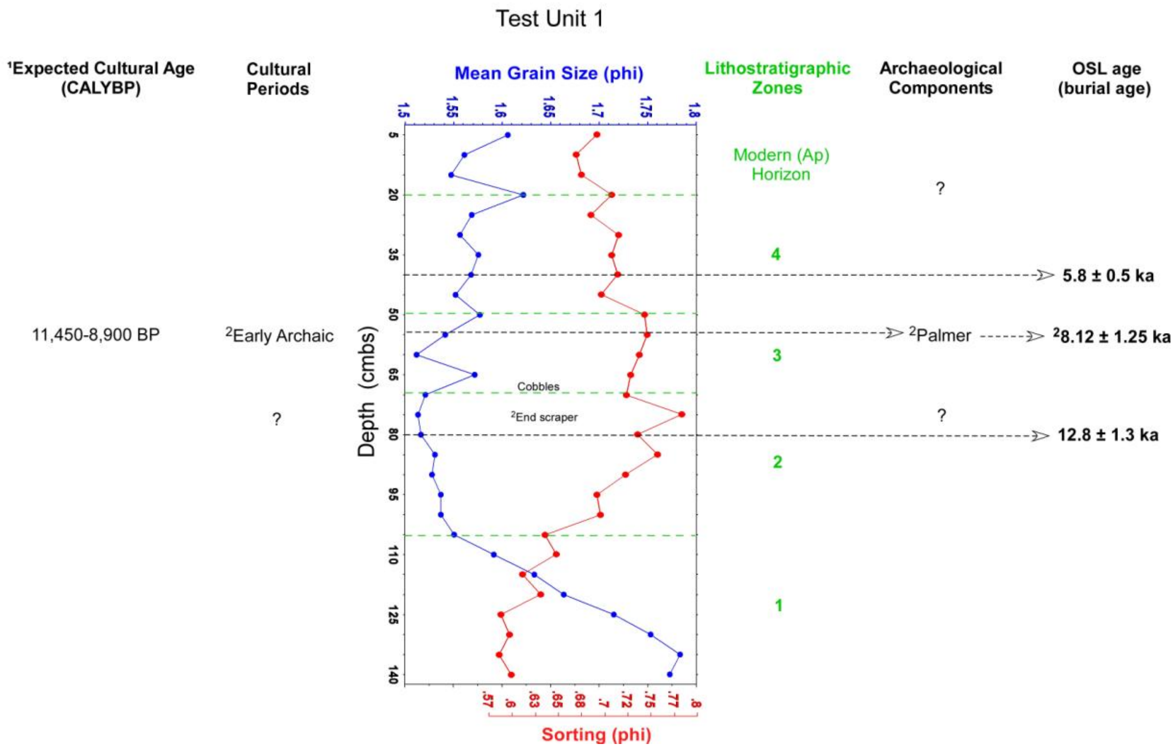
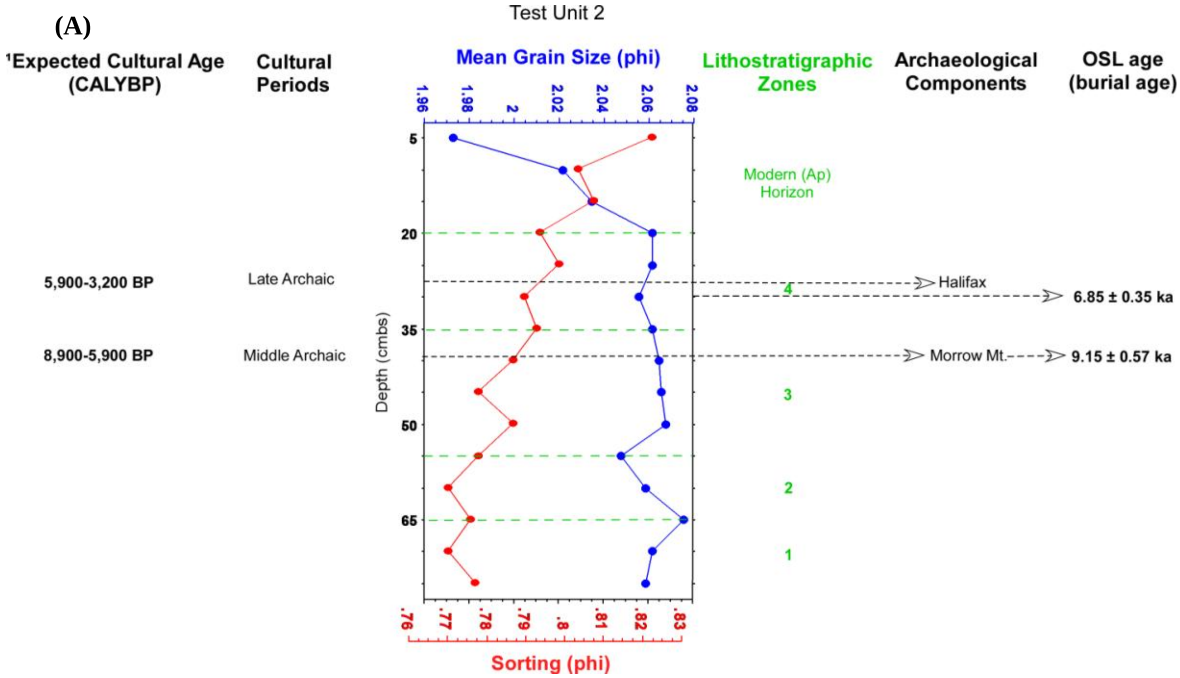


Figure 1-7. Archaeostratigraphy, interpreted lithostratigraphic zones, and luminescence (OSL) geochronology for the Owens Ridge Site (31Ed369). Note: Minimum age model used for all OSL age estimates for Owens Ridge (i.e., burial age) (Galbraith et al. 1999). See text for explanation. [1]Expected cultural age based on established (calendar year) time scale for Paleoindian and Archaic sub-periods (Anderson 2001). [2]Palmer point and end scraper are from TU 2.



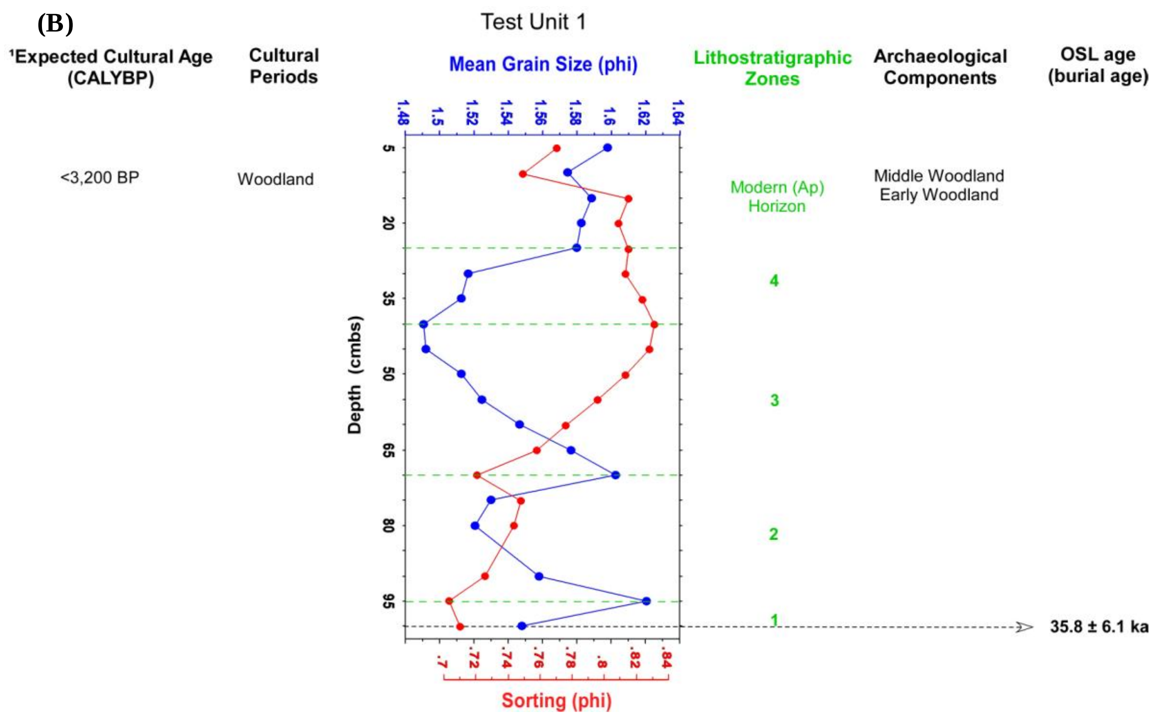


Figure 1-8. Archaeostratigraphy, interpreted lithostratigrahic zones, and luminescence (OSL) geochronology for (A) Taft Ridge (31Pt605) and (B) Hart Ridge (31Pt606). Note: Minimum age model used for both OSL age estimates at Taft Ridge (i.e., burial age) (Galbraith et al. 1999).

have been attractive for occupation by early Paleoindians encountering a very different fluvial landscape than later groups. Although initial Test Unit excavations at the Hart Ridge Site produced only low density and shallowly buried Woodland period artifacts, this landform has potential to contain deeply buried late Pleistocene or early Holocene occupations. This is particularly true given the position of Hart Ridge on the upland alluvial terrace and sedimentological data indicating a thick (>2 meter) aeolian or source-bordering dune sand unit at the site. Similarly, the Taft Ridge Site also has potential for buried early occupations, although site formation processes remain unresolved (see Daniel and Moore, this volume).

Woodland occupations were ubiquitous at most locations with almost all sites having at least some evidence of the Woodland Period, either in shovel tests or surface exposure of pottery sherds. Early Woodland (Deep Creek) pottery is the dominant pottery type at all sites with Woodland ceramics, while minor amounts of Middle Woodland Hanover and trace amounts of Mt. Pleasant were also recovered in some shovel tests. With rare exception, most pottery was confined to the upper 30 to 40 centimeters of soil with trace amounts found deeper, often a clear result of ground disturbance or possibly a result of leached out Woodland or Archaic Period storage pits or features. These leached features are often only identifiable through the careful excavation and recording of isolated concentrations of small charred nutshell and calcined bone fragments present through multiple excavation levels. In fact, it is the informed opinion of the authors that anthropogenic disturbances to site integrity (e.g., intrusive pits and features dug into earlier occupation floors) are probably at least as significant as other natural pedoturbation processes (e.g., roots, insects and tree throws).

Based on this research, archaeologically stratified aeolian dunes or mixed aeolian/fluvial sand-sheets (similar to the Barber Creek Site) appear to be present sporadically, if somewhat rarely, throughout the study area. In particular, small linear or coalescing parabolic aeolian landforms (similar to Owens Ridge) are clearly identifiable within the upper paleo-braidplain north and east of the current position of the Tar River in Edgecombe and Pitt counties (Figure 1-9). Many such landforms remain to be tested for buried archaeological sites. Lower paleo-braidplain sites were identified with the use of LiDAR elevation data as linear sand ridges immediately adjacent to the modern Tar River floodplain. These landforms lack classic aeolian or dune geomorphology but (based on sedimentology) have ~1 meter thick aeolian or mixed aeolian/fluvial caps overlying fluvial (fining-upward) braid bar or braid bar/fluvial levee type deposits (Moore 2009b). Thus, archaeologically stratified lower paleo-braidplain sites (e.g., Squires Ridge and Barber Creek) are perhaps better described as aeolian drapes or mixed aeolian/fluvial sand-sheets rather than true relict sand dunes (e.g., Owens Ridge and Hart Ridge). This suggests more complex site formation processes for lower paleo-braidplain sites as compared to upper paleo-braidplain and upland terrace sites. In fact, lower paleo-braidplain aeolian/fluvial deposits (although relatively shallow) may contain the most complete paleoenvironmental record of climate change (for landforms along the Tar River) during the late Pleistocene and Holocene. This is particularly true given that the upper meter of these deposits appears to have formed almost entirely over the last ca.13,000 calendar years.

Luminescence and ^{14}C Geochronology

For this project, twelve single-aliquot and four single-grain OSL age estimates, along with one radiocarbon date were obtained from five different sites along the Tar River in Pitt and Edgecombe counties, North Carolina (Figures 1-10 and 1-11 and Table 1-1). With respect to

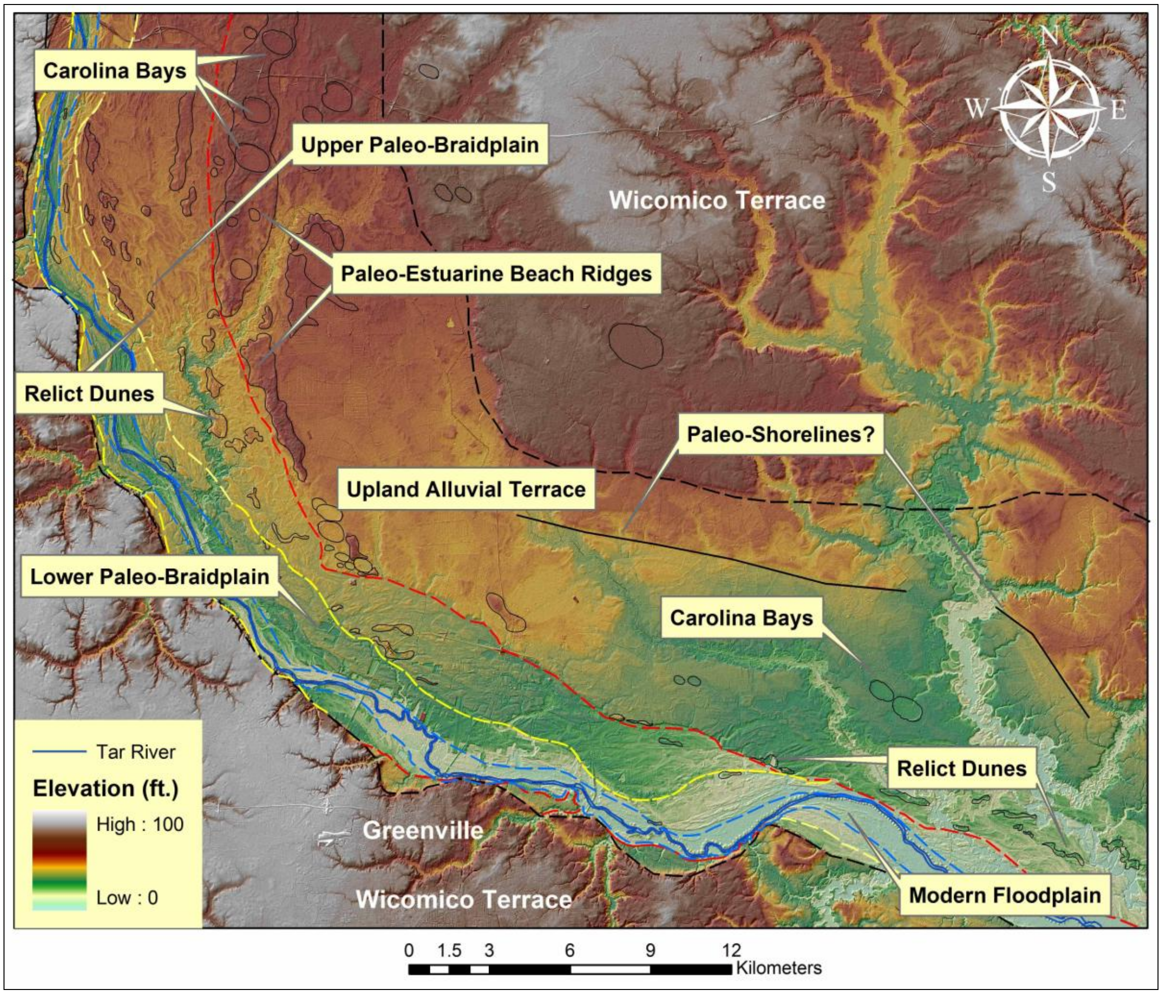


Figure 1-9. A generalized geomorphic map of the Tar River Basin between Tarboro, NC (northern Edgecombe County, NC) and Tranter's Creek (northeastern Pitt County, NC) based on analysis of LiDAR elevation data for the Tar River Basin produced by the NCDOT Floodplain Mapping Program. Riverine terrace sequences include: 1) upland alluvial terrace, 2) upper paleo-braidplain, 3) lower paleo-braidplain and 4) modern Tar River floodplain (see also Riggs, in review, 2009). Outlined features include likely relict aeolian dunes, braid-bars, paleo-estuarine beach ridges, and Carolina bays.

Note: The Wicomico terrace is a marine terrace with an elevation range between 14 and 29 meters amsl in the North Carolina Coastal Plain (Farrell et al. 2003).

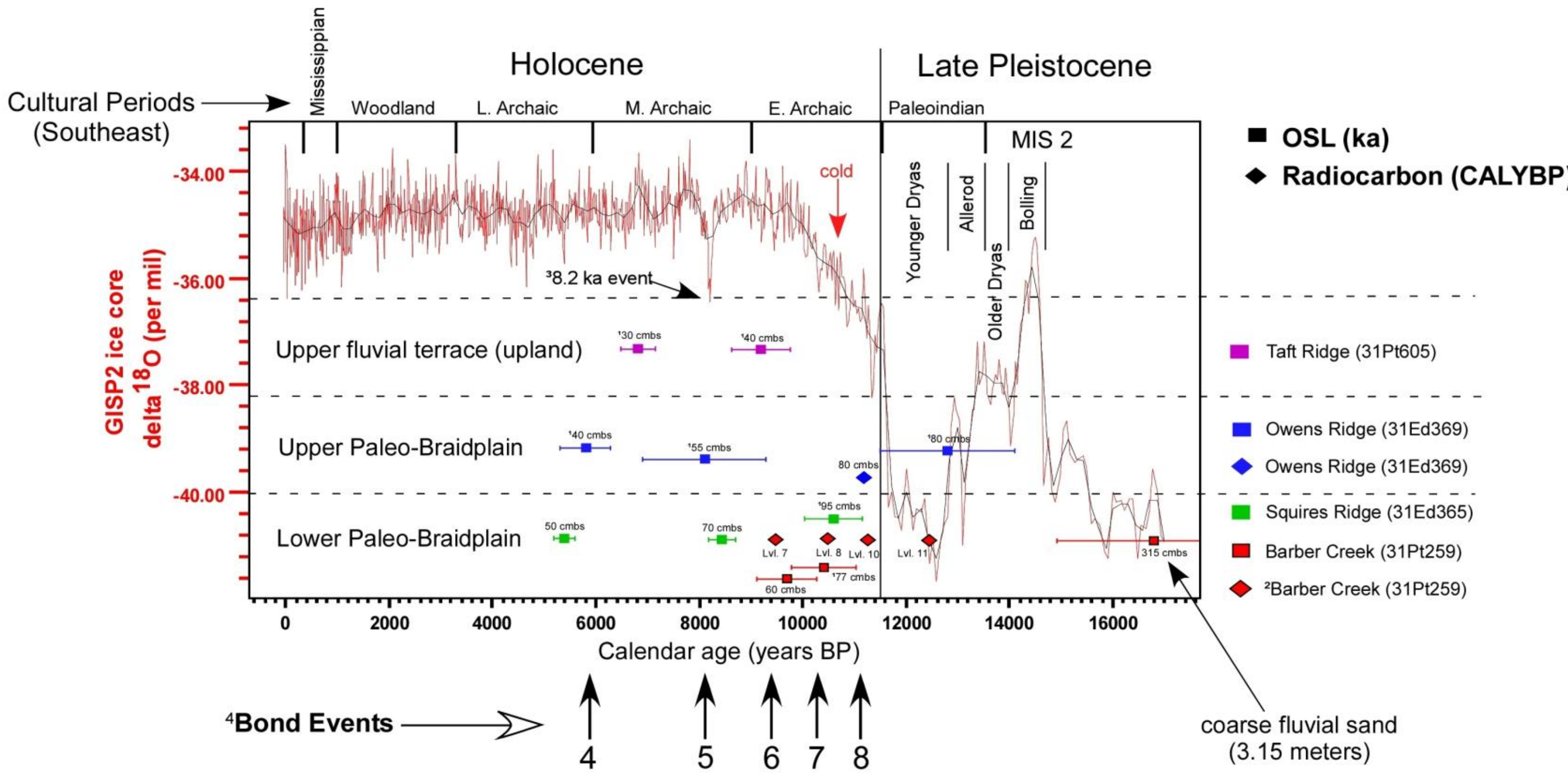


Figure 1-10. Single-aliquot luminescence and ^{14}C geochronology for buried archaeological sites along the Tar River plotted over the GISP2 Oxygen Isotope curve for the last 17 ka (Ice core data provided by the National Snow and Ice Data Center, University of Colorado, Boulder and the WDC-A for Paleoclimatology, National Geophysical Data Center, Boulder, Colorado). [1]Minimum age model used to determine burial age (all other OSL ages determined by central age model) Galbraith et al. 1999). See text for explanation. [2]Barber Creek ^{14}C dates are from Daniel et al. 2008.

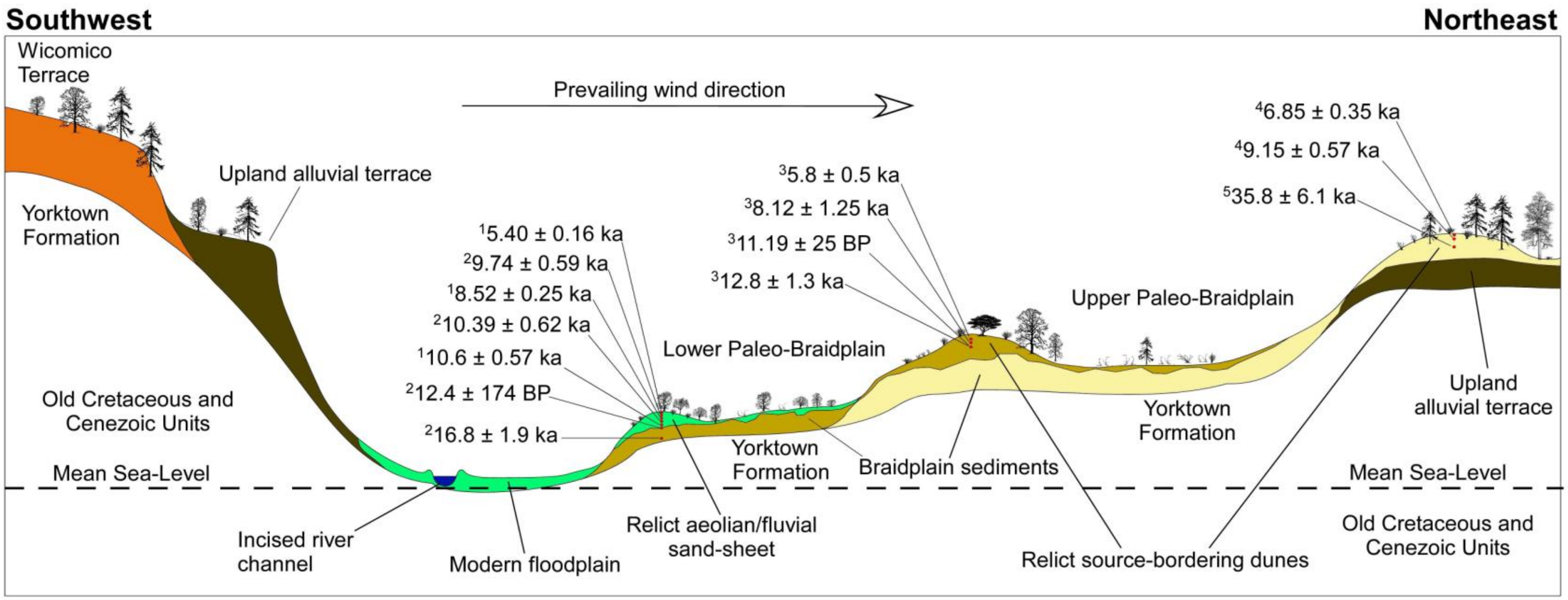


Figure 1-11. A Generalized topographic and geologic schematic of the Tar River Basin in the upper Coastal Plain of North Carolina showing single-aliquot luminescence (OSL) and calibrated ^{14}C geochronology obtained for buried archaeological sites with relict sand ridges. (Map is not to scale). Barber Creek ^{14}C dates are from Daniel et al. 2008.

[1]Squires Ridge (31Ed365), [2]Barber Creek (31Pt259), [3]Owens Ridge (31Ed369), [4]Taft Ridge (31Pt605), and [5]Hart Ridge (31Pt606).

TABLE 1-1: Dosimetry data and OSL ages for Tar River Survey, NC

Site Name/ FS #	County	Depth (cmbs)	% Water content[a]	K (%)[b]	Th (ppm)[b]	U (ppm)[b]	Cosmic dose[c] additions (Gy/ka)	Total Dose Rate (Gy/ka)	Mean De (Gy)	Minimum De (Gy)	n[d]	Mean Age (ka)	Minimum Age (ka)
Squires Ridge (31Ed365)													
FS #171	Edgecombe	50	3 (28)	1.31 ± 0.10	4.52 ± 0.17	1.34 ± 0.07	0.20 ± 0.02	1.88 ± 0.05	10.2 ± 0.09	7.84 ± 0.42	23 (24)	**5.40 ± 0.16**[f]	4.17 ± 0.11[h]
FS #172	Edgecombe	70	4 (27)	1.31 ± 0.10	4.52 ± 0.17	1.34 ± 0.07	0.19 ± 0.02	1.93 ± 0.05	16.4 ± 0.13	14.19 ± 0.83	26 (30)	**8.52 ± 0.25**[f]	7.35 ± 0.23[h]
FS #166	Edgecombe	95	4 (26)	1.31 ± 0.10	4.52 ± 0.17	1.34 ± 0.07	0.18 ± 0.02	1.97 ± 0.05	24.0 ± 0.60	20.92 ± 1.00	19 (24)	12.2 ± 0.46[e]	**10.6 ± 0.57**[h]
Owens Ridge (31Ed369)													
FS #179	Edgecombe	40	10% ± 5%	1.63	2.57 ± 0.65	1.2 ± 0.18	0.2047	2.0 ± 0.1	14.3 ± 2.23	11.87 ± 0.54	19	7.0 ± 1.2	**5.8 ± 0.5**
FS #169	Edgecombe	55	2 (30)	1.41± 0.15	4.57 ± 0.34	2.12 ± 0.08	0.19 ± 0.01	2.53 ± 0.09	23.6 ± 2.50	20.54 ± 1.12	24 (24)	9.31 ± 1.05[g]	**8.12 ± 1.25**[h]
FS #180	Edgecombe	80	10% ± 5%	1.57	1.1 ± 0.51	1.45 ± 0.14	0.1887	1.9 ± 0.1	32.1 ± 6.32	24.65 ± 1.9	19	16.6 ± 3.4	**12.8 ± 1.3**
Taft Ridge (31Pt605)													
FS #173	Pitt	30	5 (35)	1.71 ± 0.19	8.35 ± 0.62	1.28 ± 0.05	0.22 ± 0.01	2.11 ± 0.11	18.9 ± 0.66	14.46 ± 0.52	19 (20)	8.97 ± 0.57[g]	**6.85 ± 0.35**[h]
FS #174	Pitt	40	4 (24)	1.65 ± 0.19	7.60 ± 0.42	1.42 ± 0.05	0.20 ± 0.01	2.25 ± 0.09	26.3 ± 2.44	20.6 ± 0.84	23 (24)	11.7 ± 1.18[g]	**9.15 ± 0.57**[h]
Hart Ridge (31Pt606)													
FS#181	Pitt	100	10% ± 5%	1.28	4.24 ± 1.11	1.32 ± 0.32	0.1833	1.9 ± 0.2	66.3 ± 9.97	48.9 ± 4.34	16	**35.8 ± 6.1**	26.4 ± 3.2
Barber Creek (31Pt259)													
FS #2476	Pitt	60	2 (36)	1.36 ± 0.16	5.10 ± 0.26	1.41 ± 0.11	0.19 ± 0.01	1.97 ± 0.08	19.2 ± 0.88	13.7 ± 0.7	19 (20)	**9.74 ± 0.59**[e]	6.95 ± 0.58[h]
FS #2797	Pitt	77	1 (35)	1.27 ± 0.11	5.54 ± 0.22	1.33 ± 0.11	0.19 ± 0.01	1.91 ± 0.06	24.4 ± 1.11	19.84 ± 0.7	27 (30)	12.8 ± 0.71[e]	**10.39 ± 0.62**[h]
FS #2511	Pitt	315	10% ± 5%	1.37	7.3 ± 1.66	2.3 ± 0.49	0.15	2.3 ± 0.2	38.9 ± 2.66		19	**16.8 ± 1.9**	

[a]Moisture value used in calculation of age (usually 55% of total saturation). Figures in parentheses indicate the complete sample saturation %.

[b]Analyses obtained using laboratory Gamma Spectrometry (low resolution NaI).

[c]Cosmic doses and attenuation with depth were calculated using the methods of Prescott and Stephans (1982) and Prescott and Hutton (1994). See text for details.

[d]Number of replicated equivalent dose (De) estimates used to calculate the mean. Figures in parentheses indicate total number of measurements made including failed runs with unusable data.

[e]Dose rate and age for fine-grained 250-180 um quartz sand. Linear fit used on age, errors to one sigma.

[f]Dose rate and age for fine-grained 250-180 um quartz sand. Exponential and linear fit used on age, errors to one sigma, weighed mean.

[g]Dose rate and age for fine-grained 150-90 um quartz sand. Exponential and linear fit used on age, errors to one sigma.

[h]Minimum age model calculated using statistical model developed by Rex Galbraith. Errors to one sigma.

single-aliquot OSL dating, minimum age model age estimates (Galbraith et al. 1999) were considered better estimates of burial age in seven out of the twelve single-aliquot samples. This may be due to the presence of partially- bleached grains or grains with an inherited dose from a previous depositional environment. Partially bleached grains are common in many depositional environments; however, they are more common in fluvial or waterlaid deposits (Olley et al. 2004). In many cases, partially bleached grains may be inferred from positively skewed equivalent dose distributions (Murray et al. 1995; Olley et al. 1998; and Lepper et al. 2000). Many OSL age estimates from Tar River sites have positively skewed distributions (Moore 2009b) and may indicate the presence of fluvially deposited sediments or mixing with older sediments. In several cases, use of the minimum age model brought age estimates into close agreement with the known temporal range of associated projectile points and ^{14}C dates (e.g., Barber Creek and Squires Ridge). While this fact does little to refine the cultural chronology of the Coastal Plain, it does indicate that burial processes have been active during the Holocene.

Both OSL age estimates from the upper meter at the Barber Creek Site are in close agreement with the previously established radiocarbon dating sequence (Daniel et al. 2008) and may reflect periods of aeolian reactivation during Bond Events 6 and 7 respectively (see Figures 1-6A, 1-10, and 1-11). Bond Events are periods of rapid climate change during the Holocene and are associated with major ice-rafting events in the North Atlantic (Bond et al. 1997, 1999, 2001). In general, these events appear to represent the rapid onset of cooler and dryer conditions and occur on quasi-periodic (~1,500 year) cycles (Bond et al.1997, 1999). Bond Events also appear correlated with regional records of rapid climate change in the mid-Atlantic (e.g., Willard et al. 2005) and globally by multiple proxy records of climate change (Mayewski et al. 2004). Implications for these rapid climate change events are discussed below.

Although the deeper OSL sample from Barber Creek (3.15 meters below surface) has two distinct population modes evident in its equivalent dose histogram, no minimum age was calculated for this sample given the closeness of equivalent dose values. This age (16.8 ± 1.9 ka) is consistent with those reported by Leigh (2006, 2008) for transitional braided to meandering river deposits; however, grain size analysis suggests that fluvial sedimentation continued to approximately 1 meter below surface. Further luminescence dating of fluvial sands between 1 and 3 meters below surface are needed in order to determine when braided river conditions transitioned to meandering and became vegetationally-bound along the Tar River.

At Squires Ridge, weighted mean or central age model age estimates were applied to the upper two samples (i.e., 50 and 70 cmbs), while a minimum age model estimate was deemed appropriate (based on analysis of equivalent dose) for the deeper sample (i.e., 95 cmbs) associated with an Early Archaic Palmer Corner-Notched projectile point (Moore 2009b). The upper two samples provided weighted mean age estimates in good agreement with both Guilford (5.4 ± 0.16 ka) and Kirk Stemmed/Serrated (8.52 ± 0.25 ka) occupations, while the deeper sample is consistent with the accepted temporal range for Palmer (10.6 ± 0.57 ka). OSL age estimates (see Figure 1-6B) probably reflect burial events during or immediately following occupation. The integrity of the stratified Guilford occupation suggests rapid burial. Interestingly, all three ages may reflect periods of aeolian deposition associated with rapid climate change during Bond Events 4, 5, and 7 (Bond et al. 1997, 1999) (see Figure 1-10).

Limited archaeological evidence in the form of diagnostic artifacts at Owens Ridge hampered efforts to link luminescence ages to cultural sequences; however, the minimum age model estimates provided a more satisfactory chronological sequence for site formation (see Figures 1-7 and 1-10). Two OSL age estimates from Owens Ridge (Test Unit 1) suggest burial events during the Younger Dryas (12.8 ± 1.3 ka) and later during the mid Holocene (5.8 ± 0.5 ka) (possibly associated with Bond Event 4). A single luminescence age estimate for Test Unit 2, associated with an Early Archaic Palmer projectile point, returned a weighted mean age (9.31 ± 1.05 ka) consistent with late or terminal Early Archaic; however, examination of the equivalent dose distribution data suggests that a minimum age model is more appropriate for determination of true burial age. The 8.12 ± 1.25 ka minimum age model estimate more accurately reflects burial events and may be associated with Bond Event 5 (i.e., the 8.2 ka event). The 8.2 ka climate event is indicated by both Willard et al. (2005) pollen data and global climate proxies analyzed by Mayewski et al. (2004). In fact, this event is the most prominent climate event in the Holocene with approximately half the amplitude of the terminal Pleistocene Younger Dryas event (ca. 12,900-11,500 CALYBP (Alley 2000; Alley et al. 1997). Finally, a radiocarbon date obtained on wood charcoal from Level 8 (70-80 cmbs) in Test Unit 2 and associated with a Type I end scraper returned a early Holocene date (11,190 CALYBP) consistent with the observed archaeostratigraphy (see Figures 1-10 and 1-11) (Moore 2009b).

Weighted mean luminescence age estimates for Taft Ridge provided ages far older than suggested by the archaeology of the site. Recovered Halifax and Morrow Mountain projectile points indicate the presence of Middle and Late Archaic occupations. Examination of the equivalent dose histograms for Taft Ridge revealed bimodal and positively skewed distributions (Moore 2009b). Together, these suggested partially bleached grains with an inherited age. Reevaluation of these samples with the minimum age model provided ages closer to the expected age range but still significantly older than the known temporal range for Halifax or Morrow Mountain (see Figure 1-8A). These ages may reflect Morrow Mountain occupation of a long-term stable land surface, followed by site burial. This argument is particularly compelling given that the age of sand deposits immediately above (associated with Halifax) fall within the known range for Morrow Mountain (ca. 8,100-6,000 CALYBP).

While bioturbation may be a significant factor in site formation at Taft Ridge, the potential exists for relatively intact buried surfaces at 30 and 40 centimeters below surface. These surfaces may reflect limited reworking or deposition on an otherwise stable Pleistocene landform. Equivalent dose distribution data indicating the presence of partially bleached grains may also indicate more fluvial contributions to site formation than originally thought. This supports interpretations based on grain size analysis that indicate the potential for a non-aeolian origin for the landform.

Finally, a single luminescence date from the Hart Ridge Site (well below archaeological deposits) indicates a late Pleistocene origin for the landform. A weighted mean OSL age of 35.8 ± 6.1 ka is considered the best estimate of landform age based on a normally distributed equivalent dose histogram (see Table 1-1 and Figure 1-8B). A lack of evidence for partially bleached grains is further evidence for the purely aeolian nature of this landform and corroborates other lines of evidence gathered by analysis of landform geomorphology, geophysics, and grain size data (Moore 2009b).

Together, OSL and radiocarbon age estimates from Hart Ridge and Taft Ridge (upland), Owens Ridge (upper paleo-braidplain) and Squires Ridge and Barber Creek (lower paleo-braidplain), constrain the timing of depositional events and indirectly track changes in the fluvial evolution of the Tar River between three distinct alluvial terraces (see Figure 1-11). Thus, with each subsequent incision and reduction in braidplain width, the primary sand source for one set of source-bordering dunes was cut off and another activated within the fluvial environment immediately adjacent to remnant braidplain scarps.

Based on the OSL age estimate for Hart Ridge, the laterally extensive upper paleo-braidplain was weakly incised and shut-down as an active sand source sometime during late MIS 3 (ca. 35 ka), with only limited reworking of dune crests and site burial during the Holocene. This is consistent with OSL ages from Taft Ridge that produced early and middle Holocene ages for shallow archaeological deposits within the upper 40 centimeters.

Although basal dates for Owens Ridge (upper paleo-braidplain) are lacking, OSL and ^{14}C ages from the upper meter of sand indicate that the most significant period of dune emplacement had already occurred prior to the Holocene. That said, several periods of dune reactivation are indicated, and appear to have buried terminal Pleistocene and early Holocene cultural occupations within the upper 80 centimeters of sand. This may be due to the proximity of the Owens Ridge Site to the modern Tar River floodplain and/or periodic Holocene reactivation of several paleo-stream channels immediately adjacent to the landform (Moore 2009a, 2009b).

OSL and radiocarbon age estimates for basal aeolian deposits at lower paleo-braidplain sites (Barber Creek and Squires Ridge) indicate aeolian sand-sheet deposition beginning just before or during the Younger Dryas stadial event (ca. 12,900-11,500 CALYBP) (Daniel et al. 2008; Moore 2009b). An OSL age estimate was obtained from Barber Creek (ca. 16.8 ka) within coarse fluvial braidbar deposits (3.15 meters below surface) and well below the fluvial to aeolian transition (~1 meter below surface). Thus, incision of the lower paleo-braidplain and formation of the modern Tar River floodplain must have occurred sometime between ~17 ka and the onset of the Younger Dryas (*cf*. Leigh 2006, 2008; Leigh et al. 2004). In any case, aeolian deposition along the lower paleo-braidplain is unlikely to have begun until after this final incision event.

Four single-grain (as opposed to single-aliquot) OSL age estimates (Table 1-2 and Figure 1-12) from the Barber Creek Site support earlier conclusions (based on single-aliquot OSL data and ^{14}C). In particular, a single-grain OSL age estimate from 100 cmbs supports previous data already discussed and links the timing of a major transition in the lower paleo-braidplain to the Younger Dryas stadial event (i.e., the transition from predominantly fluvial to mixed aeolian/fluvial deposition within the upper 1 meter of sand at Barber Creek). In additional, the reevaluation of a single-aliquot date (FS# 2797 from Table 1-1) using the single-grain technique suggests that in some cases, even the minimum age model estimates for single-aliquot dating may overestimate burial age. This may be due to the presence of partially bleached grains or the inherent problems of using single-aliquot dating to accurately distinguish depositional age from slightly mixed or bioturbated sediments (Boulter et al. 2006).

In any event, the addition of single-grain OSL age estimates provide ages generally consistent with those already obtained through single-aliquot dating and bolster claims for an entirely Holocene origin for much of the upper meter of sand at the Barber Creek Site and at other sites along the Tar River. Multiple lines of evidence, including the archaeostratigraphy, chronometric dating (^{14}C and OSL), and granulometry all support this inference. Thus, a hypothesis of extreme bioturbation for stratifying archaeological deposits through biomantle formation of artifact 'stone zones' within old/stable Pleistocene landforms, as proposed by Johnson (1990) and others (e.g., Leigh 1998a, 1998b) is rejected. In this case, bioturbation is more accurately conceived as an "overprint" of the shallow archaeostratigraphy of many of the relict sand ridges along the Tar River rather than as the primary mechanism of artifact burial. This fact may have important implications for Cultural Resources Management (CRM) in the Coastal Plain—particularly in regard to assessments of site significance. The picture emerging from research along the Tar River suggests that burial and shallow stratification of

Table 1-2. Dosimetry data and single-grain OSL ages for Barber Creek (31Pt259).

Sample	*FS#*	*Depth (m)*	*^{238}U (ppm)*	*^{232}Th (ppm)*	*K (%)*	*H_2O %*	*Beta dose rate (Gy/ka)*		*Total dose rate (Gy/ka)*	*Central age D_e (Gy)*	*Age (ka)*	*% error*
							ß-counting	*α-counting/flame photometry*				
UW1907	[a]3315	0.8	1.64±0.13	5.22±0.91	1.39±0.03	6 ± 3	1.28±0.11	1.47±0.04	2.01±0.08	18.5 ± 0.9	**9.2 ± 0.7**	7.1
UW1908	[a]3316	1	1.53±0.12	3.74±0.76	1.28±0.04	6 ± 3	1.35±0.11	1.32±0.04	1.91±0.08	23.1 ± 0.8	**12.1 ± 0.7**	6.2
UW1909	[a]3319	1.4	0.31±0.07	3.73±0.74	1.36±0.03	6 ± 3	1.13±0.10	1.21±0.03	1.72±0.07	24.8 ± 1.3	**14.5 ± 1.0**	7.1
UW1963	[b]2797	0.77	1.33±0.11	5.54±0.22	1.27±0.11	6 ± 3	n/a	n/a	1.99±0.10	18.0± 0.8	**9.1 ± 0.7**	7.3

[a]N445, E430

[b]This sample was also dated using the single-aliquot technique (see Table 1-1).

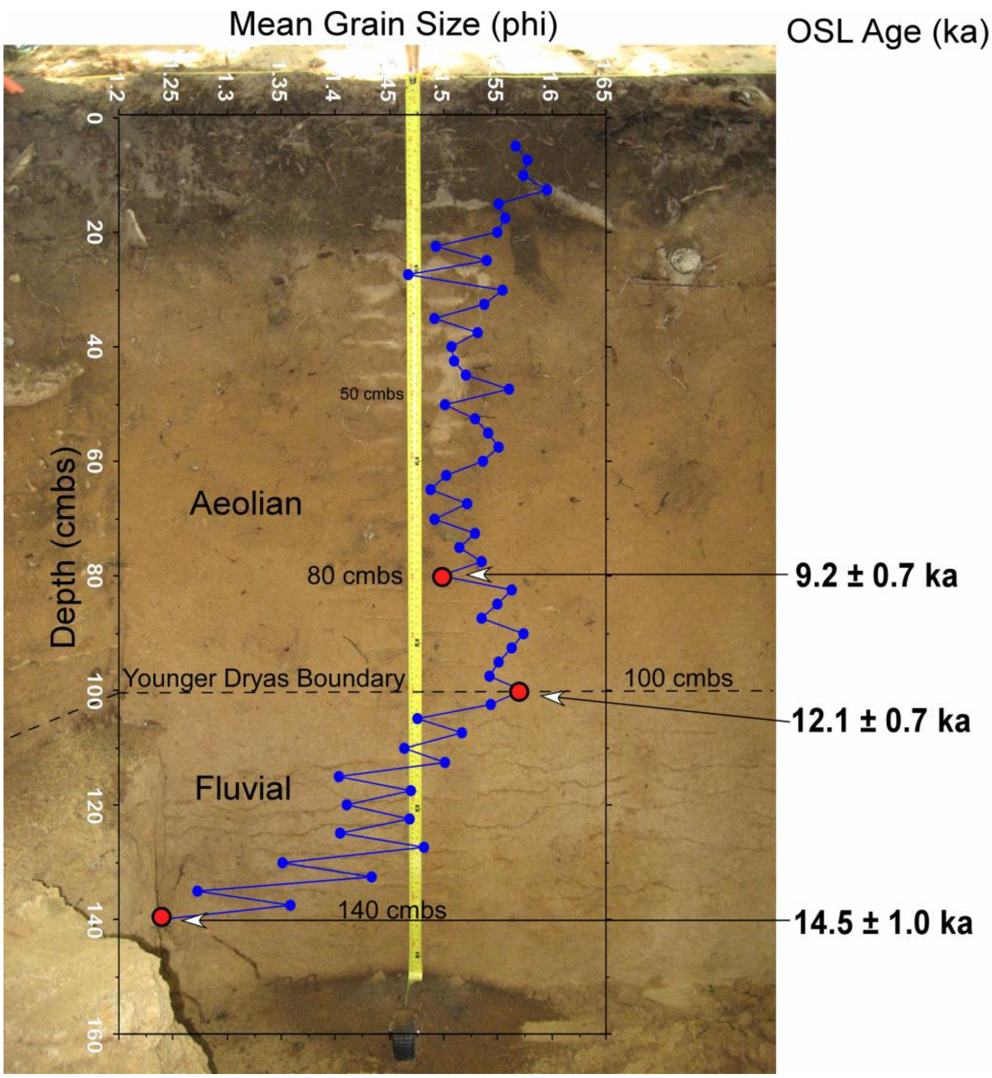


Figure 1-12. Single-grain luminescence (OSL) age estimates for the Barber Creek Site (N445, E430) showing a lithostratigraphic boundary between underlying fluvial or flood-deposited sediments (note fining-upward sediment lenses defined by granulometry and overprinted by pedogenic lamellae) and predominantly aeolian sediments (upper meter of sand). The Younger Dryas Boundary (YDB) is indicated by OSL dating at this transition. Note: Close-interval grain size data are from McFadden (2009).

archaeological occupations may be more common than once thought in the North Carolina Coastal Plain. This is all the more likely within riverine environments where source-bordering accumulations of wind-blown sand and flood deposits are a possibility. In any case, it suggests sites need to be accessed for significance based on sound geoarchaeological evidence.

CONCLUSIONS

Investigations of relict “source-bordering” dunes and/or relict aeolian/fluvial sand ridges identified along the Tar River in Pitt and Edgecombe counties, North Carolina have produced a wealth of archaeological and paleoenvironmental data (e.g., Choate 2011; Daniel 2002a, 2002b; Daniel et al. 2008; McFadden 2009; Moore 2009a, 2009b; Seramur and Cowan 2002). Combined archaeological and sedimentological analyses along with luminescence (OSL) and ^{14}C dating suggest that direct burial of cultural remains occurred throughout the late Pleistocene and Holocene by wind-blown sand as well as by flood deposits (Moore 2009a, 2009b). Geophysical, stratigraphic, chronometric, and grain size data collected from these sites indicate multiple phases of aeolian/fluvial accretion with varying rates of deposition. Close-interval grain size data and chronometric dating, along with temporally stratified artifact assemblages (typically within the upper meter of sand) suggest five or six periods of small-scale accretion at lower paleo-braidplain sites followed by periods of stability or erosion (see Figure 1-6). Based on the archaeostratigraphy of piece-plotted artifacts, three major periods of landform stability and occupation are evident at Barber Creek with shallowly stratified early, middle, and late Holocene archaeological components (see also McFadden 2009 and Choate 2011).

Upper paleo-braidplain sites, such as Owens Ridge, are large source-bordering aeolian dunes with much deeper surficial (i.e., upper sand unit) deposits than lower paleo-braidplain sites. While the majority of these landforms are likely late Pleistocene in age, periodic reactivation of the Owens Ridge Site during the Holocene is responsible for site burial and stratification of archaeological components to a depth of 80-90 cmbs. Grain size data suggest at least four periods of aeolian or fluvial accretion since the late Pleistocene (See Figure 1-7). Archaeological and chronometric data from Owens Ridge suggest this site has great potential for buried Paleoindian occupations. This may be due in part to the stratigraphic position and age of upper paleo-braidplain landforms compared with lower paleo-braidplain sites. Other large source-bordering dunes are located just north of Owens Ridge, immediately to the east of the Town Creek confluence, and should be investigated for their potential to produce evidence of the early Paleoindian occupation of the Tar River Valley.

Upland relict dunes along the Tar River are late Pleistocene in age and formed during periods of extensive braided river conditions during terminal marine isotope stage (MIS) 3 (60-30 ka). Relict landforms such as Hart Ridge are large dunes with nearly 2 meters of aeolian deposits. These sands were likely reactivated during Holocene climate events; however, depositional events may have been limited to reworking of dune crests (e.g., Ivester et al. 2001). Limited Holocene deposition at these sites may be due to the fact that, by the late Pleistocene, the sand source in the upper paleo-braidplain had been shut-down.

On a more speculative note, burial events along the Tar River may reflect Holocene millennial-scale climatic cyclicity (e.g., Bond et al. 1997) and its related effects on the fluvial system—providing a source of sand for aeolian or in some cases overbank flood transport onto adjacent braidplain scarps (Moore 2009b; Moore and Daniel 2010). Similarly, recent geoarchaeological research on the Savannah River has demonstrated that the late Quaternary sedimentological record, "…appears to be linked to and coupled with abrupt climate and vegetation changes" (Waters et al. 2009). These events likely influenced both hunter-gatherer adaptation and site preservation along the Tar River and elsewhere in the Southeast. Luminescence and radiocarbon dates from stratified sand ridges along the Tar River correspond closely to Bond Events 4 through 8. While more work is needed to test this hypothesis, chronometric data presented here indicate a pervasive and episodic signature of climate change over the last 11,500 CALYBP (see Figures 1-10 and 1-11). Three chronometric dates (two OSL and one ^{14}C [Daniel et al. 2008]) also indicate depositional events associated with the Younger Dryas stadial event. These dates are associated with a lithologic break based on grain size data and indicate a shift in depositional environment in some cases (i.e., fluvial to aeolian)—particularly for lower paleo-braidplain sites.

At the Barber Creek and Squires Ridge sites, artifacts diagnostic of the Early Holocene were recovered near the base of dune deposits and above fluvial braidplain sediments. Although evidence for earlier Paleoindian occupations may yet be found (ca.13,500-11,500 CALYBP), the presence of buried Early Holocene-age (i.e., Early Archaic) and the lack of Paleoindian artifacts immediately above or within the fluvial to aeolian transition at lower paleo-braidplain sites indicate braided river conditions may have continued as late as ca.13,000 CALYBP (*cf.* Leigh 2006, 2008, Leigh et al. 2004). In other words, active braided river conditions may have prevented occupation of the Barber Creek Site by early Paleoindian foragers. Further work is needed to test this hypothesis.

OSL and ^{14}C ages collected near the base of mixed aeolan/fluvial and cultural deposits also indicate major fluvial channel sedimentation on the lower paleo-braidplain ceased around the time of the Younger Dryas stadial (ca. 12,900-11,500 CALY BP). This was followed by initiation of primarily aeolian accretion and cultural occupation along the lower paleo-braidplain alluvial terrace that continued episodically through much of the Holocene. Evidence for dune building during the Younger Dryas has also been found for relict aeolian dunes along the North Carolina Coast (Mallinson et al. 2008).

Thus, the absence of Paleoindian occupations at lower paleo-braidplain sites, such as Barber Creek, may be due to a late transition from active braiding conditions to the modern Tar River meandering floodplain during or post Younger Dryas. Alternatively, Pleistocene-age archaeological sites may have been scoured from the lower paleo-braidplain during early Holocene meandering. On the other hand, LiDAR imagery lack evidence of large-scale paleo-meander channels within the study area, but do reveal significant preservation of former braided terraces east and north of the river. Instead, the Tar River is characterized by slight down-cutting and incision—transitioning directly from relict braided terraces to a very weakly meandering and incised or vegetationally-bound fluvial system (e.g., Riggs, in review, 2009) (see Figures 1-1 and 1-2). Conversely, just slightly upstream of the study area, LiDAR data reveal a lack of relict braided river terraces (i.e., from Tarboro to the west) and are instead characterized by large-scale paleochannels and scrollwork indicative of former meandering channels. A similar pattern has been reported for fluvial terraces of the Lower Little River (see Suther et al. 2011). Source-bordering dunes or aeolian/fluvial sand-sheets overlying relict levee and braid-bar deposits are common along the scarps separating individual upland, braidplain, and meandering river terraces. These sand ridges track changes in the fluvial system since the late Pleistocene. Additional luminescence dating of transitional braided river to aeolian sediments and basal alluvium in the modern floodplain are needed to address the timing of this transition.

To anticipate criticism that we have failed to adequately consider bioturbation processes for explaining the observed stratified sequences for Tar River sites (e.g., Johnson 1990; Leigh 2001), we want to briefly address the issue here. To start with, we are not suggesting that sand ridges along the Tar River lack evidence of bioturbation, rather that this process appears to have had limited and spatially variable impact to the overall archaeostratigraphic character of these sites. We base this inference on multiple lines of evidence including the archaeostratigraphy (detailed piece-plotting and analysis of artifact backplots) from numerous sites, close-interval sedimentology (indicating breaks in lithostratigraphy), and numerous ^{14}C and OSL age estimates gathered through a detailed study of sand ridges along the Tar River with obvious evidence of stratified archaeological remains (Moore 2009b). While occasional stratigraphic inversions of temporally diagnostic artifacts and vertically displaced refits occur, the presence of discrete occupation floors or zones is clear upon examination of piece-plot data for large excavation blocks or trenches (e.g. Choate 2011). The vertical mixing of smaller artifacts (both above and below occupation zones) through trampling and other forms of anthropogenic disturbance (e.g., hearths and pit features), erosion, burrowing animals, tree throws, and other pedoturbation processes are not unexpected. These processes act to blur the lines between occupations—particularly for shallowly buried sandy sites in the Coastal Plain.

The inherently shallow nature of these sites and likely centimeter-scale burial events between multiple occupations have also resulted in nearly continuous vertical distributions of small artifacts (e.g., debitage). This is particularly true when our analytical units for analysis consist of arbitrary 10 centimeter excavation levels—levels that likely cross-cut multiple archaeostratigraphic boundaries. Continuous vertical distributions of small artifacts are also the likely result of small-scale bioturbation and anthropogenic disturbance of active and long-term stable to erosional occupation surfaces followed by episodic accretion during periods of climatic or environmental instability (e.g., floods, drought and/or fire, and anthropogenic disturbance to the local environment). Larger artifacts, on the other hand, appear to be more stable vertically and can be used to infer occupation surfaces or zones—particularly when combined with detailed granulometry. In most cases, careful piece-plotting in large excavation blocks may be necessary to distinguish stratigraphic occupation zones or zones of long-term stability or erosion. Recent work at Barber Creek (31Pt259) by Choate (2011) and three seasons of fieldwork at the Squires Ridge Site (31Ed365) have revealed the clearest evidence to date for vertical stratigraphy in these shallow sand ridges.

We submit that the methods utilized in this research address the issue of equifinality for distinguishing site burial through bioturbation as opposed to direct burial by sedimentation processes. In particular, we believe the combination of detailed archaeostratigraphic and single-grain OSL age data reveal clear and irrefutable evidence for direct burial of archaeological occupations over the last ca. 11,000 calendar years along the Tar River. Although stated previously, we contend that bioturbation is more accurately conceived as an overprint of the relatively intact archaeostratigraphy than as the principle mechanism for site burial. As we have done here, sites must be evaluated individually and with careful collection and scrutiny of archaeological, geological, and chronometric data before similar conclusions may be made for other sites or even for all areas of the sites we examine here. The correct evaluation of buried sandy sites for the relative influences of pedoturbation verses sedimentation is crucial for paleoenvironmental determinations and behavioral inferences (Leigh 2001). While we don't expect this long-standing debate to be settled by this paper—which we will address in more detail in a later paper—we do think we have an obligation to move on and utilize these sites to address broad paleoenvironmental issues including the effects of rapid climate change on fluvial and aeolian depositional environments, riverine paleoecology, and cultural adaptation in the upper Coastal Plain of North Carolina.

Future work should focus on identifying and preserving other relict landforms within the paleo-braidplains of the Tar River and other Piedmont draining rivers in North Carolina. Many of these sand bodies are actively mined or are potentially threatened by future sand mining activities along the Tar River. Development is also actively destroying many of these sites with homes preferentially built along elevated and well-drained relict dunes and sand ridges close to the river. Given the fact that the vast majority of these sites are located on private lands, it is all the more imperative that archaeologists work with local land-owners and conservationists to provide protection for imperiled watersheds, ecologically sensitive areas, and cultural resources. When possible, conservation easements or land buyouts should be offered—particularly when significant archaeological sites overlap with important floodplains, watersheds, and biologically diverse communities along the Tar River. While this research has identified several important archaeological sites along the Tar River, none of these sites are currently protected from mining or development and many more have likely already been lost.

Archaeologically, future research should focus on additional excavations of stratified sites, primarily within the upper and lower paleo-braidplain. Additional close-interval grain size analysis (i.e., 2.5 cm or less) along with the application of close-interval, single-grain OSL dating using small-diameter sampling tubes should be applied to address site-formation questions raised by this research. In addition, soil chemistry analyses such as total phosphorous, organic carbon, phytolith extraction (e.g., Ivester et al. 2011; Leigh 2004) micromorphology studies (e.g., McPhail and McAvoy 2008) and application of other geophysical techniques (e.g., magnetic susceptibility, magnetometry, gradiometry, and electrical resistivity) may provide additional evidence for buried surfaces and/or cultural activities associated with occupations (e.g., hearths or cultural features). Together, these techniques will allow archaeologists to begin to address the substantive issues of cultural chronology and typology for the North Carolina Coastal Plain and provide archaeological correlates for understanding climate variability and the influence of environmental change on hunter-gatherer settlement and adaptation.

Acknowledgements. The senior author would like to thank members of his dissertation committee, including I. Randolph Daniel, Jr., along with committee members and research consultants, Dave Mallinson, Mike O'Driscoll, Stanley Riggs, Mark Brooks, Keith Seramur, Lisa Clough, Lauriston King, Dorothea Ames, Jim Watson, Pete Parham, and John Woods for all their assistance and advising during the undertaking of this research. We want to thank Paulette McFadden, Mattie Rasberry, Tim Shortly, Jessica Walker, Pete Parham, Wes Willoughby, Bud Patterson, Tara Potts, Jonathan Laulis, Ashley Bailey, Brian Choate, and Jerod Shufford for assisting in fieldwork and lab work processing and cataloging of artifacts. We also thank Mrs. Betsy Squires, Mr. Willie Owens, Mr. Joseph Taft and family, and Mr. Roger Simmons for allowing access to their farms for fieldwork. We are particularly indebted to the Coastal Resources Management Program and the Department of Anthropology at East Carolina University, The Savannah River Archaeological Research Program (SRARP), and the North Carolina Archaeological Society (NCAS), for supporting this research through research grants, graduate and undergraduate work-studies, and financial support for this work. The senior author also wishes to thanks Tammy Herron, Mark Brooks, Bob Van Buren, and last, but not least, my wife, Wendy Moore for technical editing of this manuscript. Finally, we wish to express thanks to Shannon Mahan (USGS Luminescence Dating Lab), Jim Feathers (University of Washington Luminescence Dating Lab), and George Brook (University of Georgia Luminescence Dating Lab) for providing OSL age estimates used in this study. Beta Analytic, Inc. provided all radiocarbon dates used in this study.

REFERENCES CITED

Aitken, M. J.
1998 *An Introduction to Optical Dating: The Dating of Quaternary Sediments by the use of Photon-Stimulated Luminescence.* Oxford University Press, New York, 267 pp.

Alley, R. B., P. A. Mayewski, T. Sowers, M. Stuiver, K. C. Taylor, and P. U. Clark
1997 Holocene Climate Instability: A Prominent, Widespread Event 8200 yr Ago. *Geology* 25: 483-486.

Alley, R. B.
2000 The Younger Dryas Cold Interval as Viewed from Central Greenland. *Quaternary Science Reviews* 19: 213-226.

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

Bateman, M. D., C. D. Frederick, M. K. Jaiswal, A. K. Singhvi
2003 Investigations into the Potential Effects of Pedoturbation on Luminescence Dating. *Quaternary Research Reviews* 22: 1169-1176.

Bond, Gerald, William M. Showers, Maziet Cheseby, Rusty Lotti, Peter Almasi, Peter deMenocal, Paul Priore, Heidi Cullen, Irka Hajdas, and Georges Bonani
1997 A Pervasive Millennial-Scale Cycle in North Atlantic Holocene and Glacial Climates. *Science* 278: 1257-1266.

Bond, Gerald, William Showers, Mary Elliot, Michael Evans, Rusty Lotti, Irka Hajdas, Georges Bonani, and Sigfus Johnson
1999 The North Atlantic's 1-2 kya Climate Rhythm: Relation to Heinrich Events, Dansgaard/Oeschger Cycle and the Little Ice Age. In: Clark P., Webb, R., Keigwin, L., (Eds.), *Mechanisms of Global Climate Change at Millennial Time Scales*, Geophysical Monograph Series, Vol. 112. American Geophysical Union, Washington, DC, pp. 35-58.

Bond, Gerald, Bernd Kromer, Juerg Beer, Raimund Muscheler, Michael N. Evans, William Showers, Sharon Hoffman, Rusty Lotti-Bond, Irka Hajdas, and George Bonani
2001 Persistent Solar Influence on North Atlantic Climate during the Holocene. *Science* 294: 2130-2136.

Boulter, C. H., M. D. Bateman, A. S. Carr, and C. D. Frederick
2006 Assessment of Archaeological Site Integrity of Sandy Substrates using Luminescence Dating. *Society of Archaeological Sciences Bulletin* 29: 8-12.

Brooks, Mark J.
1990 A Point-Bar Site on the South Edisto River in the Upper Coastal Plain of South Carolina: Depositional History and Environmental Implications. *South Carolina Antiquities* 22, Nos. 1&2, p. 17-25.

Brooks, Mark J., Barbara E. Taylor, and John A. Grant
1996 Carolina Bay Geoarchaeology and Holocene Landscape Evolution on the Upper Coastal Plain of South Carolina. *Geoarchaeology* 11: 481-504.

Brooks, Mark J., and Kenneth E. Sassaman
1990 Point Bar Geoarchaeology in the Upper Coastal Plain of the Savannah River Valley, South Carolina: A Case Study. In *Archaeological Geology of North America*, edited by N. P. Lasca and J. E. Donahue, pp. 183-197. Geological Society of America, Centennial Special Volume 4. Boulder, Colorado.

Carver, Robert, E., and George A. Brook
1989 Late Pleistocene Paleowind Directions, Atlantic Coastal Plain, U.S.A. *Palaeogeography, Palaeoclimatology, and Palaeoecology* 74: 205-216.

Choate, Brian C.
2011 *Stratigraphic Investigations at Barber Creek (31PT259): Reconstructing the Culture-History of a Multicomponent Site in the North Carolina Coastal Plain.* Unpublished Master's Thesis, Department of Anthropology, East Carolina University.

Cronin, T. M., R. Thunell, G. S., Dwyer, C. Saenger, M. E. Mann, C. Vann, and R. R. Seal II
2005 Multiproxy Evidence of Holocene Climate Variability from Estuarine Sediments, Eastern North America. *Paleoceanography* 20: 1-21.

Daniel, I. R., Jr.
2002a Stratified Early-Middle Holocene Remains in the North Carolina Coastal Plain. *Southeastern Archaeological Conference Special Publication* 7: 6-11.

2002b *Geoarchaeological Investigations at Barber Creek (31PT259), Greenville, North Carolina*. Report prepared under a Historic Preservation Fund Grant from the United States Department of Interior and administered by the North Carolina Division of Archives and History.

Daniel, I. R., Jr., Keith C. Seramur, Tara L. Potts, and Mathew W. Jorgenson
2008 Searching a Sand Dune: Shovel Testing the Barber Creek Site. *North Carolina Archaeology* 57: 50-77

Daniels, R. B., Gamble, E. E., and Boul, S.W.
1969 Eolian Sands Associated with Coastal Plain River Valleys—Some Problems in their Age and Source. *Southeastern Geology* 11: 97-110.

Farrell, K. M., H. E. Mew, A. J. Keyworth, and T. W. Clark
1991 Comprehensive Landscape Analysis, Geomorphology, and Sequence Stratigraphy in Eastern North Carolina's Little Contentnea Creek Watershed of the Neuse River Basin: Methods for Constructing Reconnaissance-level Geologic Maps of a Relict Plio-Pleistocene Terrane. In *Surficial Geology and Shallow Aquifer System of the Little Contentnea Creek Watershed of the Neuse River Basin, North Carolina,* eds. K. M. Farrell and A. J. Keyworth, Carolina Geological Society Annual Field Trip, Nov. 14-16, 2003, p. 1-17.

Feathers, James K.
2003 Use of Luminescence Dating in Archaeology. *Measurement and Science Technology* 14:1493-1509.

Feathers, James K., Vance T. Holliday, and David J. Meltzer
2006a Optically Stimulated Luminescence Dating of Southern High Plains Archaeological Sites. *Journal of Archaeological Science* 33: 1661-1665.

Feathers, James, K., Edward J. Rhodes, Sebastien Huot and Joeseph M. McAvoy
2006b Luminescence Dating of Sand Deposits Related to Late Pleistocene Human Occupation at the Cactus Hill Site, Virginia, USA. *Quaternary Geochronology* 1: 167-187.

Fournet, Stephen C.
1990 *Pleistocene-Holocene Sediment Aggradational History of the LowerTar River and the Upper Pamlico River Estuary, North Carolina.* Unpublished Master's Thesis, Department of Geology, East Carolina University, Greenville, North Carolina, 192 p.

Frederick, Charles, D., Mark D. Bateman, and Robert Rogers
2002 Evidence for Eolian Deposition in the Sandy Uplands of East Texas and the Implications for Archaeological Site integrity. *Geoarchaeology: An International Journal* 17: 191-217.

Friedman, G. M.
1961 Distinction between Dune, Beach, and River Sands from their Textural Characteristics. *Journal of Sedimentary Petrology* 31: 514-529.

1979 Address of the Retiring President of the International Association of Sedimentologists: Differences in Size Distributions of Populations of Particles among Sands of Various Origins. *Sedimentology* 26: 3-32.

Gailbraith, R. F., R. G. Roberts, G. M., Laslett, H. Yoshida, and J. M. Olley
1999 Optical Dating of Single and Multiple Grains of Quartz from Jinmium Rock Shelter, Northern Australia: Part I, Experimental Design and Statistical Models. *Archaeometry* 41, 2: 339-364.

Goman, Michelle, and David S. Leigh
2004 Wet Early to Middle Holocene Conditions on the Upper Coastal Plain of North Carolina. *Quaternary Research* 61, 3: 256-264.

Gunn, Joel, D. and John E. Foss
1992 Copperhead Hollow (38CT58): Middle Holocene Upland Conditions on the Piedmont-Coastal Plain Margin. *South Carolina Antiquities* 24: 1-17.

Huntley D. J., D. I. Godfrey-Smith, and M. L. W. Thewalt
1985 Optical Dating of Sediments. *Nature* 313: 105–107.

Ivester, Andrew, H., David S. Leigh, and Dorothy I. Godfrey-Smith
2001 Chronology of Inland Eolian Dunes on the Coastal Plain of Georgia, USA. *Quaternary Research* 55: 293-302.

Ivester, Andrew, H., and David S. Leigh
2003 Riverine Dunes on the Coastal Plain of Georgia, USA. *Geomorphology* 51: 289 -311.

Ivester, Andrew H., Mark J. Brooks, and Christopher R. Moore
2011 Geomorphological Investigations: Archaeological Sites 38RD841/842/844, Fort Jackson, South Carolina. *Southeastern Geology (in revision).*

Johnson, Donald L.
1990 Biomantle Evolution and the Redistribution of Earth Materials and Artifacts. *Soil Science* 149: 84-102.

Johnson, P. K.
2007 *Characterization of Surface Water/Groundwater Interactions along a Coastal Plain River.* Unpublished Master's Thesis Department of Geological Sciences, East Carolina University, Greenville, NC, 215 p.

Leigh, David S.
1998a Evaluating Artifact Burial by Eolian Versus Bioturbation Processes, South Carolina Sandhills, USA. *Geoarchaeology* 13: 309-330.

1998b *Geomorphic Reconnaissance of the Overhills Tract at Fort Bragg with Special Emphasis on Bioturbation and Burial of Artifacts in Upland Sands*. Report submitted to Southeastern Archaeological Services, December 11, 1998.

2001 Buried Artifacts in Sandy Soils: Techniques for Evaluating Pedoturbation Versus Sedimentation. In *Earth Sciences and Archaeology*, edited by P. Goldberg, V.T. Holiday, and C.R. Ferring, pp. 269-295. Kluwer Academic/Plenum Publishers, New York.

2004 Geomorphic Processes Influencing Archaeological Site Burial at Fort Bragg. Final report submitted to the Fort Bragg Cultural Resources office, Fort Bragg, North Carolina.

2006 Terminal Pleistocene Braided to Meandering Transition in Rivers of the Southeastern USA. *Catena* 66: 155-160.

2008 Late Quaternary Climates and River Channels of the Atlantic Coastal Plain, Southeastern USA. *Geomorphology* (2008) doi:10.1016/j.geomorph.2008.05.024

Leigh, David S., Pradeep Srivastava, and George A. Brook
2004 Late Pleistocene Braided Rivers of the Atlantic Coastal Plain, USA. *Quaternary Science Review* 23: 65-84.

Lepper, Kenneth, Niels Agersnap Larsen, and Stephen W.S. McKeever.
2000 Equivalent Dose Distribution Analysis of Holocene Eolian and Fluvial Quartz Sands from Central Oklahoma. *Radiation Measurements* 32: 603-608.

Lepper, K. and Stephen W.S. McKeever
2002 An Objective Methodology for Dose Distribution Analysis. *Radiation Protection Dosimetry,* 101: 349-352.

Lian, Olav B. and Richard G. Roberts
2006 Dating the Quaternary: Progress in Luminescence Dating of Sediments. *Quaternary Science Review* 25: 2449-2468.

Maddry, John W.
1979 Geologic History of Coastal Plain Streams Eastern Pitt County, North Carolina. Unpublished Master's thesis, Department of Geology, East Carolina University, Greenville, North Carolina, 102 p.

Macphail, Richard I., and Joseph M. McAvoy
2008 A Micromorphological Analysis of Stratigraphic Integrity and Site Formation at Cactus Hill, an Early Paleoindian and Hypothesized Pre-Clovis Occupation in South-Central Virginia, USA. *Geoarchaeology* 23: 675-694.

Mallinson, David J., Shannon A. Mahan and Christopher R. Moore
2008 High-resolution Shallow Geologic Characterization of a Late Pleistocene Eolian Environment Using Ground Penetrating Radar and Optically Stimulated Luminescence Techniques: North Carolina, USA. *Southeastern Geology* 45: 161-171.

Markewich, Helaine W., and William Markewich
1993 *Overview of Pleistocene and Holocene Inland Dunes in Georgia and the Carolinas-Morphology, Distribution, Age, and Paleoclimate*, United States Geological Survey Bulletin 2069. Washington, DC.

Marlon, J. R., P. J. Bartlein, M. K. Walsh, S. P. Harrison, K. J. Brown, M. E. Edwards, P. E. Higuera, M. J. Power, R. S. Anderson, C. Briles, A. Brunelle, C. Carcaillet, M. Daniels, F. S. Hu, M. Lavoie, C. Long, T. Minckley, P. J. H. Richard, A. C. Scott, D. S. Shafer, W. Tinner, C. E. Umbanhowar, Jr. and C. Whitlock
2009 Wildfire Response to Abrupt Climate Change in North America. *Proc. Natl Acad Sci* USA 106: 2519-2524.

Mayewski, P. A., E. E. Rohling, J. C. Stager, W. Karlén, K. A. Maasch, L. D. Meeker, E. A. Meyerson, F. Gasse, S. van Kreveld, K. Holmgren, J. Lee-Thorp, G. Rosqvist, F. Rack, M. Staubwasser, R. R. Schneider, and E. J. Steig
2004 Holocene Climate Variability. *Quaternary Research* 62: 243-255.

McFadden, Paulette S.,
2009 *Geoarchaeological Investigations of Dune Formation and Artifact Deposition at Barber Creek (31PT259).* Unpublished Master's Thesis, Department of Anthropology, East Carolina University.

Michie, James L.
1990 Bioturbation and Gravity as a Potential Site Formation Process: the Open Air Site 38GE261, Georgetown County, South Carolina. *South Carolina Antiquities* 22: 27-46.

Moore, Christopher R. and Mark J. Brooks
2011 Evidence for Widespread Eolian Activity in the Coastal Plain Uplands of North and South Carolina Revealed by High-Resolution LiDAR Data. Poster presented at the 60th Annual Meeting of the Southeastern Section, Geological Society of America, Wilmington, NC. (available at http://srarp.org/posters/dune_2011.pdf)

Moore, Christopher R., and I. Randolph Daniel, Jr.
2010 Site Formation Processes and Climatic Disequilibrium: Geoarchaeological Evidence for Rapid and Episodic Climate Change Events in the North Carolina Coastal Plain. Poster presented at the 66th Annual Meeting of the Southeastern Archaeological Conference, Mobile, AL.

Moore, Christopher R., I. Randolph Daniel, Jr., Keith C. Seramur, David J. Mallinson, and Michael O'Driscoll
2006 Geoarchaeological Investigations of Relict Sand Dunes in the North Carolina Coastal Plain: New approaches for modeling Tar River Fluvial History and Paleoclimate. Paper presented at the Geological Society of America Conference, Philadelphia, PA.

Moore, Christopher, R.
2009a Geoarchaeology and Geochronology at the Owens Ridge Site (31ED369). North Carolina Archaeological Society Newsletter, Vol. 18, No. 4.

2009b *Late Quaternary Geoarchaeology and Geochronology of Stratified Aeolian Deposits, Tar River, North Carolina.* Unpublished Ph.D. Dissertation, Coastal Resources Management Ph.D. Program, East Carolina University.

Murray, A. S., J. M. Olley, and G. G. Caitcheon
1995 Measurement of Equivalent Doses in Quartz from Contemporary Water-Lain Sediments Using Optically Stimulated Luminescence. *Quaternary Science Reviews* 14: 365-371.

Murray, A. S., and Roberts, R. G.
1997 Determining the Burial Time of Dingle-Grains of Quartz using Optically Simulated Luminescence. *Earth and Planetary Science Letters*, 152: 163-180.

O'Brien, S. R., P. A. Mayewski, L.D. Meeker, D. A. Meese, M. S. Twickler, and S. I. Whitlow
1995 Complexity of Holocene Climate as Reconstructed from a Greenland Ice Core. *Science* 5244: 1962–1964.

O'Driscoll, Michael, Patrick Johnson, and David Mallinson
2010 Geological Controls and Effects of Floodplain Asymmetry on River–Groundwater Interactions in the Southeastern Coastal Plain, USA. *Hydrogeology Journal* 18: 1265-1279.

Olley, J. M., G. Caitcheon, and A. Murray
1998 The Distribution of Apparent Dose as Determined by Optically Stimulated Luminescence in Small Aliquots of Fluvial Quartz: Implications for Dating Young Sediments. *Quaternary Science Review* 17: 1033-1040.

Olley, J. M., T. Pietsch, and R. G. Roberts
2003 Optical Dating of Holocene Sediments from a Variety of Geomorphic Settings using Single-grains of Quartz. *Geomorphology* 60: 337-358.

Otvos, Ervin, G., and David M. Price
2001 Late Quaternary Inland Dunes of Southern Louisiana and Arid Climate Phases in the Gulf Coast Region. *Quaternary Research* 55: 150-158.

Overpeck, Jonathan and Robert Webb
2000 Nonglacial Rapid Climate Change Events: Past and Future. *Proceedings of the National Academy of Sciences of the United States of America*, Vol. 97, No. 4. (Feb. 15, 2000), pp. 1335-1338.

Phelps, David S.
1983 Archaeology of the North Carolina Coast and Coastal Plain: Problems and Hypotheses. In *Prehistory of North Carolina: An Archaeological Symposium*, edited by Mark A. Mathis and J.A. Crow, pp. 1-52. North Carolina Division of Archives and History, Department of Cultural Resources, Raleigh.

Rhodes, Edward J.
2011 Optically Stimulated Luminescence Dating of Sediments Over the Past 200,000 Years. *Annu. Rev. Earth Planet. Sci.* 2011. 39: 461–88.

Riggs, Stanley R.
2001 Anatomy of a Flood, in *Facing Our Future: Hurricane Floyd and Recovery in the Coastal Plain*, eds. S.R. Maiolo, J.C. Whitehead, M. McGee, L. King, J. Johnson, and H. Stone. Coastal Carolina Press, p. 29-46.

2009 *Geologic Evolution of the Lower Roanoke River and Albemarle Sound Drainage System in Response to Climate and Sea-Level Change*. (In review) U.S. Geological Survey, Scientific Investigations Report.

Seramur, Keith C.
2003 Geoarchaeology of Site 31HT435 Harnett County, North Carolina. Report submitted to New South Associates, Inc. in response to widening of NC87, Federal AID Project No. HBF-87 (4), State Project 8.T540302, TIP Project No. 2238.

Seramur, Keith C. and Ellen A. Cowan
2002 Geoarchaeology of Site 31PT259 at the Confluence of Barber Creek and the Tar River Pitt County, Greenville, North Carolina. Report prepared for I. Randolph Daniel, Jr., Department of Anthropology, East Carolina University, Greenville, North Carolina.

2003 Site Formation Processes of Buried Cultural Horizons in the Sandhills of North Carolina: An Example from the Horses Grazing Site (31MR205). *North Carolina Archaeology* 52: 101-118.

Seramur, K. C. and E. A. Cowan, D. J. Hettinger, and I. R. Daniel, Jr.,
2003 Interpreting Site Formation Processes at a Stratified Archaeology Site in a Sand Dune on the Atlantic Coastal Plain. Paper presented at the 33rd Annual Meeting of the Middle Atlantic Archaeological Conference, Virginia Beach, VA.

Soller, David R.
1988 Geology and Tectonic History of the Lower Cape Fear River valley, Southeastern North Carolina. *U.S. Geological Survey Professional Paper 1466-A.*

Springer, Gregory S., Harold D. Rowe, Ben Hardt, R. Lawrence Edwards, and Hai Cheng
2008 Solar Forcing of Holocene Droughts in a Stalagmite Record from West Virginia in East-Central North America. *Geophysical Research Letters* 35: L17703

Steig, Eric, J.
1999 Mid-Holocene Climate Change. *Science,* New Series, Vol. 286: 1485-1487.

Suther, Bradley E., David S. Leigh, and George A. Brook
2011 Fluvial Terraces of the Little River Valley, Atlantic Coastal Plain, North Carolina. *Southeastern Geology* 48: 73-93.

Viau, André E., Konrad Gajewski, Philippe Fines, David E. Atkinson, and Michael C. Sawada
2002 Widespread Evidence of 1500 yr Climate Variability in North America During the Past 14000 yr. *Geology* 30: 455-458.

Viau, A. E., K. Gajewski, M. C. Sawada, and P. Fines
2006 Millennial-scale Temperature Variations in North America During the Holocene. *Journal of Geophysical Research* 111, D09102. (Downloadable data grids at: http://www.ncdc.noaa.gov/paleo/pubs/viau2006/viau2006.html).

Wagner, Daniel P., and Joseph M. McAvoy
2004 Pedoarchaeology of Cactus Hill, A Sandy Paleoindian Site in Southeastern Virginia, USA. *Geoarchaeology* 19: 297-322.

Waters, Michael R., Steven L. Forman, Thomas W. Stafford, Jr., and John Foss
2009 Geoarchaeological Investigations at the Topper and Big Pine Sites, Allendale County, Central Savannah River, South Carolina. *Journal of Archaeological Science* (2009), doi:10.1016/j.jas.2008.12.020

Willard, Debra A., Christopher E. Bernhardt, David A. Korejwo, and Stephen R. Myers
2004 Impact of Millennial-Scale Holocene Climate Variability on Eastern North America Terrestrial Ecosystems: Pollen-Based Climate Reconstruction. *Global and Planetary Change* 47: 17-35.

Zayac, Tracy, Fredrick J. Rich, and Lee Newson
2001 Paleoecology and Depositional Environments of the McClelland Sandpit Site, Douglas, Georgia. *Southeastern Geology* 40: 259-272.

LITHIC RESOURCES OF THE NORTH CAROLINA COASTAL PLAIN: PREHISTORIC ACQUISITION AND UTILIZATION PATTERNS

Lawrence E. Abbott, Jr.

Kathleen M. Farrell

John G. Nickerson

Norman K. Gay

The Coastal Plain of North Carolina (NC) is traditionally regarded as an area that lacks stone resources of good fracture quality. Although exceptions to this assumption occur along major rivers such as the Roanoke (Phelps 1983:22), to date, no studies fully document site specific source areas or the general distribution of source areas. The existing paradigm is an assumption, an undocumented given, that the Coastal Plain lacks predictable and reliable sources of lithic raw materials. We propose that this is not the case. Presently, there are no definitive archaeological models regarding the nature of the lithic landscape (e.g., Gould 1980; Gould and Saggers 1985) for the Coastal Plain of NC. The concept of a lithic landscape provides an environmental context to frame archaeological studies related to raw material acquisition. It also describes and defines the relative availability of lithic raw materials present for use by a population(s) in any given region (Gould 1980; Butzer 1982; Gould and Saggers 1985). This lack of a definitive model is particularly apparent in terms of how the lithic landscape relates to the patterns of prehistoric raw material procurement and use.

Our goal is to develop a baseline conceptual model that explains patterns of lithic raw material availability and the local procurement patterns of Native Americans. The primary purposes of this study are, therefore, to initiate characterization of the lithic landscape in the Coastal Plain (CP) of NC and determine how ancient Native Americans may have utilized and procured lithic resources. Key to this study is recognition of general patterns in the geomorphology of the landscape, its underlying geology, and the distribution of accessible lithic raw materials that are available for utilization as sources of stone for tool production. Specific areas in three river basins will be targeted for detailed analyses of site location, geologic and geomorphic setting, knowledge of distribution of archaeological sites, and the raw material use patterns. Once developed, the model will be tested and refined, over a long-term, more comprehensive study of prehistoric lithic raw material procurement and use. At its most basic level, this research serves as a study of human response and adaptation to the natural setting.

OVERVIEW OF COASTAL PLAIN LANDSCAPE

This section presents an overview of the NC-CP as a diverse, natural landscape and focuses on the geologic and geomorphic processes that over time created and shaped it. Emerging from this discussion is recognition of the complexity of this region and its underlying geologic framework, and the vast resource potential it offered prehistoric populations. Here we include basic descriptions of the geologic setting, surface geomorphology and landform evolution, the underlying geologic framework, and the dynamic processes that generated the Coastal Plain.

The concepts of sedimentary facies and sequence stratigraphy are introduced as predictive tools used by geologists and related to potential sources for lithic raw materials.

Generation of Maps Using Geographical Information Systems (GIS)

Regional-scale maps using ArcGIS© software were constructed with Light Detecting and Ranging (LiDAR) elevation models, and geologic and geographic features data layers. Statewide integer LiDAR from the NC Department of Transportation (NCDOT) (http://www.ncdot.org/it/gis/), with a spatial resolution of 24.4 m (80 ft), was used to produce these maps. NCDOT LiDAR data was derived from the North Carolina Floodplain Mapping Program (http://www.ncfloodmaps.com/), which provides higher-resolution data as 10,000 x 10,000-foot ASCII files, with a maximum spatial resolution of 6.09 m (20-ft).

Data layers, available from the North Carolina Geological Survey (NCGS), include polygons for the published geologic map of North Carolina (NCGS 1985), physiographic provinces, and the interpreted NC Fall Zone. Statewide geographic features (e.g., river basins and county boundaries) are available at http://www.nconemap.com. The scarp layer is from Daniels and Kane (2001). The projection is North Carolina State Plane NAD 83. To explain the geologic map, the Geological Society of America provides a geologic time scale at its website (http://www.geosociety.org/science/timescale/timescl.pdf).

Geologic Setting

The NC-CP is the emerged, landward portion of the Atlantic continental shelf (Figure 2-1A), which forms the western rim of the North Atlantic Basin. The continental shelf and rise are underlain by a seaward-thickening wedge of sediment that thins westward to a feather edge along its Fall Zone boundary with Piedmont bedrock. This clastic wedge attains a maximum on land thickness of 3009 m (9,854 ft) at Cape Hatteras (Lawrence and Hoffman 1993) and includes deposits of Cretaceous through Quaternary age (Brown et al. 1972). The greatest thicknesses (7-10 km) occur offshore beneath the continental slope and rise (Drake et al. 1968).

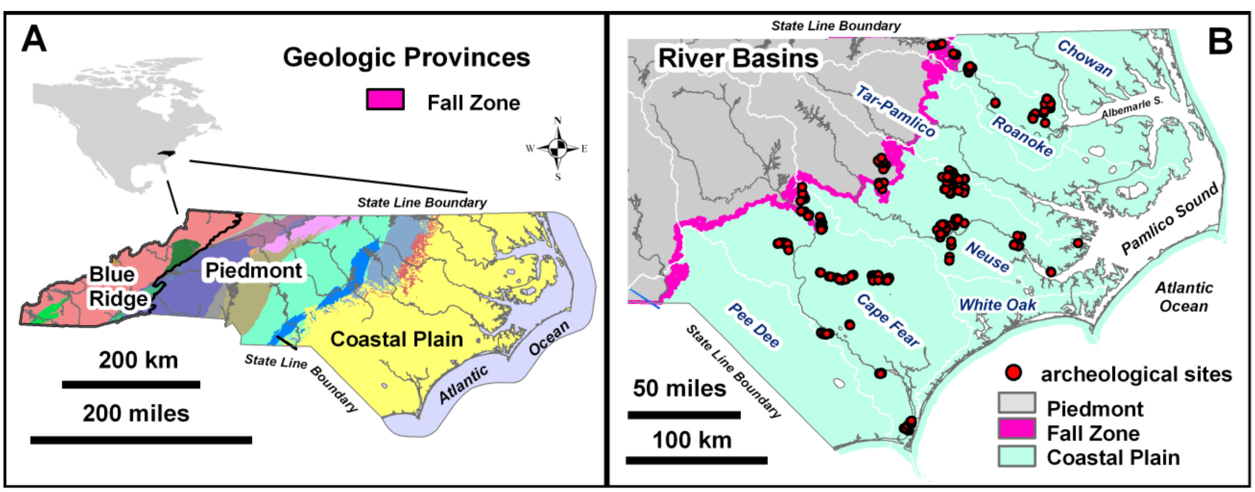


Figure 2-1. The Coastal Plain of North Carolina in the context of A) geologic provinces, and B) river basins, the Fall Zone, and archeological sites chosen for this study.

The NC Coastal Plain is mostly a relict, Plio-Pleistocene landscape characterized by a series of progressively younger scarps, or paleoshorelines, and intervening terraces that step down in elevation and age towards the coast (Figure 2-2) and into river basins (Figure 2-3). This is traditionally called stairstep topography. Seven river basins dissect the CP (Figure 2-1B) so that its low-relief, flat, eastward-dipping coastwise terraces are separated by incised valleys with terraced borders (see Colquhoun 1966). Incised valleys are commonly filled and buried on the continental shelf. Glacioeustatic changes in sea level in the Late Tertiary and Quaternary (~ the past 5 Ma) drove the marine transgressive-regressive (T-R) cycles that sculpted this landscape. The surficial deposits that underlie the relict landscape include a complex assemblage of marine, barrier island, estuarine, fluvial and other Coastal Plain deposits.

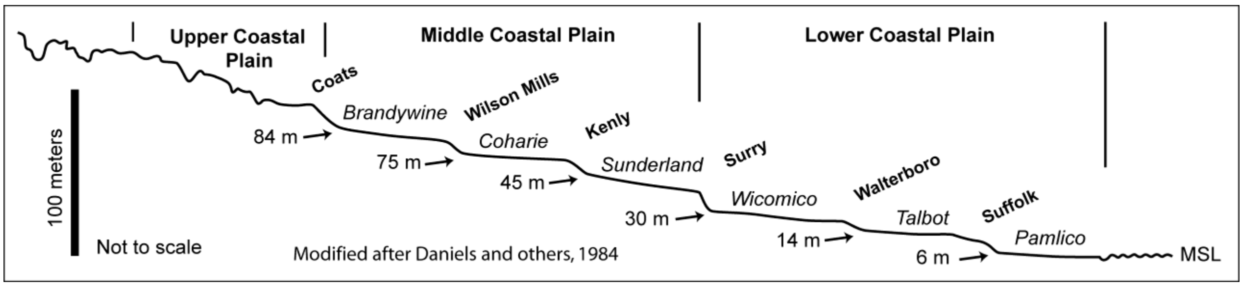


Figure 2-2. Stairstep topography (dip-parallel cross-sectional view) as depicted by a series of marine terraces that step down to the coast across interfluves in a ramp setting, between incised valleys.

Figure 2-3 shows geomorphic terminology applied to landscape position. River basin boundaries follow the highest point of land between basins (the drainage divides). Interfluves are high elevation flat areas that form (mostly) non-depositional surfaces and the divides between incised valleys (terraced drainages) (see Schumm 1993). On the Coastal Plain, interfluves correspond to the marine terraces that step down to the coast (Figure 2-2). The term ramp, derived from sequence stratigraphy terminology, refers to broad flat regions of a continental shelf, and is used interchangeably with marine terrace. Incised valleys truncate formerly extensive marine terraces. Fluvial and estuarine terraces occur in the incised valleys.

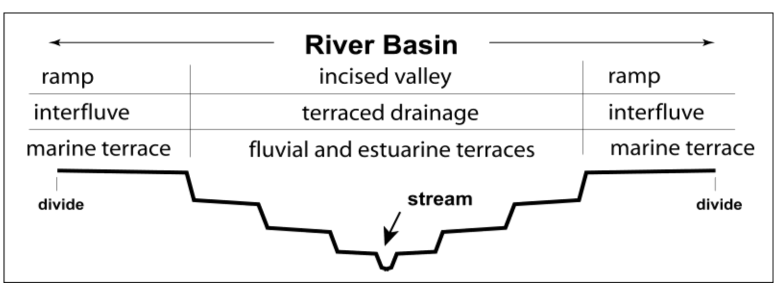


Figure 2-3. Sketch (orthogonal cross sectional view) through a river basin that shows stairstep topography from the top of an interfluve to the stream at the base of a terraced drainage. Also shown are geomorphic configurations for incised valley and ramps (sequence stratigraphy terminology), and marine, estuarine and fluvial terraces.

In the Fall Zone (Figure 2-1B), dissection of the Coastal Plain's clastic wedge is extensive, forming a zone of disconnected sedimentary outliers that overlie bedrock or saprolite (weathered bedrock). In this zone, outliers, some of which are pre-Pliocene in age, are restricted to upland interfluves, with bedrock exposed in adjacent streams. Terraces and alluvium typically border drainages and may extend upstream into the Piedmont along drainages or river valleys. Potential lithic sources in a Coastal Plain setting are: 1) *in situ* upstream bedrock, 2) upstream sedimentary outliers, 3) downstream sedimentary formations, 3) and reworked alluvium.

The archaeological sites examined here occur in the Cape Fear, Neuse and Roanoke River Basins (Figure 2-1B). Maps of the Coastal Plain show the distribution of sites in the context of surficial geomorphic features (Figure 2-4); scarps, terraces, and incised valleys, and the relative ages of the deposits (Figure 2-5). These maps are based on: 1) LiDAR elevation models, 2) named scarps (e.g., Daniels et al. 1984), 3) unpublished stratigraphic investigations by NC Geological Survey, and 4) correlative units in adjacent Virginia (Mixon et al. 1989). The following sections explain how the geomorphic conceptual model (Farrell et al. 2003) was developed for the landscape shown in these maps.

Previous Work – Surficial Geology

Traditionally, geologic maps of the Atlantic Coastal Plain are products that integrate surface landforms and subsurface stratigraphy. Early workers subdivided the Atlantic Coastal Plain into ocean-facing scarps and marine terraces (e.g., Johnson 1904; Clark et al. 1912; Cooke 1931, 1935; Flint 1940). Shattuck (1901) established the concept of a terrace formation (a flat, seaward thickening wedge of marine sediment that pinches out at the toe of a landward, wave-cut scarp). Several sources (e.g., Oaks and Dubar 1974) provide historical summaries of the terrace formation concept, its nomenclature and application. Clark and Miller (1906) inferred an emergent-submergent cycle for each maximum sea level elevation, or highstand, marked by a scarp. Glacioeustatic sea level fluctuations provided the mechanism for these cycles.

In landmark studies in eastern Virginia, Oaks and Coch (1973) recommended abandoning the terrace formation concept, recognizing that relict landforms were underlain by a complex assemblage of sedimentary deposits, or facies. They retained the idea of an unconformity-bounded unit associated with marine highstands, but included the possibility of relict coeval barrier, backbarrier, estuarine and fluvial facies preserved in more landward (and subsurface) positions. Their work also expanded the concept of a scarp from a simple wave-cut cliff to a potentially complex paleoshoreline associated with a variety of geologic environments.

With a few exceptions (Daniels et al. 1966a, 1966b, 1977a, 1977b, 1978; Oaks and Dubar 1974; Owens 1989) the shallow, post-Miocene geologic framework of eastern North Carolina is poorly known. Surficial maps based on soils morphology are available (Daniels et al. 1984, 1999; Mew et al. 2002), but do not show traditionally defined geologic map units. The geologic map of NC (NCGS 1985) mostly does not show surficial Pliocene and Pleistocene formations for the Coastal Plain. The map does show the older, underlying subcrops (Figure 2-6) that are mostly independent from surficial features. For example, surficial units east of the Suffolk Scarp are grouped as “Quaternery – Surficial Deposits - Undivided”.

Formalized stratigraphic units in NC include the Pliocene Yorktown and Duplin Formations, and the Pleistocene James City, Flanner Beach, and Waccamaw Formations. The map extent and ages of these units relative to relict landforms is poorly known. These units are commonly differentiated using fossil assemblages. A web site provides historical context and citations for formal stratigraphic names (http://ngmdb.usgs.gov/Geolex/geolex_qs.html). The recent lowering of the base of the Pleistocene Epoch to correspond with that of the Quaternary System boundary (the Gelasian Global Stratotype Section and Point) so that it is at 2.58 Ma rather than the previous 1.8 Ma (Gibbard et al. 2010) impacts the local stratigraphic nomenclature significantly.

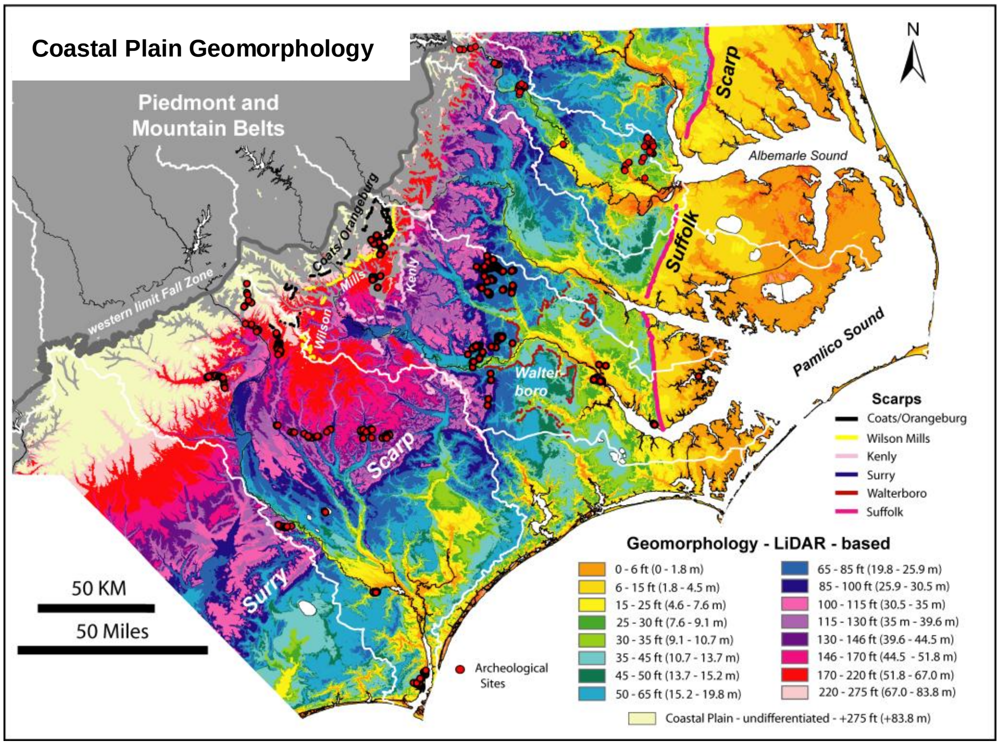


Figure 2-4. Geomorphology of the Coastal Plain of North Carolina, derived from a LiDAR-based elevation model. Scarp terminology and extents from Daniels and Kane (2001) and Daniels et al. (1984).

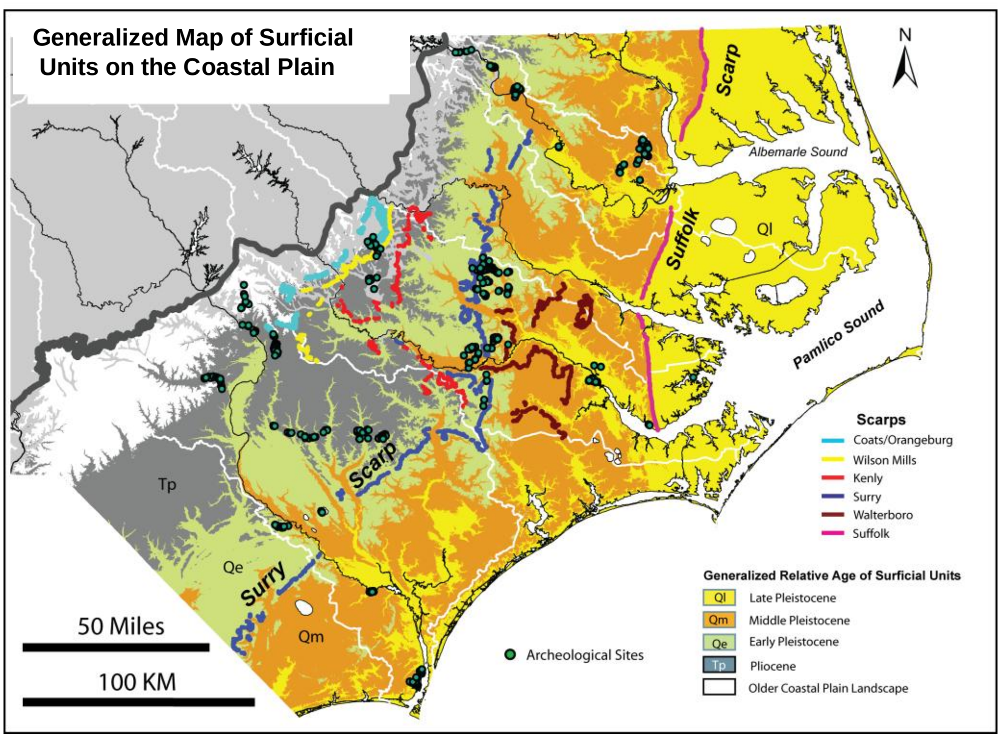


Figure 2-5. Map of surficial units showing approximate distribution of Pleistocene, Pliocene and older Coastal Plain deposits, derived from a LiDAR elevation model.

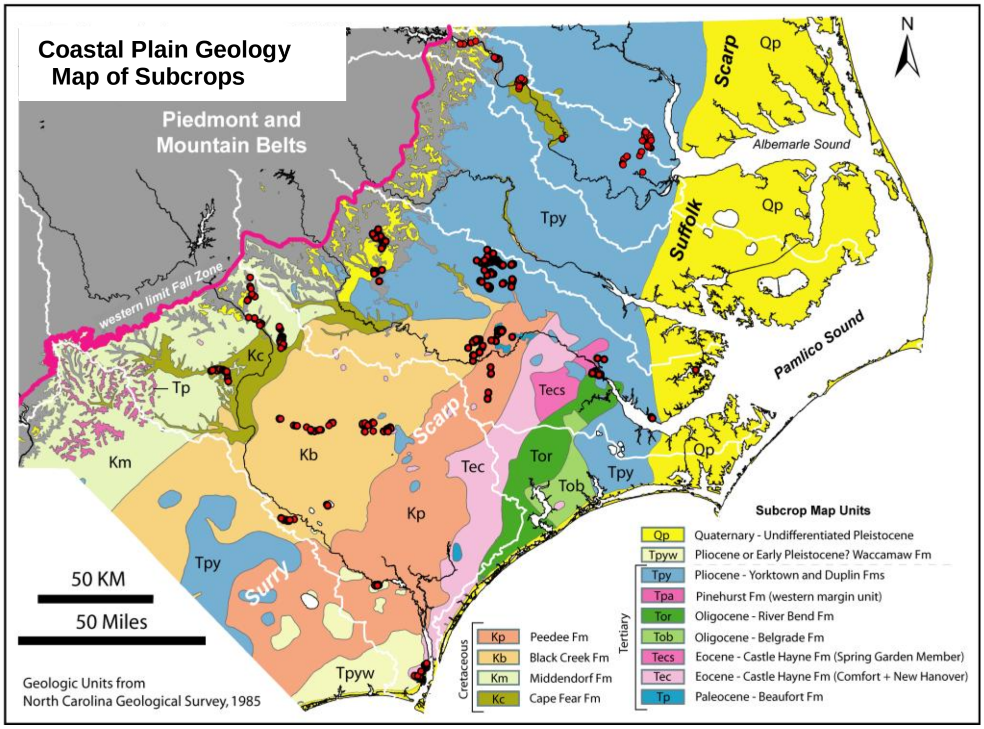


Figure 2-6. Geologic Map of North Carolina (NCGS, 1985) shows subcrop formations that underlie unmapped surficial geologic units.

Ongoing research, initiated by Riggs et al. (1992), and collaborative between the U.S. Geological Survey, NCGS, and East Carolina University, intends to integrate stratigraphy, map units, ages, marine isotope stages, and glacioeustatic sea level oscillations for Quaternary deposits (e.g., Wehmiller et al. 2010; Mallinson et al. 2005, 2007, 2010; Culver et al. 2008, 2011). Unpublished, regional-scale cross sections are in preparation (Farrell et al. 2008) for areas east of the Suffolk Scarp and the Outer Banks. To date, Parham (2009) provides the most comprehensive regional treatment of Late Pleistocene stratigraphy in this area.

Stratigraphic Concepts

Two components of a modern stratigraphic analysis - facies analysis and sequence stratigraphy - are defined here. From a geologic perspective, lithic raw materials of the CP are process-generated and facies-controlled, and are commonly concentrated along surfaces defined in a sequence stratigraphic context. Sequence stratigraphy is a recent paradigm shift for classic stratigraphers, and is considered a major revolution in geology (Miall 1995; Catuneanu 2006). Familiarity with these concepts helps describe and interpret landscape positions for archaeological studies, and predict the geologic occurrence of potential lithic sources. The Society for Sedimentary Geology (SEPM) provides examples of on-line resources to better understand sedimentary facies, dynamic stratigraphic processes, and sequence stratigraphy (http:// http://www.sepmstrata.org/).

Depositional environments, processes, landforms, and sedimentary facies are interrelated. A facies is a lithologically distinct body of rock or sediment, with geometry and internal characteristics that reflect the processes that acted together to form a deposit in a specific sedimentary environment (Krumbein and Sloss 1963). A facies is defined by a geomorphic form and its bounding surfaces and is a geometrical component of an evolving landscape (Farrell 2001). An example of a facies is a ribbon-shaped, crossbedded sand, that formed in a fluvial environment, during the channel migration process (see Farrell 2001:137). Facies, their geometries, and their stacking arrangement in the rock record, form the architectural elements of a sedimentary deposit.

Catuneanu (2006) provides definitions that are useful in linking facies with sequence stratigraphy. Facies analysis is a fundamental sedimentological method of characterizing bodies of rock with unique lithologic, physical and biological attributes relative to all adjacent deposits. A depositional system is the product of sedimentation in a particular depositional environment and includes the three-dimensional assemblage, or architecture, of strata whose geometry and facies lead to the interpretation of a specific paleo-depositional environment. Depositional systems refer to products (bodies of rock in the stratigraphic record), whereas depositional environments refer to active processes in modern areas of sediment accumulation.

The Coastal Plain clastic wedge is constructed from a series of depositional systems ranging in age from Cretaceous to Holocene. Many texts catalog depositional environments and describe facies models for a broad spectrum of depositional systems (e.g., Walker and James 2001; Reading 1996). Facies models are tools that help predict the spatial distribution of facies and their attributes in each depositional system. Catuneanu (2006:19) provides an example of a classification of depositional environments, based on the relative contributions of nonmarine and marine processes. For Coastal Plain settings, knowledge of facies models, sedimentary processes, and depositional systems provides bases for establishing geologically meaningful descriptions of the natural landscape, and predicting potential sources for lithic materials.

Sequence stratigraphy focuses on analyzing changes in facies, the geometric character of strata, and the identification of key surfaces to determine the chronological order of basin filling and erosional events; it emphasizes facies relationships and stratal architecture within a chronological framework (Catuneanu et al. 2009; Van Wagoner et al. 1990). Sequence stratigraphy includes the analysis of the sedimentary response and cyclic sedimentation patterns that emerge in response to base level changes, variations in sediment supply, and accommodation space, which is space available for sediment to accumulate (Posamentier and Allen 1999). Base level is controlled by an interplay between sea level oscillation and tectonism (uplift and subsidence), which creates accommodation. This interplay may be complex.

Facies models in the context of a sequence stratigraphic framework are useful as predictor tools. Dalrymple (1992:209) provides an example of a facies model that is relevant to identifying potential lithic sources on the southeast Atlantic Coastal Plain. This conceptual model is a hypothetical, coast-parallel, two-dimensional (2D), geologic cross section based on actual field data (Figure 2-7). It shows the predicted architecture of fluvial, estuarine and marine facies, and their bounding surfaces in a transgressive (sea level rising) system. Facies with gravel-sized clasts, the potential raw material for lithic assemblages, are generally associated with high energy current, wave, or storm conditions. Gravel, a size-grade classification term (> 2 mm diameter, after Wentworth (1922), includes granule-, pebble-, cobble- and boulder-sized clasts. Clasts are sedimentary particles. Gravel tends to be associated with fluvial and estuarine channels, tidal inlets, and along erosion surfaces such facies boundaries, transgressive surfaces, and unconformities.

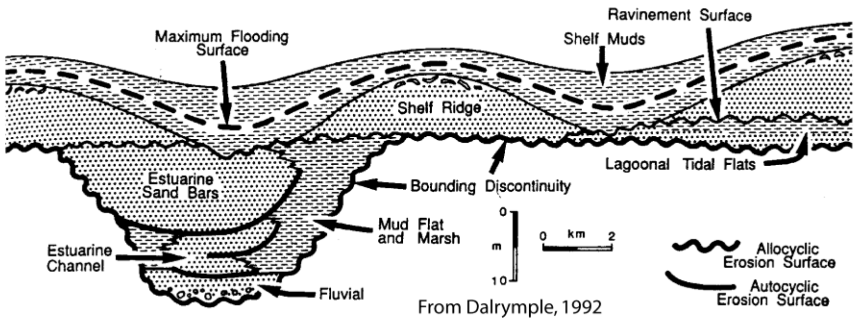


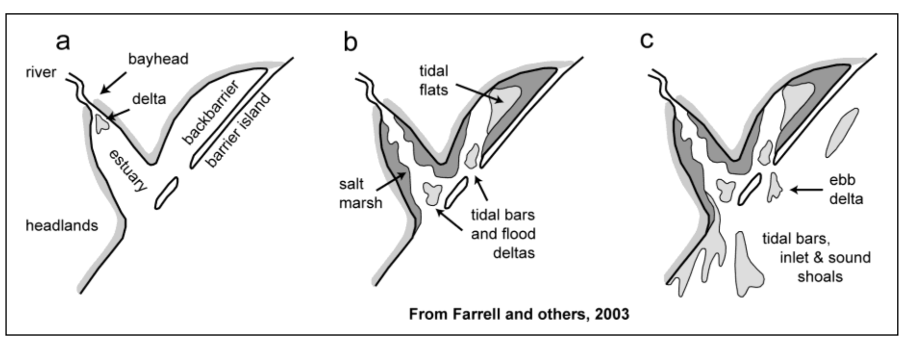
Figure 2-7. Example of a facies model that shows a hypothetical cross section parallel to a coast such as North Carolina's Outer Banks. The section shows the architecture and scale of sedimentary facies and bounding surfaces. Gravel-sized clasts may be preserved in fluvial and estuarine channel facies, and along bounding discontinuities.

Surface Geomorphology and Landform Evolution

The Coastal Plain is mantled by Holocene (modern <10,000 years old), relict Pleistocene (>10,000 – 2.58 Ma), and older relict features that are Pliocene (2.58 – 4.8 Ma) and possibly older. The Holocene rise in sea level is flooding river valleys and the interfluves between them. This section explains how a relict, dissected, Plio-Pleistocene landscape is divided into a series of progressively younger, depositional systems and their landform elements. The geomorphic configuration of the landscape, combined with the distribution of map units, provide bases for subdividing or compartmentalizing the Coastal Plain to define lithic landscapes.

The modern NC Coastal Plain (Figure 2-4) includes a set of barrier islands (the Outer Banks) that separate the Atlantic Ocean from backbarrier sounds (Albemarle and Pamlico Sounds). Rivers, such as the Cape Fear, Neuse, and Roanoke, have funnel-shaped estuaries near their mouths. These and other landforms associated with a Holocene, embayed coast are summarized in Figure 2-8 (Farrell et al. 2003). At the head of each estuary is the bayhead and its delta (Figure 2-8a); this may occur as a subaqueous feature, a tidal flat, or a vegetated marsh or wetland. Landward of the bayhead, the rivers tend to be incised into their floodplains and older terraces. At the bayhead, the river changes its form from pipe-shaped conduit to funnel-shaped estuary. Similar, relict landform patterns are repeated in the older landscapes.

Figure 2-8. Landforms associated with the Holocene embayed coastline, and other relict marine highstand positions (map view). From Farrell et al., 2003.



Elevation patterns suggest that the Coastal Plain landscape consists of a series of downstepping, paleo-coastlines with associated nested, embayed paleovalleys. Figure 2-9 is a simple conceptual model that shows a series of unconformity-bounded units, or depositional systems, that step downward to the coast and into an incised valley.

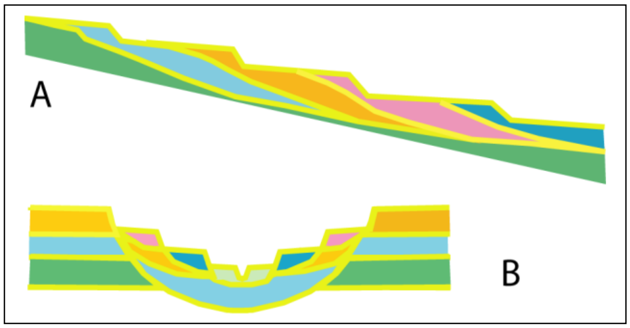


Figure 2-9. Conceptual model that shows stratigraphic architecture of a series of depositional systems, preserved in the geologic record as unconformity bounded units. A. Dip parallel section beneath coast-facing marine terraces. B. Orthogonal cross section through an incised valley.

To subdivide the Coastal Plain into unconformity-bounded units, the first task is to identify the marine (ocean facing) wave-cut scarps that mark highstand positions in relative sea level. Highstands may be marked by four coeval shorelines at the same elevation (Figure 2-8a): 1) an oceanside, coast-parallel marine shoreline; 2) a backbarrier shoreline on the leeward side of a barrier; 3) a shoreline on the headland side of a backbarrier sound, lagoon, tidal flat or salt marsh; and 4) a wave-cut scarp that extends upstream along the borders of estuaries. Figure 2-10 shows generalized shoreline features in cross section. Slope and toe elevation may vary along the extent of a shoreline. Identifying the best-fit elevation to explain all of these features is the key to defining a highstand position in relative sea level.

For each highstand position, elevation helps define smaller-scale landforms distributed along the paleoshoreline, such as those associated with estuaries and backbarrier environs (Figure 2-8b), and open shoreline (Figure 2-8c). Salt and freshwater wetland flats may border the estuary and the river channel. Landward of the bayhead, fluvial terraces mantled by wetland flats rise in elevation upstream along the drainage.

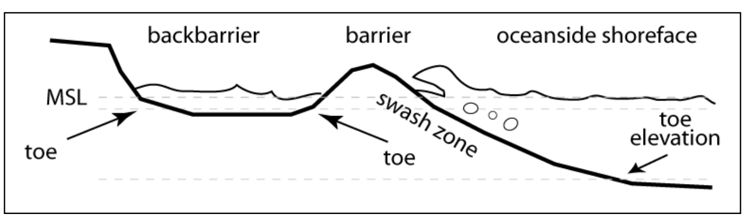


Figure 2-10. Variations in toe elevation at a marine highstand (cross sectional view) in relative sea level.

Assumptions for Stratigraphic Model

The stratigraphic model developed for southeast Virginia from a geomorphic analysis and targeted subsurface studies (e.g., Johnson and Berquist 1989; Mixon et al. 1989), applies south of the border in NC (see Figure 2-11). The model, used to help generate Figures 2-4 and 2-5, relates a series of unconformity-bounded, T-R cycles to regional landscape features and elevation. Each T-R cycle includes both paleovalley and interfluve deposits. The model (see Farrell et al. 2003) assumes that: 1) field data support development of regional relative sea level curves; 2) the shape of relative sea level curves is controlled primarily by glacial eustasy, recognizing that local sediment supply and subsidence affect landforms and differential facies thicknesses; 3) glacial eustasy affected large map extents; 4) successive highstand deposits step down to the coast; 5) unconformity-bounded T-R units are associated with sea level events; and 6) the distribution of strata related to sea level events requires confirmation via subsurface analysis at key localities. This mapping method does not provide absolute sea levels and ignores isostatic rebound.

Dynamic Processes and Lithic Resources

Our position is that, from a geologic perspective, the Coastal Plain is a dynamic, complex terrain, with great potential to yield a variable lithic landscape for human use. In this section, we explore typical associations between landscape position, dynamic geologic processes, gravel-sized clasts, and potential lithic resources. The discussion is specific for the mid-Atlantic Coastal Plain, which is part of a passive continental margin, and is based on the geomorphic and stratigraphic features preserved in that region. See Catuneanu (2006) for further information on the dynamic processes of landscape and basin evolution.

As relative sea level rises and transgresses across a Coastal Plain landscape, sedimentary environments and facies migrate landward, accompanied by an upward deepening of facies that culminates in a surface or zone of maximum flooding (Cattaneo and Steel 2003:187). As the shoreface migrates (Figure 2-10), the landscape is eroded, and a basal unconformity, or ravinement surface, is generated to mark this event. During transgressions and near highstands of sea level, sediment fills in accommodation (space) on the shelf, in estuaries and sounds, in backbarrier areas, and in the contiguous fluvial systems, provided that sediment and accommodation are available. Upstream areas are commonly incised throughout a transgression and may act as regions of sediment bypass. If the rate of sea level rise decreases relative to the rate of sediment supply, then the shoreline regresses, and progrades or migrates seaward. This process may construct a series of beach ridges that are preserved on a marine terrace. Commonly, relict topography indicates that shoreline landforms are abruptly abandoned when relative sea level falls. During falling stages in sea level or at lowstands, rivers may incise and deeply erode into terraces, valleys and subcrop formations.

Sediment deposited during T-R cycles includes mud, sand, and gravel-sized clasts. Climate and tectonic events, such as uplift in source areas and subsidence in basins, impact the relative volume of coarser grained sediment available for dispersal in a river basin or along a coast. Tectonic events affect stream slope and the amount of accommodation (space) available for infill. Some of the older and higher, coastwise terraces near the Fall Zone are mantled with near-surface, areally extensive gravel facies that may have formed as rivers and coastal zones responded to climatic, sea level, and/or tectonic events. Similar gravel facies are not common in the surficial Pliocene and Pleistocene deposits of lower elevation coastal terraces.

Cobble-sized clasts are concentrated in depositional environments associated with high-energy stream power, wave and storm energy. Incised valleys, with their terraced borders, are common sources for gravel-sized clasts. Large rock fragments may be eroded from upstream crystalline bedrock or indurated sedimentary outcrops. Coarser clasts may also be eroded from terrace deposits or geologic formations that are exposed along streams. As these clasts are transported downstream, they are broken, abraded, rounded, and redeposited. Clast size decreases in a downstream direction. In drainages, modern environments with gravel include channel floors (thalwegs), active bars, and swash-zone beaches along rivers and estuaries. On the open coast, modern gravels may be concentrated in swash zone beaches (Figure 2-10), in tidal inlets, and on overwash fans on barrier islands. Gravel beds that are components of surficial or subcrop formations may be exposed and eroded from headlands, from subaerial outcrops, or from subaqueous outcrops in channels or in the shoreface (see Figure 2-10). Reworked gravel may be redeposited onto beaches and bars, especially in response to storm events.

Gravel lags commonly overlie geologic contacts such as unconformities, transgressive or ravinement surfaces, or facies contacts. The erosive and transporting power of stream flow may concentrate gravel-sized clasts in channel thalwegs (deepest part of channel). As thalwegs migrate, the gravel pavement migrates and expands in area, and the basal gravel becomes buried by a channel, bar, or inlet fill. Transgressive surfaces may occur at the bases of estuarine and marine facies. At the leading edge of the transgression, wave and storm energy is concentrated on the beach, shoreface and shallow shelf. This erosive power, accompanied by the landward migration of the shoreface over time, erodes and reworks pre-existing deposits. Surfaces interpreted as unconformities that separate formations commonly originate as transgressive surfaces or are associated with fluvial incision, or are subaerial surfaces of erosion. Gravel-sized clasts originating in older, pre-existing deposits are reconcentrated as lags at the base of the next younger T-R cycle. Near sediment source areas (Fall Zone), gravel-rich facies are common on upland coastwise terraces.

In summary, the Plio-Pleistocene landscape of the Coastal Plain consists of a series of downstepping marine-facing terraces that are truncated by incised valleys with terraced borders (Figure 2-9). In valley settings, gravel occurs: 1) upstream near exposures of bedrock; 2) in bars along modern streams, 3) in channel facies that underlie valley terraces, and 4) along unconformities. On interfluves, coast-facing terraces (Figure 2-9A) typically include gravels along unconformities and ravinement surfaces, or buried in fluvial, estuarine, or inlet channel-fill facies, or other high energy facies. Proximal to the sediment source, the Fall Zone, gravel facies with potentially significant thicknesses and large areal extents occur in the shallow subsurface beneath upland terraces. Surficial units further east do not include comparable gravel deposits. Stream and wave erosion, however, may erode and expose buried gravels to produce localized, long-standing outcrops, also useful as potential lithic sources.

LITHIC RESOURCES AND THE GEOLOGIC FRAMEWORK

Here potential lithic sources are examined in the context of subcrop formations (Figure 2-6), geomorphology, and surficial map units (Figures 2-4 and 2-5). A regional scale overview is presented first. Then, the Cape Fear, Neuse and Roanoke river basins are examined in detail. The subcrop formations in Figure 2-6 are based on NCGS (1985). The map is not current, but is a starting point for integration. Through the scientific process, more recent studies (e.g., Horton and Zullo 1991) provide bases for reinterpreting and revising this map. Citations documenting formalized stratigraphic nomenclature are provided at the U.S. Geological Survey's website (http://ngmdb.usgs.gov/Geolex/geolex_qs.html). Conceptual models for geomorphology (Figure 2-4) and surficial units (Figure 2-5) are based on: 1) correlation charts (Ramsey 1992; Krantz 1991) and maps (Mixon et al. 1989), 2) interpreted LiDAR elevation models, and 3) unpublished

Series	Subseries, Stages	Age (MA)	Alloformations and Extent				
			Virginia Coastal Plain Berquist, 2007, pers. comm. Revised after Mixon et al, 1989		Virginia Map Extent Geomorphic Features		
			Formations	Members	Elevation - Surface		Scarp Toe
					Ft	Meters	"Highstand"
Holocene							
Pleistocene	Late	0.12	Tabb Fm	Poquoson Mbr. Lynnhaven Mbr. Sedgefield Mbr.	6 -10 ft 10 -18 ft 18 -28 ft	1.8 - 3.3 m 3.3 - 5.5 m 5.5 - 8.5 m	10 ft/ 3.3 m 18 ft/ 5.5 m 28 ft/8.5 m
	Middle	0.78	Shirley Fm		28 - 48 ft	8.5 - 14.6 m	48 ft/14.6 m
			Chuckatuck Fm		48 - 55 ft	14.6 - 16.8 m	55 ft/16.8 m
	Early	1.80	Charles City Fm		55 - 70 ft	16.8 - 21.3 m	70 ft/21.3 m
			Windsor Fm		70 - 95 ft	21.3 - 29.0 m	95 ft/29.0 m
			Moorings Unit	barrier/beach backbarrier	95 - 125 ft 95? - 115 ft	29.0 - 38.1 m 29.0? - 35.0 m	115 ft/35 m 115 ft/35 m
Pliocene			Bacons Castle Fm	Barhamsville Varina Grove	115 - 170 ft	35.0 - 51.8 m	170 ft/51.8 m
			Chowan River Fm				

Figure 2-11. Chart showing relative ages and map units for Virginia's Coastal Plain Map (Mixon et al., 1989). This diagram does not incorporate revisions to the Pleistocene proposed by Gibbard et al. (2010).

subsurface studies by the NCGS. Figure 2-2 shows nomenclature (Daniels and Gamble 1974; Daniels et al. 1966a) for scarps and terraces. Figure 2-11 compiles surficial units in adjacent Virginia, their respective relative ages, and elevation of surface expression.

Regional Subcrop Geology

The subcrop formations (Figure 2-6) that underlie the surficial Pliocene and Pleistocene units mostly predate the incised paleovalleys and relict coastal terraces that form the modern Coastal Plain landscape. Generally, the subcrop formations dip and thicken eastward as older units are replaced by progressively younger units. Subcrop units are intercepted in boreholes and are exposed beneath the surficial units along streams, in pits and mines, and in other man-made and natural outcrops. A dramatic change in map patterns, that may be fault controlled, occurs along the Neuse River and its upper tributaries.

North of the Neuse, relatively younger subcrop units are exposed closer to the ground surface. West of the Suffolk Scarp is the areally extensive Pliocene-age, Yorktown/Duplin Formation; its actual extent is poorly known. Outcrops of the Cretaceous Cape Fear Formation occur along upstream reaches of the Roanoke River. East of the Suffolk Scarp, the region is mapped as undifferentiated Pleistocene, and includes the thickest Pleistocene section (>60 m). The Yorktown and Pleistocene units overlie the Miocene Pungo River Formation (not shown) which is mined for phosphate at Aurora, NC.

South of the Neuse, relatively older subcrop units are exposed near the ground surface, and lithologic materials are more diverse. Shallow subcrops include the Cretaceous Cape Fear, Middendorf, Black Creek and Peedee Formations (NCGS 1985). The stratigraphy of Cretaceous units is currently under revision by the U.S. Geological Survey, but the new units are not yet mapped and are not discussed here. For simplicity, we use here the former terminology shown in Figure 2-6. Subcrop belts of the Paleocene-age Beaufort, the Eocene Castle Hayne, and the Oligocene River Bend and Belgrade Formations successively overlie the Peedee. The Yorktown/Duplin and Pleistocene Waccamaw Formations form the youngest subcrops. Near the Fall Zone, the Pinehurst Formation, of enigmatic age, overlies the Middendorf and other units.

Coastal Plain formations are typically composed of siliciclastic and/or bioclastic sedimentary particles, with some intervals containing concentrated plant debris (peats and lignites), glauconite, or phosphate clasts. Generally, siliciclastic units are dominated by the silicate minerals (e.g., quartz, feldspar, mica) and possibly, variegated rock fragments. Bioclastic units, which include limestones, typically include clasts composed of calcium carbonate (the allochems - fossils, pellets, oolites and intraclasts). In NC, whole and broken fossils (shells) dominate.

Along the Cape Fear River, the four Cretaceous formations are mostly siliciclastic. The Middendorf and Cape Fear include facies interpreted as fluvial channel and floodplain. Gravels that include quartz, rock fragments, and petrified wood are common in channel facies, and at their basal contacts. The overlying Black Creek may include some thin shell beds. Its basal unconformity is, at least locally, overlain by relatively thick, estuarine channel gravels. The unit also includes high energy tidal bar facies with gravel and finer-grained marine units. Gravel-sized clasts in the Black Creek include petrified logs, lignitized logs and plant debris, quartz, variegated rock fragments, slump blocks, intraclasts, and bone. Some clasts, such as logs and slump blocks, are boulder sized. The overlying Peedee is a marine shelf deposit with dark gray muds and sands; these are punctuated by thin beds (< 0.5 meters thick) that include gravel-sized shell, quartz, and rock fragments. In downdip areas, Cretaceous deposits in the subsurface include bioclastic sediment.

The Paleogene section includes Paleocene, Eocene and Oligocene formations. These dominantly marine units include siliciclastic, bioclastic, and compositionally mixed facies; concentrated glauconite and/or phosphate may be present. This section may be variably cemented with calcite and other minerals, forming plastic, friable, and brittle rocks. Marine unconformities are commonly associated with thin, cemented beds and gravel lags that include shells, quartz, phosphate, and rock fragments. Paleocene deposits locally include porcellanite, a low density (porous) siliceous rock. Oligocene strata are locally cemented with silica or dolomite, and include thin chert-like beds. The New Hanover Member of the Castle Hayne is a brittle rock that includes cobble-sized rock fragments. Rounded, quartz cobbles and other rock fragments occur in the Pinehurst.

The Waccamaw and Yorktown/Duplin are fossiliferous marine units with basal unconformities and facies that include bones, logs and wood, phosphate nodules, quartz, and reworked rock fragments. Reworking of underlying Miocene strata contributed cobble-sized phosphate nodules, variegated rock fragments, fossils and bone fragments into younger formations and onto modern beaches.

The geomorphic map (Figure 2-4) shows the general relationship between river basins, paleovalleys, and the relatively undissected interfluves between the valleys. Several of the scarps (Figures 2-2, 2-4 and 2-5) (the Coats, also known as Orangeburg, Surry, and Suffolk Scarps) are components of regionally extensive (> 500 km) ancient shorelines (Winker and

Howard 1977). The generalized distribution of Pliocene, and Early, Middle and Late Pleistocene deposits is shown in Figure 2-5. The Surry Scarp, Walterboro and Suffolk Scarps are respectively Early, Middle and Late Pleistocene landforms. Early Pleistocene deposits appear to extend westward to some of the traces of the Kenly Scarp. Late Pleistocene surficial deposits occur east of the Suffolk Scarp and beneath upstream terraces in valleys.

The Surry Scarp formed as a latest Pliocene to Early Pleistocene shoreline (Mixon et al. 1989). It is defined here as a highstand shoreline at about 31 m (possibly as high as 35 m). Its toe elevation is about 29 m (Flint 1940; Johnson et al. 1987; Daniels et al. 1984). West of the Surry Scarp is the extensively dissected Sunderland Plain. This is a Pliocene headland that predates the Surry shoreline; east of the Kenly Scarp, it is underlain by a unit equivalent to the Late Pliocene Bacons Castle Formation (Mixon et al. 1989; Ramsey 1992). Near the Surry Scarp, this Pliocene unit is overlain by a barrier island complex that is in the same stratigraphic position as the Moorings Unit in Virginia. The Moorings Unit (32-36 m) is a latest Pliocene to Early Pleistocene barrier island complex (Mixon et al. 1989) that extends southward from Moorings, Virginia to NC's Neuse River Basin. It includes barrier island sands along the Surry Scarp, and extensive backbarrier flats behind it. These units are exposed in a quarry at Fountain, NC where Early Pleistocene backbarrier foraminifera were identified (Snyder and Katrosh 1979).

East of the Surry Scarp is the Wicomico Terrace. This feature extends eastward to the Walterboro Scarp, but, it is erosionally notched along two, low, discontinuous, unnamed scarps (at ~26 m and 20 m) that face the coast and local drainages. The higher western part of the plain (at ~26-31 m) is underlain by a unit equivalent to the Windsor Formation. The Windsor is Early Pleistocene in age (1.6 to 0.7 Ma) (Krantz 1991). Below 26 m is a lower and flatter plain (at ~20-25 m), that is mantled by a unit that correlates with the Charles City Formation. The Charles City is also Early Pleistocene (Johnson and Berquist 1989; Mixon et al. 1989), but postdates the Windsor. Between 20 m and the Walterboro Scarp are surficial deposits that correlate with the Chuckatuck Formation. The Chuckatuck is Middle Pleistocene (Johnson and Berquist 1989; Mixon et al. 1989). This unnamed scarp at 20 m is, potentially, the landward updip limit of surficial, Middle Pleistocene deposits. East of it, the middle Pleistocene Walterboro Scarp, a highstand shoreline at 15 m, separates the Wicomico from the Talbot Terrace. The middle Pleistocene generated Talbot Terrace extends eastward to the Suffolk Scarp, a predominantly Late Pleistocene feature.

Surficial deposits seaward of the Suffolk Scarp are Late Pleistocene and Holocene in age. The Suffolk shoreline likely formed in Late Pleistocene time, but was likely occupied at least twice. A unit that correlates with the Shirley Formation, which is Late Middle Pleistocene in age (Johnson et al. 1987), lies between the highstand shorelines at 15 m and 10 m, but there is an additional highstand shoreline or notch at 12 m. Three T-R cycles are associated with Late Pleistocene deposits in southeast Virginia. These form the three members of the Tabb Formation. In NC, these respectively have highstand shorelines at 10, 7, and 4 meters. The Arapahoe Ridge complex, and the associated "Cherry Point Member" of the Flanner Beach Formation are likely associated with the 10 m highstand. The 7 m highstand approximately coincides with the "toe" of the Suffolk Scarp. Parham (2009) provides a discussion of Late Pleistocene stratigraphy near the Suffolk Scarp. Mallinson et al. (2007) provide additional information on the age of features associated with and east of the Suffolk Scarp.

Upper Cape Fear River Basin

Geomorphology, surficial deposits, and subcrop geology for the upper Cape Fear are shown in Figure 2-12. For this discussion, the upper Cape Fear includes the terraces and incised valleys that are landward of the Surry Scarp. These include Middle Pleistocene and older deposits. Here the Surry Scarp prominently separates upland terraces, or ramps, of the middle Coastal Plain from the Wicomico and younger marine terraces of the lower CP. Marine terraces are crosscut and dissected by an incised paleovalley complex (Figure 2-12D) that includes deposits that are Early Pleistocene and younger in age. The valley fill includes a probable Early Pleistocene longitudinal bar complex.

Generally, the archaeological sites used for this study are situated on Early Pleistocene, Pliocene and older uplands, near streams or lakes (Figure 2-12B). Subcrops that are exposed in eroding banks along the upper Cape Fear River include all four Cretaceous units and the Waccamaw Formation. All contain gravel-sized clasts. The Surry Scarp follows the unconformity that separates the Cretaceous Black Creek Formation from the overlying Peedee. The archaeological sites are clustered in several areas: 1) upstream on Pliocene and older terranes near the Fall Zone and bedrock outcrops; 2) on the middle Coastal Plain, upland Pliocene terranes along incised streams; 3) on Early Pleistocene uplands near the Cape Fear River; and 4) along a lake on an Early Pleistocene terrane. Most of these sites occur near streams that are potentially reworking Cretaceous gravels. The Cape Fear and Middendorf Formations provide fluvial channel gravels; the Black Creek Formation provides thick estuarine gravels. The base of the Waccamaw Formation contains cobbles that are exposed in cliffs along the river.

Lower Cape Fear River Basin

Geomorphology, surficial deposits, and subcrop geology for the lower Cape Fear are shown in Figure 2-13. For this discussion, the lower Cape Fear includes the terraces and incised valleys that are seaward of the Surry Scarp. These are Middle Pleistocene and younger in age, with Early Pleistocene units exposed near the Surry Scarp. East of the Surry, the landscape is flat, and incised valleys have low relief. Subcrops eroded here include the Peedee, Castle Hayne, and Waccamaw Formations. The Peedee has areally extensive thin beds with gravel-sized clasts that are exposed locally in river cliffs. Gravel derived from upstream outcrops could be transported downstream into these lower reaches. In cliffs along the Cape Fear, cobbles at the base of the Waccamaw are exposed. Near Lake Waccamaw, cobble sized rock fragments from the same unit, are concentrated, as lime dissolves, in the soil profile (< 2 m depth). Castle Hayne limestones may be exposed in streams beds that dissect the Middle Pleistocene landscape. Shoreline beaches here could concentrate clasts of sediment debris that originate in subaqueous outcrops. The archaeological sites considered here occur in two clusters near the Cape Fear River: 1) upstream near cliff banks that include Waccamaw gravels, and 2) downstream near estuarine beaches that accumulate clasts reworked from Pleistocene and possibly older strata.

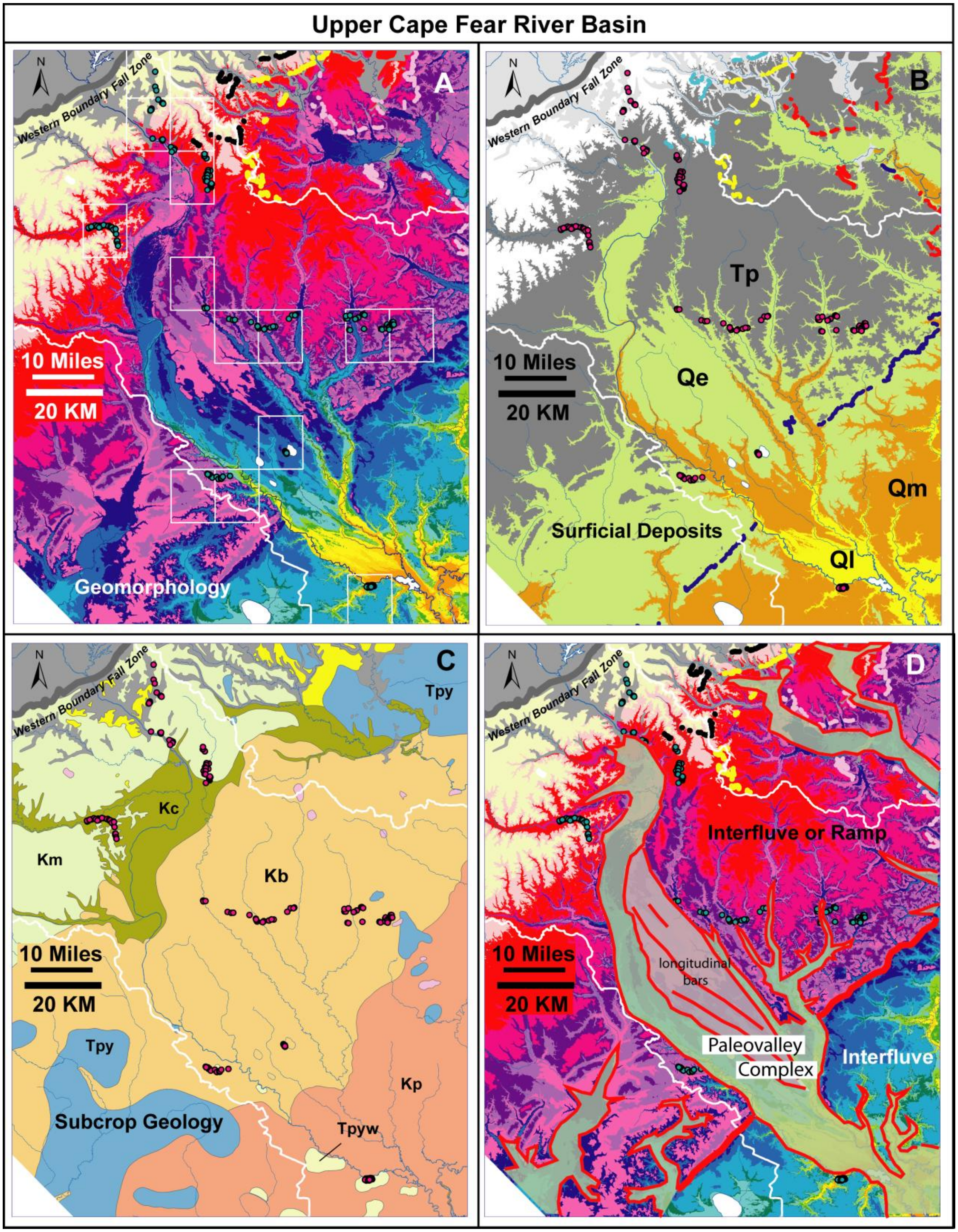


Figure 2-12. The Upper Cape Fear River Basin shows the distribution of archaeological sites in the context of: A) geomorphology, B) surficial geologic units, C) subcrop geologic units, and D) interfluves (ramps) and incised paleovalleys. Legend is included in Figure 13.

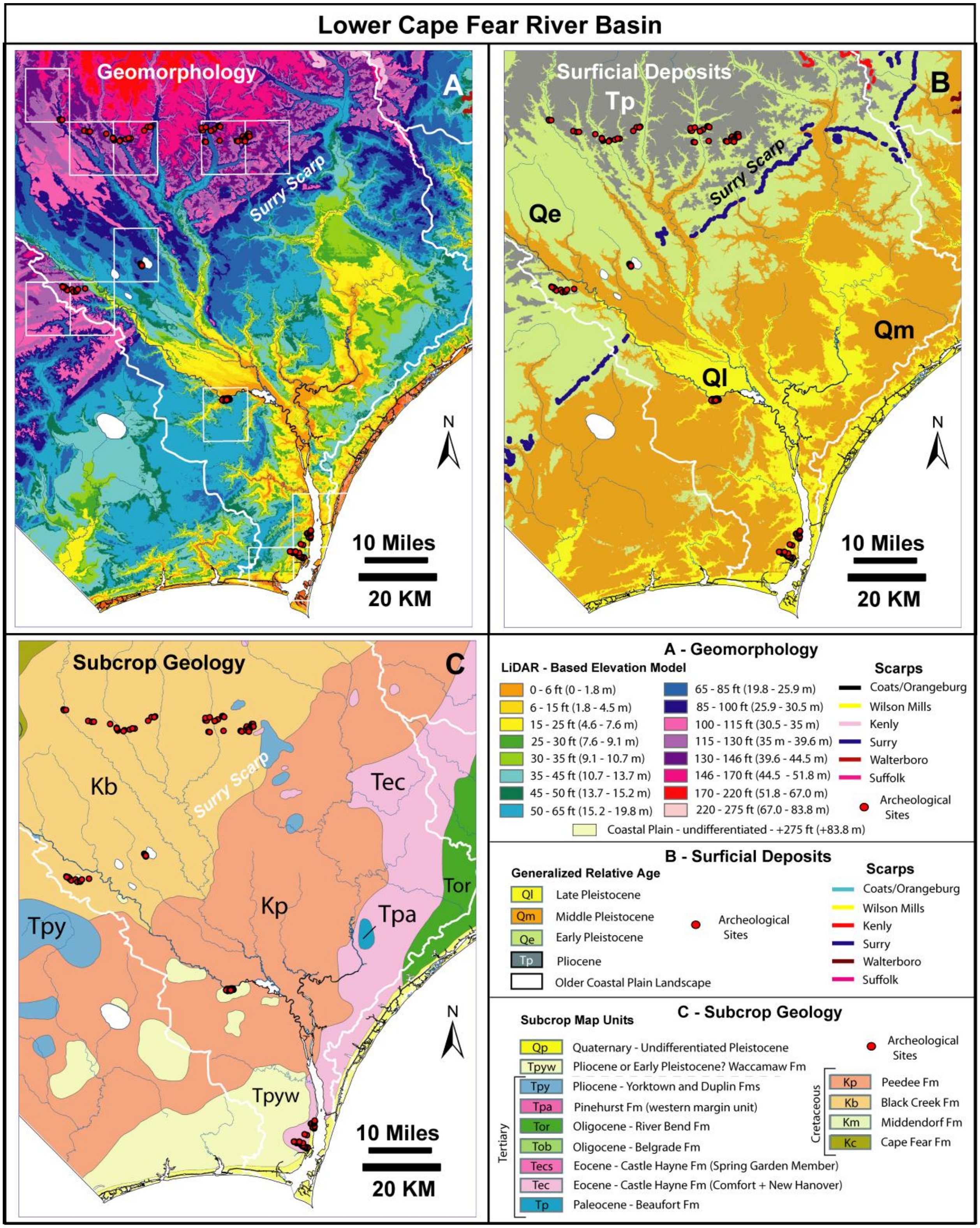


Figure 2-13. The lower Cape Fear River Basin shows the distribution of archaeological sites in the context of: A) geomorphology, B) surficial geologic units, and C) subcrop geologic units.

Middle to Upper Neuse River Basin

Geomorphology, surficial deposits, and subcrop geology for the middle to upper Neuse are shown in Figure 2-14. This discussion includes the interfluves and incised valleys near the Surry Scarp, upstream to the Fall Zone, where sites cluster in an area of crystalline bedrock and Coastal Plain outliers. In downstream areas, most sites occur along streams near the Surry Scarp.

North of Contentnea Creek, archaeological sites cluster along Little Contentnea Creek, which headwaters in the Surry Scarp area, in some cases, possibly as springs. Little Contentnea Creek was formerly an open water stream, until storms and management practices changed it into wetlands in the early 1960s. These sites sit on an Early Pleistocene landscape. The subsurface stratigraphy is well known here from boreholes (NCGS, unpublished data), but outcrops are rare. An exception is the quarry on the river basin boundary at Fountain, NC, where granodiorite bedrock is exposed at the ground surface near the upper reaches of Little Contentnea Creek. Coastal Plain formations lap up and shallow around this bedrock dome, so that a series of unconformities approaches the ground surface. In the quarry, cobble-sized quartz and rock fragments occur along the unconformity at the base of the Yorktown Formation. Above this, is a thick, high-energy shelly facies with gravel-sized clasts. The Yorktown is overlain by a probable Early Pleistocene unit with boulders and cobbles of crystalline rock along its basal unconformity. Boulders are exposed at the ground surface here. Cobbles from these unconformities are likely reworked into local stream beds.

South of Contentnea Creek, the selected archaeological sites cluster along second order streams in the Early Pleistocene landscape. West of the scarp, the landscape is more highly dissected than east of it. Some sites are located in the Middle Pleistocene and younger paleovalley. The subcrop map indicates that in this area, the trace of the Surry Scarp follows the unconformity at the base of the Peedee, and many of the sites are fairly close to this boundary. We cannot confirm if gravel occurs at the base of the Peedee. The Black Creek Formation could provide coarse clastic debris from upstream reaches of the Neuse.

Lower Neuse River Basin

Geomorphology, surficial deposits, and subcrop geology for the lower Neuse are shown in Figure 2-15. For this discussion, the lower Neuse includes terraces and incised valleys that are in the vicinity of the Walterboro Scarp and east. This region is flat with low relief and few outcrops. All sites are situated in a Late Pleistocene landscape. Most are concentrated in the region of the bayhead delta, at the head of the estuary, at the confluence of several streams. This area also corresponds with the unconformity at the base of the Oligocene formations. Limestone outcrops occur upstream from here and in tributaries. All the sites are near the banks and shoreline of the Neuse and its tributaries. New unpublished data (NCGS) suggests that the Yorktown Formation, although documented in the literature, is not exposed along the Lower Neuse; nor does it occur in the subsurface in coreholes, south of the Neuse. Outcrops of Pleistocene units with shell beds are present along the lower Neuse. Potential local sources for lithic clasts here are storm deposits on beaches, and outcrops on the Neuse and its tributaries. Clasts derived from upstream sources may also be concentrated here.

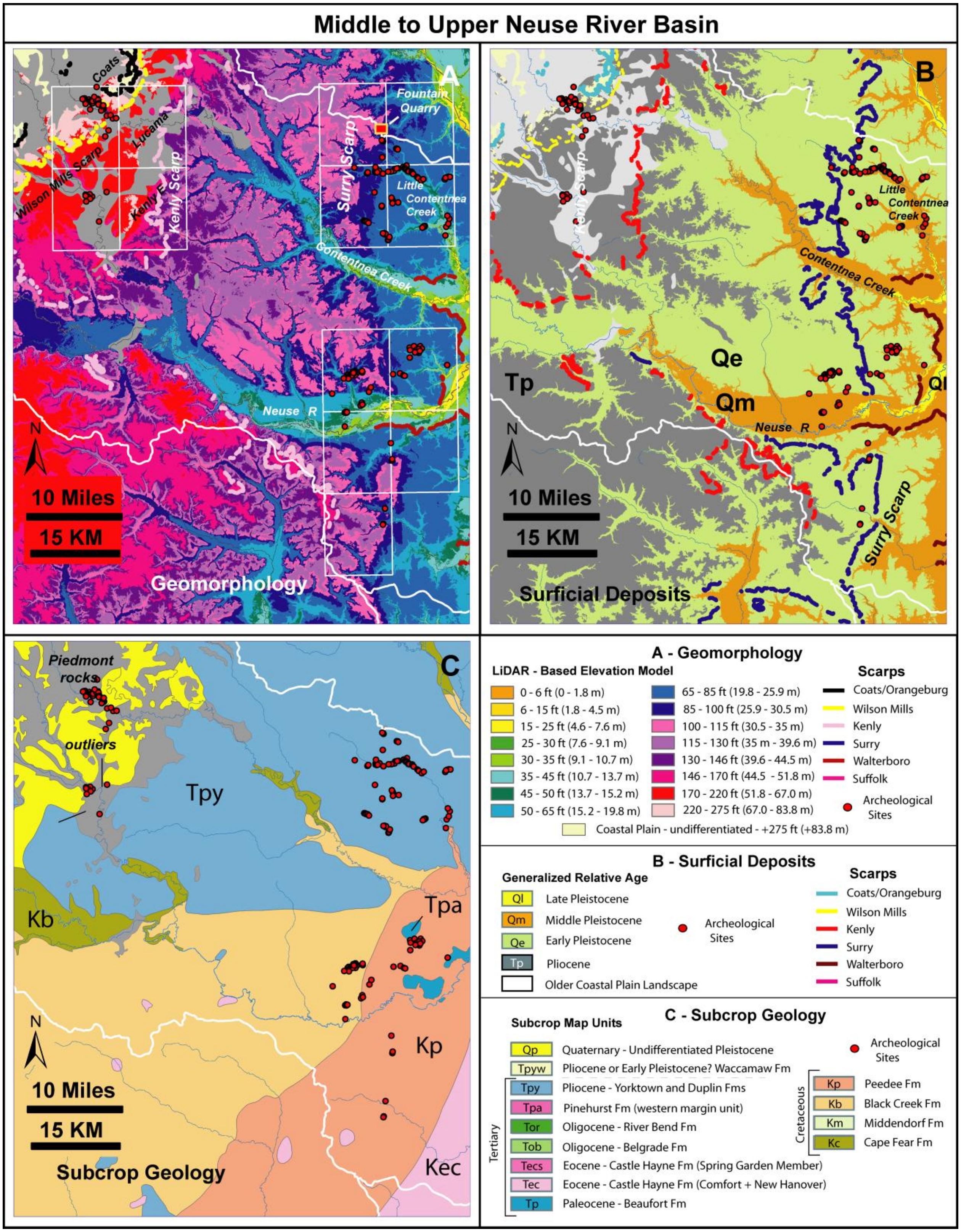


Figure 2-14. The middle to upper Neuse River Basin shows the distribution of archaeological sites in the context of: A) geomorphology, B) surficial geologic units, and C) subcrop geologic units.

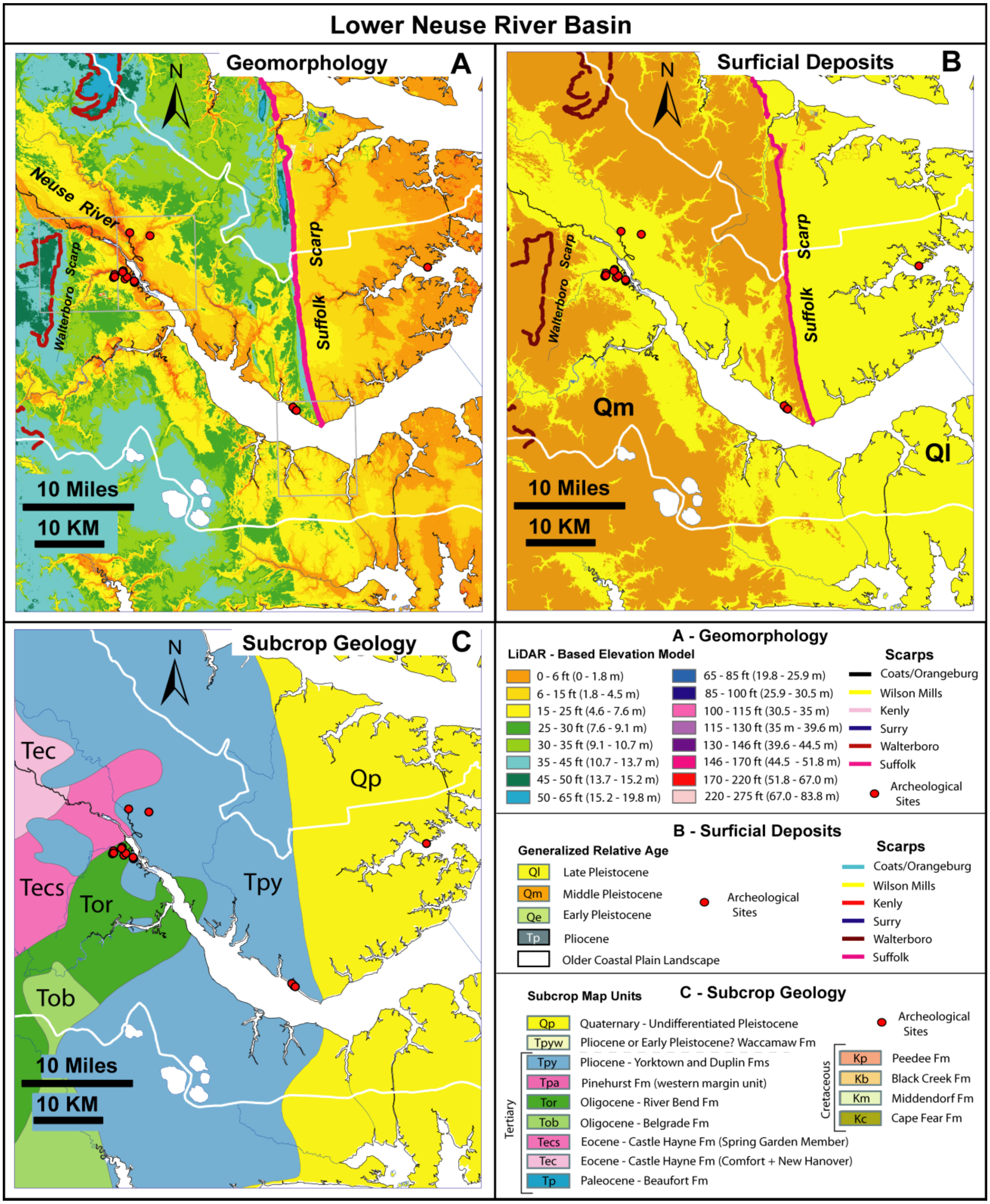


Figure 2-15. The lower Neuse River Basin shows the distribution of archaeological sites in the context of: A) geomorphology, B) surficial geologic units, and C) subcrop geologic units.

Upper Roanoke River Basin

Geomorphology, surficial deposits, and subcrop geology for the upper Roanoke are shown in Figure 2-16. For this discussion, the upper Roanoke includes the Fall Zone and terraces and incised valleys that are landward of the Surry Scarp. The archaeological sites occur in three clusters near the Roanoke River. At the upstream end, the first cluster occurs in the Fall Zone in a bedrock terrane associated with Coastal Plain outliers on uplands. Moving downstream, the second cluster occurs in an area with bedrock outcrops along streams. Here however, the Yorktown Formation overlies bedrock and its basal unconformity may be locally exposed. Also, this area marks the updip limit of Early Pleistocene units, a basal unconformity or gravelly facies may outcrop in river banks. The third cluster is downstream from exposed bedrock, with most sites occurring along the river in the Middle Pleistocene incised valley. Some occur on the Early Pleistocene landscape. The subcrop map indicates that basal Yorktown is exposed upstream from the cluster, and that the gravelly Cape Fear Formation, may be exposed along the Roanoke.

Lower Roanoke River Basin

Geomorphology, surficial deposits, and subcrop geology for the lower Roanoke are shown in Figure 2-17. For this discussion, the lower Roanoke includes terraces and incised valleys, seaward of the Surry Scarp. This area is low relief with few outcrops. The subcrop map shows that the Yorktown is areally extensive, with its basal unconformity exposed along the Roanoke. One site is located in the Late Pleistocene valley complex, near this unconformity, along the river. Other sites are not near the Roanoke River. Many cluster near the drainage divide along the northeast border of the Roanoke Basin, possibly associated with stream headwaters, upland pocosins, or Carolina Bays. Other sites occur in Late Pleistocene incised valley, or on Middle Pleistocene upland terraces. Except for stream banks, river bars, and beaches, local sources for large clasts suitable as raw material are likely not available locally.

PREVIOUS ARCHAEOLOGICAL RESEARCH

Within the Coastal Plain region of NC, very little research has focused on documenting lithic sources or resource acquisition and prehistoric procurement patterns. This is not the case in adjoining regions, where more specific research addresses lithic raw material procurement and distribution in terms of prehistoric settlement patterns in South Carolina (Blanton 1983; Blanton et al. 1986; Sassaman et al. 1988; Anderson and Hanson 1988; Blanton and Sassaman 1989; Tippett 1992; Cable et al. 1996) and northward in the Middle Atlantic Region (Gardner 1979; Geier 1990; Stewart 1989).

Chert and quartzite quarries are recorded along the Fall Zone in Virginia (McAvoy 1992). Allendale chert quarries are recorded in the Coastal Plain of South Carolina (Goodyear and Charles 1984). Quartzite quarries occur in the Coastal Plain of South Carolina in the lower Santee River valley (Charles 1981; Anderson et al. 1982; Goodyear and Charles 1984) and also in the Savannah River valley (Goodyear and Charles 1984). A short distance west of the NC-CP, Lautzenheiser et al. (1996) record a chert quarry (Piedmont Chert) in the eastern Piedmont (Lee County). A source of jasper (Montgomery County Agate) is recorded in the Uwharrie Mountains in Montgomery County (Abbott 1996; Abbott and Harmon 1998). To date, however, chert or jasper quarries are not described in detail in the NC-CP.

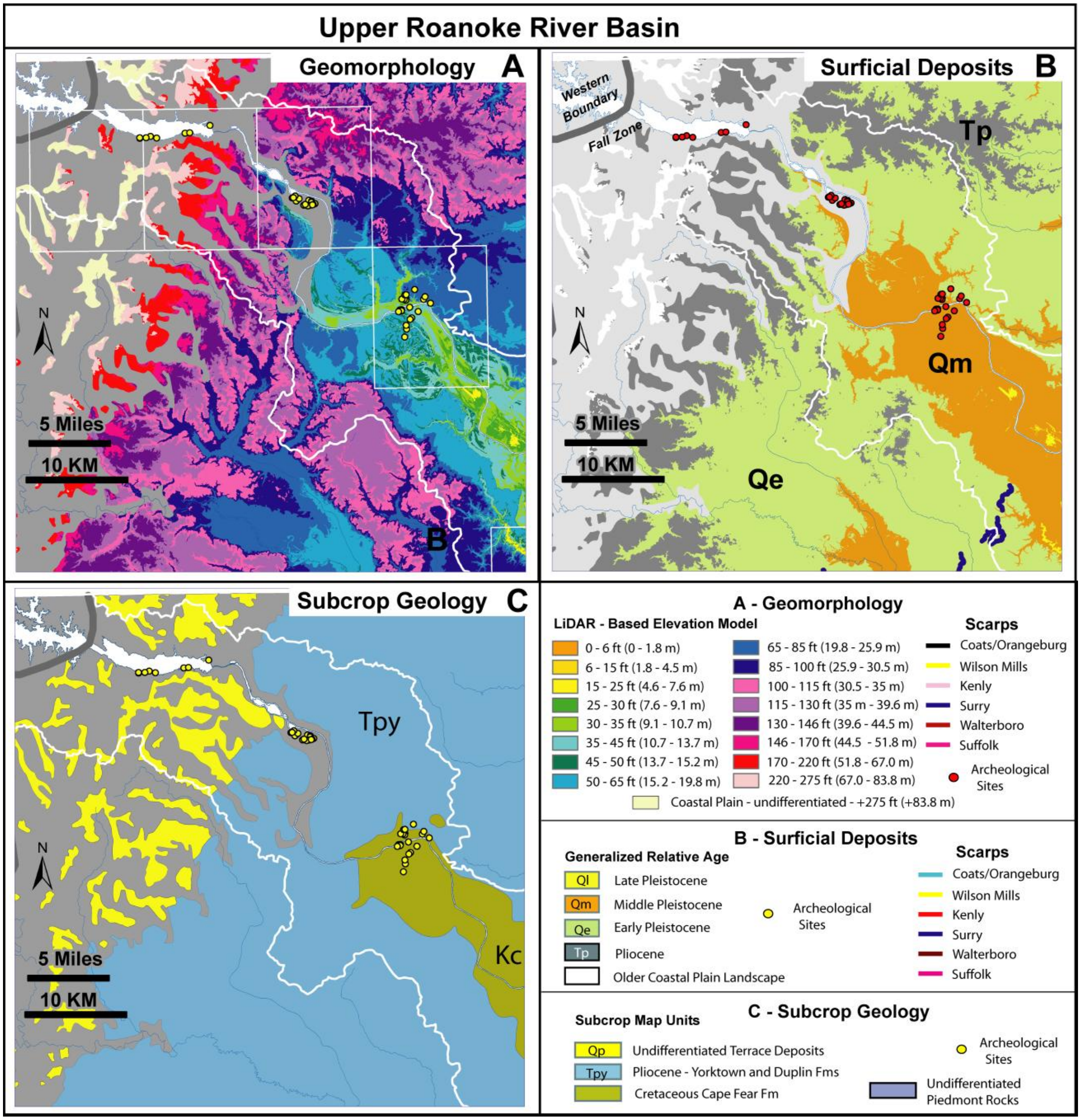
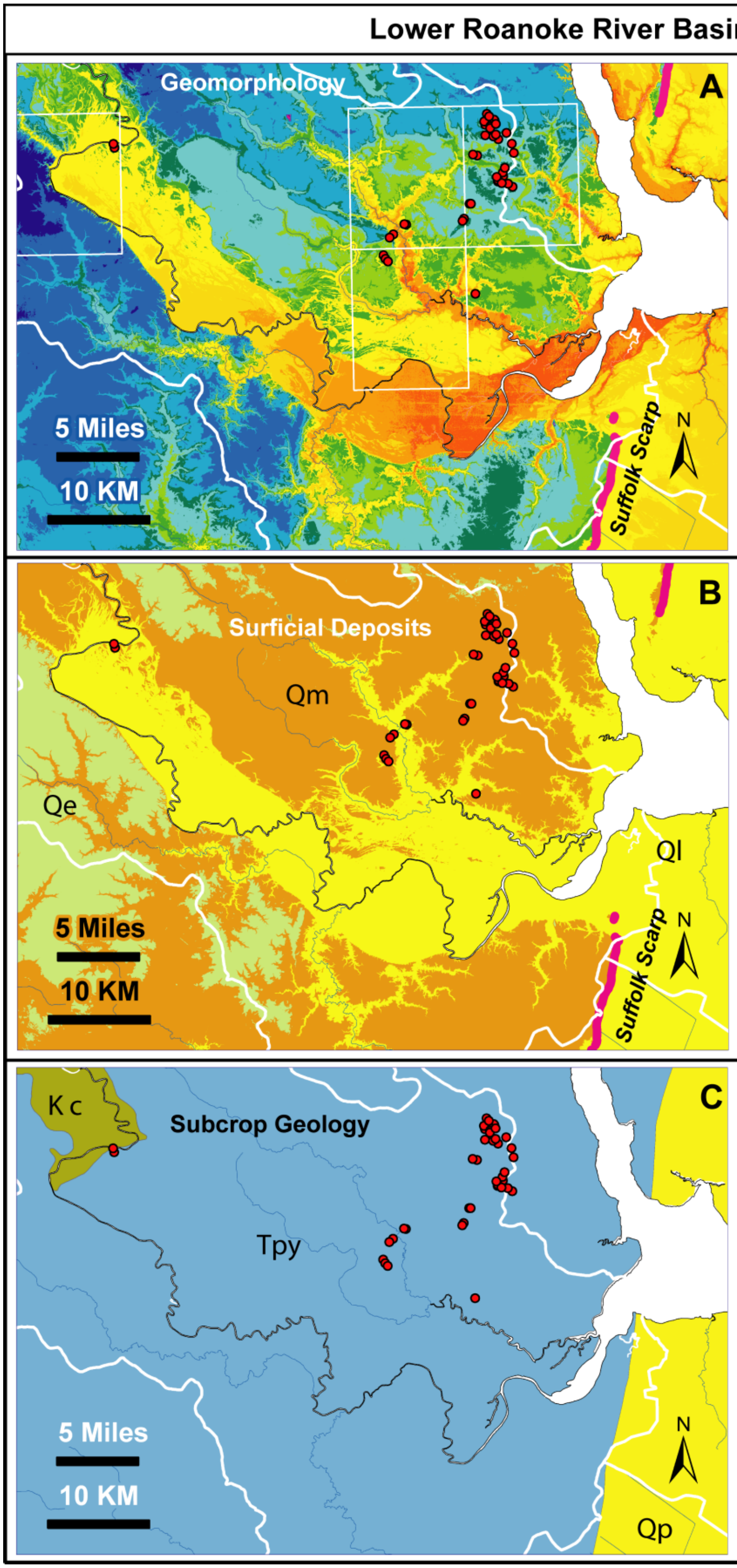


Figure 2-16. The upper Roanoke River Basin shows the distribution of archaeological sites in the context of: A) geomorphology, B) surficial geologic units, and C) subcrop geologic units.



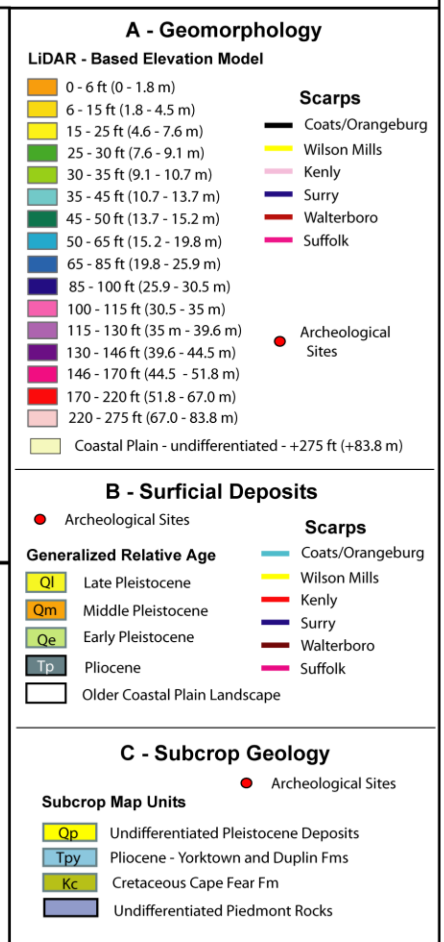


Figure 2-17. The lower Roanoke River Basin shows the distribution of archaeological sites in the context of: A) geomorphology, B) surficial geologic units, and C) subcrop geologic units.

Most of the earlier discussion regarding lithic raw material acquisition in the NC-CP focused on its function within an inferred Paleo-Indian settlement model. Phelps (1983:21-22) discussed the Dismal Swamp model according to Gardner (1979:14-15). In this model, Gardner suggested that the Williamson quarry site in Virginia served as a primary source for chert which occurred at sites along the western margin of the Dismal Swamp. This model was based on the central quarry theory proposed by Gardner (1974) for the Flint Run Complex in which settlement and mobility is tethered to large, primary sources of high-quality raw materials. According to Phelps (1983:21), "Given the range of locally available materials from which the Paleo-Indian artifacts (projectile points, scrapers) found in the Coastal Plain have been produced (quartz, quartzite, slate, rhyolite, chert, jasper), the central 'quarry' organization seems inappropriate and trade between territories may just as readily explain the presence of chert from particular sources".

Gardner (1979) observed a general lack of sites within the Coastal Plain, which suggested the lack of naturally occurring raw material sources within the region. Gardner noted the Roanoke River basin as an exception to this trend. Phelps responded to this issue and stated that, "all of the rivers with Mountain and Piedmont headwaters probably carried considerable loads of pebbles and cobbles downstream from their source (1983:22)." In the final analysis, the exploitation of subsistence resources rather than the location of lithic resources more likely dictated Paleo-Indian settlement (Phelps 1983:22). A key element in his discussion was the acknowledgement of the important role served by river-borne gravel and cobbles as primary sources of lithic raw material within the Coastal Plain. Phelps also suggested that Paleo-Indian territorial ranges could have extended 130 miles or more from known quarries in the Carolina Slate Belt of the Piedmont Region of NC. Similar issues related to Early Archaic ranges were addressed by Anderson and Hanson (1988) and Daniel (1994, 1996).

As a part of the Uwharrie-Allendale settlement model, Daniel (1994) suggests that sources of raw material were the geographical basis for Early Archaic adaptation. His model is based on sources of metavolcanics from the Uwharrie Mountains of NC and sources of chert from the Allendale quarries in the Coastal Plain of South Carolina along the Savannah River (Goodyear and Charles 1984). According to Daniel (1994:245), "At some point during the Early Holocene, hunter-gatherer groups coalesced around the Uwharrie and Allendale sources forming at least two regions." Aggregation of the two regions occurred in areas between the two ranges, such as the Fall Zone along the Upper Congaree River valley. As a result, band ranges cut across several major drainages rather than remaining confined to specific drainages as proposed by the band-macroband model of Anderson and Hanson (1988). According to Daniel (1994:257), "Although most lithic demands were satisfied at the Uwharrie and Allendale sources, stone supplies were also supplemented while moving within each region by exploiting secondary cobble sources and lesser quality outlying bedrock outcrops." He refers to these sources as "expedient quarries", dispersed across the landscape (1994:257). Use of these types of sources were likely embedded in normal subsistence activities, and allowed groups to extend the time and distance traveled away from the primary quarries prior to a scheduled return to the Uwharrie or Allendale sources (Daniel 1994:257).

McReynolds (2005:24) notes an increase in quartz use over time within the Coastal Plain. In her study of projectile point distribution, she observes that for the NC-CP, "metavolcanic stone appears to gradually diminish in importance relative to quartz, which was presumably locally available in the form of riverbed cobbles (2005:24)." She also notes the relatively low frequency of chert in the NC-CP and suggests that the sources of Allendale Chert in South Carolina (Goodyear and Charles 1984) were not regularly used by groups in NC.

Cooke (2000:11) notes that the northern Coastal Plain lacks significant lithic raw material sources, except for available metavolcanic cobbles (Riverine Quaternary gravels) in riverbeds as possible sources of raw material for tool production (2000:28). He assumes, however, that most "non-local stone was procured from the Piedmont (2000:11)."

Changes in lithic raw material procurement and utilization are generally viewed as functions of group range reduction over time (Blanton 1983; Sassaman et al. 1988; Blanton and Sassaman 1989; Claggett and Cable 1982; Sassaman 1983; Anderson and Hanson 1988; Tippett 1992). In general terms, lithic raw material procurement and use patterns changed over time. Changes range from the near exclusive use of specific types of high quality metavolcanics collected over a relatively wide geographic area centered in the Piedmont region, to the use of a diverse group of materials collected from more localized (river-borne) sources (Daniel 1994; Cable et al. 1996:327; Daniel et al. 2008). This view is generally accepted and is based mainly on research conducted in the Piedmont regions of North and South Carolina. Tippett (1992) and Cable et al. (1996) addressed the implications of this model in terms of its application to the Coastal Plain. Tippett suggests that a generalized reduction of group range begins during the Middle Archaic. The evidence for this is that assemblages of this time frame and beyond include a greater diversity of inferred, poorer-quality Coastal Plain resources mixed with the inferred, higher-quality metavolcanic materials from the Piedmont (1992:111). This general trend continues over time, intensifying during the Late Archaic. It culminates in the Woodland Stage with an expedient, disposable technology based on flake tools (Blanton et al. 1986) and, in some cases, the exploitation of "cultural quarries" (Sassaman et al. 1993). Benson (2000a and 2000b) discusses cultural quarries as a type of lithic landscape in the Sandhills of NC.

Previous research generally suggests that Coastal Plain resources consist primarily of quartz, quartzite, chert, and sandstone. Most of these resources are assumed to occur as river gravel. These materials apparently were collected and reduced from cobble form into cores, flake tools and other tools (Cable et al. 1996). Most metavolcanic raw materials (i.e., aphanitic rhyodacite, porphyritic rhyodacite, flow-banded rhyodacite, and various tuffs) are assumed to be transported into the Coastal Plain from sources located above the Fall Zone within the Piedmont region (presumably the Carolina Slate Belt). The most frequently cited evidence for this is the preponderance of metavolcanic late-stage reduction debris (e.g., bifacial thinning flakes, retouch flakes) in assemblages collected within Coastal Plain sites (Cable et al. 1996:334). In general, most previous work recognizes the NC-CP as a "lithic poor" region. As a result, the NC-CP is an area where very little information is available on raw material sources.

METHODS FOR LITHIC ANALYSIS

The sources of the archaeological data analyzed here are published and technical reports filed at the NC Office of State Archaeology (NC-OSA) in Raleigh. Most technical reports were a part of cultural resource management projects conducted in the Coastal Plain sector of the Cape Fear, Neuse and Roanoke basins over the last 30-40 years. Also available was a set of U.S. Geological Survey, 7.5 Minute Quadrangles with site locations plotted as point data. From these sources, baseline information on raw material use was compiled and analyzed for sites in the three river basins.

The study area in each river basin was defined to include the Coastal Plain landscape between the Fall Zone and the river's respective mouth. Individual USGS quadrangle maps served as the primary sample units. All quadrangles within the three drainages were inspected for the presence of archaeological sites and for the availability of survey and analytical data. Quadrangle maps, and their accompanying data sets, were selected for analysis because of the quantity, quality and type of available data, location in the drainage, and the relative ease that the data could be imported into ArcGIS for spatial analysis.

For specific localities in selected quadrangles, site files and reports at the OSA were consulted for raw material counts and other information. The usefulness of available information at a site was evaluated using several criteria: 1) did a survey accompany site reports, 2) were site locations recorded as point data on quadrangles positioned along the drainages in question; and 3) was data collected on raw material variation for recorded sites? Based on the availability of information, forty USGS quadrangles were selected for analysis (Table 2-1). Only sites with information on the raw material of individual artifacts were considered for this study. Sites with questionable context and isolated finds of questionable context were excluded.

Raw material information was collected from a wide range of archaeological site types and dimensions. Large- and small-scale sites were given equal weight in the analysis. Information was recorded for sites adjacent to the trunk streams, in the surrounding uplands, and along auxiliary drainages. Compiled information on raw material use included 27,444 artifacts at 525 archaeological sites (Table 2-2). Sites were distributed in quadrangles positioned in upper, central and lower reaches of each river basin. These distributions served as upstream to downstream transects within the river basins from the Fall Zone to the river mouth in a sound or the Atlantic Ocean.

For each site, information recorded in a spreadsheet format included: USGS quadrangle name, UTM northing and easting, UTM zone, North American datum (1927), county, and site number. UTM coordinates were converted to North Carolina State Plane NAD 83. The following raw material types were recorded for each site, in terms of frequency and as a percent of the total lithic assemblage:

1	Quartz – includes all quartz – crystal, white vein, citrine, rose, etc.
2	Metavolcanics – includes rhyodacite/rhyolite, various tuffs, argillite, and nonspecific metavolcanics
3	Quartzite – includes orthoquartzite
4	Chert
5	Steatite
6	Sandstone
7	Other – includes chalcedony, jasper, nonspecific silicates, and nonspecific sedimentary

Fire-cracked rock was not included as a part of this study. The existing surveys at NC-OSA recorded raw materials as frequency counts only, rather than counts and weights. The case for using raw material weights as a more effective unit of measure has been discussed and implemented by Millis et al. (2005). We acknowledge that weights are better units of measure, but the data was not available. Future lithic analyses should record artifact weight as a variable.

In addition, temporal aspects of individual sites were not considered for this analysis. Studies on raw material variation and the spatial distribution of temporal diagnostics were undertaken previously by Sassaman et al. (1988); Daniel (1998); Tippett (1992); Cooke (2000); and McReynolds (2005). These studies focused on prehistoric settlement pattern over time and have provided valuable data and insights. The primary focus of the current study is a baseline examination of raw material occurrence (range of raw material variation) and the changes in the range of variation as a function of distance from the Fall Zone within each basin. In this regard,

Table 2-1. USGS Quadrangles utilized in this analysis, organized by river basin.

Raw Materials (%)

Quadrangle	Dist (km) A	Dist (km) B	Qtz	MV	Qtzite	Chert	Steatite	Sandst	Other
A. USGS Quadrangles Cape Fear River Basin									
Fuquay-Varina	0	> 20	91.6	4.2	0	0	4.2	0	0
Lillington	0	< 20	61.2	37.7	0	0	0	0	1.1
Coats	9	< 20	23.7	76.3	0	0	0	0	0
Erwin	16	< 20	81.4	18.6	0	0	0	0	0
Manchester	17	< 20	35.3	61.4	0.8	0	0.8	0.9	0.7
Overhills	21	> 20	56.2	43.3	0.3	0	0.01	0.1	0.07
Stedman	40	< 20	64.9	35.1	0	0	0	0	0
Roseboro	55	> 20	13.7	79.9	0.7	4	0	0	1.7
Bonnetsville	62	> 20	32.2	59.2	0.9	7	0	0	0.6
Turkey	76	> 20	25.6	55.2	1.8	17.2	0	0.1	0.1
Warsaw South	84	> 20	5.1	67.1	5.8	22	0	0	0
White Lake	84	< 20	10.6	6.5	57.1	24.3	0	0.4	1.1
Abbottsburg	89	< 20	30.3	21.1	41.5	7.1	0	0	0
Elizabethtown S	93	< 20	33	41	17	9	0	0	0
Acme	131	< 20	57.1	29	13.1	0.2	0.02	0.3	0.2
Carolina Beach	166	< 20	41.1	11.4	24.9	16.6	0	0	5.9
KureBeach/Southport	177	< 20	20.1	32	22.2	23.6	0	0	2.1
B. USGS Quadrangles Neuse River Basin									
Stancils Chapel	-9	< 20	65.6	34	0.4	0	0	0	0
Kenly West	0	< 20	87.8	12	0.1	0	0	0	0.1
Fountain	29	> 20	32.7	25.6	28	0.2	0	0	13.5
Walstonburg	37	> 20	59.9	31.8	7.3	0	0	0	1
Falkland	41	> 20	44.4	29.7	15.3	0	0	0	10.3
Farmville	42	> 20	44.2	44.9	8.6	0.1	0.1	0.5	1.6
Falling Creek	54	< 20	68.7	28.9	1.6	0.3	0	0.3	0.1
Deep Run	61	< 20	67.7	0.8	30.3	1.2	0	0	0
Kinston	63	< 20	42	42.2	7.3	7.3	0	0	1.1
Pink Hill	72	> 20	37.5	22.9	33.3	2.1	0	0	4.2
Rivermont	72	< 20	15	0	71.6	6.7	0	0	6.7
Jasper	97	< 20	82.2	17.8	0	0	0	0	0
Askin	106	< 20	11.1	16.9	40	26.9	0	0	5.1
Cherry Point	141	< 20	46.4	0.2	47.3	3.2	0	0.1	2.8
C. USGS Quadrangles Roanoke River Basin									
Thelma	-16	< 20	49.8	49.2	0	0	1	0	0
Roanoke Rapids	-5	< 20	78.9	14.6	3.6	0	0	0	2.9
Weldon	6	< 20	47	0.1	9.8	16.7	0	0.2	26.2
Boones Crossroad	22	< 20	73.7	21.6	0.8	0.1	1.2	0	2.6
Palmyra	45	< 20	45.3	11.6	41.4	1	0.7	0	0
Windsor North	74	< 20	31.4	32.5	29.3	0	0	0	6.8
Windsor South	78	< 20	18	11.1	58.7	5.5	0	0	6.6
Merry Hill	84	< 20	59.6	15.6	17.4	6.7	0	0.5	0.2

A – From Fall Zone, B – From Stream Trunk, Qtz – Quartz, MV – Metavolcanic, Qtzite – Quartzite, Sandst – Sandstone.

Table 2-2. Raw Material Data, Cape Fear, Neuse, and Roanoke River Basins

Basin	Total Sites	Total Artifacts
Cape Fear	217	17,807
Neuse	214	6,024
Roanoke	94	3,613
Totals	525	27,444

the lithic assemblage is considered for study as opposed to considering only temporal diagnostics. This approach provides the best information at this time on the range of variation in raw material use, as it relates to groups of sites spread across the natural landscape.

Analytical Methods

USGS quadrangle maps functioned as sample units to define clusters of sites and measure approximate distances from the Fall Zone. The quadrangle maps were considered relative points within the drainage basins for analytical purposes. For each quadrangle, the average distance was measured in kilometers (km) from the point where the main channel of the respective river crossed the eastern edge of the Fall Zone, to the center of the quadrangle. Quadrangles, and associated data, were further subdivided into two sets: 1) quadrangles that included the primary trunk stream or areas < 20 km from the primary stream, and 2) quadrangles with central points greater than 20 km from the trunk stream and associated with uplands and auxiliary streams. The frequency distribution for raw materials was calculated for the sites within each quadrangle and was recorded in terms of distance from the eastern edge of the Fall Zone and distance from trunk stream. The data for each site was recorded as frequencies and percentages relative to the total lithics within the assemblage.

RESULTS - FREQUENCY DISTRIBUTION OF LITHIC RAW MATERIALS

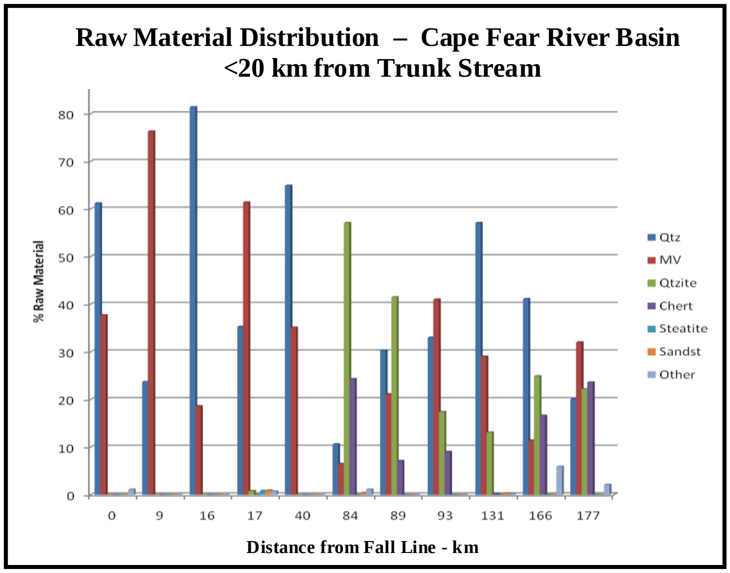
Table 2-1 presents the percent of raw material use for the lithic types listed above and relative to distance (km) from the Fall Zone and trunk stream for the three drainage basins. The data is presented in sets of frequency distribution contingency tables for each drainage basin (Tippett 1992:78). Similar to Tippett's (1992) methods, the contingency table data with basic frequency counts for each quadrangle was standardized by converting the frequency data into percentages. Once converted the percentages were transformed into a set of graphs showing proportional frequency polygons.

Cape Fear River Basin

Table 2-1A shows data compiled for the Cape Fear River basin. Twelve quads are proximal (<20 km) and six are distal (>20 km) from the trunk stream (Cape Fear River). Data for Kure Beach and Southport quadrangles were combined due to equal distance measures and similarity of physical location relative to the Fall Zone.

For proximal quadrangles, data assemblages displayed in Table 2-1A and Figure 2-18A suggest that quartz and metavolcanics dominate from the Fall Zone to 84 kilometers downstream. The other categories of raw materials remain constant or in trace proportions up to 84 km downstream. Figures 2-18A and 2-19 suggest the use of quartzite increases dramatically between 40 and 84 km from the Fall Zone, and remains relatively high downstream from this

A



B

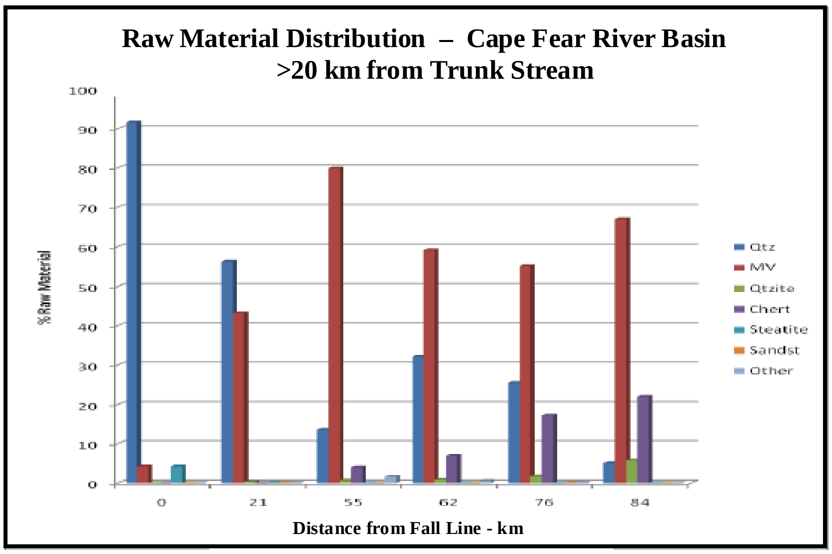


Figure 2-18. Distribution of raw materials within Cape Fear River Basin: A) < 20 km from trunk stream; B) > 20 km from trunk stream.

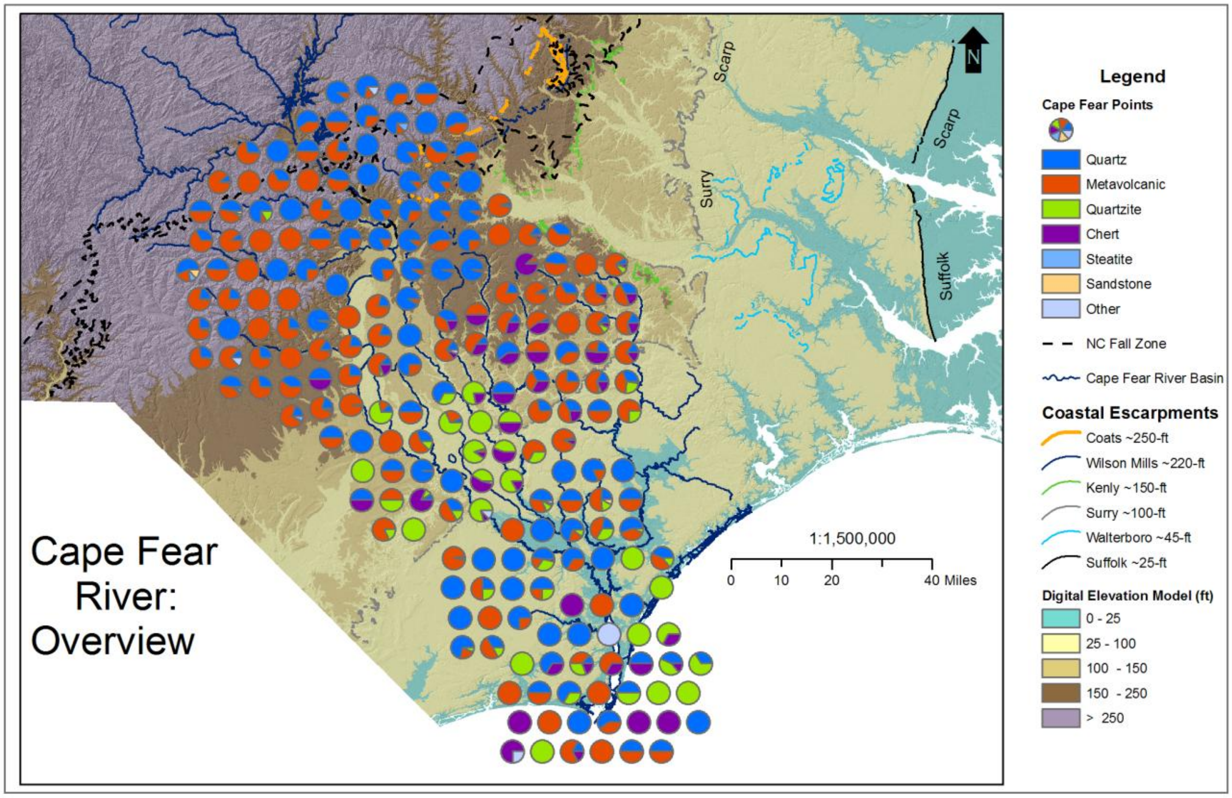


Figure 2-19. Diagrammatic view of Cape Fear River basin archaeological site locations. NOTE: Point locations for sites are exaggerated in size to show the relative percentages of material type (see legend), and are not to scale, nor in their proper spatial location.

area to the river mouth near Wilmington. Chert also spikes between 40 and 84 km from the Fall Zone, although relatively less than quartzite. The diversity of assemblages appears to increase downstream from 84 km. Overall, quartz and metavolcanics dominate.

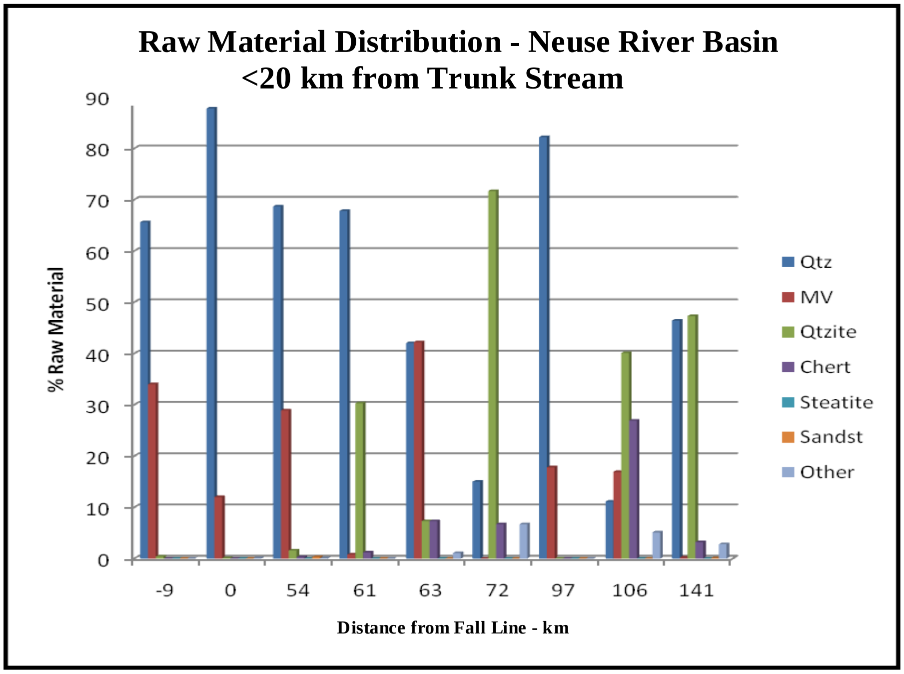
For distal quadrangles, Table 2-1A and Figure 2-18B suggest that quartz dominates from the edge of the Fall Zone to an area between 21 and 55 km from the Fall Zone, where metavolcanics dominate. East of here, on uplands and auxiliary streams, however, chert and quartzite gradually increase as a function of distance from the Fall Zone.

Neuse River Basin

Table 2-1B shows data compiled for the Neuse River Basin. Nine quads are proximal (<20 km) and five are distal (>20 km) to the trunk stream (Neuse River). The center of the Stancils Chapel quadrangle is located within the Fall Zone, about 9 km west of its inferred eastern edge. The contingency table data is presented in Table 2-1B. Figure 2-20 shows the graphic display of the proportional frequency polygons.

For proximal quads, data assemblages displayed in Table 2-1B and Figure 2-20A are similar to those displayed in Figure 2-18 for the Cape Fear basin. Figure 2-21A shows that quartz and metavolcanics dominate in the upper Neuse basin between 9 km upstream from the eastern edge

A



B

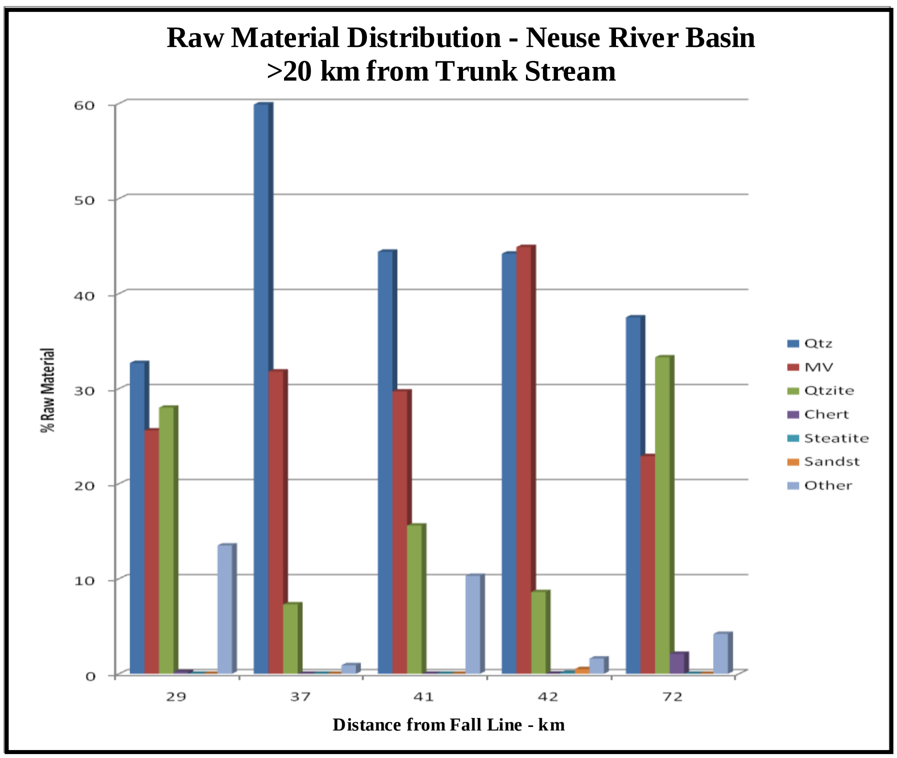
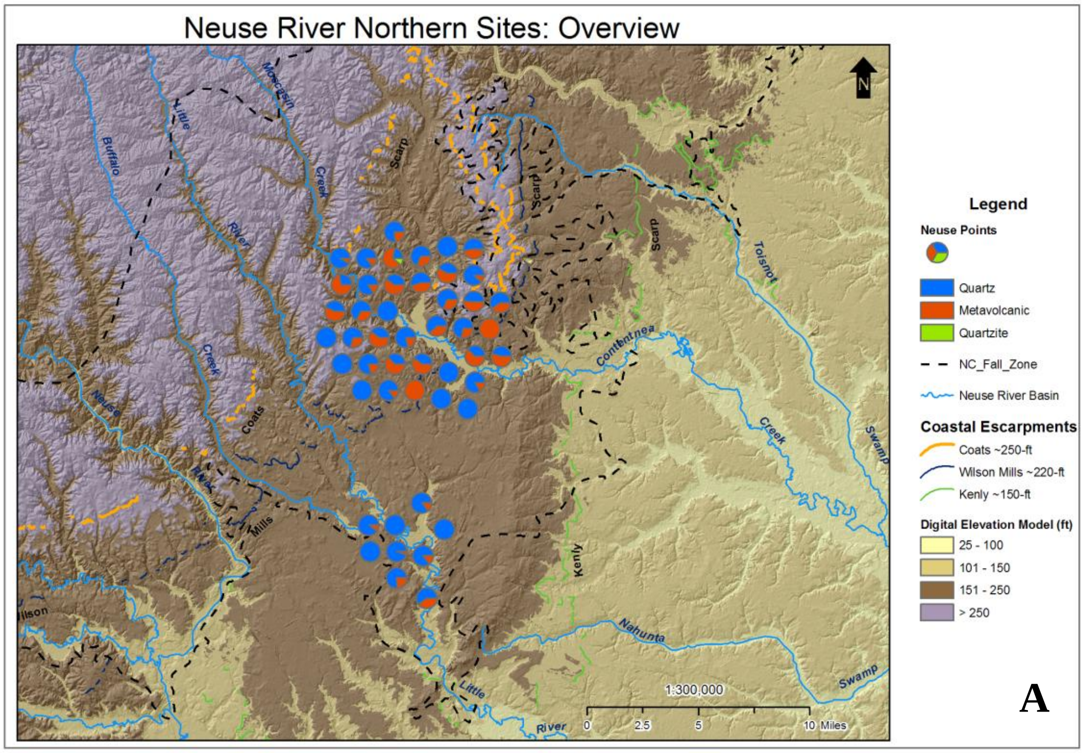


Figure 2-20. Distribution of raw materials in the Neuse River Basin: A) <20 km from trunk stream, and B) >20 km from trunk stream.



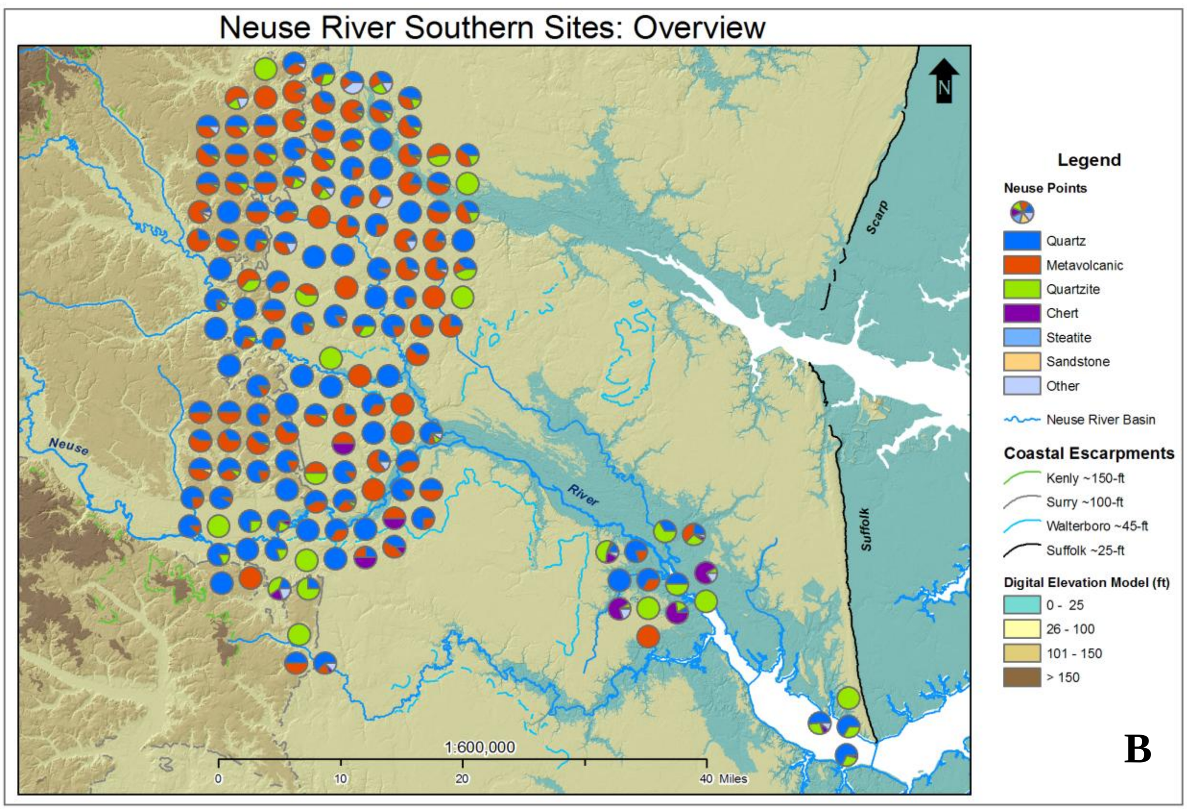


Figure 2-21. Diagrammatic view of Neuse River Basin archaeological site locations. NOTE: Point locations for sites are exaggerated in size to show the relative percentages of material type (see legend), and are not to scale, nor in their proper spatial location. A. Northern sites – overview. B. Southern sites – overview.

of the Fall Zone to about 61 km downstream. The other categories of raw materials remain constant or in trace proportions, with the exception of a small increase in quartzite at 54 km. The use of quartzite increases dramatically between 54 to 61 km from the Fall Zone and maintains relatively higher proportions downstream to its mouth near Cherry Point (Figure 2-21B). Chert increases at 61 to 63 km from the Fall Zone, although much less than quartzite. Similar to the Cape Fear drainage, the overall diversity of assemblages increases downstream from 61 km.

In distal quads (>20 km) from trunk stream, Figure 2-20B shows that the diversity of raw material is higher at a shorter distance from the Fall Zone. Percentages of quartz and metavolcanics remain high, but quartzite is proportionally more prominent at a shorter distance. This may have some connection with distance upstream from the confluence of the trunk stream with primary auxiliary drainage rather than distance from the Fall Zone. This may relate to task groups use of auxiliary drainage for activities associated with hunting or other resource acquisition behavior (Binford, 1980).

Roanoke River Basin

Table 2-1C shows data compiled for the Roanoke River Basin. All eight quadrangles occur proximal (< 20 km) to the trunk stream (Roanoke River). The Thelma and Roanoke Rapids quadrangles occur within the Fall Zone about 16 and 5 km, respectively, west of its eastern edge. The results posted in Table 2-1C and Figure 2-22 suggest a dominance of quartz along the drainage with near equal proportions of quartz and metavolcanics west of the eastern edge of the Fall Zone (Figure 2-23). Quartzite increases at 45 km from the Fall Zone, remains nearly equal in occurrence with quartz to 78 km, and then, proportionally, greatly surpasses quartz and metavolcanics in a downstream direction. Quartz dominates at 84 km from the Fall Zone.

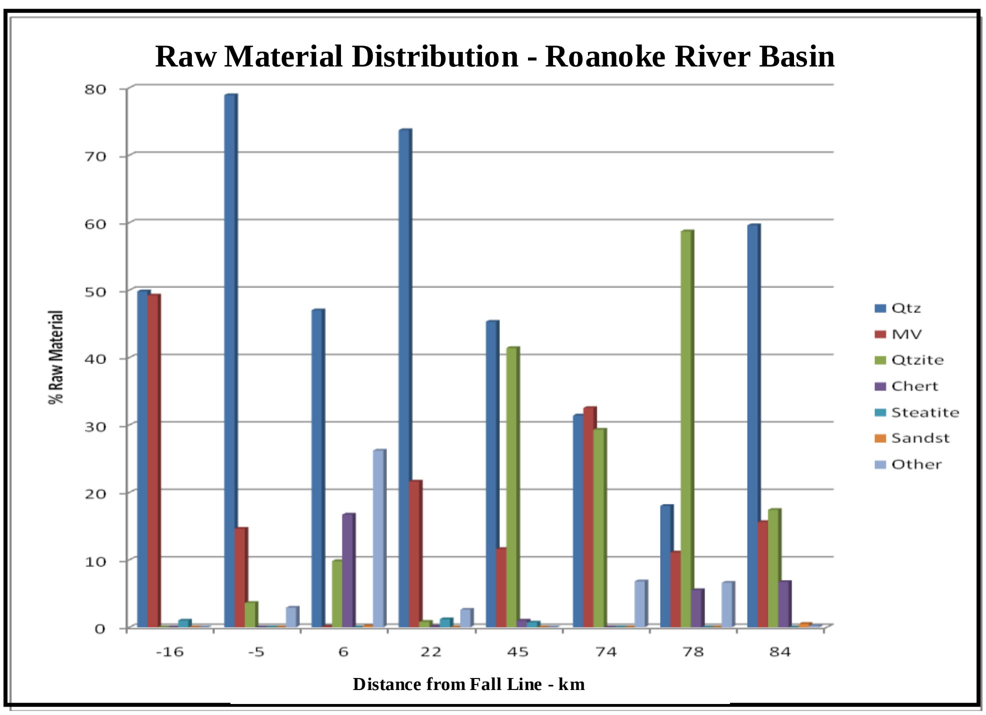


Figure 2-22. Distribution of raw materials within 20 km of trunk stream, Roanoke River Basin.

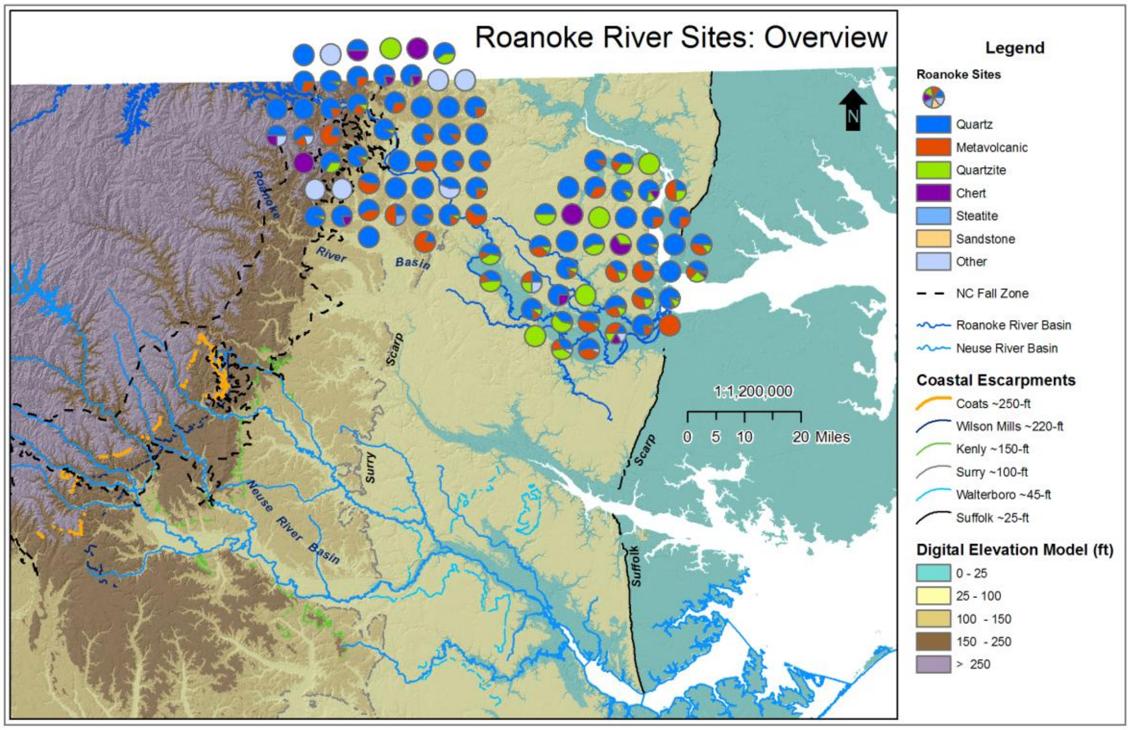


Figure 2-23. Diagrammatic view of Roanoke River Basin archaeological site locations. NOTE: Point locations for sites are exaggerated in size to show the relative percentages of material type (see legend), and are not to scale, nor in their proper spatial location.

PATTERNS IN THE LITHIC LANDSCAPE SUGGESTED BY LITHIC RAW MATERIAL ASSEMBLAGES

Our evaluation of the spatial distribution of lithic raw material assemblages in the context of the geologic and geomorphic setting reveals two preliminary but specific patterns in the nature of the lithic landscape of the NC Coastal Plain. First, potential source areas exist within upland settings of the Coastal Plain. This outcome is documented in the case study presented below. Routine detailed geologic mapping by the NCGS identifies outcrops and includes descriptions of the composition and grain size of near surface sediment and formations. In particular, detailed mapping in the Raleigh 100K sheet, identified easily accessible, surficial gravel patches within upland settings. The second pattern is related to changes in the range of variation in raw material assemblages as a function of distance from the Fall Zone. These patterns are discussed below.

Case Study – Upland Lithic Sources

Detailed geologic mapping, (1:24,000 scale on 7.5 minute quadrangles), by NCGS has identified upland gravel deposits in the Stancils Chapel, Lucama, Kenly West, and Kenly East quadrangles. In this area, bedrock is close to the ground surface (<10 ft). These gravels typically have a sandy matrix, and are exposed at the ground surface primarily in areas where the irregular bedrock surface forms topographic highs, allowing these basal Coastal Plain gravels to outcrop. These sandy gravels occur in outcrops as surficial, patchily-distributed, map units on upland terraces (Figures 2-24 and 2-25). NCGS drill holes in this area commonly encounter basal gravel at the contact between Coastal Plain sediments and the underlying weathered crystalline bedrock, which may indicate that these gravels are widespread at this contact. The gravel deposits are likely Late Pliocene (~ 1.8 - 2.5 Ma: nonconformant with revisions in Gibbard et al. (2010)) in age and may have originated as basal lags associated with an unconformity or a transgressive ravinement surface. Bedrock here is dominated by metamorphosed volcanic rocks (Clark et al. 2004). In some areas of Stancils Chapel quadrangle, pebbles and cobbles of quartz lack a sandy matrix in this zone above weathered bedrock. At some localities, gravel facies may be as thick as 1 m (3.3 ft). The gravel patches at the landscape surface are interpreted as erosional remnants of formerly thicker and more areally extensive units.

Most of the surficial gravel patches occur in agricultural fields, where recent plowing to depths of 0.45 m (1.5 ft) exposes them. Gravel clasts are commonly broadly distributed in a sandy matrix, and are rounded to subrounded in shape, indicating high-energy conditions. Many fields are completely littered with gravel (Figure 2-25). NCGS mapped these gravels by walking the open fields and visually determining the gravels' composition and the areal extent of outcrops. The relative density of the gravel patches was estimated using qualitative terms such as low, medium, and high density. Overall, most of the gravel patches were deemed relatively dense. Outcrops have extents that range in size from 0.24 to 5.15 acres. Eighty percent of the mapped gravel patches are less than five acres in size. The mean extent is 1.69 acres, with a standard deviation of 1.23 acres. A few patches are larger, with extents that cover broad, flat interfluve regions.

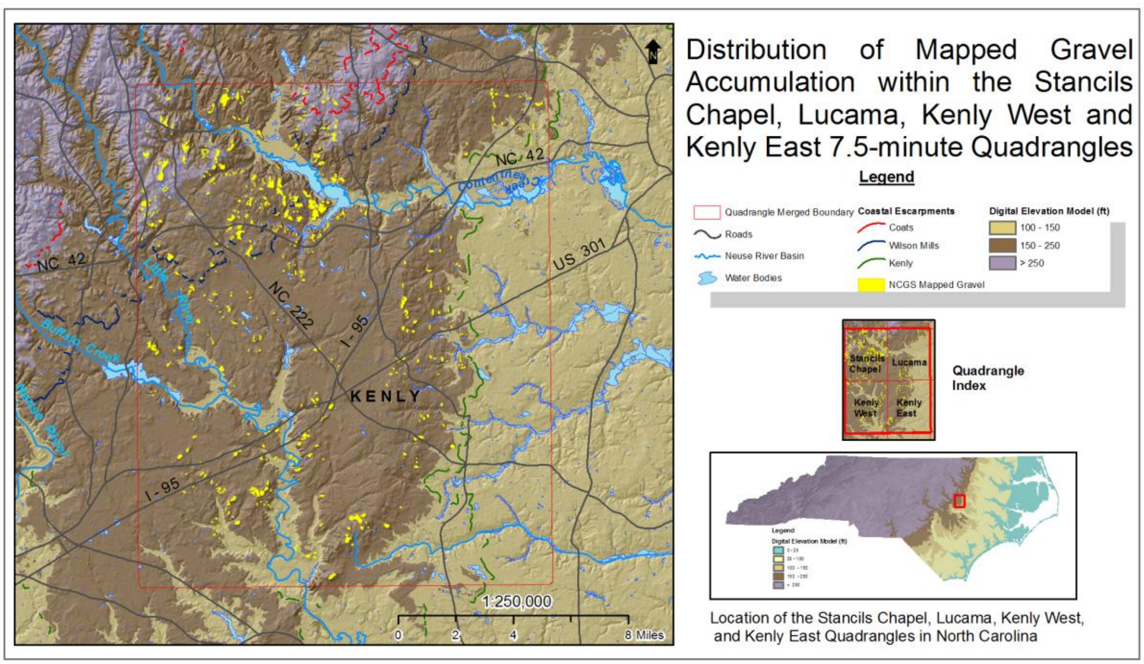


Figure 2-24. Map of gravel patches on selected 7.5 Minute Quadrangles.

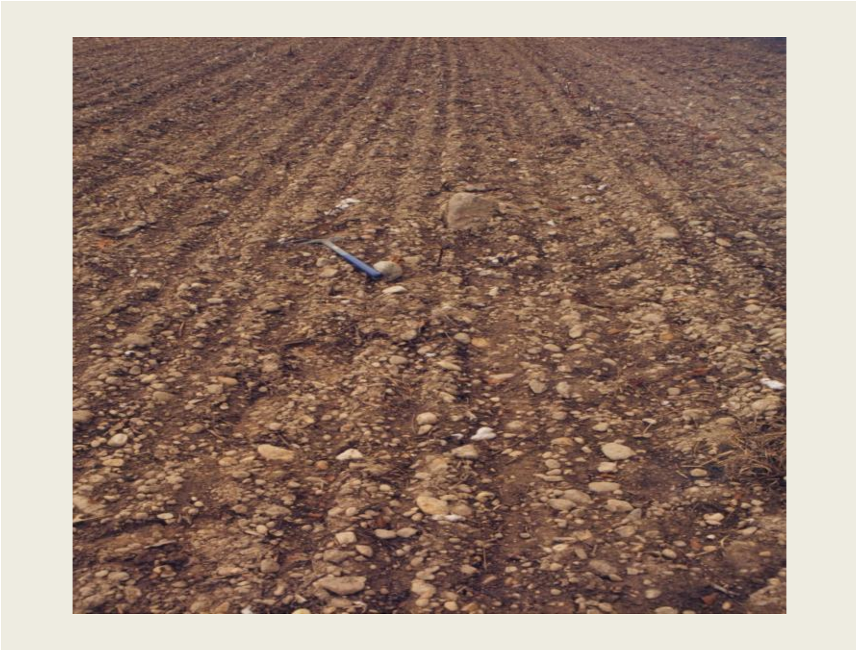


Figure 2-25. Example of a high-density gravel patch in a recently tilled field. The pick in this image is ~ 2.5-feet in length.

Figure 2-26 shows compositional variation in gravel lag units mapped by NCGS, compared to raw material assemblages documented at archaeological sites by the OSA in the Stancils Chapel quadrangle. Gravel lags are shown in orange. Archaeological sites are shown as bars denoting the percentages of raw material types. The circles represent the composition of the NCGS mapped gravels. The lag gravels are dominated by relatively high percentages of quartz and metavolcanic clasts. Lithic raw material assemblages at archaeological sites proximal to these surficial gravel lags show similar high frequencies of occurrence for quartz and metavolcanics. The apparent correlation between composition of the local sedimentary gravels (gravel lag map unit), and lithic assemblages at nearby sites, strongly suggests that the gravels lags functioned as local sources for lithic raw material.

Proximality Trends in Lithic Raw Materials – Fall Zone and Surry Scarp Relationships

In the three drainage basins, the diversity of lithic raw material assemblages changes as a function of distance from the Fall Zone. Changes range from a dominance of quartz and metavolcanics in the upper reaches of the study area (west of Surry Scarp) to a more varied mix of materials in the lower reaches (east of Surry Scarp). In particular, the use of quartzite and chert increases as a function of distance from the Fall Zone in all three river basins. The major changes in diversity occur in the middle portions of the Cape Fear and Neuse drainages in the vicinity of the Surry Scarp (see Figure 2-4). In the Roanoke Basin, the change in diversity occurs a shorter distance from the Fall Zone, but also close to the Surry Scarp. Our results strongly suggest that the area of the Surry Scarp serves as a boundary between the lithic resources used in the middle to upper Coastal Plain and those used in the lower Coastal Plain (terminology after Daniels et al. 1984). These patterns are not coincidences, but may be directly related to actual differences in the geologic and geomorphic framework, the lithic landscape, and an associated human response to the changes in lithic resource availability, above and below the Surry Scarp.

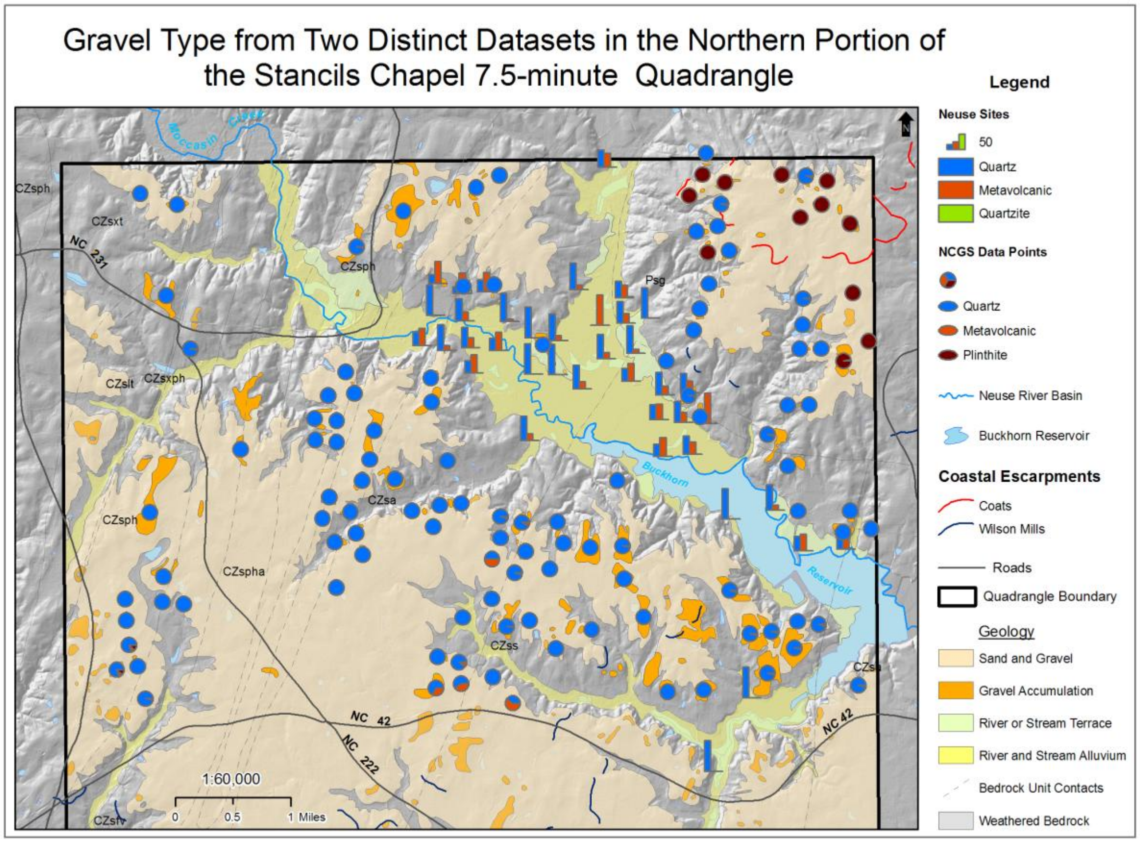


Figure 2-26. Distribution of gravel locations on the Stancils Chapel 7.5-minute USGS quadrangle. Bar graph locations refer to archaeological sites and are predominantly quartz and metavolcanic rock fragments. Circle data points are from the NCGS and show a predominance of quartz gravel.

The area in the vicinity of the Surry Scarp may have served as a secondary aggregation zone for prehistoric populations moving through the Coastal Plain, particularly during the Archaic. Similar to the Fall Zone further to the west, the Surry Scarp may have functioned as an ecotone for mobile groups in transit between the upper and lower Coastal Plain. The wide variation of resources associated with these areas could have supported population aggregates and facilitated temporary base camps and other short-term occupations. This inference merits further work as a part of long-term goals established for this project.

A Baseline Model Regarding the Lithic Landscape of the NC Coastal Plain

The results of this study suggest that surficially exposed gravel lag deposits associated with unconformities or transgressive surfaces likely served as reliable, primary sources of quartz and metavolcanic raw materials for prehistoric populations. This is at least the case for upland interfluves proximal to the Fall Zone. Knowledge of the locations of these types of sources could eliminate or greatly reduce the element of chance with respect to lithic procurement. Such knowledge facilitates conscious decisions regarding group movements and schedules made in light of known commodities. The results of this study suggest that lithic resources within the

Coastal Plain are not confined merely to rivers and streams. Rather, sources for lithic materials are potentially variable and widely distributed across the landscape, including patches of outcrops with concentrations of gravel-sized clasts in upland areas. From a geologic perspective, the Coastal Plain is thus far more complex and diverse than previously thought, in terms of raw material availability. With this realization comes the understanding that the complexity and relative high diversity of the lithic landscape invokes equally complex and diverse responses from human populations in the area. Given this understanding, future studies related to lithic raw material procurement and use within the Coastal Plain should be guided by some basic models adapted to hunter-gatherer subsistence and settlement patterns.

A GENERAL MODEL OF RAW MATERIAL PROCUREMENT FOR THE COASTAL PLAIN

A general model of prehistoric lithic raw material procurement for the Coastal Plain of NC should be strongly rooted in various assumptions and principles associated with human ecology (e.g., Jochim 1976; Butzer 1982). We suggest that the basic assumptions underlying a general model follow those proposed by Jochim (1976) for hunter-gatherer subsistence and settlement. While these ideas have a wide use within anthropological studies, they are rarely directly applied to lithic procurement studies in NC, particularly in the Coastal Plain. First, we assume that lithic raw material procurement is patterned behavior. We also assume that regularities exist in these behavioral patterns which serve to solve or address problems or issues related to individual and group survival. These regularities are expressed in terms of adaptive relationships between a given human group and their resources (Jochim 1976:8-9). Relationships are expressed in decisions which become instituted as economic strategies (patterned group behavior). These assumptions, at the very basic level, are deemed equally applicable to highly mobile hunter-gatherers (Archaic groups) and more sedentary, more constricted (Woodland) groups within the Coastal Plain of NC.

Adapted from Jochim (1976:10), the general assumptions are:

1	Lithic raw material procurement and use within the Coastal Plain are the results of conscious choices.
2	These choices are mostly deliberative rather than solely opportunistic.
3	Deliberation is rational, based on preferences for raw materials.
4	The probabilities of the outcomes of choices are sometimes uncertain and must be estimated based on knowledge of resource location and the basic lithic landscape.
5	Choices seek to satisfy predetermined levels of need in terms of tool forms and functions.
6	Choices will allow mixed strategy solutions to satisfy raw material needs.
7	Desire to achieve specific goals underlies most decisions regarding lithic raw material acquisition.

The underlying principles, adapted from Jochim (1976), include: 1) problems requiring solutions or choices related to lithic raw material acquisition are conveniently formulated as systems; and 2) problems are best approached in the context of human ecology and human responses to the existing lithic landscape (see Jochim 1976:10). As stated, the context is rooted in the human response to the lithic landscape of the Coastal Plain. The basic issues or problems related to lithic procurement (adapted from Jochim (1976:11) are: which lithic resources should be collected and used, in what quantity, from which sites, and by which members of a particular group. Utilizing Jochim, these are combined into a set of problem areas that include lithic resource use scheduling, site placement to facilitate procurement, and demographic arrangement (1976:11). Each problem, as it relates to lithic procurement in the Coastal Plain, is considered as a subsystem within the overall economic and subsistence framework of a particular group. Again, these issues cannot be addressed in terms of lithic procurement without a relatively good geologically-based understanding of the lithic landscape, and the logistics of identifying and utilizing the patchy distribution of the resources within the Coastal Plain.

The distribution of lithic raw materials, although patchy in terms of exposure over time within the Coastal Plain, should be considered fixed in terms of physical location. The most productive decisions related to lithic procurement in this setting would likely employ mixed strategies. As such, the acquisition of raw materials could be approached in three ways: 1) as an activity embedded either in other activities or during transit between activities or settlement locations (Binford 1980); 2) as a separate task not related to other activities or group movement (Gould 1980); or 3) in a less structured manner that involves periodic, fortuitous encounters associated with activities unrelated to the first two approaches.

The results of this study suggest that the lithic landscape of the NC Coastal Plain is partitioned into two sections in terms of prehistoric lithic resource availability and use: an inner region that includes the middle to upper Coastal Plain (see Figure 2-2), and the lower Coastal Plain. These are separated by the Surry Scarp. The area between the Fall Zone and the Surry Scarp is dominated by the use of quartz and metavolcanics. A more highly diverse assemblage of raw materials is used further east within the lower Coastal Plain. Analysis suggests that in the area between the Surry Scarp and the Fall Zone, quartz and metavolcanics are reliable, readily accessible primary resources, and were used as a matter of deliberate selection rather than expedience or on an *ad hoc* basis. This is facilitated by the presence of readily available quartz and metavolcanic cobbles within gravel lag deposits on uplands and in river-borne cobble sources. These deposits were likely utilized as part of either scheduled or embedded visits by groups within the vicinity. In this upper portion of the Coastal Plain, quartz is likely the primary commodity if compared to metavolcanics. The bulk of metavolcanic materials may originate primarily to the west of the Fall Zone in the Carolina Slate Belt (Daniel 1994; Steponaitis et al. 2006), but certainly supplementary deposits occur in the area between the Fall Zone and the Surry Scarp.

East of the Surry Scarp, extensive thick surficial gravel deposits are not likely common, and may not be a component of the lithic landscape. Local outcrops of gravel lags associated with unconformities and other erosion surfaces, however, may be exposed in cliffs along major streams. These could also form predictable resources that could be utilized. The absence of either type of stable source site, (upland gravel lag or cliff with outcrop of gravel) necessitates a more variable assemblage of raw materials acquired from river-borne cobble sources of inferred, less reliable predictability.

CONCLUSIONS AND FUTURE WORK

Key to developing a baseline conceptual model is recognition of general patterns in the geomorphology of the landscape and its underlying geology, and the distribution of accessible lithic raw materials available for utilization as sources of stone for the production of tools. From a geologic perspective, to define lithic landscapes it is useful to start with geomorphic subdivision of the landscape. This includes defining river basin and watershed boundaries, mapping regional scarps and terraces, and surely separating the incised valley systems from the upland terraces. The Surry and Suffolk Scarps are natural prominent boundaries, as are the incised valley systems associated with these ancient shorelines. The incised valleys and upland terraces have inherently different stratigraphic and facies signatures, and hence potentially different lithic raw materials. Geologic maps that show subcrops and surficial units help us to predict the location of unconformities and facies associated with lithic raw materials. But detailed maps of shallow and surficial deposits are needed to delineate unique formations, and the nature of their lithology and composition. As the example presented above suggests, documentation of geologic localities that potentially produce gravel-sized clasts, and the mineralogic composition of those clasts is most useful in defining the lithic landscape.

The results of our study are general in scope, but provide preliminary insights into the nature of the lithic landscape of the NC Coastal Plain and possible patterns of prehistoric raw material use. Foremost, our results suggest that the Coastal Plain should no longer be considered a "lithic poor" region. Rather, it is a region potentially characterized by patchily distributed, but reliable, lithic resources that from a geologic perspective, may be predictable in occurrence. This patchy, but reliable characterization suggests radically different states of existence than previously thought for prehistoric lithic resource procurement. This implies alternative ways of organizing human behavior in response to the availability of resources across the landscape.

A "lithic poor" region implies a landscape nearly devoid of suitable resources. The resources are hidden or nearly absent, not readily apparent, or are obscured and inaccessible due to sediment or water cover. Lithic resource procurement in this type of landscape is a function of chance or luck, and not easily incorporated into viable settlement and subsistence strategies. Ethnographic analogs (e.g., Gould 1980) suggest that too much is at stake in terms of group well-being and survival to leave the acquisition of major resources to chance alone. Human groups require some level of confidence that certain resources will be available at given times and places. As a result, it is of great benefit for us to move beyond the assumption that materials for tool production on the Coastal Plain were collected only on an expedient basis from cobble deposits within rivers and streams. Certainly, a level of expedient resource acquisition played a part in any given system; however, such behavior served the function its name implies and did not constitute the primary mode of raw material collection over time. Clearly a different basic pattern to lithic raw material acquisition and use exists for the NC Coastal Plain. As an example, upland source areas include remnants of formerly more extensive basal lag deposits. These were likely used by prehistoric populations for raw materials on a regular basis.

This preliminary study suggests that a regional geomorphic feature, the Surry Scarp, served as a boundary for changes in raw material assemblage. Additional study, however, is needed to determine the reasons for and significance of this observation relative to human settlement and subsistence behavior over time, and the natural environment. Information on specific assemblages of artifact types as well as compositional variations in raw material sources is necessary to determine how specific materials were utilized. Also, the difficult issue of the chronological context of the data needs to be addressed, to allow testing of proposed models of human behavior and inferred changes and/or similarities across cultural periods. Lithic raw material acquisition and use studies should be incorporated into basic hunter-gatherer subsistence and settlement models (e.g., Jochim 1976).

Clearly a comprehensive understanding of the nature of the lithic landscape of the Coastal Plain is essential to fully understand prehistoric raw material acquisition and utilization patterns for this area. Previously, the geology of this region was ignored as a key component of archaeological settlement and subsistence studies. This approach is counter-productive and methodologically backward. Currently, as funding permits, NCGS geologists are actively mapping the Coastal Plain in detail using advanced techniques in remote imaging, GIS technology, and subsurface analysis. As new map units are defined, the vast complexity of the Coastal Plain region emerges. This study suggests that a comprehensive understanding of the geomorphology and framework geology of the Coastal Plain is necessary to define the natural landscape and a context for lithic acquisition studies. To promote this understanding, new research should be collaborative between professional archaeologists and geologists.

Our long-term goal is to integrate data sets collected by NC-OSA archaeologists and NCGS geologists to define features that compartmentalize the lithic landscape and apply this knowledge to interpreting prehistoric lithic raw material procurement and use. An example of a future analysis will be a comparison of the range of variation of raw materials within documented sources for local raw materials, with the range of materials from surrounding sites. The focus of this work should be to gain understanding of site distribution/function within the Fall Zone, the area of the Surry Scarp, and the lower Coastal Plain as they may relate to the nature and use of the lithic landscape for raw material procurement. This approach will allow comparative studies of the three areas (Fall Zone, Surry Scarp, and Lower Coastal Plain) and tests of models related to subsistence, settlement, and raw material acquisition.

In future studies, we recommend evaluation of archaeological site locations and their associated artifacts in the context of: 1) river basin, 2) landscape position, 3) surficial geologic unit, 4) subcrop geologic units, 5) clast composition of local sources, and 6) artifact assemblage composition. This will require collaboration between archaeologists and geologists, and intensive field investigations by both fields to characterize the geologic source areas and lithic landscapes.

More specifically, raw material assemblages should be recorded for all sites located as a part of compliance-oriented (CRM) projects. In terms of data analysis, we recommend that weights for individual artifacts be recorded as standard lab procedure. Weights of individual artifacts, in concert with counts, provide better measures in terms of raw material use (see Millis et al. 2005). Naturally-occurring cobble sources proximal to each site should be identified. These cobble sources should include not only modern stream deposits, but also gravels incorporated into facies in the rock record, and associated with unconformities and transgressive surfaces. These may be exposed in local outcrops or concentrated in soil profiles.

Finally, it should be understood that raw material acquisition and use are merely components of the greater holistic prehistoric cultural system, in the context of the framework of the natural environment. The parts cannot be separated from the whole and studied in a vacuum. Any inferred changes in raw material acquisition and use patterns should be weighed against inferred changes in the overall system, and evaluated in the context of the natural landscape.

Acknowledgements. We thank Steve Claggett, Dolores Hall, John Mintz and Susan Myers of the NC Office of State Archaeology for their support of this research project. We also thank James B. Simons, State Geologist of North Carolina, and Assistant State Geologist and Chief for the North Carolina Geological Survey, Dr. Kenneth B. Taylor, for providing the leadership that facilitated this interagency, interdisciplinary research. Phillip Bradley of the NCGS provided additional technical advising. Lastly, we thank Charles Ewen of East Carolina University for his role as editor of this volume.

REFERENCES CITED

Abbott, Lawrence E.

1996 *Archaeological Testing of Five Sites within the Uwharrie Ranger District, Uwharrie National Forest: Intersite Analysis in the Carolina Slate Belt, Montgomery County, North Carolina*. New South Associates Technical Report 270 submitted to the USDA Forest Service, Southeastern Experimental Station, Asheville.

Abbott, Lawrence E., Jr. and Michael A. Harmon

1998 The Acquisition of Siliceous Raw Materials From the Carolina Slate Belt: Intentional or Fortuitous Lithic Procurement Within the South Central Piedmont of North Carolina. Paper presented to the 63rd annual meeting of the Society for American Archaeology, Seattle.

Anderson, David G., Charles E. Cantley, and Andrea Lee Novick

1982 *The Mattessee Lake Sites: Archaeological Investigations Along the Lower Santee River in the Coastal Plain of South Carolina*. Interagency Archaeological Services, National Park Service, Atlanta.

Anderson, David G. and Glen T. Hanson

1988 Early Archaic Settlement in the Southeastern United States: A Case Study From the Savannah River Valley. *American Antiquity* 53:261-286.

Benson, Robert W.

2000a *Archaeological Testing of 50 Sites, Overhills Tract, Fort Bragg, Harnett and Cumberland Counties, North Carolina*. Report submitted to Gulf Engineering and Consultants, Inc. and the U. S. Army Corps of Engineers, Savannah District, Savannah, Georgia by Southeastern Archaeological Services, Inc., Athens.

2000b Building a Lithic Landscape: Short-term Goals and Long-term Consequences. Paper presented at the 57th Annual Meeting of the Southeastern Archaeological Conference, Macon, Georgia.

Binford, Lewis R.

1980 Willow Smoke and Dogs' Tails: Hunter-Gatherer Settlement Systems and Archaeological Site Formation. *American Antiquity* 45:4-20.

Blanton, Dennis B.

1983 Lithic Raw Material Procurement and Use During the Morrow Mountain Phase in South Carolina. M. A. thesis, Department of Anthropology, Brown University.

Blanton, Dennis B., Christopher T. Espenshade and Paul E. Brockington

1986 *An Archaeological Study of 31SU83: A Yadkin Phase Site in the Upper Coastal Plain of South Carolina*. Report submitted to the South Carolina Department of Highways and Public Transportation by Garrow and Associates, Atlanta.

Blanton, Dennis B. and Kenneth E. Sassaman
1989 Pattern and Process in the Middle Archaic Period of South Carolina. In *Studies in South Carolina Archaeology: Essays in Honor of Robert L. Stephenson*, edited by Albert C. Goodyear, III and Glen T. Hanson, pp. 53-72. Institute of Archaeology and Anthropology, Anthropological Studies No. 9, University of South Carolina, Columbia.

Brown, P.M., Miller, J.A., and Swain, F.M.
1972 *Structural and Stratigraphic Framework and Spatial Distribution of the Permeability of the Atlantic Coastal Plain, North Carolina to New York*. U.S. Geological Survey Professional Paper 796.

Butzer, Karl W.
1982 *Archaeology as Human Ecology: Method and Theory for a Contextual Approach.* Cambridge University Press, Cambridge.

Cable, John S., Kenneth F. Styer, and Charles E. Cantley
1996 *Data Recovery Excavations at the Maple Swamp (38HR309) and Big Jones (38HR315) Sites on the Conway Bypass, Horry County, South Carolina: Prehistoric Sequence and Settlement on the North Coastal Plain of South Carolina.* New South Associates Technical Report 385, Stone Mountain.

Cattaneo, A. and Ron J. Steel
2003 Transgressive Deposits: A Review of Their Variability. *Earth-Science Reviews* 62:187-228.

Catuneanu, O.
2006 *Principles of Sequence Stratigraphy*. Elsevier, Oxford, UK.

Catuneanu, O., V. Abreu, J.P. Bhattacharya, M.D. Blum, R.W. Dalrymple, P.G. Eriksson, C.R. Fielding, W.L. Fisher, W.E. Galloway, M.R. Gibling, K.A. Giles, J.M. Holbrook, R. Jordan, C.G. Kendall, B. Macurda, O.J. Martinsen, A.D. Miall, J.E. Nearl, D. Nummedal, L. Pomar, H. W. Pasamentier, B.R. Pratt, J.F. Sarg, K.W. Shanley, R.J. Steel, A. Strasser, M.E. Tucker, and C. Winker
2009 Towards the Standardization of Sequence Stratigraphy. *Earth-Science Reviews* 92:1-33.

Charles, Tommy
1981 Dwindling Resources: An Overture to the Future of South Carolina's Archaeological Resources. *The Notebook* 13:1-85. South Carolina Institute of Archaeology and Anthropology, University of South Carolina, Columbia.

Claggett, Stephen R. and John S. Cable (assemblers)
1982 *The Haw River Sites: Archeological Investigations at Two Stratified Sites in the North Carolina Piedmont.* Commonwealth and Associates, Jackson.

Clark, T.W., Blake, D.E., Stoddard, E.F., Carpenter, P.A., III, Carpenter, R.H.
2004 Preliminary bedrock geologic map of the Raleigh 30' X 60' Quadrangle, North Carolina. North Carolina Geological Survey, Open File Report 2004-02.

Clark, W.B. and B.L. Miller
1906 Geology of the Virginia Coastal Plain. In: The Clay Deposits of the Virginia Coastal Plain. *Virginia Geological Survey, Bulletin* 2:11-24.

Clark, W.B., B.L. Miller, and L.W. Stephenson
1912 Physiography and Geology of the Coastal Plain Region. In *The Coastal Plain of North Carolina*, edited by W.B. Clark, B.L. Miller, L.W. Stephenson, B.L. Johnson, and H.N. Parker. North Carolina Geological and Economic Survey, Volume III, Part 1.

Colquhoun, D.J.
1966 Geomorphology of River Valleys in the Southeastern Atlantic Coastal Plain. *Southeastern Geology* 7:101-110.

Cooke, C.W.
1931 Seven Coastal Terraces in the Southeastern States. *Journal of the Washington Academy of Science* 21:503-513.

Cooke, C.W.
1935 Tentative Ages of Pleistocene Shorelines. *Journal of the Washington Academy of Science* 25:331-333.

Cooke, John P.
2000 A Distribution of Archaic Projectile Points Across the Coastal Plain of North Carolina. M.A. thesis, Department of Anthropology, East Carolina University, Greenville.

Culver, S.J., K.M. Farrell, D.J. Mallinson, B.P. Horton, D.A. Willard, E.R. Thieler, S.R. Riggs, S.W. Sndyer, J.F. Wehmiller, C.E. Bernhardt, C. Hillier
2008 Micropaleontologic Record of Late Pliocene and Quaternary Paleoenvironments in the Northern Albemarle Embayment, North Carolina, USA. *Palaeogeography, Palaeoclimatology, Palaeoecology* 254:54-77.

Culver, S.J., K.M. Farrell, D.J. Mallinson, B.P. Horton, D.A. Willard, S.R. Riggs, E.R. Thieler, J.F. Wehmiller, P.R. Parham, S.W. Sndyer, C. Hillier
2011 Micropaleontologic record of Quaternary paleoenvironments in the Central Albemarle Embayment, North Carolina, U.S.A. *Palaeogeography, Palaeoclimatology, Palaeoecology* 305:227-249.

Dalrymple, R.W.
1992 Tidal Depositional Systems. In *Facies Models: Response to Sea Level Change*, edited by R.G. Walker and N.P. James. Geological Association of Canada, St. Johns, Newfoundland, Canada.

Daniel, Issac R., Jr.
1994 Hardaway Revisited: Early Archaic Settlement in the Southeast. Ph.D. dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.

1996 Raw Material Availability and Early Archaic Settlement in the Southeast. In *The Paleoindian and Early Archaic Southeast*, edited by D.G. Anderson and K. E. Sassaman, pp. 84-91. The University of Alabama Press, Tuscaloosa.

1998 *Hardaway Revisited: Early Archaic Settlement in the Southeast.* University of Alabama Press, Tuscaloosa.

Daniel, Issac R., Jr., Keith C. Seramur, Tara L. Potts, and Matthew W. Jorgenson
2008 Searching a Sand Dune: Shovel Testing The Barber Creek Site. *North Carolina Archaeology* 57:50-77.

Daniels, R.B., E.E. Gamble, and W.D. Nettleton
1966a The Surry Scarp from Fountain to Potters Hill, North Carolina. *Southeastern Geology* 7:41-50.

Daniels, R.B., E.E. Gamble, W.H. Wheeler, and W.D. Nettleton
1966b Coastal Plain Stratigraphy and Geomorphology near Benson, North Carolina. *Southeastern Geology* 7:159-182.

Daniels, R.B. and E.E. Gamble
1974 Surficial Seposits of the Neuse-Cape Fear Divide Above the Surry Scarp, North Carolina. In *Post-Miocene Stratigraphy, Central and Southern Atlantic Coastal Plain*, edited by R.Q. Oaks, Jr., and J.R. Dubar, pp. 88-101. Utah State University Press, Logan, Utah.

Daniels, R.B., E.E. Gamble, W.H. Wheeler, and C.S. Holzhey
1977a The Arapahoe Ridge – A Pleistocene Storm Beach. *Southeastern Geology* 18:231-248.

Daniels, R.B., E.E. Gamble, W.H. Wheeler, and C.S. Holzhey
1977b The Stratigraphy and Geomorphology of the Hofmann Forest Pocosin. *Soil Science Society of America* 41:1175-1180.

Daniels, R.B., E.E. Gamble, and W.H. Wheeler
1978 Upper Coastal Plain Surficial Sediments Between the Tar and Cape Fear Rivers, North Carolina. *Southeastern Geology* 19:69-110.

Daniels, R.B., H.J. Kleiss, S.W. Buol, H.J. Byrd, and J.A. Phillips
1984 *Soil Systems in North Carolina*. Bulletin 467, North Carolina Agricultural Research Service, North Carolina State University, Raleigh.

Daniels, R.B., S.W. Buol, H.J. Kleiss, C.A. Ditzler
1999 *Soil Systems in North Carolina*. Technical Bulletin 314, North Carolina State University, Soil Science Department, Raleigh.

Daniels, R.B., and E.O. Kane
2001 *Coastal Plain Scarps of the Neuse River Basin, North Carolina, as Delineated by R.B. Daniels: a new GIS Coverage.* Ground Water Circular No. 18, NC-DENR, Raleigh.

Drake, C.L., J.I. Ewing, and H. Stockard
1968 The Continental Margin of the Eastern United States. *Canadian Journal of Earth Science* 5:993-1010.

Farrell, K.M.
2001 Geomorphology, Facies Architecture and High-resolution Non-marine Sequence Stratigraphy in Avulsion Deposits, Cumberland Marshes, Saskatchewan. *Sedimentary Geology* 139:93-150.

Farrell, K.M., H.E. Mew, A.J. Keyworth, and T.W. Clark
2003 *Comprehensive Landscape Analysis, Geomorphology, and Sequence Stratigraphy in Eastern North Carolina's Little Contentnea Creek Watershed of the Neuse River Basin: Methods for Constructing Reconnaissance-level Geologic Maps of a Relict Plio-Pleistocene Terrane*, pp.1-17. Carolina Geological Society, 2003 Annual Field Trip Guidebook.

Farrell, K.M., S.J. Culver, D. Mallinson, S.R. Riggs, J.R. Wehmiller, E.R. Thieler, P. Parham, and J. Pierson
2008 Quaternary Stratigraphic Framework of the Eastern Coastal Plain and Outer Banks of North Carolina, USA. Abstract, Geological Society of America, Annual Meeting, Houston, TX.

Flint, R.F.
1940 Pleistocene Features of the Atlantic Coastal Plain. *American Journal of Science* 238:757-787.

Gardner, William M.
1974 The Flint Run Paleo-Indian Complex: A Preliminary Report, 1971-73 Seasons. Archeology Laboratory, Department of Anthropology, The Catholic University of America, Washington, D.C. *Occasional Publication*, No. 1.

1979 Paleo-Indian Settlement Patterns and Site Distribution in the Middle Atlantic. Ms. on file, Department of Anthropology, Catholic University.

Geier, Clarence R.
1990 A Middle Woodland Bipolar Pebble Technology in the Lower Chesapeake Area of Tidewater Virginia. *Journal of Middle Atlantic Archaeology* 6:55-74.

Goodyear, Albert C. and Tommy Charles
1984 *An Archaeological Survey of Chert Quarries in Western Allendale County, South Carolina*. Research Manuscript Series 195. South Carolina Institute of Archaeology and Anthropology, University of South Carolina, Columbia.

Gibbard, P. L., M.J. Head and M.J.C. Walker
2010 Formal ratification of the Quaternary System/Period and the Pleistocene Series/Epoch with a base at 2.58 Ma. *Journal of Quaternary Science* 25:96-102.

Gould, Richard A.
1980 *Living Archaeology*. Cambridge University Press, Cambridge.

Gould, Richard A. and S. Saggers
Lithic Procurement in Central Australia: A Closer Look at Binford's Idea of Embeddednes in Archaeology. *American Antiquity* 50:117-136.

Horton, J.W. and Zullo, V.A. (editors)
1991 *The Geology of the Carolinas*. University of Tennessee Press, Knoxville, TN.

Jochim, Michael A.
1976 *Hunter-Gatherer Subsistence and Settlement: A Predictive Model*. Academic Press, New York.

Johnson, B.L.
1904 Pleistocene Terracing in the North Carolina Coastal Plain. *Science* 26:640-642.

Johnson, G.H., and C.R. Berquist, Jr.
1989 *Geology and Mineral Resources of the Brandon and Norge Quadrangles, Virginia*. Virginia Division of Mineral Resources Publication 87, Department of Mines, Minerals, and Energy, Division of Mineral Resources, Charlottesville.

Johnson, G.H., L.W. Ward, and P.C. Peebles
1987 Stratigraphy and Paleontology of Pliocene and Pleistocene Deposits of Southeastern Virginia. In *Geological Excursions in Virginia and North Carolina*, edited by G.R. Whittecar, pp. 189-218. Southeastern Section, Geological Society of America, Guidebook, Old Dominion University, Norfolk.

Krantz, D.E.
1991 A Chronology of Pliocene Sea-level Fluctuations: the U.S. Middle Atlantic Coastal Plain Record. *Quaternary Science Reviews* 10:163-174.

Krumbein, W.C., and L.L. Sloss
1963 *Stratigraphy and Sedimentation*. W.H. Freeman and Co, San Francisco.

Lautzenheiser, Loretta, Jane M. Eastman, and Mary A. Holm
1996 Identification of a Piedmont Chert Quarry. *Southen Indian Studies* 45:38-56.

Lawrence, D.P., and C.W. Hoffman
1993 *Geology of Basement Rocks Beneath the North Carolina Coastal Plain.* North Carolina Geological Survey Bulletin 95, Raleigh.

Mallinson, D., S. Riggs, S. Culver, R. Thieler, D. Foster, D. Corbett, K. Farrell, and J. Wehmiller
2005 Late Neogene and Quaternary Evolution of the Northern Albemarle Embayment (Mid-Atlantic Continental Margin, USA). *Marine Geology* 217:97-117.

Mallinson, D., K. Burdette, S. Mahan and G. Brook
2007 Optically stimulated luminescence age controls on Late Pleistocene and Holocene coastal lithosomes, North Carolina, USA. *Quaternary Research* 69:97-109.

Mallinson, D.J., S. J.Culver, S. R. Riggs, E. R. Thieler, D. Foster, J. F. Wehmiller, K. M. Farrell, and J. Pierson
2010 Regional Seismic Stratigraphy and Controls on the Quaternary Evolution of the Cape Hatteras Region of the Atlantic Continental Margin, USA. *Marine Geology* 238:16-33.

McAvoy, Joseph M.
1992 *Clovis Settlement Patterns: The 30 Year Study of Late Ice Age Hunting Culture on the Southern Interior Coastal Plain of Virginia.* Nottoway River Survey, Part I. Archaeological Society of Virginia Special Publication Number 28. Dietz Press, Richmond.

McReynolds, Theresa E.
2005 Spatial and Temporal Patterning in the Distribution of North Carolina Projectile Points. *North Carolina Archaeology* 54:1-33.

Mew, H.E.,Jr., D.K. Hirth, D.V. Lewis, R.B. Daniels, A.J. Keyworth
2002 *Methodology for Compiling Ground Water Recharge Maps in the Piedmont and Coastal Plain Provinces of North Carolilna.* Ground Water Bulletin Number 25, N.C. Department of Environment and Natural Resources, Goundwater Section, Division of Water Quality, Raleigh.

Miall, A.D.
1995 Whither stratigraphy? *Sedimentary Geology* 100:5-20.

Millis, Tracy L., C. Damon Jones, Heather Millis, and Lance Greene
2005 *Archaeological Survey of the FY01 Silvicultural Prescription and Company Battle Course, and Phase II Testing of Site 31ON1019/1019** on Marine Corps Base, Camp Lejeune, Onslow County, North Carolina.* Report submitted by TRC Garrow Associates, Inc. to U.S. Army Corps of Engineers, Wilmington District.

Mixon, R.B., C.R. Berquist, Jr., W.L Newell, G.H. Johnson, D.S. Powars, J.S. Schindler, and E.K. Rader
1989 *Geologic Map and Generalized Cross Sections of the Coastal Plain and Adjacent Parts of the Piedmont, Virginia.* U.S. Geological Survey Miscellaneous Investigations Series Map I-2033.

North Carolina Geological Survey (NCGS)
1985 *Geologic Map of North Carolina.* North Carolina Geological Survey, Raleigh.

Oaks, R.Q., Jr. and N.K Coch
1973 *Post Miocene Stratigraphy and Morphology, Southeastern Virginia.* Bulletin 82, Virginia Division of Mineral Resources, Charlottesville.

Oaks, R.Q., Jr. and J.R. Dubar, editors,
1974 *Post-Miocene Stratigraphy Central and Southern Atlantic Coastal Plain*, edited by R.Q. Oaks, Jr., and J.R. Dubar,Utah State University Press, Logan, 275 pp.

Owens, J.P.
1989 Geology of the Cape Fear region, Florence 1 degrees x 2 degrees quadrangle and northern half of the Georgetown 1 degrees x 2 degrees quadrangle, North Carolina and South Carolina: U.S. Geological Survey Miscellaneous Investigations Series Map, I-1948-A, 2 sheets, scale 1:250,000 [http://ngmdb.usgs.gov/Prodesc/proddesc_10026.htm]

Parham, P. R.
2009 *The Late Quaternary Stratigraphy and Geologic History of Northeastern North Carolina and Southeastern Virginia.* Ph.D. dissertation, Department of Geological Sciences, East Carolina University, Greenville.

Phelps, David S.
1983 Archaeology of the North Carolina Coast and Coastal Plain: Problems and Hypotheses. In *Prehistory of North Carolina: An Archaeological Symposium*, edited by M.A. Mathis and J.A. Crow, pp. 1-52. North Carolina Division of Archives and History, Department of Cultural Resources, Raleigh.

Posamentier, H.W., and G.P. Allen
1999 *Siliciclastic Sequence Stratigraphy – Concepts and Applications.* Concepts in Sedimentoogy and Paleontology No. 7. Society for Sedimentary Geology, Tulsa.

Ramsey, K.W.
1992 Coastal Response to Late Pliocene Climate Change: Middle Atlantic Coastal Plain, Virginia and Delaware. In *Quaternary Coasts of the United States: Marine and Lacustrine Systems*, edited by C.H. Fletcher, III and J.F. Wehmiller. Society for Sedimentary Geology Special Pub. 48, Tulsa.

Reading, H.G., editor
1996 *Sedimentary Environments: Processes, Facies and Stratigraphy.* Blackwell Scientific, Oxford.

Riggs, S. R., L. L. York, J. F. Wehmiller, and S. W. Snyder
1992 Depositional Patterns Resulting From High-frequency Quaternary Sea-level Fluctuations in Northeastern North Carolina. In *Quaternary Coasts of the United States: Marine and Lacustrine Systems*, edited by C.H._Fletcher, III and J.F. Wehmiller, pp. 155-160. Society of Economic Paleontologists and Mineralogists Special Publication 48.

Sassaman, Kenneth E.
1983 Middle and Late Archaic Settlement in the South Carolina Piedmont. M. A. thesis, Department of Anthropology, University of South Carolina, Columbia.

Sassaman, Kenneth E., Glen T. Hanson, and Tommy Charles
1988 Raw Material Procurement and the Reduction of Hunter-Gatherer Range in the Savannah River Valley. *Southeastern Archaeology* 7:79-94.

Sassaman, Kenneth E. with contributions by Mark J. Brooks, David C. Crass, W. Green, G. S. Lewis and D. K. Stephenson
1993 *Early Woodland Settlement in the Aiken Plateau: Archaeological Investigations at 31AK157, Savannah River Site, Aiken County, South Carolina.* Savannah River Archaeological Research Paper 1. Institute of Archaeology and Anthropology, University of South Carolina, Columbia

Schumm, S.A.
1993 River Response to Base Level Change: Implications for Sequence Stratigraphy: *Journal of Geology* 101:279-294.

Shattuck, G.B.
1901 The Pleistocene Problem of the North Atlantic Coastal Plain. *Johns Hopkins University Circular* 20(152):67-75.

Snyder, S.W., and M. R. Katrosh
1979 An Exposure of Marginal Marine Pleistocene Sediments, Pitt County, North Carolina. *Southeastern Geology* 20:247-259.

Steponaitis, Vincas P., Jeffrey D. Irwin, Theresa E. McReynolds, and Christopher R. Moore
2006 *Stone Quarries and Sourcing in the Carolina Slate Belt.* University of North Carolina at Chapel Hill.

Stewart, R. Michael
1989 Trade and Exchange in Middle Atlantic Region Prehistory. *Archaeology of Eastern North America* 17:47-78.

Tippett, Joseph L.
1992 The Spatial Distribution of Lithic Materials: Implications for Early and Middle Archaic Hunter-Gatherer Mobility in South Carolina. M. A. thesis, Department of Anthropology, University of Tennessee, Knoxville.

Van Wagoner, J.C., R.M. Mitchum, Jr., K.M Campion, and V.D. Rahmanian
1990 *Siliciclastic Sequence Stratigraphy in Well Logs, Core and Outcrops; Concepts for High Resolution Correlation of Time and Facies*. American Association of Petroleum Geologists Methods in Exploration Series 7.

Walker, R.G. and N.P. James, editors
2001 *Facies Models: Response to Sea Level Change*. Geological Association of Canada, Toronto.

Wehmiller, J.F., E.R. Thieler, D. Miller, V. Pellerito, V.B. Keeney, S.R. Riggs, S. Culver, D. Mallinson, K.M. Farrell, L.L. York, J. Pierson, P.R. Parham
2010 Aminostratigraphy of Surface and Subsurface Quaternary Sediments, North Carolina Coastal Plain, USA. *Quaternary Geochronology* 5:459-492.

Wentworth, C.K.
1922 A Scale of Grade and Class Terms for Clastic Sediments. *Journal of Geology*, 30:377-392.

Winker, C.D. and J.D. Howard
1977 Correlation of Tectonically Deformed Shorelines on the Southern Atlantic Coastal Plain. *Geology* 5:123-127.

CURRENT RESEARCH INTO THE PALEOINDIAN AND ARCHAIC PERIODS IN THE NORTH CAROLINA COASTAL PLAIN

I. Randolph Daniel, Jr.

Christopher R. Moore

A decade ago, Ward and Davis (1999:226) noted that the North Carolina Coastal Plain was "arguably the least understood of all the major physiographic regions in the state." That statement is still particularly applicable to our understanding of the archaeology of the Paleoindian and Archaic periods in the region. In part, this knowledge gap reflects the absence of specific research focused on addressing archaeological problems related to late Pleistocene and early Holocene human adaptations in the region. Over the last decade, however, East Carolina University initiated long-term research projects aimed at elucidating Coastal Plain chronology, typology, and settlement patterns of the Paleoindian and Archaic periods. Specific examples of this research include 1) recording the types and distributions of fluted points from the region; 2) completing the first comprehensive analysis of the only known Clovis assemblage in the state (from the Pasquotank site); and 3) conducting geoarchaeological research along the Tar River including the extensive excavations of stratified archaeological remains at the Barber Creek site. Here, we outline the results of this work—much of which is still in progress—as it to relates to issues of chronology and typology. We conclude with a tentative revision of the Paleoindian and Archaic cultural historic sequence for the region.

PALEOINDIAN PERIOD RESEARCH

As elsewhere in the Southeastern United States, most of the Paleoindian archaeological record in the state is known from typological studies of scattered surface finds. Perkinson's (1971; 1973) and Peck's (1988) compilations of fluted point occurrences in North Carolina have been virtually the sole source of Paleoindian data in the state. Despite the importance of these inventories in documenting fluted point occurrences, little systematic analyses of these data have been produced. Consequently, North Carolina has lagged behind other southeastern states (e.g., Virginia and South Carolina) with regards to Paleoindian studies. Various reports of this work have appeared elsewhere (Daniel 2000, 2005, 2006; Daniel and Goodyear 2006). Here, we present an update on the study. While we focus on the Coastal Plain, we make reference to regions elsewhere in the state since the archaeology of the Coastal Plain cannot be understood apart from other regions.

Survey Parameters

Point data has been collected from both institutional and private collections across the state. Attributes recorded for each point were similar to those used in statewide studies elsewhere in the Southeast (e.g., South Carolina and Georgia). Metric attributes, for instance, primarily focused on artifact dimensions. Recorded nonmetric attributes included basal form, artifact condition, retouch characteristics, and raw material type. County location served as the basic provenience unit, although more specific site location data were also recorded when possible. The data set consists of 281 points. Since so little is known concerning the Paleoindian occupation of the state, it is difficult to know what proportion of the recovered or recoverable fluted points in the state this sample represents. The number is probably on the low side, however, if fluted point totals from surrounding states are any indication (e.g., Anderson et al. 2005; Anderson and Sassaman 1996).

Spatial Distributions

A total of 281 points are present in 67 of North Carolina's 100 counties (excluding three points for which provenience is uncertain), of which 60 are recorded for the Coastal Plain (Figure 3-1). Several broad patterns emerge in the in the statewide distribution of points by county. First, the current tally results in a mean score of 4.14 points per county, this statistical average is misleading due to the influence of five counties with counts greater than 10. Indeed, fewer than three points were recorded in about half (*n*=32, 47.8%) of the 67 counties. In this case, the mode represents a more meaningful average score in that 20 (29.8%) of the 67 counties exhibit a count of one point.

Second, there is a significant difference in point frequencies by region ($\chi^2 = 58.4$, $df = 2$, $p. < .000$). Given their comparable size, one would expect that similar point frequencies would occur in both the Piedmont and Coastal Plain (i.e., each regions covers about 45% of the state's area), yet this is not the case. While the Piedmont (*n*=177) contains greater frequencies of points than expected for a region that size, the Coastal Plain (*n*=60) contains less than half as many points as expected. Likewise, the Mountains (*n*=35) exhibit a greater frequency of points than expected for its size.

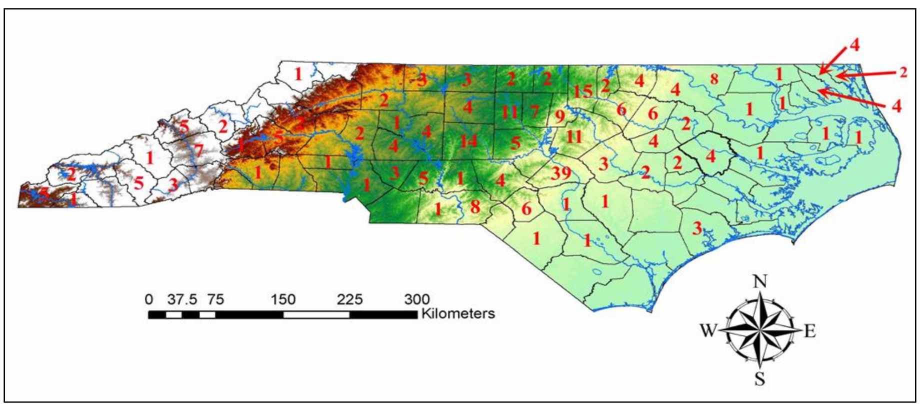


Figure 3-1. Frequency distribution of fluted points by county.

Third, both concentrations and gaps occurs in point spatial distributions. Most apparent is a nearly contiguous concentration of counties with points that covers most of the Piedmont and Fall Line. This concentration contains four counties with the greatest point totals: Harnett (*n* = 39), Granville (*n* = 15), Randolph (*n* = 14), and Alamance (*n* = 11). Counties with low to no recorded points occur to the east along the outer Coastal Plain and to the west along a corridor of counties between the Piedmont and Mountains. This western gap helps define a second potential spatial clustering of points in the Mountain region—although it covers a much smaller area than the Piedmont/Coastal Plain concentration. Nevertheless, the relatively high density of points from the Mountains suggests it may have been as intensely occupied as the Piedmont. In effect, the mountain concentration in North Carolina is probably just a portion of a larger area that encompasses high frequencies of fluted points across the state line in eastern Tennessee (Broster and Norton 1996)

In any case, the Coastal Plain region retains the lowest density of Paleoindian points in the state: 9.77 points per 10,000 km^2 as compared to 28.88 points per 10,000 km^2 for the Piedmont and 25.64 points per 10,000 km^2 for the Mountains. It may be of some significance that the Coastal Plain counties that contain points tend to parallel major river valleys such as the Cape Fear (in Hoke, Cumberland, Bladen, and Sampson counties), the Neuse and Tar (in Wayne, Greene, Edgecombe, Pitt, and Beaufort counties), and the Chowan (in Gates, Chowan, and Pasquotank counties).

Taken together, it is tempting to view the spatial patterning as real. As discussed elsewhere (Daniel 2000; Daniel and Goodyear 2006) this spatial patterning is interpreted to represent portions of two Paleoindian settlement regions in the state: a Piedmont/Fall Line region in the east and a Mountain region in the west. Of course, prudence is warranted in interpreting this pattern given the potential biases that might exist in this survey. Collector habits and/or geological processes are two possible biases that readily come to mind. With respect to the former, we cannot ignore the obvious fact of sea level rise that has inundated a significant portion of the coastline since the early Holocene, rendering any potential Paleoindian occupations on the continental shelf essentially invisible. Likewise, the relative absence of points in the Coastal Plain as compared to the Piedmont may, in part, reflect the deeper and less eroded soils of the former. Thus, greater soil exposure would favor a greater chance of artifact recovery in the Piedmont. Still, it is likely that both the abundance and density of fluted points in the Piedmont may reflect some prehistoric reality, as the eastern Piedmont is the source of the best knappable stone in the state (Daniel 1998; Daniel and Butler 1996; Steponaitis et al. 2006) and metavolcanic stone is the predominate raw material represented in the survey (Daniel 2000). Researchers have often noted the spatial correlation between high densities of fluted points and cryptocrystalline raw materials elsewhere in the Southeast (e.g.,Goodyear et al. 1989).

Typological Considerations

Several Paleoindian point types were recognized during the survey including Clovis, Redstone, Cumberland, Gainey, Simpson, and some apparent fluted point preforms. It should be emphasized that this classification has been largely qualitative, based upon morphological forms recognized elsewhere in the Southeast (e.g., Anderson et al. 1990; Goodyear et al. 1989). Clovis and Redstone are the predominant types present in the Coastal Plain. A brief description of these two types follows.

Clovis. Clovis points were the predominate Paleoindian form identified in the survey (n=196, 70%). While this category generally corresponds to the Southwestern form (Haynes 2002) and is characterized by a relatively large size, straight sided base, and shallow basal concavity, there is considerable size variability within this class that is at least partially attributed to stone raw material. With respect to geographic distributions, Clovis points were recorded in every region of the state.

Redstone. Redstone-like points (Mason 1962; Perino 1968) represent the second most frequent category in the survey (*n*=59, 21%). Redstone points are scattered in the eastern Piedmont and inner Coastal Plain. It exhibits a distinctive full facial fluting, relatively deep basal concavity, and triangular form similar to what is called Redstone in the mid-South. As such, this type may represent a post-Clovis manifestation in the Piedmont and Coastal Plain of North Carolina (Daniel and Goodyear 2006).

The Pasquotank assemblage

Taken at face value, the relatively low density of fluted points in the Coastal Plain would suggest that the region is lacking in important Paleoindian sites. The presence of the Pasquotank site, however, serves as a reminder that this is not the case. To the best of our knowledge the Pasquotank assemblage is unique in North Carolina, and represents one of the few Clovis assemblages in the Southeast (Daniel et al. 2007). The Pasquotank Site is located in the vicinity of the Great Dismal Swamp on the south side of the Pasquotank River, northwest of Elizabeth City, in Pasquotank County. James Pritchard of Suffolk, Virginia, has been surface collecting on his family's farm for over five decades resulting in the recovery of a Paleoindian assemblage of over 100 stone tools and several hundred pieces of flaking debris recovered from about 7 ha.

Despite the fact that the Pasquotank assemblage is a surface collection with multiple components, there is a remarkable clarity in the assemblage with respect to the Paleoindian occupation. One complete and two broken fluted points temporally define the assemblage. In addition to the fluted points, the unifacial tools exhibit forms that are readily classifiable as Paleoindian in character including end scrapers, side scrapers, *limaces*, and graver. A single *pièce esquillée,* apparently manufactured from a side scraper is also present in the assemblage.

Regarding raw material patterning, virtually all of the tool stone in the assemblage is considered nonlocal. Indeed, the Pasquotank site does not appear to be anywhere near a stone source as the Coastal Plain of North Carolina is generally regarded as a stone deprived environment. While over a dozen stone types were identified in the assemblage, a particular type of metavolcanic stone dominates the assemblage. A fine-grained green metavolcanic stone that may be a rhyolitic tuff can be observed in virtually all artifact classes including fluted points providing some evidence that temporally links the fluted points with much of the other artifacts in the assemblage. The closest source of this material as well as the other metavolcanic stone in the assemblage was either the Eastern Slate Belt approximately 140 km to the west or more likely the Carolina Slate Belt at least 200 km away. Furthermore, if Uwharrie rhyolite from the Carolina Slate Belt is present in the assemblage, then at least some metavolcanic stone was acquired some 360 km from Pasquotank. Chert, a distance second in abundance to metavolcanic stone in the Pasquotank assemblage, was likely nonlocal to Pasquotank as well and may have been acquired from the Williamson location about 140 km to the northwest.

The array of artifacts in the assemblage can be interpreted to represent some portion of a portable hunter-gatherer toolkit. It seems evident that the focus on the acquisition of high quality tool stone combined with the practice of tool curation and recycling reflects a strategy to reduce tool stone bulk while maintaining toolkit flexibility as it is carried to locations of tool use. Additional analyses suggests that the primary stages of tool production, including core preparation and tool blank production did not occur at the site. Rather, the preponderance of late stage flaking debris attests to lithic reduction practices at the site weighted towards finishing and maintenance. In fact, the character of the entire assemblage is one of retooling—toolkit maintenance rather than toolkit (i.e., stone) provisioning. Moreover, whatever the planned functions of the Pasquotank tools, it was likely the case that the need to carry a tool influenced its form more than its intended use (e.g.,Kuhn 1994).

ARCHAIC PERIOD RESEARCH

Recent geoarchaeological work on relict dunes in the North Carolina Coastal Plain has shown the potential for contributing data regarding chronology, typology, and geoarchaeology (Daniel et al. 2008; Moore 2009). While the widespread occurrence of dune fields in Georgia and the Carolinas (Ivester and Leigh 2003; Ivester et al. 2001; Markewich and Markewich 1994) have been the focus of many geological studies—particularly in regards to their paleoclimatic implications—the archaeological potential of these landforms remains unrealized in North Carolina. To date, we have obtained archaeological, geophysical, and grain size data from several sites along the Tar River that suggests multiple phases of dune-building with varying rates of deposition (see Moore and Daniel, this volume). In particular, this work aims to address poorly understood aspects of the region's archaeology including Archaic period (ca. 8000 – 1000 BC) and Woodland period (ca. 1000 BC – AD 800) chronologies and settlement systems. Stratigraphic histories of site use are being constructed for several sites based on sedimentological studies, geophysical data, temporally diagnostic artifacts, and chronometric dates. The lynchpin of this work has been the long-term excavations at the Barber Creek site (Daniel 2002; Daniel et al. 2008). More recently, additional survey and testing of several other stratified sites along the Tar River are placing Barber Creek in a broader regional context (Moore 2009). Here, we summarize the cultural-historic sequences from five of these sites including Barber Creek.

Methodology

Specifically, relict dune locations were targeted along three terraces of the Tar River: the upper and lower "paleo-braidplain" and "upland alluvial terrace" (Figure 3-2). Relict alluvial braided stream terraces are preserved to the east and north of the Tar River and are divided into an upper and lower paleo-braidplain. Although generally recognizable with high resolution Light Detecting and Ranging (LiDAR) elevation imagery, the upper paleo-braidplain is only marginally higher in elevation than the lower paleo-braidplain; however, it is characterized by larger relict braided and sandy scroll-bar topography and larger and more numerous relict dunes.

Source-bordering dunes or relict aeolian "sand sheets" along the Tar River are present along terrace boundaries or escarpments overlooking either the paleo-braidplain or the modern river floodplain. Areas north and east of the Tar River contain extensive relict braided river deposits along with aeolian sediments and source-bordering dunes. Relict braided river and terrace deposits north and east of the river have been preferentially preserved as the river system has migrated to the south. In many areas, the Tar River has migrated to the extreme southern limit of the river basin. Alluvial terraces to the north and east of the Tar River were targeted for survey with small numbers of shovel tests placed strategically along ridges and landforms in areas deemed to have high probability for archaeological sites. The vast majority of sites were located along the north and east side of the Tar River along a 42 km transect from northeastern Pitt County to the city of Tarboro in Edgecombe County. Nineteen sites were identified as a

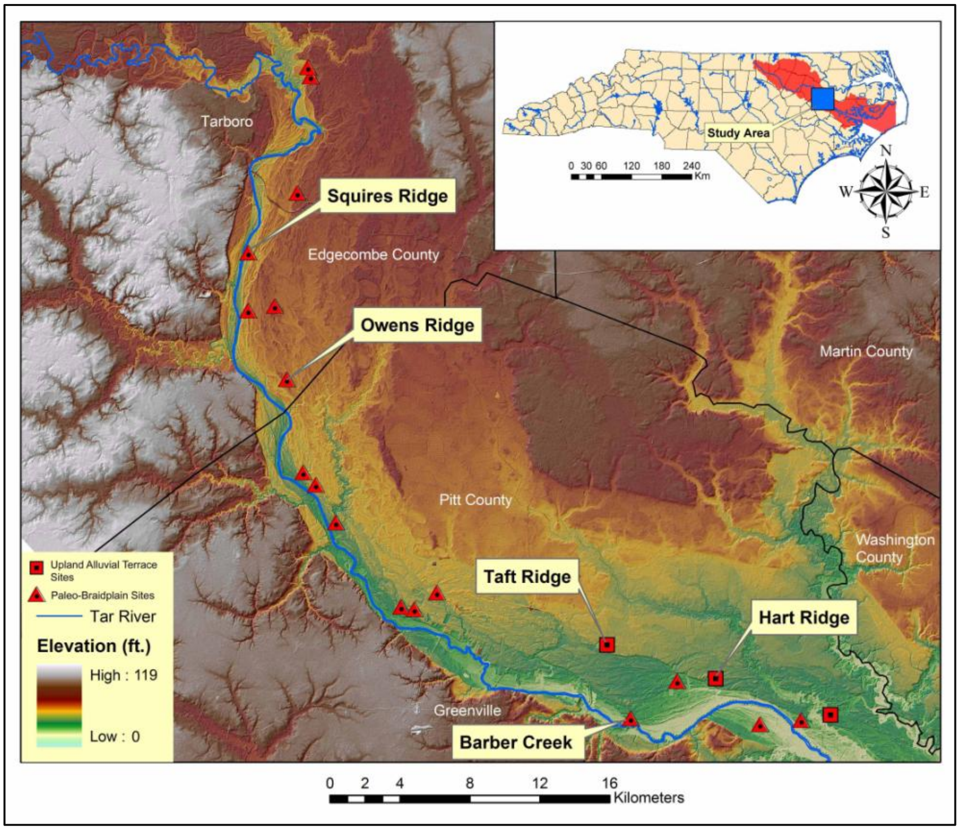


Figure 3-2. Site locations along the Tar River.

result of the strategic shovel testing. Additional test unit excavations were then conducted at four sites suspected of containing significant stratified cultural deposits. Two sites (Hart Ridge and Taft Ridge) were chosen from the upland alluvial terrace and two sites (Squires Ridge and Owens Ridge) were selected from the paleo-braidplain. Additional data were also used from the on-going excavations at Barber Creek (also located on the paleo-braidplain) which contains the best documented archaeological sequence yet identified along the Tar River.

In brief, test unit excavations included digging two 2 m^2 units at each of the above sites. Excavation proceeded in 10 cm arbitrary levels with the piece plotting of temporally diagnostic artifacts for chronological control. Relatively large (i.e., 2.5 cm) artifacts were also plotted to detect potentially buried occupation surfaces under the assumption that they were less likely to have been displaced vertically by postdepositonal processes. Samples were also collected for sedimentological analyses, radiocarbon, and luminescence dating.

Barber Creek

The Barber Creek site (31Pt259) is located along the edge of the lower Paleo-braidplain near the confluence of the Tar River and Barber Creek—a small first order tributary of the Tar River (Figure 3-2). Maximum elevation of the site is approximately 5.9 meters above mean sea level. In similar fashion to the Squires Ridge site, Barber Creek is oriented roughly parallel to the Tar River channel and extends for approximately 300 meters along the scarp separating the upper paleo-braidplain from the modern Tar River channel (Daniel 2002; Daniel et al. 2008).

Extensive shovel testing and unit excavations (ca. 250 m^2) have revealed stratified Woodland and Archaic period remains concentrated in the upper 1 meter of the site (Daniel 2002; Daniel et al. 2008). The presence of features, artifact clusters, and artifacts in chronological order suggest that former occupation surfaces have been buried by wind-blown sand throughout the Holocene. Associated radiocarbon dates have focused on dating the Archaic component and supports the stratigraphic integrity of the site (Daniel et al. 2008).

Here we present the initial results of a geoarchaeological analysis intended to understand site formation as it relates to the prehistoric chronology of the site (Moore 2009). Excavations of adjacent 2 m squares conducted during the 2004-2006 field seasons produced a 4 x 12 m block along the crest of the site (i.e., 443 and 445 East Trench) Figure 3-3 depicts the archaeological profile of this trench along with backplots of piece-plotted diagnostic artifacts (n = 37), a histogram of artifact frequencies by level, grain size analyses.

Stratigraphy. Sediments within the upper 1.4 meters at the Barber Creek site were designated into five different zones based on color and texture. Zones I and II represent the uppermost and highly organic O/A horizon and extend from the ground surface to approximately 30 cmbs. These zones are heavily disturbed with numerous roots and include a very dark brown medium to fine sandy loam (Zone I) and a dark brown medium to fine sandy loam (Zone II). Woodland period artifacts are present in both zones and peak in level 3. Zone III consists of a dark yellowish-brown medium to fine sand and represents a leached (illuviated) E-horizon extending to about 80 cmbs. This zone contains the highest frequency of artifacts and appears to represent cultural deposits spanning the Early through Late Archaic periods although some Early Woodland artifacts are present in the uppermost portion of this zone. Zones IV and V represent a poorly developed B-horizon; the latter being somewhat arbitrarily distinguished from the former by being lighter in color. Zone IV and consists of a massively bedded yellowish-brown medium to fine sand that extends to roughly 100 cmbs. Zone V extends beyond 100 cmbs and is a massively bedded yellowish brown to light yellow fine to medium sand. Although absent in this profile, numerous lamellae are present in units slightly down slope from this trench. While cultural material is present in the top of Zone IV, Zone V is essentially culturally sterile.

Grain size analysis. Close interval (5 cm) grain size samples were collected to a depth of 1.4 meters below surface along the east profile of the 445 East trench. The grain size signature of the aeolian sand-sheet or dune drape at Barber Creek is very similar to that for other relict dune sites along the Tar River (Moore 2009). Grain size analysis of the sand fraction from the aeolian facies consists of nearly symmetrical, medium, moderately sorted and mesokurtic sand. Mean grain size for the upper meter (Zones I – III) of sand at Barber Creek is 1.77 phi. The upper meter of sand at Barber Creek consist of ca. 15-16 percent very coarse and coarse sand, ca. 45-48 percent medium sand, 30-31 percent fine sand and 6-7 percent very fine sand. Total fines (silt and clay) at Barber Creek range from ca. 5-8 percent in the upper aeolian sand. This surficial sand unit most likely represents the (predominately aeolian) component of the "Q6a fine sand unit" described for sand ridges along the lower paleo-braidplain of the Tar River (Maddry 1979).

Between 1 and 2 meters below surface (i.e. Zones IV and V), percent fine sand first increases and then fluctuates with slight increases in very coarse and coarse below 1.6 meters. Grain size parameters for this sand unit are similar to overlying aeolian sediments; however,

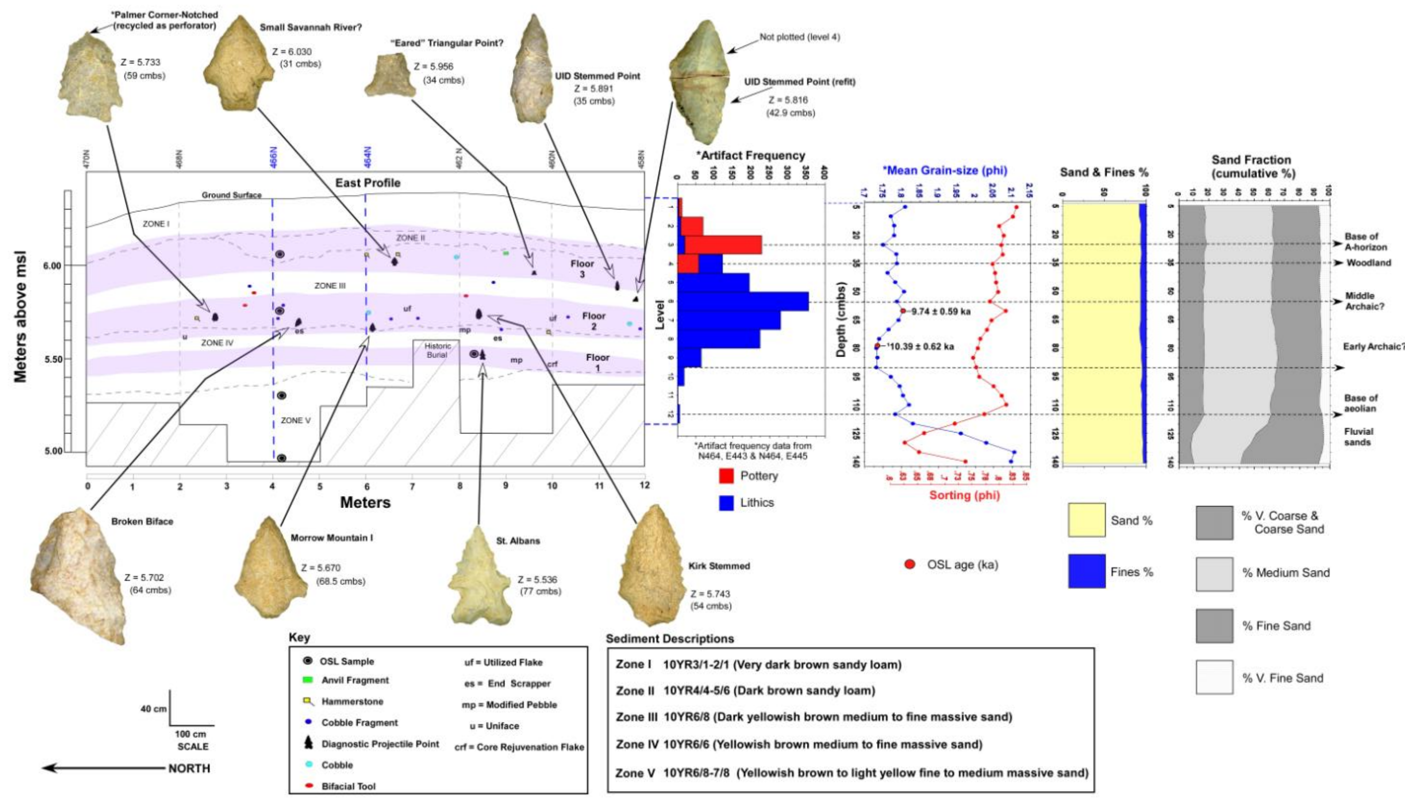


Figure 3-3. Artifact backplot for 445 East Trench at the Barber Creek site illustrating piece-plotted, OSL ages, artifact frequency by level and grain-size data. Note: Artifacts are not to scale. [1]Minimum age model (Galbraith et al. 1999) used to calculate OSL age estimate. Other OSL age estimate determined by central age model (Galbraith et al. 1999) (adapted from Moore 2009).

statistical measures fluctuate considerably more than the aeolian sediments and fines decrease from 6.5 percent to 1.5 percent. This zone is probably the lower (predominately fluvial) portion of the Q6 fine sand unit described by Maddry (1979). Areas underlain by unit Q6 exhibit a rolling topography with large remnant braid-bars and swales (Maddry 1979). Together, the upper aeolian and lower fluvial medium and fine sands represent the sand unit (Q6) originally deposited in a rejuvenated Tar River as braided river deposits during lowered sea level (Maddry 1979). In short, unit Q6a likely represents sediments deposited as sand-sheets or source-bordering dunes over remnant braidplain topography. Lastly, the prevalence of very coarse and coarse sand (ca. 15-16%) and trace amounts of very fine gravel (0.01-0.12 %) within the upper meter sediments at Barber Creek suggests fluvial sediments may have contributed to site burial in addition to aeolian sedimentation (e.g., Leigh 1998a). These would have likely been relatively minor contributions as a result of infrequent overbank flood events. Coarse fluvial sediments are present below 100 cmbs. These sediments apparently predate any human occupation in the area and were probably deposited as a result of alluvial channel fill or as flashy and high energy braided river deposits (Moore 2009).

Artifact analysis. For the purposes of this analysis, typological classification was done on artifacts recovered from two units (464 North/443 East and 464 North/445 East) within the trench as well as diagnostic stone artifacts piece-plotted within the remaining part of the trench (see Moore 2009). A backplot of diagnostic stone artifacts along with a histogram of total artifact counts by level is illustrated in Figure 3-3. Piece-plotted stone artifacts for the entire trench included points (*n*=8), other bifaces (*n* = 3), end scrappers (*n* = 2), hammerstones (*n* = 4), cobble fragments (*n* = 9), unmodified cobbles (*n* = 3), utilized flakes (*n* = 2), modified pebbles (*n* = 2) along with a single uniface, anvil fragment, and core-rejuvenation flake. Additional diagnostic artifacts excavated within the two test units (and not depicted on the backplot) for which only level provenience exists include biface fragments (*n* = 2), cobble fragments (*n* = 4), unmodified cobbles (*n* = 2), and single specimens of a core and unidentified point fragment. Flaking debris (i.e., debitage) constitutes the most abundant stone artifact type (*n* = 1,390). Projectile points include Early Archaic (Palmer Corner-Notched, St. Albans Side Notched?), Middle Archaic (Kirk Stemmed, Morrow Mountain), and Late Archaic (Small Savannah River? and Thelma?) types. A heavily reworked unidentified stemmed point and a small “eared” triangular point are also present; the latter likely is associated with the Early Woodland component. In addition to lithics, a large number of ceramic sherds (*n* = 369) are present in the assemblage of which only 150 are identifiable as to type. Early Woodland (Deep Creek) pottery dominates the ceramic assemblage (*n* = 128) with minor amounts (*n* = 20) of Middle Woodland (Hanover) and unidentified specimens (*n* = 2) with possible shell temper.

Temporally diagnostic artifacts indicate Early Archaic through Early Woodland occupations. With few exceptions (to be discussed below), these artifacts are in correct stratigraphic order. With respect to the artifact histogram, two patterns are evident. First, a bimodal distribution is quite evident in the distribution of artifact totals by level. Peaks occur at levels 6 and 3 that broadly represent the Archaic and Woodland components at the site. A second pattern is evident with the distribution of ceramics. Ceramics are present in levels 1 – 4 with a peak frequency in level 3 (20-30 cmbs) lending further support to the ceramic versus pre-ceramic component distinctions. Ceramic frequencies drop significantly through levels 4 and 5. Level 5 contained a single Deep Creek sherd, along with one residual sherd too small to be identified by type.

Discussion. In the absence of distinct changes in soil strata that might indicate cultural stratigraphy, emphasis was placed in the field on documenting changes in artifact frequency and type with depth that might reveal former occupation floors. As noted in the excavation methods, digging in 10-cm levels along with the judgmental piece plotting (i.e., recording precise horizontal and vertical location) of particular artifacts allowed excavators to recognize potential occupation floors in the field. In particular, emphasis was placed on plotting temporally diagnostic and/or relatively large artifacts (ca. >2.5 cm). Temporally diagnostic artifacts provided chronological control and larger artifacts suggested buried surfaces since they were less likely to have been moved vertically by postdepositional process (Brooks and Sassaman 1990; Brooks et al. 1996; Hughes and Lampert 1977; Moore 2009).

Using diagnostic and large lithic artifacts to determine occupational boundaries, a multimodal distribution of artifacts becomes apparent. This suggests three periods of occupational stability at the Barber Creek site designated as occupation “floors” in Figure 3-3: one dating to the Early Archaic, a second Middle/Late Archaic occupation, and a third identified during the Woodland period. There is a relative absence of diagnostic artifacts between these former occupation floors. Taken together, artifact distributions and sedimentology suggests periods of surface accretion punctuated by periods of surface stability and eventual burial at Barber Creek.

The earliest evidence of human occupation occurs once fluvial deposition ceased. Changes in the mean grain size and sorting at about 110 centimeters below surface (cmbs), suggest fluvial deposition stopped and aeolian deposits began to build the land form (Moore 2009). Calibrated radiocarbon dates and an OSL date from level 11 elsewhere on the site suggest that this event began sometime after 12,500 years (Daniel et al. 2008; Moore 2009). This date is also consistent with the onset of inland dune formation across the Southeast (Markewich and Markewich 1994). The high frequency and continuous distribution of artifacts between levels 6-8 suggest that the 60-80 cmbs depth range represents a relatively slowly but continuously accreting land surface. The grain size pattern for this depth exhibits a fining upward sequence that would suggest little anthropogenic disturbance (Figure 3-3). Among the plotted artifacts, a bifurcate point (St. Albans?) was recovered in level 8 (at 77 cmbs). With the exception of the Palmer point (discussed below) recovered stratigraphically higher, the bifurcate point represents the earliest and deepest diagnostic artifact recovered in the trench (assuming it has undergone no significant postdepostional vertical displacement). Although relatively few plotted artifacts were recovered at this level, we suggest that an Early Archaic surface was present at about 70-80 cmbs which is consistent with the recovery of at least two other bifurcate points elsewhere on the site (Choate 2011; McFadden 2009). This is indicated by occupation floor 1 in Figure 3-3.

Occupation floor 2 is identified at roughly 60 cmbs based on soil grain size changes and the presence of stemmed stemmed points. Grain size analysis shows erratic changes in both mean grain size and sorting around 60-65 cmbs that are similar to what would be expected in anthropogenically disturbed deposits (i.e., buried occupation surfaces) (e.g., Brooks et al. 1996). Peak artifact counts occur at this depth along with two Archaic stemmed points (e.g., Kirk Stemmed and Morrow Mountain Stemmed) and other plotted artifacts from levels 6 and 7. A Palmer Corner-Notched point was also recovered at the base of level 6. Taken at face value, the association of corner-notched and stemmed points at about 60 cmbs suggests a period of surface stability during the early to middle Holocene that may have lasted several millennia.

Accordingly, the single Palmer Corner-Notched point recovered from level 6 would have been deposited in the early Holocene followed by stemmed points latter in the Holocene. Of course, this interpretation is hard to reconcile with the stratigraphically lower recovery of the bifurcate point. Of possible significance, however, is the clear evidence of artifact recycling in the form of the manufacture of a spur-like projection on the point tip—as evidenced by the presence of differential patination seen in the flake scars. Thus, the location of the Palmer point may be stratigraphically correct and is associated with later stemmed points as a result of being scavenged and used by Middle to Late Archaic groups visiting the site. In any case, a change in mean grain size sorting again resumes with a slight coarsening upward sequence between about 50-40 cmbs and corresponds with a drop in artifact density. This would likely span the Late Archaic as represented by one refitted but, as yet, unclassified stemmed point recovered from level 4. This pattern suggests a period of sediment accumulation and less intense human occupation.

Another increase in artifact densities, including the presence of ceramics, which were absent in the lower levels indicates the presence of occupation floor 1 at about 30 cmbs. Ceramic frequencies peak in level 3 and indicate the presence of a Woodland component. This represents yet another period of relative surface stability on the site that corresponds with an erratic shift in grain size at about 30-35 cmbs. In addition to the ceramics, temporally diagnostic points recovered in the upper levels include two small stemmed points and one "eared" triangular point. The points are somewhat difficult to classify with respect to existing cultural-historical types in North Carolina. One point resembles a Small Savannah River Stemmed while the second resembles a Thelma Stemmed (South 2005). Regardless of their classification, their small size, overall morphology, and stratigraphic position are consistent with a technological transition from stemmed to triangular points. The "eared" triangular point is more difficult to classify; however, it is almost certainly associated with the Woodland component.

To summarize, excavation data from the 443 Trench at Barber Creek suggests multiple phases of site burial. Archaeological and soil data suggests the potential for several long-term stable surfaces that provided occupation surfaces for multiple cultural components. Occupation surfaces were subsequently buried by episodic aeolian sedimentation with likely minor fluvial contributions due to large overbank floods. Variable amounts of vertical mixing due to bioturbation and/or cultural or anthropogenic effects are likely; however, sedimentological and archaeological data indicate relatively intact cultural deposits can be discerned during the early to middle Holocene.

Squires Ridge

Squires Ridge (31Ed365) occupies the lower paleo-braidplain overlooking the modern incised floodplain of the Tar River (Figure 3-2). The site is situated on a narrow (ca. 80 meter wide) vegetated sand ridge elevated about 11 meters above the Tar River floodplain near its confluence with Lancaster Creek. Following judgmental placement of shovel test pits two test units excavated along the crest of the ridge. Archaeological materials including diagnostic Woodland and Archaic age artifacts were found to a maximum depth of 1.2 meters (Moore 2009).

Three pedogenic soil zones were recorded in unit profiles based on sediment color and texture. Zone I comprised the uppermost active horizon or A-horizon and was described as a dark yellow brown loamy medium to fine sand (10YR2/1-2/2) containing many roots. Zone I extended from the ground surface to between 15 and 20 cmbs. Zone II was present to a depth of between about 95 to 100 cmbs, consisting of a dark yellowish brown medium to fine sand (10YR4/6). Zone III continued to the base of the unit consisting of a lighter yellowish brown medium to find sand (10YR6/6-5/6) with a noticeable increase in small gravels. Grain size analysis for Squires Ridge suggest aeolian deposits approximately 1 meter in thickness overlay finer and coarse skewed fluvial deposits associated with remnant Pleistocene braid-bars. The grain size signature of the aeolian sand-sheet or dune drape at Squires Ridge is typical of surficial aeolian sands and source-bordering dunes all along the Tar River.

Test unit 1 produced a large amount of debitage (n = 817) and two projectile points. The first point appears to have been reworked into a drill as it exhibits a heavily resharpened blade, while the second is a small corner-notched Palmer point. Both artifacts were plotted at a depth of 50-53 cmbs and 94.5 cmbs, respectively. The former point remains unclassified as it exhibits a somewhat eared base uncharacteristic of conventional point types for the Coastal Plain.

Cobble and tabular stone and core fragments were noted in test unit 1 in small numbers—primarily with levels 5, 7, 8 and 10. Level 7 through 9 contained the highest concentration of debitage, with small numbers of flakes found through level 12 (110-120 cmbs). Low frequencies of Deep Creek (Early Woodland) fabric impressed pottery shards were found through level 4, with peak frequency occurring in level 3 (n = 11). Vertical artifact frequency by level appears multimodal in test unit 1, with artifact modes in level 3, 7 and 9. Peak concentration of artifacts occurs in level 9 and falls off rapidly in subsequent levels.

Test unit 2 at Squires Ridge contained large quantities of debitage (n = 2,312), numerous cobble, cobble fragments and core fragments (n = 16), biface fragments (n = 11), points fragments (n = 3), hammerstone and hammerstone fragments (n = 6), a single endscraper and pottery (n = 14). In addition, six whole projectile points were found, including five Guilford points and one Kirk Stemmed/Serrated point. A single and very large Guilford point was found in level 4 (38 cmbs) while the remaining Guilford points were piece-plotted together in level 5 and are suggestive of a buried surface or "floor." Three Guilford points were found at irtually identical depths below surface (ca. 50 cmbs), all lying flat or very slightly angled. In addition to the Guilford occupation, a single Kirk Stemmed/Serrated point was found near the southwest corner of test unit 2 at the base of level 7 (about 70 cmbs) and was associated with cobble fragments, flaked cobbles and biface fragments also clustered in the southwestern quadrant of test unit 2. Level 7 (60-70 cmbs) also contained the highest frequency of artifacts (n = 698) with artifact frequency following a unimodal vertical distribution. Only trace amounts of debitage were recovered below level 10 (90-100 cmbs). Woodland pottery shards (n =14) were restricted to the first four levels with peak ceramic frequency occurring in level 3 (20-30 cmbs). Artifacts drop off dramatically in level 10 (n = 32) and appear to represent the base of archaeological deposits. Only 6 flakes were recovered from levels 11 and 12 (100-120 cmbs) and these most likely represent displacement from higher levels. Test unit 2 exhibited an increase in small pebbles below level 9 (n = 141) with very large amounts of pebbles recovered in level 13 (n = 1,480). Test unit 1, on the other hand, has similar frequencies of pebbles in level 11 to unit 2 in Level 10. As noted above, artifacts appear to "bottom-out" at level 10 in both test units. Both deeper vertical artifact modes, grain size analysis and pebble frequency suggest that unit 1 is located in an area of the site with slightly deeper aeolian sediments overlying fluvial braid-bar sediments.

Taken together, the two test units produced a stratigraphic sequence characterized by Palmer, Kirk Stemmed, Guilford, and Deep Creek phase occupations. Furthermore, it is interesting to note that the two test units produced different diagnostic artifacts with different vertical artifact density modes. Test unit 1 produced an Early Archaic component around levels 7-9 with another presumably Middle to Late Archaic component near level 5. An Early Woodland occupation is present in level 3. Test unit 2 produced Kirk Stemmed, Guilford, and Deep Creek components in good stratigraphic order. The Kirk Stemmed component is present around 70 cmbs with a relatively strong Guilford occupation at about 50 cmbs. As with test unit 1, Deep Creek occurs at about 30 cmbs.

Owens Ridge

Owens Ridge (31Ed369) occupies the edge of the upper paleo-braidplain of the Tar River (Figure 3-2) overlooking a very narrow section of lower paleo-braidplain and is relatively close (ca. 1200 meters) to modern Tar River channel. Oriented parallel to the Tar River, Owens Ridge is a large linear sand ridge (ca. 850 meters long) and exhibits geometry diagnostic of linear or coalescing parabolic source-bordering sand dunes. Maximum elevation (amsl) at Owens Ridge is about 16 meters (Moore 2009).

Limited shovel testing of Owens Ridge revealed buried archaeological deposits located along the highest section of the landform or crest of the sand ridge. Test unit excavations were conducted along the relatively narrow crest of the landform as it gently rises in elevation from west to east (representing the relict stoss dune surface). Test unit excavations produced buried archaeological deposits of low to moderate density including one diagnostic Early Archaic projectile point base, an endscraper and debitage frequencies suggestive of stratification to a depth of 80-90 cmbs.

Soil types for Owens Ridge excavation units are divided into three zones. Zone I (0-20 cmbs) consists of a medium to fine dark brown loamy sand (2.5Y3/2 to 2.5Y3/3). Zone I is the modern O/A soil horizon with numerous roots and high amounts of decaying organic matter. Zone II (ca. 20-98 cmbs) is the illuviated E-horizon and consist of a medium to fine dark brown massive sand (10YR5/5 to 10YR5/8). Most artifacts were found in the middle and lower portion of this soil zone. Finally, Zone III (>98 cmbs) is a medium to fine soil unit (10YR5/6 to 10YR5/8) slightly lighter in color than Zone II, although somewhat arbitrarily defined. Very few artifacts were found in this zone. As with Squires Ridge, grain size data for Owens Ridge suggest a fluvial origin for sediments underlying aeolian dune deposits and most likely represent braided terrace sequences that make up the upper paleo-braidplain.

Test unit 1 produced low frequencies of artifacts (n = 136) consisting primarily of flaking debris. Peak artifact frequency was encountered in level 5 (n = 36) with only minor amounts of flakes recovered in levels 8 and 9 (n = 11). Level 10 was sterile; however, part of the test unit along the west wall was arbitrarily excavated and screened to a depth of 160 cmbs for purposes of grain size and luminescence sampling. No artifacts were found below level 9. Most significantly, two large quartzite cobbles were found lying together (one leaning against the other) at 70 cmbs and is suggestive of a buried surface at that depth. Although no temporally diagnostic artifacts were found at this level, they were recovered from a depth consistent with Early Archaic artifacts recovered from unit two 2.

A second test unit was excavated approximately 20 meters north/northwest of the first. Although test unit 2 is slightly lower in elevation than test unit 1, both units were situated along the ridge crest. Temporally diagnostic artifacts recovered in this unit include a Palmer Corner-Notched point 9 (level 6) and a formal end scraper (level 8). Test unit 2 produced low to moderate artifact frequency (*n* = 249), most of which was flaking debris. Interestingly, however, the majority of artifacts occurred in level 8 including debitage (*n* = 110) with the formal end scraper suggestive of a buried occupation surface between 70 and 80 cmbs. Morphologically, the end scraper resembles and Early Archaic or Paleoindian age unifacial stone tool. Of particular note, flake concentrations appeared to be concentrated near the southwest corner of level 8 rather than scattered over the entire unit while the Palmer base was found in the northeast corner of the test unit in level 6. Minor amounts of historic artifacts (*n* = 6) including barbed wire, brick fragments and ceramics were also found in the upper three levels of test unit 2 from.

To summarize, analysis of archaeological data from the Owens Ridge Site revealed low to moderate density lithics with generally continuous and unimodal to weakly bimodal artifact distributions. Total artifact frequency and modal tendencies varied between test units, with test unit 1 producing the highest frequency of artifacts in level 5, while test unit 2 had a much larger spike in artifact frequency in level 8. Two large cobbles were found lying together in test unit 1 at 70 cmbs, suggestive of a buried surface at that depth, while the recovery a broken Palmer point in level 6 and high artifact frequencies including a formal endscraper in level 8 suggest buried cultural occupations during the Early Archaic or earlier. Although lateral continuity between the two test units has not been established, the presence of a buried occupation floor in level 8 of test unit 2 most likely represents the general location of the 70 or 85 cmbs buried surfaces indicated by grain size data for unit 1.

Hart Ridge

The Hart Ridge Site (31Pt605) is located a few miles west of Greenville, NC and is very close to both Barber Creek and Taft Ridge (see below). This landform is a large linear sand dune with hummocky topography (Figure 3-2). Both Taft Ridge and Hart Ridge occupy the edge or scarp of the same upland alluvial terrace. Both sites also overlook the paleo-braidplain to the south. Maximum elevation at Hart Ridge is 9.5 meters amsl, while maximum vertical relief is ca. 3 meters above the surrounding alluvial terrace and ca. 7 meters above the adjacent paleo-braidplain terrace (Moore 2009).

Following selected shovel test placement, two test units were placed along the central and most elevated portion of the ridge near a large blowout containing numerous small flakes and pottery. These units were positioned next to shovel tests that revealed lithic debris located within the upper 40 cm of the soil column.

Test unit excavations revealed very low artifact density primarily consisting of lithic debitage (*n* = 64) a single hammerstone fragment, one tabular stone fragment and ceramics (*n* =10). In addition, numerous historic artifacts such as broken glass, brick, iron and shell (*n* = 70) were found mixed with prehistoric artifacts through level 2 (10-20 cmbs). Prehistoric pottery at Hart Ridge consists of fabric impressed Deep Creek pottery (*n* = 2), a single Hanover pottery sherd, one unidentifiable and six residual sherds. All artifacts were confined to the upper 40 cm in test unit 1 and were confined entirely within the upper 20 cm (A-horizon/plowzone) in test unit 2. Ephemeral evidence of plowscars was evident in both test units in level 2. Test unit 1 had what appeared to be a recent burned stump feature in level 2, with large burned chunks of wood. No other burned root or cultural features were evident.

Three soil zones were mapped in profile including a medium to fine dark gray loamy sand (10YR4/6) A-horizon in the upper 20 centimeters (Zone I), and medium to fine massive sand (7.5Y4/6) E-horizon from 20 to about 60 cmbs (Zone II). The E-horizon continues into

Zone III as a medium to fine massive sand that is slightly lighter in color (10YR6/8) than Zone II. Very thin and weakly developed lamellae were visible in the soil profile of unit 1 in Zone III from approximately 60-65 cmbs until termination of the excavation at one meter below surface. Iron staining was also sporadically visible in the soil profile of both units.

As reported elsewhere grain size and ground-penetrating radar data are typical of relict aeolian dune facies (Moore 2009). As revealed by radar profiles, no other major stratigraphic boundary is present until 2.6 – 3 meters below surface. This stratigraphic boundary differentiates the upper fine-grained unit (mostly aeolian) from underlying fluvial terrace deposits. Radar profiles consist of a very shallow high amplitude surficial zone followed by a low amplitude aeolian sand unit. A strong and continuous reflector at 2.6 meters below surface represents the base of dune deposits and the top of the buried alluvial terrace. Below 2.6 meters, very strong laminar reflectors represent silty and interbedded fluvial sands and mud.

In sum, a relatively shallow deposit of cultural material is present in the top 20-40 cm of Hart Ridge. Excluding historic artifacts, the primary component appears to have been a Woodland occupation although the presence of undiagnostic flaking debris could also reflect an Archaic presence on the ridge. Aeolian deposition appears to have been the primary mode of site burial although any cultural stratigraphy at the site, if present, is largely obscured by recent farming practices.

Taft Ridge

The Taft Ridge Site (31Pt606) occupies the edge of an incised alluvial terrace of the Tar River that overlooks both upper and lower paleo-braidplains (Figure 3-2). Due to the asymmetry of the Tar River valley in the Coastal Plain, much of this former alluvial terrace has been destroyed to the west and south as the river has migrated to the extreme western and southern limit of its floodplain. Both Taft Ridge and Hart Ridge occupy the remnant scarp of this alluvial terrace north of the active channel. Taft Ridge is about 2 km north of the Barber Creek Site and overlooks a large swath of remnant braided river topography to its south (Moore 2009).

The site is located on a large sand ridge situated along the scarp of a former upland alluvial terrace at ca. 10.7 meters above mean sea level. Taft Ridge is more than 400 meters long (east to west) and slightly over 200 meters at its widest (north to south). Vertical relief above the underlying alluvial terrace is estimated at ca. 1.9 meters based on LiDAR elevation data. LiDAR elevation data reveal several similar landforms along the edge of this upper alluvial terrace. Several of these, including Hart Ridge appear to be large source-bordering aeolian dunes.

Strategic shovel testing revealed low to moderate density cultural material scattered across the landform; however, the area with highest artifact density was found along the most elevated section of the ridge near the south side of the alluvial scarp separating the older alluvial terrace from lower elevation paleo-braidplain deposits. Perhaps not coincidently, this vantage point offers one of the best views of the paleo-braidplain in Pitt County and is a southern exposure. Two test units were placed along the south side of the landform immediately adjacent to edge of the terrace.

Soil profiles are divided into four pedogenic soil zones. Zone I (0-15 cmbs) consists of a medium to fine dark brown loamy sand (10YR4/4-10YR4/6). This zone is the remnant A-horizon and part of an historic plowzone that appears to have been partially deflated. Zone II (ca. 15-50 cmbs) is a compact reddish brown loamy sand (10YR6/6-10YR6/8) and has a highly oxidized appearance. Most artifacts are found in the middle and upper portion of Zone II. Zone

III (ca. 50-90 cmbs) is a very compact medium to fine reddish brown sand (5YR5/8). This zone is very slightly lighter in color than Zone II and has very few artifacts. A fourth soil zone was recorded for unit 1, between about 85 and 110 cmbs that was not encountered in unit 2. It is a very well developed soil zone with extremely thick and well-developed clayey lamellae (5YR5/6-5YR6/6) surrounded by a much lighter colored sand unit (10YR7/3-10YR8/3). No artifacts were recovered from this zone.

Test unit 1 produced moderate amounts of debitage (*n* = 237), projectile point and biface fragments (*n* = 4) along with historic artifacts (i.e., nails, shotgun shells, bullet casings, asphalt, styrofoam, shell and aluminum pie plate fragments) found within the upper 3 Levels. Very small and tabular pieces of slate were also found and may represent historic activities at the site. Artifacts within the upper 20 to 30 cm of soil appear to be deposited within an historic plowzone (as evidenced by the presence of plow scars in level 2) with minor erosion and deflation of the original surface. Non-diagnostic tool fragments included a biface fragment in Level 3 and point fragment in level 4. Of particular interest, a small biface (made on a cobble blank) was found in level 3 (20-30 cmbs). In addition, a small undiagnostic, weakly side-notched, projectile point was found in level 4 (30-40 cmbs). Although the former may represent an unfinished projectile point or knife, the later projectile point may be a Halifax Side-Notched variant (Coe 1964; South 2005). This classification is supported by the presence of Halifax points recovered in test unit 2 (discussed below). Artifact frequencies by level in unit 1, produce a normal artifact distribution with a peak in level 4 (*n* = 75), and with nearly equal numbers in level 3 (*n* = 46) and level 5 (*n* = 44).

Test unit 2 produced higher amounts of debitage (*n* = 404) along with cobble fragments (*n* = 6), a single flaked cobble, point fragment, uniface fragment and a large tabular stone fragment. In addition, diagnostic projectile points (*n* = 3) were recovered, including two Halifax Side-Notched points and one Morrow Mountain Stemmed point. All three diagnostic projectile points were piece-plotted along with one cobble fragment and the metavolcanic tabular stone fragment. Other cobble or tool fragments were bagged by level, although somewhat more precise depths were obtained on two cobble fragments. All cobble, cobble fragments and tabular fragment were found in levels 3, 4, 5 and 7.

Interestingly, refits were made between three cobble fragments, two of which were found only one centimeter apart vertically (i.e., 43 and 44 cmbs), while the third refit piece was found in level 7 (60-70 cmbs). Peak artifact density for test unit 2 was found in level 3 (*n* = 117) and level 4 (*n* = 131). Associated diagnostic Late Archaic and Middle Archaic points for levels 3 and 4 respectively along with tabular and cobble fragments at the base of level 4 and top of level 5 also indicate the potential for a buried occupation surfaces at those depths.

Ignoring the historic materials for the moment, temporally diagnostic artifacts suggest Middle and Late Archaic occupations at the site. An essentially unimodal vertical artifact distribution with peak artifact densities at about 30-40 cmbs could reflect shallow artifact burial with some bioturbation. Associated diagnostic Late Archaic and Middle Archaic points for levels 3 and 4 respectively along with tabular and cobble fragments at the base of level 4 and top of level 5 also indicate the potential for a buried occupation surface at that depth. The cobble refits in level 5 and 7 noted above would be consistent with that interpretation.

However, interpreting site formation at Taft Ridge is more problematic than any of the other tested sites. While aeolian burial may have partially contributed to site burial, artifact distributions may also be explained as a result of biomantle formation within a long-term stable landform (Johnson 1990; Leigh 1998). Sedimentologically, for example, Taft Ridge is anomalous as compared to the other Tar River sites in that it has an unusually high percentage of fines (ca. 11-17 percent). Dune sediments typically contain less than 10 percent silt and clay (e.g., Daniels and Hammer 1992). While possibly pedogenic in origin, a high percentage of fines at Taft Ridge may imply significant landform age. A recent (i.e., Holocene) aeolian origin for surficial sediments at Taft Ridge would seem to be ruled out given the large percent fines. Furthermore, the soil profile at Taft Ridge appears highly oxidized (strong reddish brown) and has extremely well developed and thick "clayey" lamellae below one meter below surface. Such oxidization would also suggest soils of greater than Holocene age. Such a conclusion is also consistent with two luminescence (OSL) age-estimates several thousand years earlier than the presumed Middle to Late Archaic components represented by the associated diagnostic points (see Moore and Daniel, this volume).

In short, non-depositional or limited depositional burial processes are possible at Taft Ridge given the shallow nature of the archaeology, OSL dates significantly older than diagnostic artifacts, oxidized soil profiles with high amounts of fines and at least one case of artifact refitting demonstrating artifact displacement. This landform may be of late Pleistocene origin with limited reworking or deposition of sediments occurring during the Holocene. Further work at Taft Ridge is necessary to better understand site formation.

CONCLUSIONS

Some 25 years ago David Phelps proposed a cultural-historical sequence of Coastal Plain prehistory. Phelps emphasized this sequence was a working model "since most cultural frameworks of this nature, once they are described…tend to perpetuate themselves without the necessary testing that hypothetical constructs require for validity" (1983:15). Unfortunately, this point has largely been ignored, as researchers in the state continue to uncritically use this framework to guide their research. While correct in broad outline, our research suggests that the existing cultural-historical sequence can be refined to more accurately reflect Coastal Plain prehistory. A tentative revision is offered here (Figure 3-4).

The Paleoindian period remains the least understood of all the major prehistoric time periods in the region, if not the state. In large part this is due to the paucity of the Paleoindian archaeological record. Yet, North Carolina is no different than other Southeastern states in this regard and documenting the statewide distribution of fluted points remains our primary source of data regarding the Paleoindian period. Based solely on typological grounds, a three phase cultural-historical sequence can be proposed for the Paleoindian period of the Coastal Plain. Three phases are proposed for the Piedmont/Coastal Plain region: Clovis, Redstone, and Dalton. Although the latter point type was not included in the collections survey discussed here, Hardaway-Dalton points are present in the Coastal Plain in apparently as rare frequencies as other fluted points (Cooke 2000; Daniel 1998). As elsewhere in the Southeast, Dalton points are inferred to represent the transitional late Pleistocene—early Holocene point type in the Southeast (Ellis et al. 1998). Of course, this sequence remains untested against stratified or chronometrically dated Paleoindian assemblages. Finally, the Pasquotank site, is an important reminder that significant assemblages remain to be found in unstratified contexts and are not associated with stone sources (cf. Gardner 1983).

Turning to the Archaic period, we are on more firmer ground with respect to our proposed revisions to Coastal Plain culture-history. In particular, research to date suggests that "paleo-braidplain" sites hold particular promise for containing stratified (i.e., relatively discrete)

Period	Sub-Period	Phase/Complex	Context
Woodland	Late	(see Phelps 1983)	
	Middle	(see Phelps 1983)	
	Early	(see Phelps 1983)	
Archaic	Late	Savannah River Stemmed/ Thelma Stemmed?	Barber Creek
	Middle	Halifax Side-Notched?	Barber Creek/ Taft Ridge
		Guilford Stemmed	Barber Creek/ Squire's Ridge
		Morrow Mountain Stemmed/	Barber Creek/ Taft Ridge
		Stanly Stemmed?	Surface
		Kirk Stemmed	Barber Creek/ Squire's Ridge
	Early	St. Albans	Barber Creek
		Palmer/Kirk Corner-Notched	Barber Creek/ Squire's Ridge/ Owen's Ridge
		Hardaway Side-Notched?	Surface
Paleoindian	Late	Hardaway-Dalton	Surface
	Middle	Redstone	Surface
	Early	Clovis	Surface

Figure 3-4. Revised Paleoindian and Archaic culture-history of the North Carolina Coastal Plain (adapted from Phelps 1983:Figure 1.2).

archaeological occupations (Figure 3-5). Upland Terrace sites, on the other hand, appear to contain less stratified (i.e., more temporally mixed) archaeological deposits.

Early Archaic revisions includes the addition of (Hardaway) Side-Notched and Bifurcate phases/complexes that bracket the (Kirk) Corner-Notched phase originally proposed for the Early Archaic. The phases/complexes of the Middle Archaic subperiod remain virtually unchanged with the possible exception of the addition of Kirk Stemmed points at the early end of the subperiod. Finally, the Late Archaic in the Coastal Plain is represented by Savannah River and small stemmed Thelma-like points. Although outside the purview of this paper, the presence of Early Woodland components at Barber Creek and other sites along the Tar River is significant. Data exists within those components to further refine our understanding of Deep Creek phase ceramic and lithic typologies. Although not detailed here, refinements in chronometrically dating this proposed sequence will be an important outcome of this research. Towards that end, we believe that OSL will play an increasingly larger role as a dating method in the Coastal Plain (see Moore and Daniel, this volume).

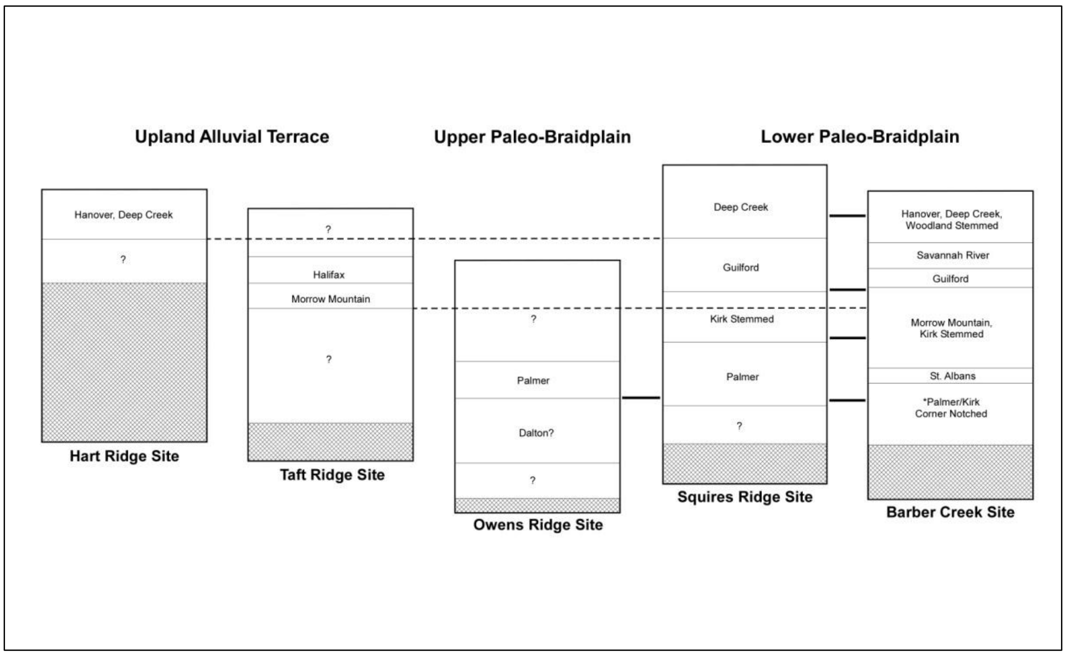


Figure 3-5. Schematic profiles of Tar River sites (after Moore 2009).

In sum, much work remains to be done, but it is clear that archaeological data are present in the Coastal Plain to address issues bearing on Paleoindian and Archaic period culture-history. Increased efforts need to be devoted to primary data collecting, particularly with respect to issues relating to chronology and typology. Whatever the outcome of that research, one implication of the current work is clear: the archaeology of the coastal plain needs to be regarded on its own terms.

Acknowledgments. Greenville Utilities Commission have hosted the Barber Creek field school since 2000. In particular, Thomas Hardison (Chief Operator, Waste Water Treatment Plant) facilitated our efforts in every way. Historic Preservation Fund Grants administered by the North Carolina Division of Archives and History in 2001 and 2003 have been used to obtain radiocarbon dates, conduct preliminary geoarchaeological work, and support student research on Barber Creek. More recently, East Carolina University provided support for the dissertation research of Christopher Moore, a Ph.D. student in the Coastal Resources Management Program, conducting the archaeological survey of the Tar River. Finally, virtually all of the fluted point data used here is in private collections. We are extremely grateful for the many individuals who shared those collections with us.

REFERENCES CITED

Anderson, David G., D. Shane Miller, Stephen J. Yerka and Michael K. Faught
2005 Paleoindian Database of the Americas: 2005 Status Report. *Current Research in the Pleistocene* 22:91-92.

Anderson, David G., R. Jerald Ledbetter and Lisa O'Steen
1990 *Paleoindian Period Archaeology of Georgia*. Georgia Archaeological Research Design Paper No. 6. Laboratory of Archaeology Series Report 28. University of Georgia, Athens.

Anderson, David G. and Kenneth E. Sassaman (editors)
1996 *The Paleoindian and Early Archaic Southeast*. University of Alabama Press, Tuscaloosa.

Brooks, Mark J. and Kenneth E. Sassaman
1990 Point Bar Geoarchaoelogy in the Upper Coastal Plain of the Savannah River Valley, South Carolina: A Case Study. In *Archaeological Geology of North America*, edited by N. P. Lasca and J. E. Donahue, pp. 183-197. Geological Society of America, Centennial Special Volume 4, Boulder, Colorado.

Brooks, Mark J., Barbara E. Taylor and John A. Grant
1996 Carolina Bay Geoarchaeology and Holocene Landscape Evolution on the Upper Coastal Plain of South Carolina. *Geoarchaeology: an International Journal* 11:481-504.

Broster, John B. and Mark R. Norton
1996 Recent Paleoindian Research in Tennessee. In *Paleoindian and Early Archaic Research in the Southeast*, edited by D. G. Anderson and K. E. Sassaman, pp. 288-297. University of Alabama Press, Tuscaloosa.

Choate, Brian C.
2011 *Stratigraphic Investigations at Barber Creek (31PT259): Reconstructing the Culture-History of a Multicomponent Site in the North Carolina Coastal Plain*, Unpublished M.A. thesis, East Carolina University, Greenville.

Cooke, John P.
2000 *A Distribution of Archaic Projectile Points Across the Coastal Plain of North Carolina*, East Carolina, Greenville.

Daniel, I. Randolph, Jr.
1998 *Hardaway Revisited : Early Archaic Settlement in the Southeast*. University of Alabama Press, Tuscaloosa.

2000 Paleoindian Points in North Carolina. *Current Research in the Pleistocene* 17:15-16.

2002 Stratified Early-Middle Holocene Remains in the North Carolina Coastal Plain. *Southeastern Archaeological Conference Special Publication 7*:6-11.

2005 Paleoindian Research in North Carolina. Paper presented at the Clovis in the Southeast Conference, Columbia, SC.

2006 Three Fluted Points from the Hardaway Site. *North Carolina Archaeology* 55:103-111.

Daniel, I. Randolph, Jr. and J. Robert Butler
1996 An Archaeological Survey and Petrographic Description of Rhyolite Sources in the Uwharrie Mountains, North Carolina. *Southern Indian Studies* 45:1-37.

Daniel, I. Randolph, Jr. and Albert C. Goodyear
2006 An Update on the North Carolina Fluted-Point survey. *Current Research in the Pleistocene* 23:88-90.

Daniel, I. Randolph, Jr., William H. Moore and James Pritchard
2007 Analysis of A Paleoindian Stone Tool Assemblage from the Pasquotank Site (31PK1) in Northeastern North Carolina. *Southeastern Archaeology* 26:73-90.

Daniel, I. Randolph, Jr., Keith C. Seramur, Tara L. Potts and Matthew W. Jorgenson
2008 Searching a Sand Dune: Shovel Testing the Barber Creek Site. *North Carolina Archaeology* 57:50-77.

Daniels, R.B. and R.D. Hammer
1992 *Soil Geomorphology*. John Wiley, New York.

Ellis, Christopher, Albert C. Goodyear, Dan F. Morse and Kenneth B. Tankersley
1998 Archaeology of the Pleistocene-Holocene Transition in Eastern North America. *Quaternary International* 49/50:151-166.

Gardner, William
1983 Stop Me if You Have Heard This One Before: The Flint Run Complex Revisited. *Archaeology of Eastern North America* 11:49-64.

Goodyear, Albert C., James L. Michie and Tommy Charles
1989 The Earliest South Carolinians. In *Studies in South Carolina Archaeology: Essays in Honor of Robert L. Stephenson*, edited by A. C. Goodyear and G. T. Hanson, pp. 19-52. vol. Anthropological Studies 9. South Carolina Institute of Archaeology and Anthropology, University of South Carolina.

Haynes, Gary
2002 *The Early Settlement of North America: The Clovis Era*. University of Cambridge Press, Cambridge.

Hughes, P.J. and R.J. Lampert
1977 Occupation Disturbance and Types of Archaeological Deposit. *Journal of Archaeological Science* 4:135-140.

Ivester, Andrew H. and David S. Leigh
2003 Riverine Dunes on the Coastal Plain of Georgia, USA. *Geomorphology* 51:289-311.

Ivester, Andrew H., David S. Leigh and D.I. Godfrey-Smith
2001 Chronology of Inland Eolian dunes on the Coastal Plain of Georgia, USA. *Quaternary Research* 55:293-302.

Johnson, D. L.
1990 Biomantle Evolution and the Redistribution of Earth Materials and Artifacts. *Soil Science* 149:84-102.

Kuhn, Steven L.
1994 A Formal Approach to the Design and Assembly of Mobile Toolkits. *American Antiquity* 49:44-54.

Leigh, David S.
1998 Evaluating Artifact Burial by Eolian Versus Bioturbation Processes, South Carolina Sandhills, USA. *Geoarchaeology: an International Journal* 13:309-330.

Maddry, John W.
1979 *Geologic History of Coastal Plain Streams Eastern Pitt County, North Carolina*, East Carolina University, Greenville.

Markewich, H. W. and William Markewich
1994 An Overview of Pleistocene and Holocene Inland Dunes in Georgia and the Carolinas--Morphology, Distribution, Age, and Paleoclimate. U.S. Geological Survey Bulletin 2069.

Mason, Ronald J.
1962 The Paleo-Indian Tradition in Eastern North America. *Current Anthropology* 3:227-283.

McFadden, Paulette
2009 *Geoarchaeological Investigations of Dune Formation and Artifact Deposition at Barber Creek (31PT259)*, Unpublished M.A. thesis, East Carolina University, Greenville.

Moore, Christopher R.
2009 Late Quaternary Geoarchaeology and Geochronology of Stratified Aeolian Deposits, Tar River, North Carolina. Unpublished Ph.D. Dissertation, Coastal Resources Management Program, East Carolina University, Greenville.

Peck, Rodney K.
1988 Clovis Points of Early Man in North Carolina. *Piedmont Journal of Archaeology* 6:1-22.

Perino, Gregory
1968 *Guide to the Identification of Certain American Indian Projectile Points*. Special Bulletin No. 3 of the Oklahoma Anthropological Society.

Perkinson, Phil H.
1971 North Carolina Fluted Projectile Points--Survey Report Number One. *Southern Indian Studies* 23:3-40.

1973 North Carolina Fluted Projectile Points--Survey Report Number Two. *Southern Indian Studies* 25:3-60.

Phelps, David Sutton
1983 Archaeology of North Carolina and the Coastal Plain: Problems and Hypotheses. In *The Prehistory of North Carolina: An Archaeological Symposium*, edited by M. A. Mathis and J. J. Crow, pp. 1-51. North Carolina Division of Archives and History, Raleigh.

South, Stanley A.
2005 *Archaeology of the Roanoke*. Monograph No. 4, Research Laboratories of Archaeology, The University of North Carolina, Chapel Hill.

Steponaitis, Vincas P., Jeffrey D. Irwin, Theresa E. McReynolds and Christopher R. Moore (editors)
2006 *Stone Quarries and Sourcing in the Carolina Slate Belt*. Research Laboratories of Archaeology, University of North Carolina at Chapel Hill, Chapel Hill.

Ward, H. Trawick and R. P. Stephen Davis
1999 *Time Before History : The Archaeology of North Carolina*. University of North Carolina Press, Chapel Hill.

RECENT WOODLAND ARCHAEOLOGY OF COASTAL NORTH CAROLINA

Joseph M. Herbert

This chapter presents a brief retrospective of Woodland archaeology on North Carolina's Coastal Plain conducted over the past quarter century with special attention to pottery, ceramic analysis, and future research. It begins with a survey of pottery sequences, reviews the contributions of several projects conducted since 1983, considers the implications of these findings for pottery typology, proposes a few possible solutions to some taxonomic inconsistencies, and identifies challenges and promising directions for future research. Only pottery types for which there is a reasonable amount of chronometric and geographic information are reviewed in the text. Formal type descriptions are referenced, but not provided, so readers are advised to consult original sources for those details. An abbreviated summary of all chronometric data for the Coastal Plain of North Carolina is presented in a table at the end of this chapter (Table 4-1). Much of this information was compiled in collaboration with the late Mark Mathis, NC-OSA. Subsequently I have tried to fill in the details and expand the database to include data published up to the time when this paper was compiled (winter 2009). For radiocarbon dates the contextual information was evaluated, but is included in the table only as a list of associated "target" pottery types. Associations are not always clearly established, and consequently each reader is encouraged to the consult the original contract reports to evaluate the validity of associations. In most cases, it has been possible to include the bibliographic reference numbers for technical reports on file at the NC-OSA; but for a few dates, casually referred to in texts or passed on by personal communications in the distant past, the details remain unknown. The association of pottery samples with luminescence dates obviously requires no evaluation, but the validity of the results of the dating procedure itself appear to strike some researchers as dubious, and a few reject it outright. Here too the reader is advised to consult the literature and come to their own conclusions.

THE EARLY WOODLAND

Stallings

Fiber-tempered Stallings pottery (Griffin 1943; Sassaman 1993; Stoltman 1972, 1974) is considered to be the earliest pottery in both South and North Carolina. On the North Carolina coast, any pottery that exhibits lacunae within the body of the ceramic resulting from the oxidation of fiber (presumably Spanish moss) is considered to be fiber tempered and is classified as Stallings. Stallings has been found from the Altamaha River in Georgia (Sassaman 1993) to the Chowan River near the North Carolina-Virginia line, where it occasionally turns up along tributaries from the upper Coastal Plain slightly beyond the Fall Line to the Atlantic coastal margin (Phelps 1983). Despite this vast geographic range, the frequency of Stallings in North Carolina is relatively low and the distribution drops off with distance from the core area in the middle Savannah River valley, South Carolina (Herbert 2003:204–206, Figure 6.1 and 6.2; 2009:116, 148–150; Phelps 1983:26–28, Figure 1.4).

The margins of the distribution of fiber tempered ware are geographically broad and weakly defined, suggesting that the first pottery did not revolutionize cooking technology, but rather, the concept and practice of hardening mud into vessels by fire caught on slowly and was largely ignored by the majority of hunter gatherers.

Although a wide variety of drag-and-jab punctuate decorative patterns characterize classic period Stallings styles in the Savannah Valley and along the central South Carolina coast, fiber-tempered ware of the same period found in North Carolina typically exhibits mostly plain, smoothed surfaces. Although not yet dated in North Carolina, Stallings appeared in South Carolina at approximately 2500 B.C. and persisted to at least 1100 B.C. (Sassaman 1993). The idea for this technology is assumed to have originated there, diffusing over several hundred years among the cultures of North Carolina Coastal Plain.

Thom's Creek

The next innovation in the history of pottery making technology, wherein the step of adding Spanish moss to clay was deemed unnecessary and dropped from the protocol, appears to have developed independently in several areas of the Middle Atlantic and elsewhere in the Southeast. The fine, sand-tempered or temperless Thom's Creek series (Anderson et al. 1982: 263–264; DePratter et al. 1979; Phelps 1968; Trinkley 1980; Waring and Holder 1968) is thought to have emerged from Stallings in South Carolina at about 2000 B.C., and persisted up to 1200 B.C. Thom's Creek Punctate appears to represent a continuation of Stallings decorative styles applied to fiberless paste. It is found along the lower coast of North Carolina in assemblages from Brunswick to Onslow Counties, but rarely further north (Herbert 2003:213–214, Figure 6.9; 2009: 155–157). Restricted to the coastal margin and exhibiting a rather sharp northern boundary, this distribution suggests for the first time a cultural boundary demarcating the geographic extent of a cohering body of people whose technology included ceramics which also exhibit a diagnostic suite of technological styles. Decorations on Thom's Creek sherds in southern North Carolina consist mostly of random punctuations, missing much of the richness and diversity of drag-and-jab decoration seen in the Savannah drainage. One recent exception has been found at the Barnards Creek site (31NH747) in the lower Cape Fear valley near Wilmington, where Thom's Creek Punctate (square stylus, reed and periwinkle, linear drag-and-jab) is well represented (n=393, or 68 percent of the assemblage) (Moser et al. 2009). This suggests that although the protocols for making Thom's Creek Punctate vessels were faithfully practiced on the southern coast of North Carolina, the decorative embellishments that flourished in the core area were only occasionally communicated to this distant point on the periphery. The lack of punctuate embellishments may also signal a time difference, with the North Carolina coastal expression representing the late-stage tail of the temporal trajectory; verification of this hypothesis will require additional chronometric data.

Refuge

Sand-tempered, Refuge series pottery follows the Thom's Creek series in the sequence, emerging about 700 B.C. in the Middle Savannah drainage and persisting up to about 400 B.C. (Anderson et al. 1982, 1996:224; Stoltman 1972, 1974:276–277). As is the case for all sand-tempered pottery in Carolina, classification is made easier if some surface treatment other than plain (smoothed) is present. On the North Carolina coast, Refuge is most often recognized in its manifestation as Refuge Punctuate *variety Allendale*. This type is decorated with random punctuations, quite distinct from the Stallings and Thom's Creek drag-and-jab pattern, resembling pine-cone rouletting (Herbert 2003:63; 2009:156–158). Although the geographic range of the Refuge series is vast, extending well into Georgia, Allendale is found no farther south than central South Carolina, and in North Carolina the distribution is almost identical to that of Thom's Creek Punctate, with the two series often co-occurring, suggesting some cultural relationship among the makers of these types (Barse et al. 2001, Plates 4.19 and 4.25; Herbert 2003:214–215, Figure 6.10).

Chronological data for Refuge Allendale from North Carolina consists of two dates: a radiocarbon date (1950±80 B.C.) from the Cape Island site for a feature including Hamp's Landing sherds (Jones et al. 1997), and a luminescence date (2080±230 B.C.) from a site in the Sandhills (McNutt and Gray 2009). The fact that these two dates are in close agreement lends some measure of confidence in their accuracy, but both are 1000 years older than the earliest dates for Refuge from South Carolina. These data, together with the similarity of paste characteristics, suggest that Allendale, as manifested on the North Carolina coast, may in fact be best placed in the Thom's Creek rather than the Refuge series.

Hamp's Landing

Hamp's Landing is a limestone- or marl-tempered series found on coastal sites from northern South Carolina up to the Tar-Pamlico valley (Hargrove 1993; Hargrove and Eastman 1997, 1998; Herbert and Mathis 1996; Herbert 2003; Mathis 1999; Terrell et al. 2000). This distribution closely approximates the area in which marl and limestone were commercially mined in the 20th century (Loughlin et al. 1921). The southern boundary of the distribution is thought to be near Charleston, but certainly Wando is relatively common in Horry County South Carolina (Hargrove and Eastman 1997) where marl-tempered pottery is classified as the Wando series (Adams and Trinkley 1993). The northern boundary of the distribution is clearly circumscribed by finds on the northern coast of the Pamlico River (Figure 4-1).

There have been six attempts to date Hamp's Landing pottery from North Carolina, with age estimates ranging from 3056 B.C. to A.D. 634 (Figure 4-2). The oldest and youngest dates in this series were luminescence dates for samples associated with Feature 10 at the Riegelwood site (31CB114), and both were determined to be unreliable due to excessive scatter in the growth curve or anomalous fading (Herbert 2003:163–168, Table 4.20). Among the remaining four dates, two almost identical radiocarbon dates (cal 2080±50 and cal 2080±40 B.C.) were derived from charcoal collected from flotation samples associated with pottery clusters (Features 6 and 10) at the Riegelwood site (Abbott et al. 1999:61, Figure 6-9). In both cases, however, multiple pottery types were included in the features. In addition, the data describing an AMS assay (approximately 865 B.C.) of soot from the surface of a vessel fragment found at site 31NH771 (Barse et al. 2001:3.4) are incompletely reported. Consequently, the most reliable date for Hamp's landing at present appears to be a luminescence date (221±239 B.C.) for a cord-marked vessel found in association with a cremation (Feature 1) at the Riegelwood site (Herbert 2003:163–168).

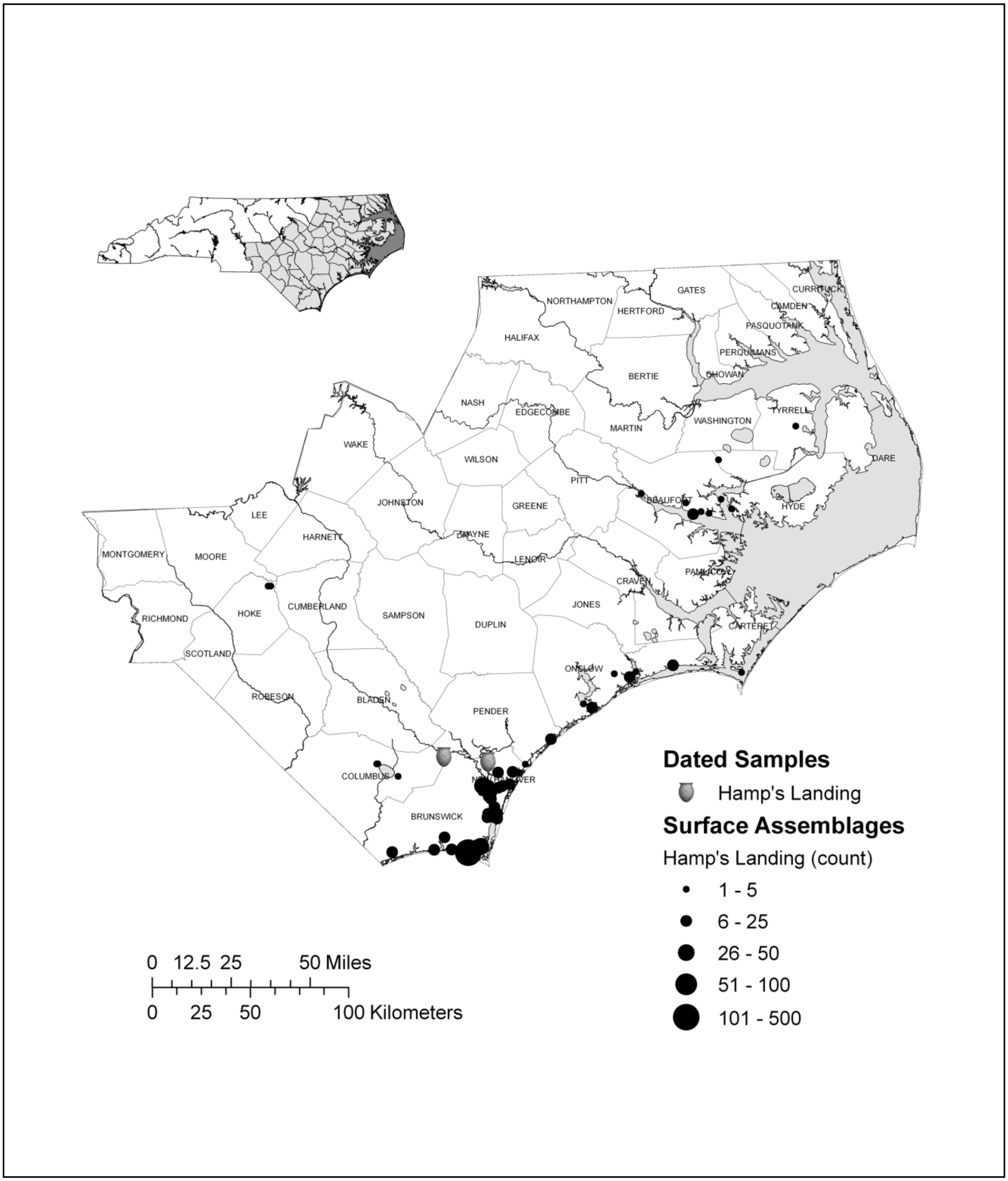


Figure 4-1. Geographic distribution of the Hamp's Landing series.

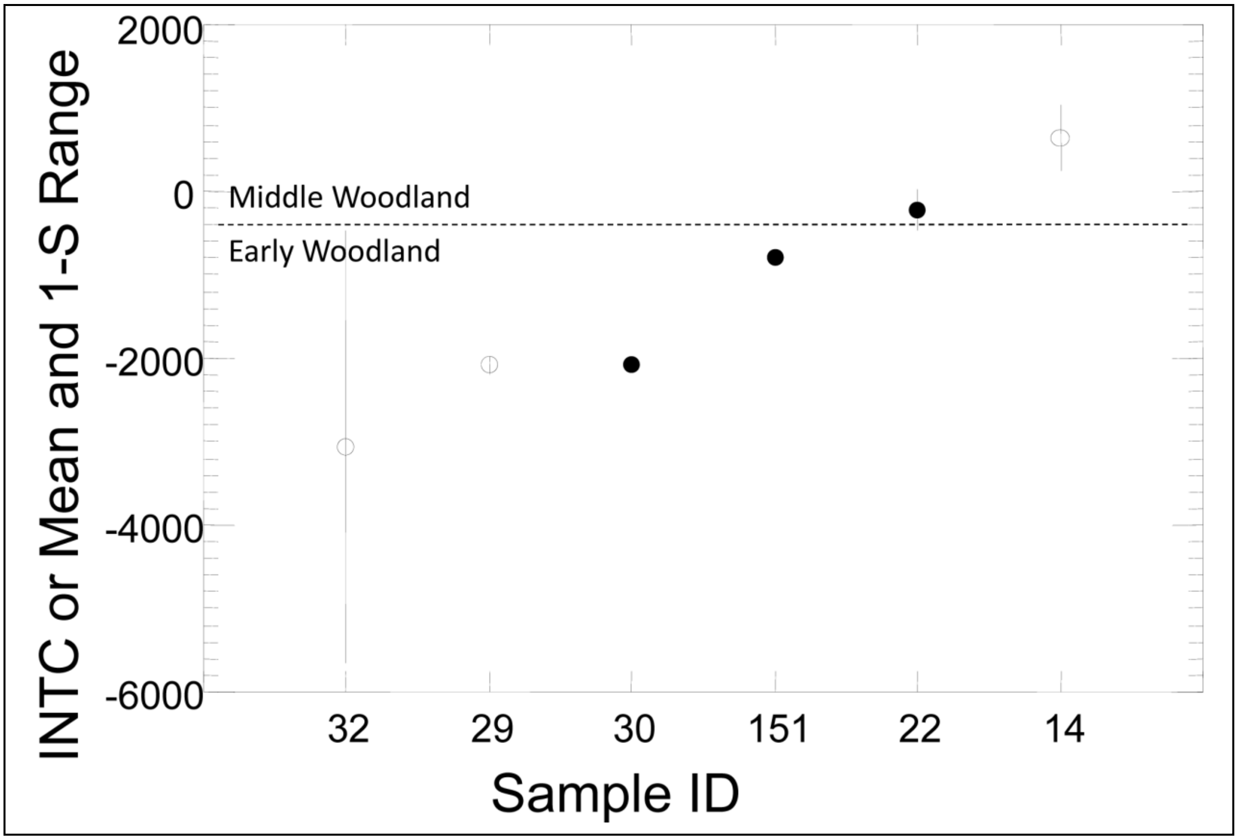


Figure 4-2. Dates associated with the Hamp's Landing series.[1]

New River and Deep Creek

With the New River and Deep Creek series we encounter the first of several instances of what might be called regionally redundant archaeological taxa. During the period when Loftfield (1976) was formulating a ceramic sequence for his dissertation research in the New River basin, Phelps (1983) was busy constructing a ceramic sequence for pottery in his research domain, north of the Neuse River. Neither the Loftfield nor Phelps schemes incorporated the work of Gary Crawford (1966), whose thesis research included the formulation of a pottery series for the Lenoir County area. As a consequence, Crawford, Loftfield and Phelps independently crafted typologies for their regions with some of their types describing the same classes of pottery (e.g., Lenoir, New River and Deep Creek, respectively). In this case, the territories of prehistoric pottery practice did not conform to the territories of archaeological research. As a result, most subsequent work has selected one or the other taxonomic scheme according to the research territory in which they were working. I have made the case elsewhere for the use of a single series, New River, for the pottery in this class (Herbert 2003, 2008, 2009). It seems reasonable to propose that the Early Woodland Deep Creek culture phase is represented by New River series pottery in assemblages throughout the North Carolina Coastal Plain including the Sandhills and very likely on the South Carolina coast as well.

New River is characterized by quartz sand temper in high proportion, and homogeneous compact paste, with net-impressed, cord-marked, fabric-impressed, simple-stamped, and plain (smoothed) surface treatments (Loftfield 1976:149; Phelps 1983:29). The presence of coarse sand in high proportion seems to be a key element in identifying the series. Pottery tempered with coarse sand and ”grit” (used here to denote very coarse sand and occasional granule size particles) was first described for materials found in Lenoir County and defined as the Lenoir series (Crawford 1966:34). Crawford’s (1966:101) seriation of these materials suggested an Early Woodland association. Loftfield (1976:187) also used the seriation of 48 assemblages from Onslow, Carteret, Jones, and Pender Counties, to determine that the New River series was an Early Woodland period manifestation. Ceramics of the same description were also reported by Phelps (1975:77–79) from the Parker site on Deep Creek in Edgecombe County where they were found in contexts with soapstone-tempered Marcey Creek and Stallings, both Early Woodland types.

Later, Phelps (1983:29–32) proposed a culture-historical model for the Deep Creek phase including three periods characterized by differences in pottery surface treatment, resembling Evans’ (1955:69–74) model for the Stoney Creek pottery series from coastal Virginia. The first period was characterized by a majority of cord-marked, with some fabric-impressed, and occasionally plain and net-impressed types. A second period comprised mostly cord-marked, net-impressed, and fabric-impressed types with the presence of a simple-stamped type (presumably related to Deptford), and the third period was distinguished by a decrease in the frequency and eventual disappearance of simple-stamped specimens (Phelps 1983:29). The model continues to be cited, although it has never been demonstrated archaeologically with reasonable certainty. Martin (2004, 2008) reanalyzed Phelps’ excavated assemblage of sand-tempered pottery from the Barber Creek site and concluded that Phelps’ tripartite model was supported. However, the data from the Barber Creek excavation exhibit only very slight differences in the frequency of surface treatment types from each level, providing only a the suggestion of temporal trends. Consequently, the existence of three Early Woodland culture phases corresponding to three ceramic stylistic periods must for the present remain a hypothetical model until more comprehensive data demonstrate unequivocal temporal patterns. Nevertheless, Phelps’ three-phase model is presumably based on decades of excavation in the region north of the Neuse River, and may well prove applicable for articulating stages of cultural evolution within the long Early Woodland period in the larger geographic region as more data come to light.

New River pottery has been dated from several sites on Fort Bragg, in the lower Cape Fear Valley, and along the New River on Camp LeJeune. Sites with significant Deep Creek phase components have also been found in the lower Pamlico Valley, and on the Currituck Peninsula (Figure 4-3).

There are currently 22 dates for pottery, or associated charcoal, originally identified as Deep Creek (n=6) or New River (n=16). The earliest two dates, 2850±40 B.C. (Daniel et al. 2008) and 2898±50 B.C. (Sanborn and Abbott 1999:6, Tables 1–2) are radiocarbon dates for charcoal that appears to have been unreliably associated with the target pottery (Figure 4-4). These are outliers; each are about a thousand years older than other dates in this series, and about seven hundred years older than the earliest reliable dates for Stallings from the Savannah River basin (Sassaman 1993). Likewise, the three youngest dates (two luminescence and one radiocarbon) post dating A.D. 400 are either erroneous or, more likely, indicate a continuation of this tradition into the Middle Woodland period. Otherwise, 12 dates for this series range from 1865–130 B.C., agree nicely with Phelps’ predictions from 1983.

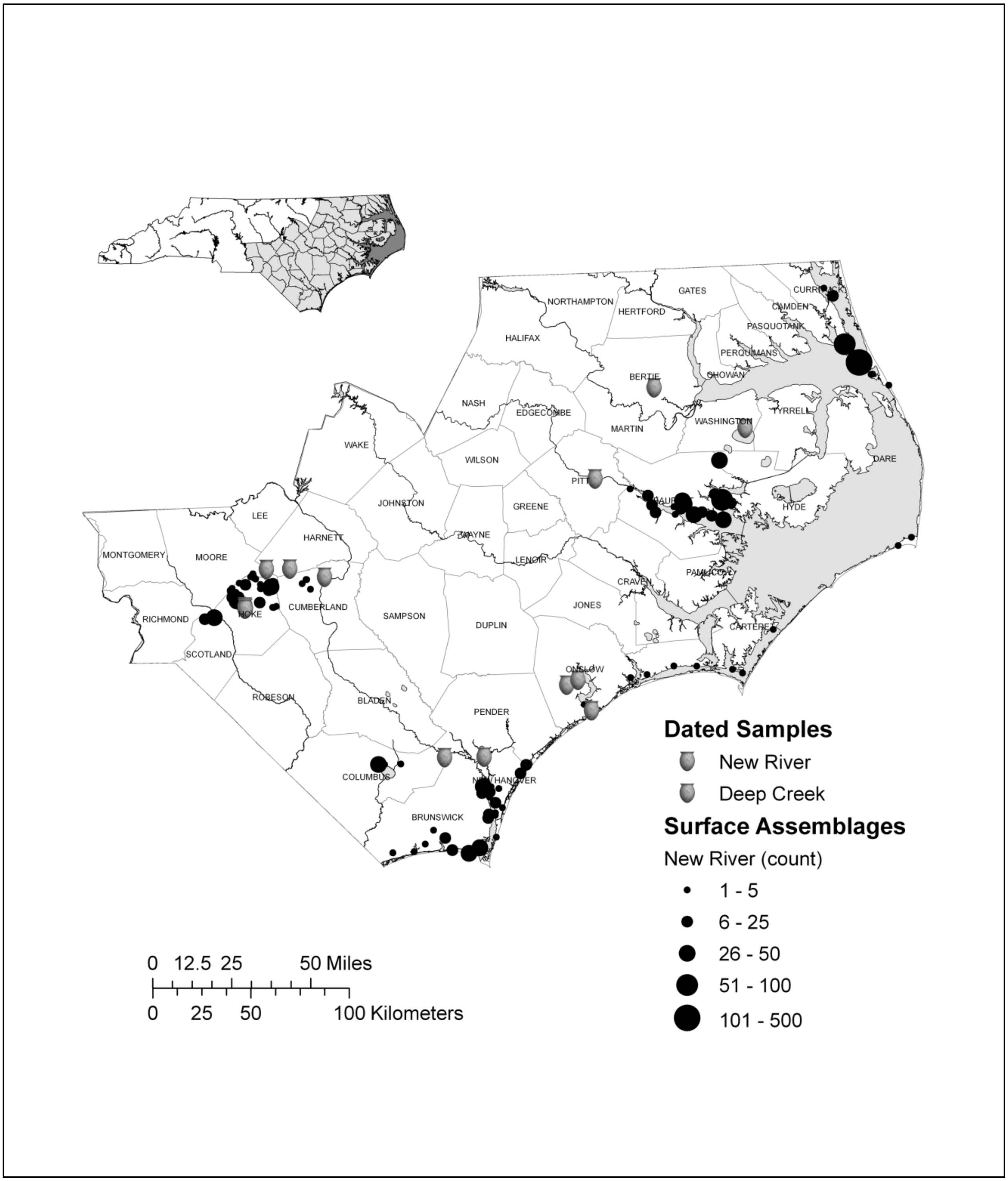


Figure 4-3. Geographic distribution of the New River series.

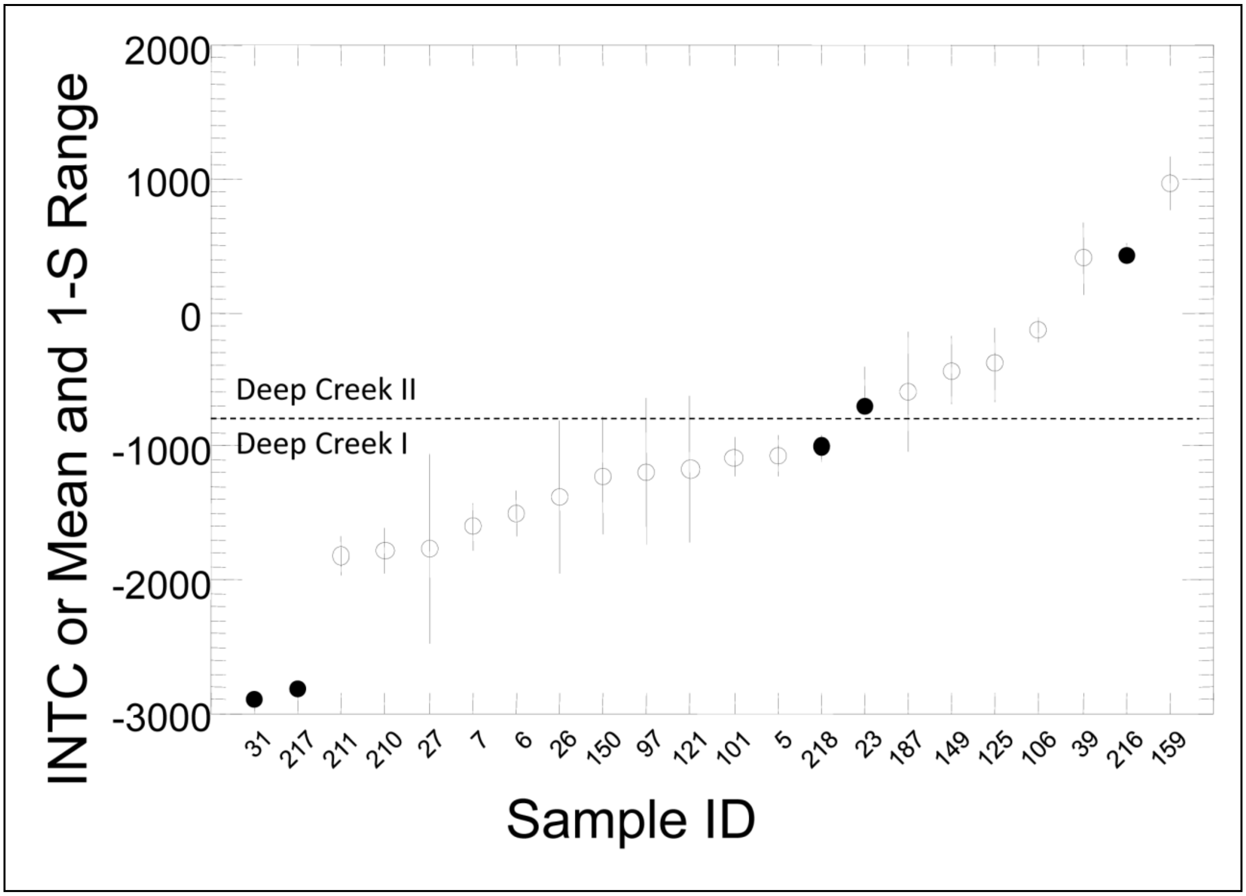


Figure 4-4. Dates associated with the New River series.

There are several other Early Woodland pottery types occurring primarily in the Albemarle Sound region, including Water Lily, Currituck, Croaker Landing, and Marcey Creek, for which we have no chronometric data from North Carolina. They are not described here but are summarized elsewhere (Herbert 2008).

THE MIDDLE WOODLAND

Yadkin

The Yadkin series was interpreted by Coe (1964:30–32) as a direct descendant of the Early Woodland Badin series, and thus the product of a long period of gradual change characterized by improvements in technology culminating in the addition of very coarse sand–pebble size (1–8 mm), angular fragments of quartz, in very high (40–50 %) proportion (Coe 1964:31, 1995:154). The definition of the series, as characterized by very large, angular quartz particles in very high proportion, has in certain instances been relaxed to include sand-tempered pottery thought to be associated with the Yadkin culture phase (e.g., Blanton et al. 1986; Claggett and Cable 1982). It is said that Joffre Coe identified the pottery from the 1986 project as Yadkin (Espenshade, personal communication 2011). This suggests that he viewed the Yadkin series as a marker for the Middle Woodland pottery in general, and certainly, the definition of Yadkin became more inclusive in Coe's (1995) later work to include pottery with very different sorts of temper found at the Town Creek site. It seems that the idea was that pottery made during the Yadkin culture phase was characterized by a wide variety of tempering technologies, and consequently ceramics tempered with sand or grog, if found to be associated to the appropriate period and region, could justifiably be classified as Yadkin. In contradistinction, the position taken in this paper is that although the Yadkin culture phase may be represented by pottery reflecting different tempering technologies, the Yadkin pottery series should be exclusively characterized by the inclusion of large amounts of angular quartz, or other rock fragments. The position taken here is that pottery containing only sand, or some combination of sand and grog, should not be classified to the Yadkin series. How to classify pottery found to exhibit a combination of angular quartz (or other crushed rock) and grog is at present an open question.

The Yadkin pottery series is typically not considered a Coastal Plain series, but is regularly represented in assemblages from the Sandhills, although more common in the Eastern Piedmont. The absence of Yadkin series pottery elsewhere on the Coastal Plain suggests a cultural boundary in the Sandhills. The current suite of ten dates (seven luminescence and three radiocarbon) associated with Yadkin series pottery suggests an age range of 400 B.C.– A.D. 400 (Herbert 2003:184–185).

Mount Pleasant

The Mount Pleasant phase was defined by Phelps (1984:32–36) for the Middle Woodland culture of the northern coastal region. The Mount Pleasant pottery series was described by him as tempered with fine and medium sized sand, with granule or pebble sized, rounded and subrounded, quartz inclusions (Phelps 1984:41–44). Surface treatments include fabric-impressed, cord-marked, net-impressed, and plain, with vessel forms including jars with restricted and unrestricted necks, and bowls of simple, hemispherical and globular shape (Bamann 2004; Green 1987; Jorgenson 2001; Millis 2001; Phelps 1983, 1984).

Included in Phelps's (1984:41) definition of the Mount Pleasant series is the comment, "apparently within the normal range of temper variation are some specimens with only fine to medium sand temper…." This observation, along with contextual co-occurrence, is what led to the conclusion that the Mount Pleasant and Deep Creek series were part of a "traditional continuity" with Deep Creek varying only in "a *possibly* higher frequency of net-impressed surface finish, a *trend toward* larger clastic temper" and the addition of incising (Phelps 1983:33, emphasis added). Such equivocal language indicates that Phelps understood that the data with which he was attempting to discriminate among Deep Creek (New River) and Mount Pleasant pottery was somewhat ambiguous, with a sand-tempered variant lacking any granule or pebble inclusions seeming to occur throughout the Early and Middle Woodland periods. Since Phelps's first descriptions, the sand-tempered continuum has been further articulated by Clay Swindell's study of Mount Pleasant pottery from the Fishing Creek site (Holm et al. 1999), suggesting that a late expression of the tradition may indeed lack granules and pebbles. At this site, data from excavated sherd-bearing (although not dated) zones suggest "an increase in the use of smaller sands, minus larger clasts… apparent and pronounced throughout time" (Holm et al. 1999:47). Following discussions with Phelps, Swindell dubbed the late Mount Pleasant phase sand-tempered variant, Middle Town. As described below however, there is now little doubt that this sand-tempered ware is a Late Woodland in age, and the question of its relationship to the Middle

Woodland Mount Pleasant phase, and its taxonomic status as either a variant (Mount Pleasant *variety Middle Town*, or alternately, the Middle Town series) must be given renewed consideration.

Pottery classified to the Mount Pleasant series is represented on sites from southern Virginia to northern South Carolina. Although the distribution of this ware suggests a core area north of the Neuse River in the Upper Coastal Plain portion of the Pamlico basin (Figure 4-5), Mount Pleasant pottery occurs in low frequencies in assemblages from both the lower and upper Cape Fear valley, suggesting a gradually thinning distribution as one moves south from the core area.

The number and range of radiocarbon dates associated with pottery classified as Mount Pleasant is one of the biggest surprises in North Carolina coastal archaeology of the past 25 years. In its initial formulation five dates were presented for Mount Pleasant (Phelps 1983:32) and none were added in the subsequent decade (Eastman 1994:21, Figure 23). Currently there are 24 radiocarbon dates possibly associated with pottery classified as Mount Pleasant series (Figure 4-6). Phelps proposed 300 B.C. as a beginning date for the Mount Pleasant phase, with its termination around A.D. 800. At present, only one assay from the Liberty Hill site predates A.D. 300 (Phelps personal communication 1997). Seven other assays, mostly from Phelps' excavations, fall within the latter half of the Middle Woodland range (A.D. 300–800). The balance of Mount Pleasant dates (16 recently obtained) fall within the age range of the Late Woodland period and six of these are from contexts containing the carbonized remains of corn (Millis 2001). The suite of Late Woodland dates for Mount Pleasant series pottery is significantly influenced by 17 assays from the Contentnea Creek site where it is described as primarily fabric-impressed with moderate amounts of subangular, medium sized quartz sand and granule inclusions (Millis 2001:397). Vessels in this assemblage include mostly jars with unrestricted necks, rounded lips, and brushed interiors, often stamped 1–3 cm down the interior neck. Six of the 17 features from the Contentnea Creek site that contained Mount Pleasant series pottery and plant remains dated to the Late Woodland period also included examples of a provisional Late Woodland pottery series (Series 1 and 2) thought to be related to, or perhaps an early expression of, Cashie series pottery. Only one feature from the Contentnea Creek site contained both Mount Pleasant and Hanover series sherds, suggesting little temporal relationship between these two pottery types at this site.

Three assays of carbonized plant remains from contexts at the Mabrey Bridge site thought to be associated with Mount Pleasant pottery yielded age estimates in the Late Woodland period (cal A.D. 1100–1220) (Bamann 2004). The assemblage of pottery associated with these assays comprised mostly fabric-impressed (52%) and cord-marked (17%) types tempered mostly with very coarse and granule size quartz (Bamann 2004:193, Table 9).

Consequently, the original case for Mount Pleasant pottery series as the index marker for the Middle Woodland Mount Pleasant culture phase is now thrown into question. On one hand it appears appropriate to conclude that the technological styles characterizing the Mount Pleasant pottery series persisted until A.D. 1400 (that would be about 1700 years of ceramic technological and stylistic continuity). On the other hand, it might be more prudent to consider Middle Town as a provisional Late Woodland culture phase characterized by a settled village agricultural economy and a sand-tempered pottery making technology derived from the Mount Pleasant tradition. Further complications are introduced by Swindell's evidence for a Late Woodland

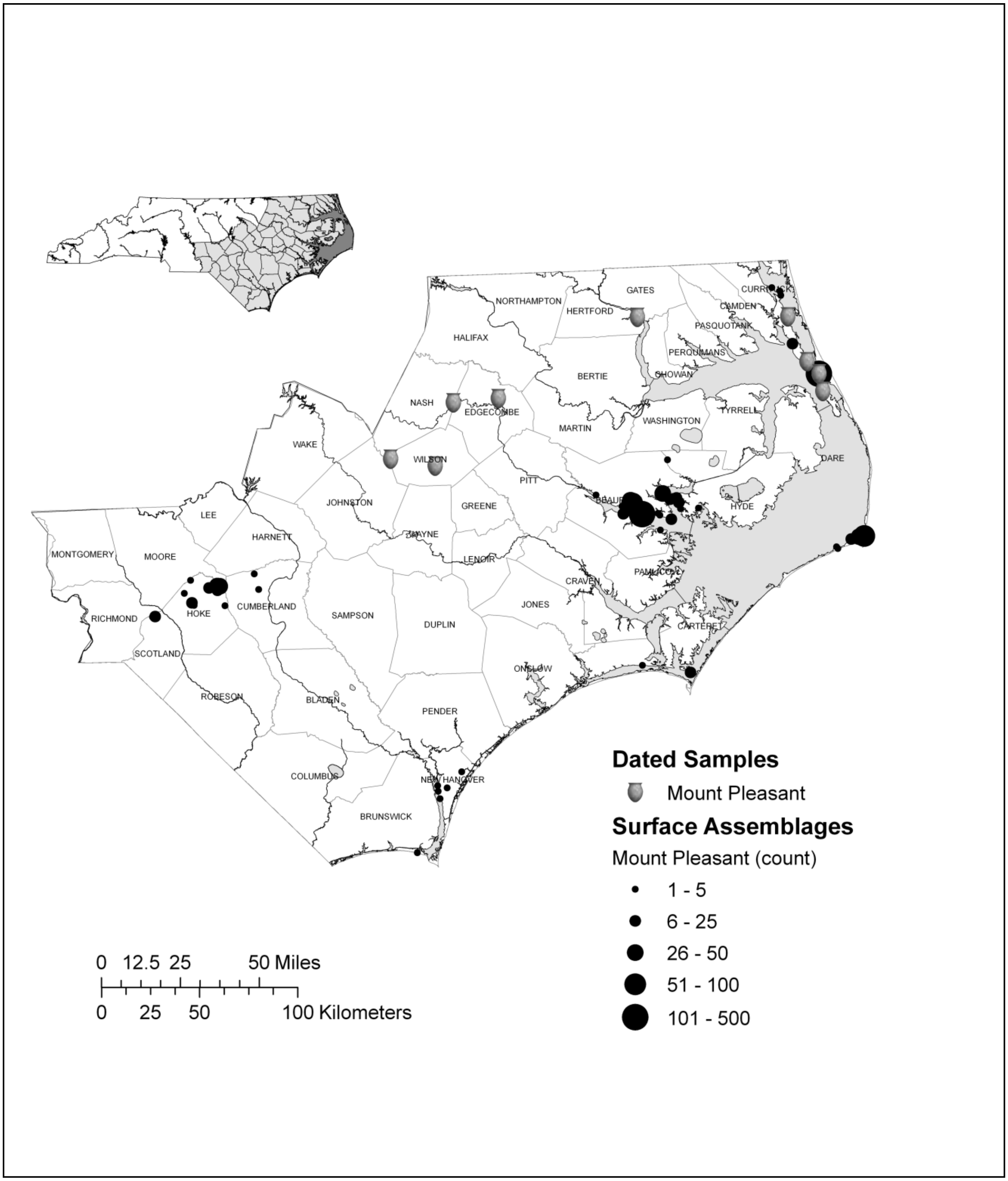


Figure 4-5. Geographic distribution of the Mount Pleasant series.

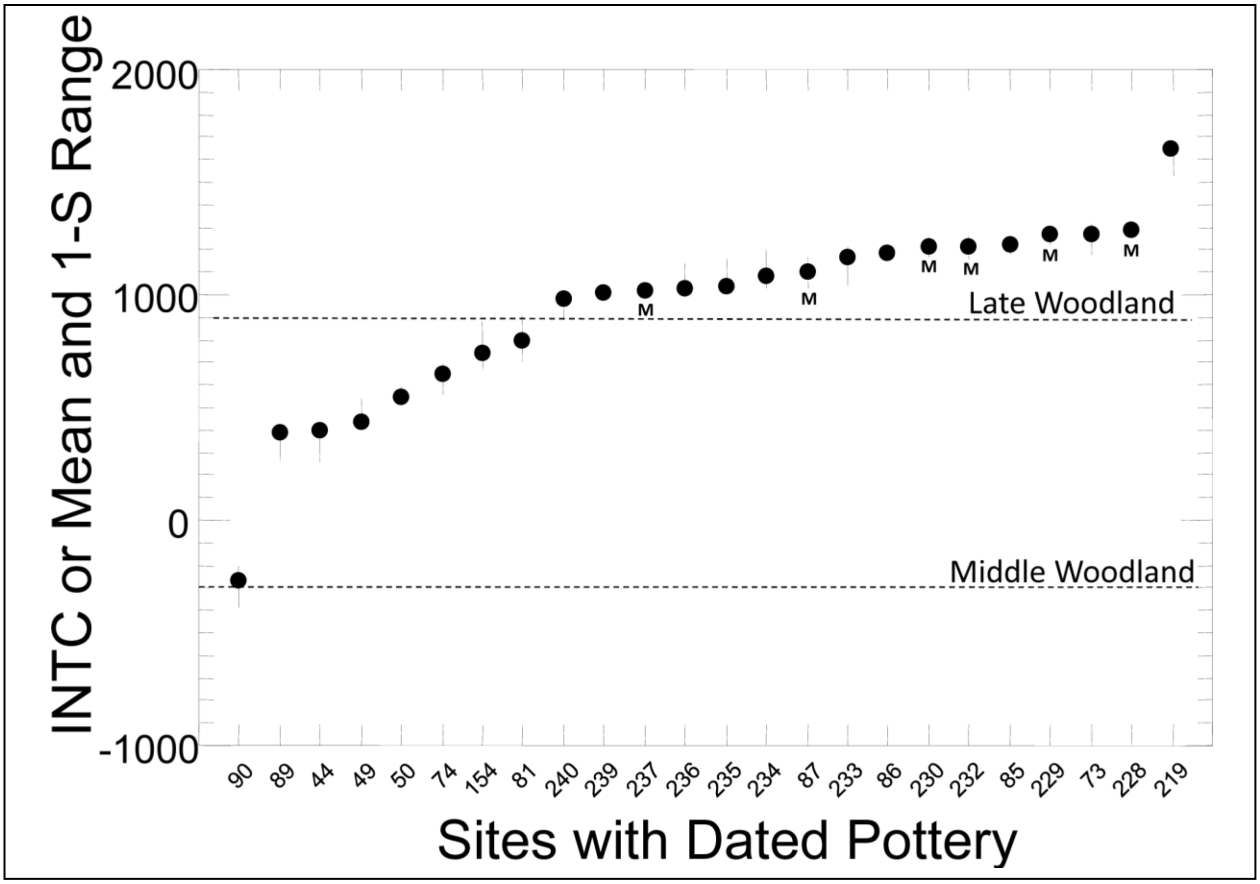


Figure 4-6. Dates associated with the Mount Pleasant series.

variant of the Mount Pleasant series pottery that does not include granules. As it stands, the assumption of technological and stylistic continuity with Early Woodland New River series leaves open the early end of the sequence, and recent dates and associations clearly leave open the late end of the sequence and continuity with the Cashie series. Consequently, every effort should be made to characterize and date details in vessel form, surface treatment, decorative embellishments, and production techniques, as the inclusion of granules in the paste does not appear to be a necessary criterion for identification of the Mount Pleasant series.

Hanover

The Hanover series was first defined by South (1960:16–17) for the Middle Woodland period pottery of the lower Cape Fear Valley. The series was originally considered to date to 400 B.C.–A.D. 200 (South 1976:28, Figure 12), and was assumed to be related to the grog-tempered Middle Woodland Wilmington series of the Georgia and South Carolina coasts (Caldwell 1952:316). South (1976:28) described Hanover as tempered with "large lumps of aplastic clay…that appear to be crushed sherds." Loftfield (1976:154–157) described the same ware from the New River Basin, calling it the Carteret series, and characterized the temper as crushed sherds or "fire-hardened pieces of clay" in a paste that was "poorly kneaded being lumpy and contorted" and feeling "very chalky to the touch." South (1976) identified only cord-marked and fabric-impressed types; Loftfield (1976:157) added a smoothed or plain type.

By virtue of naming convention, the southern extent of the Hanover series is in the northern coastal counties of South Carolina. If combined with the Wilmington series, the southernmost distribution extends into northern Georgia. A reduced frequency of grog-tempered ware in the Albemarle Sound region prefigures its gradual diminution and disappearance on the southern coast of Virginia (Figure 4-7).

Opportunities for dating Hanover series pottery have been pursued with diligence over the past 10 years. Eastman (1994:19–21) reported two dates associated with Hanover pottery; at present there are 48 (Figure 4-8). One very important factor contributing to this increase is the use of luminescence dating, accounting for 66 percent of all Hanover dates. AMS radiocarbon dating of soot and sherd organics (n=3) (see Johnson 1988), and assays on shell and bone (n=4) also contributed. The current range of dates associated with Hanover pottery is 780 B.C. to 1675 A.D., excluding one luminescence date of 3170±310 B.C. (McNutt and Gray 2009) that is problematic. The majority of Hanover dates fall within in the Middle Woodland period (300 B.C.–900 A.D.), although 36 percent are Late Woodland. Where surface treatment was identified among the dated samples (n=36) most were fabric impressed (n=24), with seven cord-marked, and two check-stamped samples.

One unfortunate effect of such a very broad range of dates, spanning virtually the entire Woodland era, is that the pottery in question loses its specificity as a chronological indicator and cultural marker. These results are a compelling justification for reevaluating the Hanover culture phase and the pottery taken as evidence of it. Further consideration of the implication of these dates and the difficulty of identifying grog is addressed later in this chapter.

Cape Fear

The Cape Fear culture phase was defined by South (1960, 1976:18) for the Middle Woodland period on the southern coast of North Carolina. This phase is signified by the Cape Fear pottery series, first defined as a sand-tempered ware with cord-marked, fabric-impressed, and net-impressed types. A key distinction between Cape Fear and New River sand tempering seems to be the proportion of sand; the New River series having a higher proportion. Research based on data from sites in the lower Cape Fear Valley and Sandhills prompted several possible adjustments to South's original model (Herbert 2003; Herbert et al. 2002). It was proposed that the Cape Fear series not include a net-impressed type, net impressing seeming to occur only in the Early Woodland period and therefore diagnostic of the New River series. It was also suggested that the cord marking found on Middle Woodland sand-tempered ware was often applied in a distinctively perpendicular pattern, with the fabric used to impress the surface made by interweaving cordage weft over non-fiber warp elements, such as a rush or reed, to produce a more rigid textile characterized by a more linear warp pattern. In contrast, Early Woodland cord marking is more often parallel or haphazardly oblique, and earlier period fabric typically made with a cordage weft interwoven or twined with flexible, fibrous warp. Such flexible fabric, when wracked, produces impressions distinct from those made by "fabric" with inflexible, linear warp elements.

Pottery classifiable to the Cape Fear series is present in assemblages from every part of the North Carolina coast (Figure 4-9). Sites with sand-tempered, perpendicular cord-marked

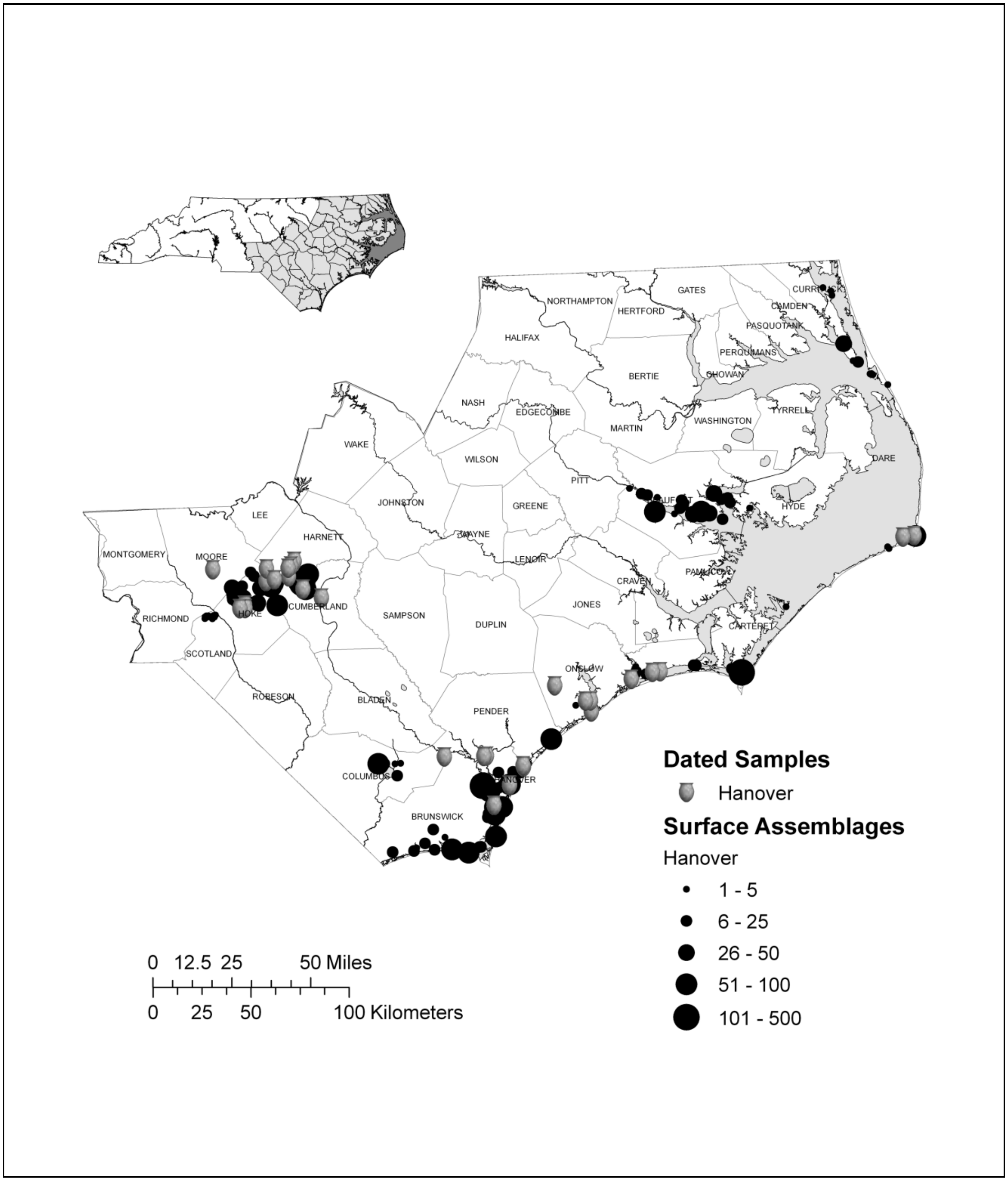


Figure 4-7. Geographic distribution of the Hanover series.

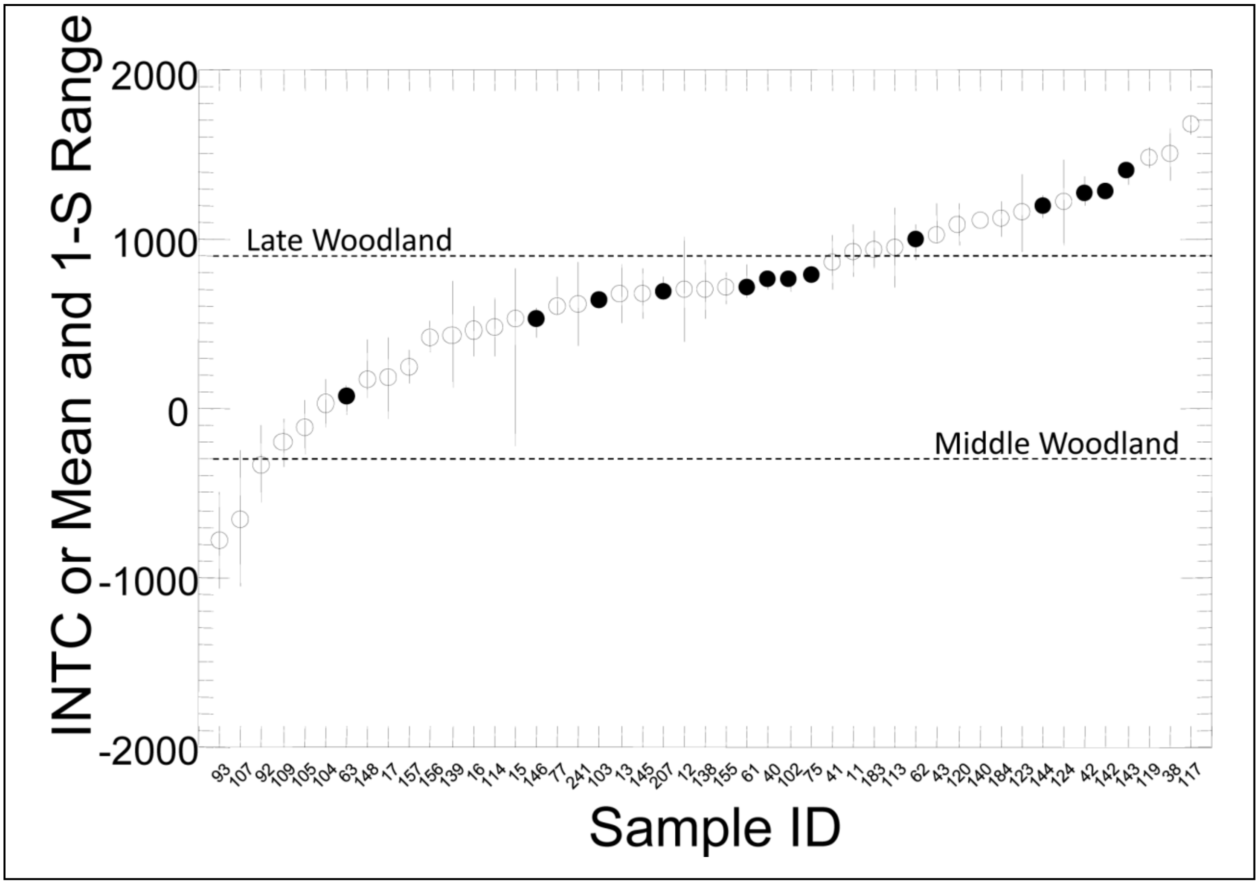


Figure 4-8. Dates associated with the Hanover series.

sherds are found in Currituck County and the Outer Banks, along the central coast and especially in the Pamlico drainage, lower Cape Fear Valley, and Sandhills. On sites where Cape Fear pottery is found, the frequency percentage, calculated as the proportion of the subtotal of Middle Woodland age sherds at each site, is often over 60 percent. Cape Fear Fabric Impressed sherds are also distributed widely over the North Carolina coast with proportions suggesting an area of particularly intensive occurrence in Carteret County, the lower Pamlico, and Outer Banks. The surprisingly widespread presence of Cape Fear reflects, in part, different regional naming conventions. These calculations and interpretations are complicated by the fact that at present there appears to be no taxonomic distinction between the Cape Fear and Middle Town series (or Mount Pleasant *var. Middle Town*, as may be preferred).

Currently there are 16 dates associated with Cape Fear series pottery, only one of which is a conventional radiocarbon date (Figure 4-10). Among the 16 dates, nine (56%) fall within the Middle Woodland period, ranging from 300 B.C.–A.D. 300, three fall within the Early Woodland (960–1240 B.C.), and four within the Late Woodland (A.D. 1000–1320).

Mockley

The Mockley series, defined by Stephenson and others (1963:105–109) is characterized by thick vessel walls, abundant, coarse shell temper, cord-marked or net-impressed surfaces, and

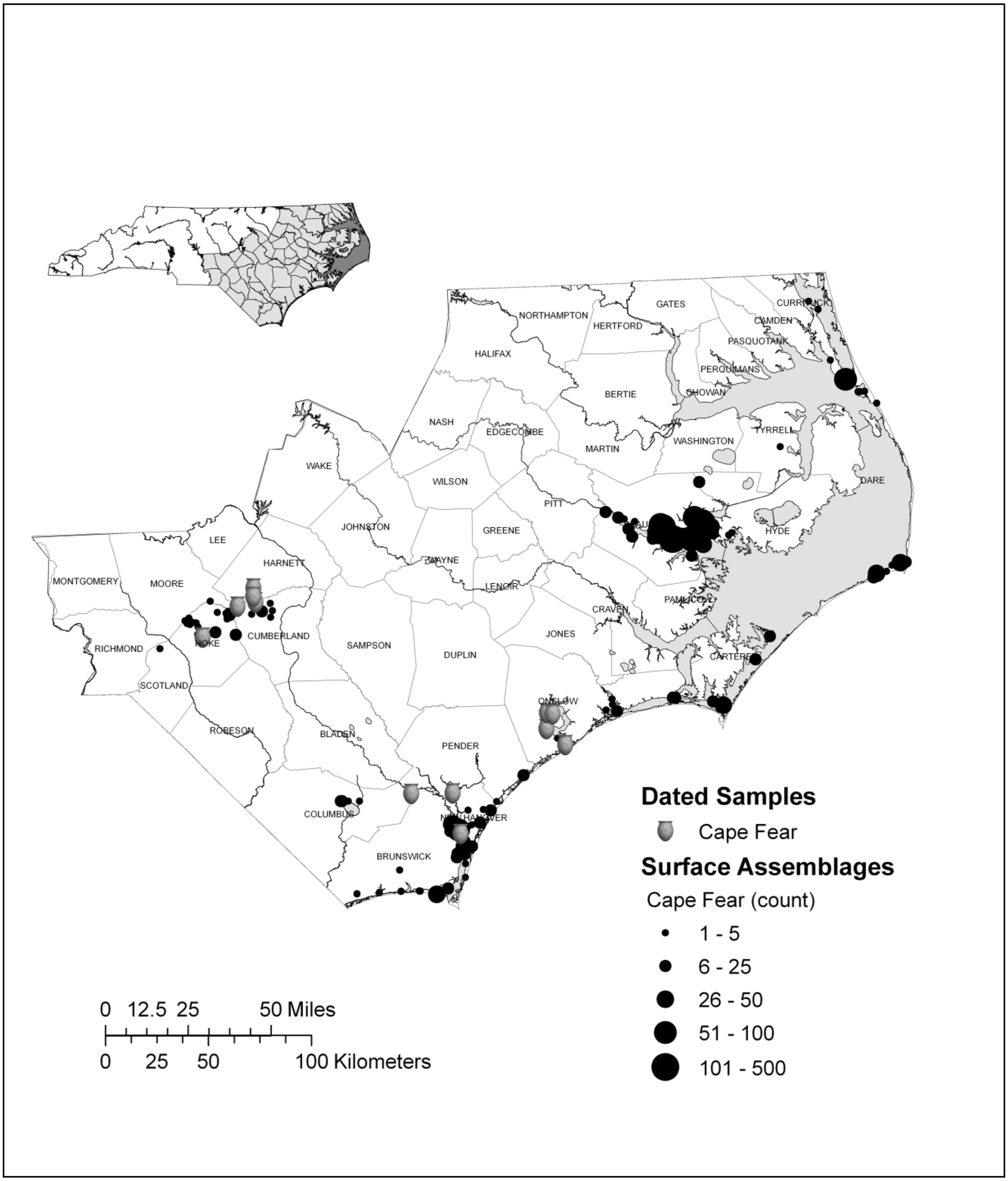


Figure 4-9. Geographic distribution of the Cape Fear series.

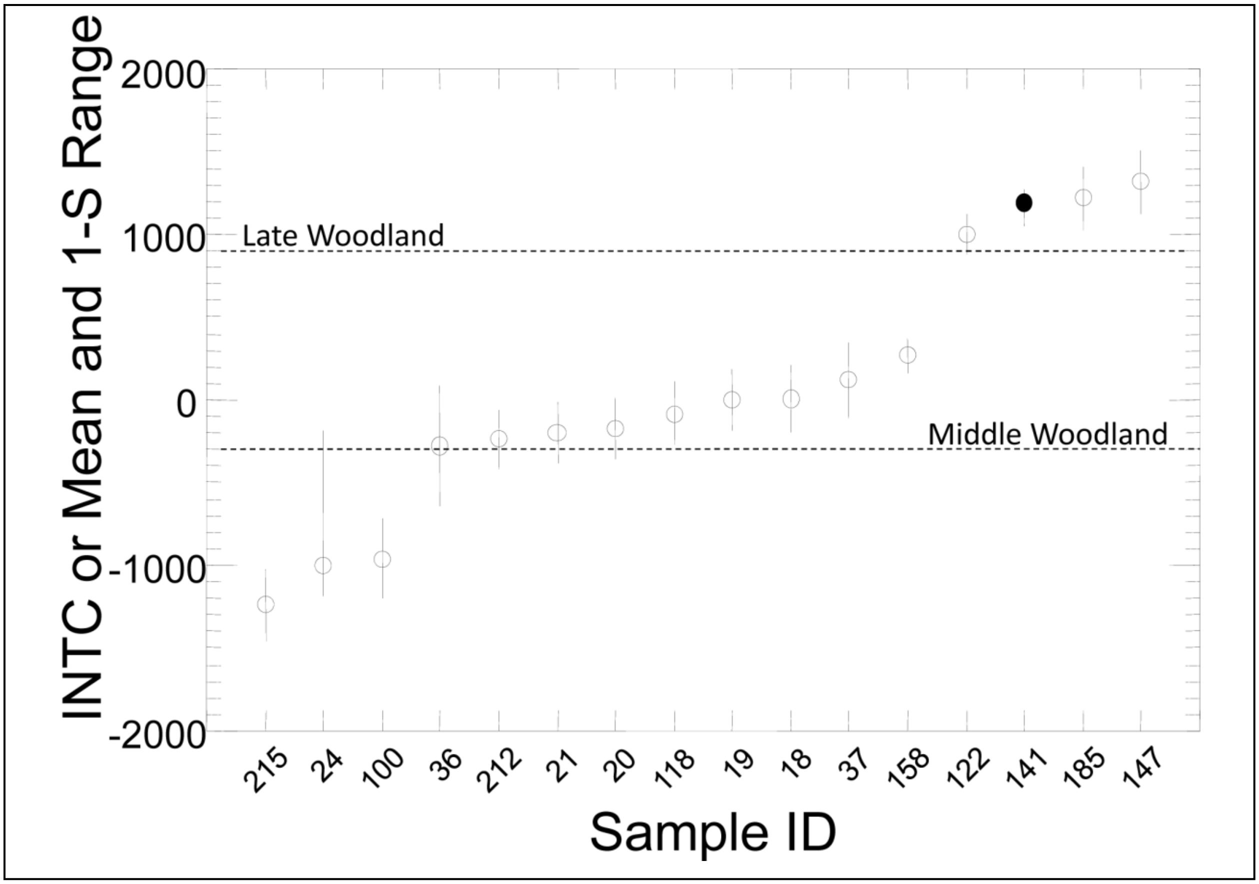


Figure 4-10. Dates associated with the Cape Fear series.

simple conical jar forms with unrestricted necks (Potter 1982:124). The geographic distribution of this ware is quite broad, from Delaware to central North Carolina (Herbert 2008). Potter (1982:124) suggested that among Mockley materials from the Northern Neck of Virginia, cord marking was more common in the earlier part of the phase, and net impressing more common in the later part. This sequence appears to be reversed in southern Maryland (Herbert 1995:20) and on the coast of North Carolina, where net impressing is the more common of the two surface-treatment styles early in the sequence, with cord marking becoming more popular in the later part of the period, persisting into the earliest portion of the Late Woodland (A.D. 800–900).

Mockley series pottery has been dated to the latter half of the Middle Woodland period with dates ranging from about A.D. 200 to A.D. 880 (Artusy 1976:9; Barka and McCary 1977:43; Gardner and McNett 1971:29; Opperman 1980:4; Potter 1982:121; Waselkov 1982).

THE LATE WOODLAND

Townsend

Late Woodland Townsend series pottery is found throughout the Middle Atlantic Chesapeake region including coastal Delaware, Maryland, Virginia and North Carolina (Blaker

1963; Clark 1976:178–208; Egloff and Potter 1982:107–108; Griffith 1982; Herbert 2003; Peck 1978:19–22; Potter 1993:114–119; Stephenson et al. 1963; Steponaitis 1980:16, 1986:191–192; Wright 1973:16–24). Blaker (1963) originally defined the Townsend series as a shell-tempered, fabric-impressed ware, and several types were subsequently defined on the basis of decorations made by incision or direct cord-impression (Clark 1976:178–208; 1980; Peck 1978:19–22; Steponaitis 1980:16, 1986:191–192; Wright 1973:16–24). The shell-tempered pottery defined by Phelps (1983) as Colington Fabric Impressed, and that defined by Loftfield (1976) as White Oak Fabric Impressed appear to be identical to Townsend, or practically so based on current data, and should be considered as part of the Townsend series. Marshall (1999) suggests that Colington Fabric Impressed and White Oak Fabric Impressed be distinguished based on the extent of stamping on the interior of vessel necks. Should such differences prove to apply to larger samples from a broader region, this might be interpreted as local, or sub-regional, variation in the Townsend Fabric Impressed type. This would also be the case should future analyses demonstrate sub-regional differences in the frequency of occurrence, or style, of decorative incising. Certainly, the demonstration of variation in stylistic elements from one locale to another could indicate territorial boundaries of different cultural or ethnic groups, or the social influence of potters with different pottery making techniques.

The distribution of the Townsend series extends to the lower Cape Fear basin, although it is not common on sites south of the New River (Figure 4-11). In contrast, Townsend Fabric Impressed pottery is the principal Late Woodland marker for sites in the New River basin, Pamilico, and Albemarle Sound region.

Currently, there are 66 dates associated with Townsend series pottery from North Carolina (Figure 4-12). These data include a radiocarbon assay of clam shell (193±60 B.C.) from the Uniflite site (Loftfield 1979) that is not considered to be accurately associated with Townsend pottery, and is not included in the graphed data. The remaining 65 dates range from A.D. 536–1784, with 60 percent of the dates occupying a 300-year period, A.D. 1200–1500 (Figure 4-12). There is some suggestion that incised decorative motifs executed on Late Woodland shell-tempered pottery from the North Carolina coast may be geographically and temporally diagnostic, but the nature of these patterns has yet to be documented.

Colington

Roanoke Simple Stamped was defined for shell-tempered, simple-stamped pottery found on Roanoke and Hatteras Islands (Blaker 1952:257–258; Harrington 1948:251–252). This ware was subsequently renamed Colington Simple Stamped (Phelps 1983). Colington Simple Stamped comprises two varieties of simple stamping, invariably executed on shell-tempered vessels. The first is characterized by narrow (typically < 3 mm) impressions with rounded cross section, and the second, more common type is characterized by wide (about 5 mm) flat impressions that are rather shallow, suggesting that they were applied when the vessel was approaching the leather-hard stage of drying, or that the simple-stamped surfaces were partially smoothed following stamping.

The placement of the Colington Simple Stamped type outside of the Townsend series might be justified based on stylistic, geographic and temporal evidence. All of the Townsend series types, including the decorated types, Rappahannock Incised, Townsend Corded, and Townsend Herringbone, are executed on fabric impressed vessels (Blaker 1963:14–16; Potter

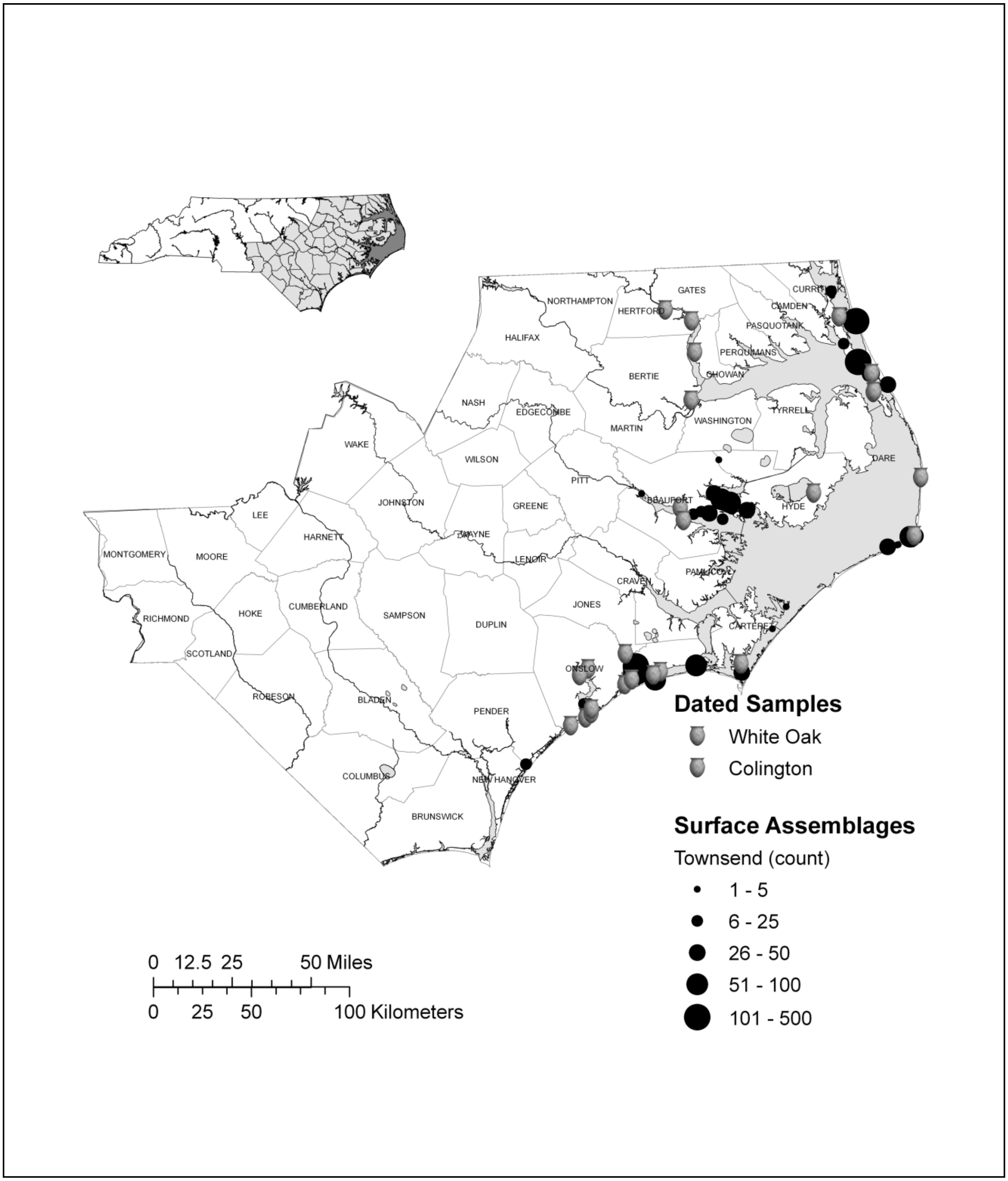


Figure 4-11. Geographic distribution of the Townsend series.

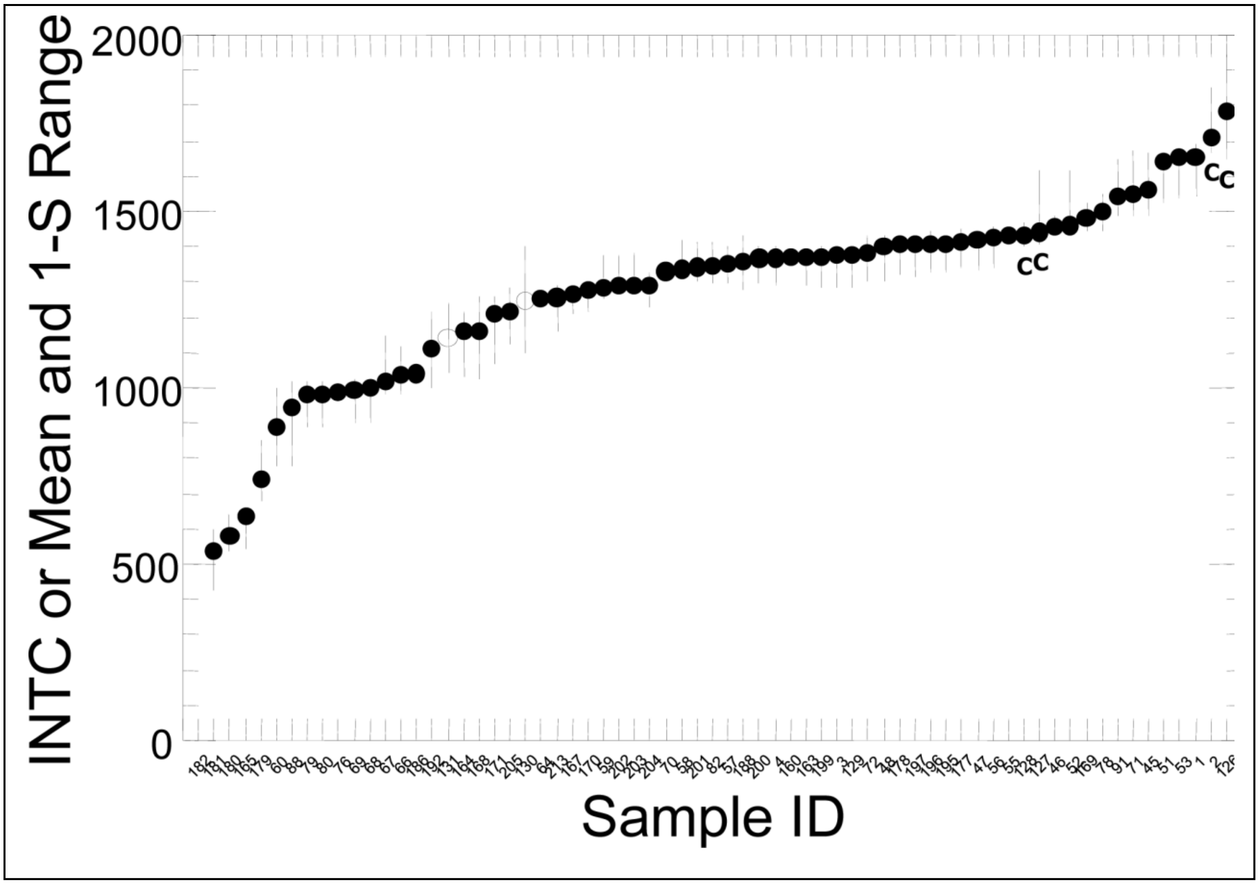


Figure 4-12. Dates associated with the Townsend series.

1982:127; Stephenson et al. 1963:109–110). Shell-tempered simple-stamped pottery is not found farther north than the southernmost coastal counties of Virginia, was not represented in the assemblages of Townsend series pottery from extensive excavations of shell middens on Virginia's Northern Neck (Potter 1982; Waselkov 1982), and is uncommon south of the Pamlico River. In surface collections from the North Carolina coast, Colington Simple Stamped appears to be common along the north bank of the lower Pamlico River, on Hatteras Island, Dare and Currituck Counties (Figure 4-13).

Four dates, included in the Townsend data set for North Carolina, are associated with Colington Simple Stamped pottery, and those four dates range in age from A.D. 1484–1734. All other dates associated with pottery classified as Colington series are undifferentiated as to surface treatment type and are here assumed to be associated with Colington Fabric Impressed, Townsend series. Based on this evidence, it would seem that the practice of simple stamping was adopted by the coastal makers of Townsend in the Proto-Historic period, perhaps influenced by communication with the Tuscarora makers of Cashie Simple Stamped pottery. There is little doubt that the practice of simple stamping was incorporated into an already mature tradition that specialized in the production of shell-tempered pottery; a tradition with considerable time depth in coastal North Carolina (Herbert 2008).

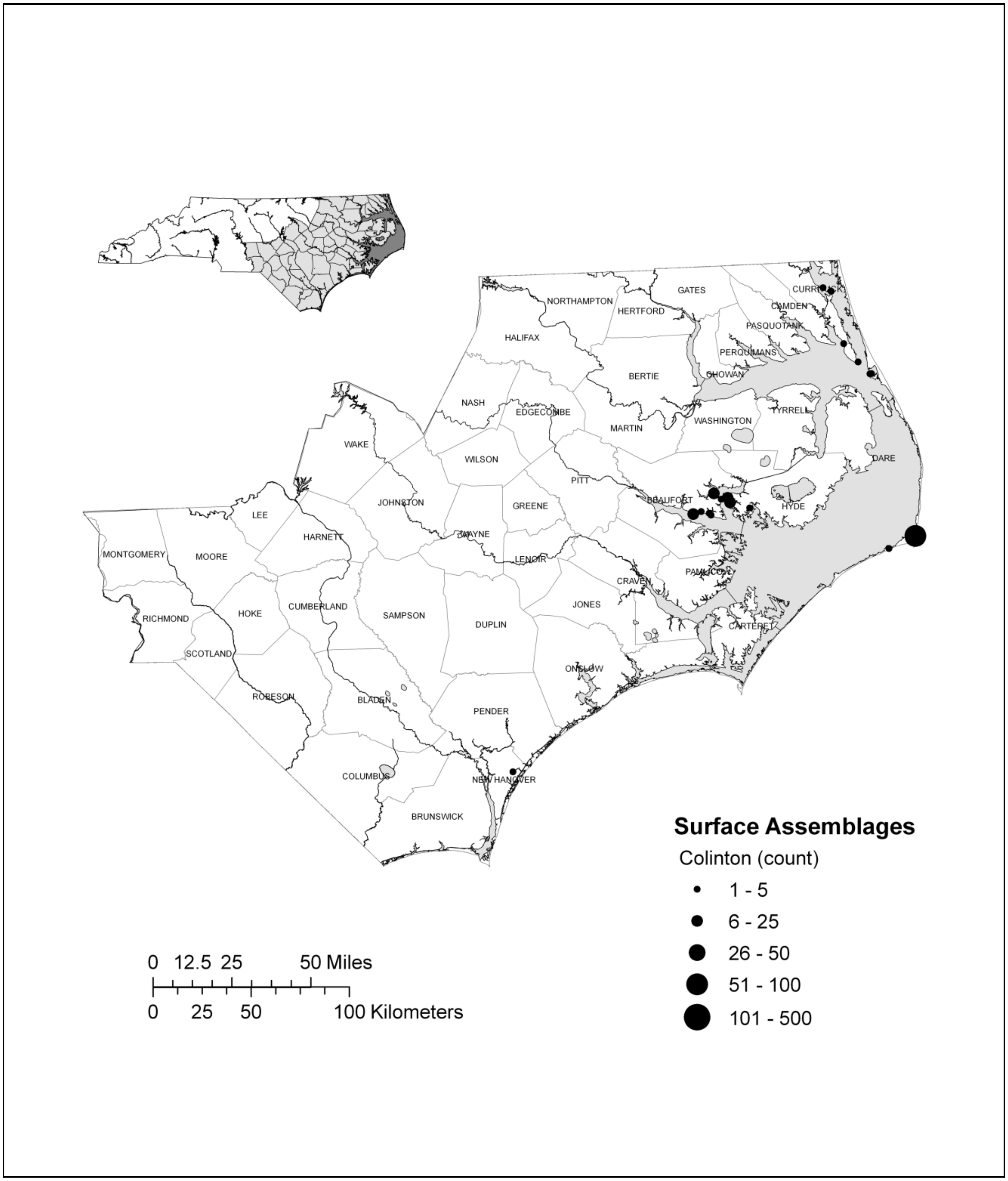


Figure 4-13. Geographic distribution of the Colington series.

Cashie

The Cashie phase and pottery series was first described by Phelps (1983) and later revised (Phelps and Heath 1998), based on data recovered from several key sites in the northern Coastal Plain (Herbert 2003). The Cashie series is tempered with quartz sand in a range of size grades up to granule and pebble and includes fabric-impressed, simple-stamped, incised, and plain types. In addition, Phelps and Heath (1998) note that floated or very well smoothed interiors is another common feature. Cashie simple-stamped is considered equivalent to Gaston simple-stamped (Coe 1964) from the Roanoke Rapids area, and to Branchville (Binford 1964) and Sturgeon Head (Smith 1971) in the Meherrin and Nottoway River basins. Minority surface treatment types found in the Gaston and related series (e.g., cord-marked, cob-marked, and check stamped) have not been observed in the Cashie series.

The extensive and unique ceramic assemblage from the Neoheroka Fort site (Heath, this volume) provides an exceptional example of pottery from the final decades of the Cashie phase that has allowed Phelps and Heath (1998) to discriminate two periods within the Cashie series, comprising four vessel forms including large conoidal-based jars, small, thin-walled jars, bowls, and dippers. Large and small jars are primarily simple-stamped while bowls and pouring vessels are mostly fabric impressed. Decoration, usually restricted to the rim and neck, generally consists of punctated patterns including solid and hollow circles, solid semicircles and ovoid shapes. Incising is also common, especially on the small jar forms. Paste, temper and construction methods do not change significantly between Cashie I (A.D. 1200–1650), and Cashie II (A.D. 1650–1715), although fabric impressing and some vessel form variants disappear, leaving a less rich array in the Colonial period.

Cashie series pottery has been found on sites from the Neuse to the Meherrin River in southeastern Virginia, and from the Piedmont fall line to the westernmost tidal estuaries of the Pamlico and Albemarle Sounds. Ten radiocarbon dates are currently associated with Cashie pottery, ranging from A.D. 778–1665 (Figure 4-14). The two oldest dates in this sequence, from the Tower Hill (Eastman et al. 1997) and Thorpe (Phelps 1980a) sites, are not unimpeachable; at Tower Hill, the dated feature was complex and mixing cannot be ruled out, and at the Thorpe site the dated feature did not actually include Cashie pottery. Excluding these two, the range for Cashie series pottery is A.D. 1230–1665.

Swansboro

The Swansboro series is thought to date to the latest portion of the Late Woodland period, the Contact, and Colonial periods. This ware may be related to the Yeocomico series found on the Virginia coast (Potter 1982; Waselkov 1982) and to the Warekeck series (Binford 1965), a Colono-ware found on sites in southeastern Virginia, principally in Southampton County. Taxonomically, it is not included in the Townsend series, but it appears to be a late manifestation of the shell-tempering tradition and future researchers may choose to classify it as a component type in the Townsend series.

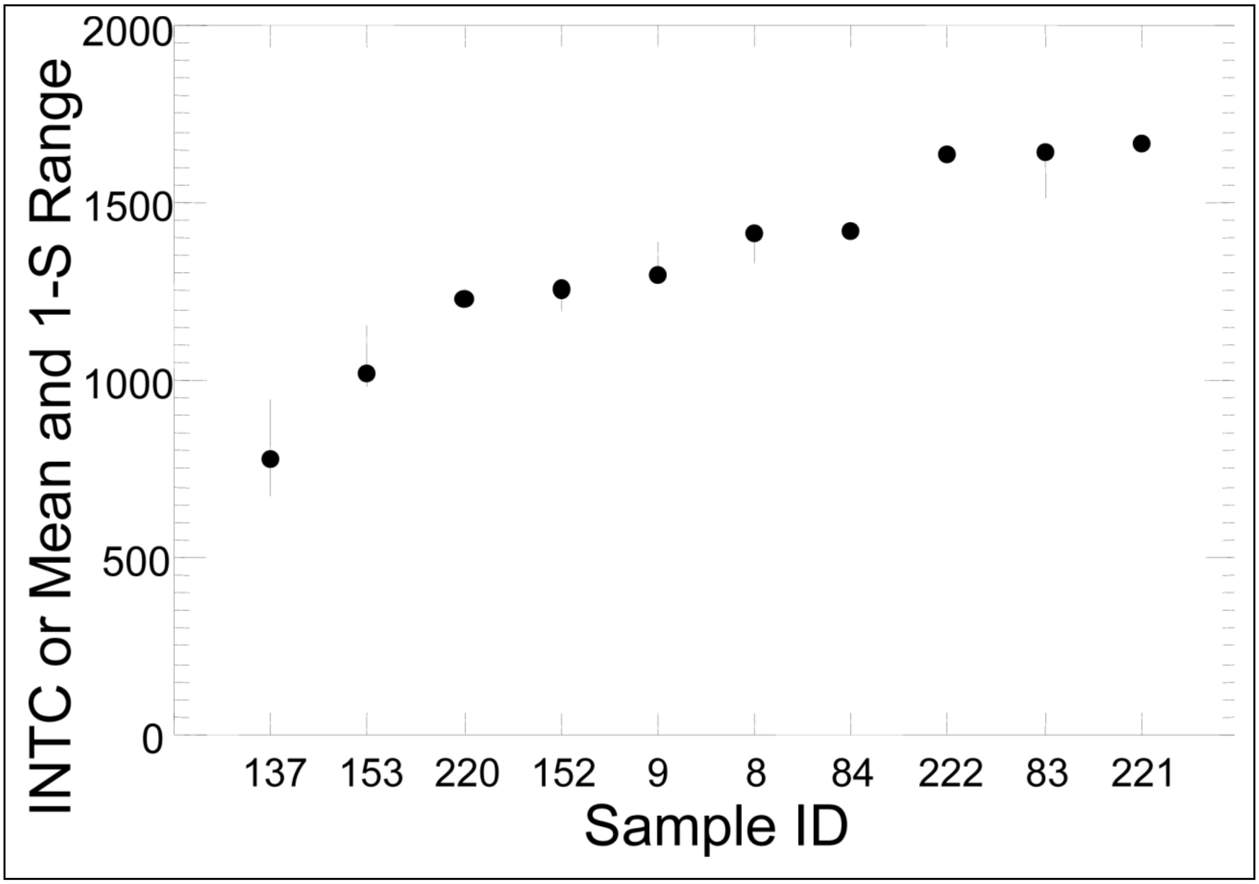


Figure 4-14. Dates associated with the Cashie series.

Brunswick

Brunswick is a Pre-Contact–Colonial period (A.D. 1400–1700) series defined by South (1960) to describe Colono-Indian ware found at Brunswick Town and Bath, North Carolina. Brunswick shares with other colono-wares from coastal Virginia and South Carolina the characteristics of fine paste, burnished finish, and mimicry of European vessel forms.

CHALLENGES AND DIRECTIONS

The foregoing synopsis describes typological conventions and chronometric results that raise questions and pose challenges for future research. In the following discussion I draw attention to some of the more obvious areas of concern, inquire into their causes, and suggest possible steps for addressing them.

Some difficulty arises from the fact that most Woodland pottery is not ornamental, but utilitarian; mostly consisting of cooking pots with few decorations adorning simple rim forms, applied to a relatively narrow range of vessel shapes. Pottery styles apparently persisted many hundred years with perhaps 40 or 50 generations of potters replicating very similar styles, regardless of their ethnic or linguistic affiliation. In other words, the pottery in question is often characterized by an array of traits that exhibit very little change over long periods of time and vast geographic regions. As a consequent, archaeologists have sought leverage through the observation of slight shifts in temper constituents over time and space that might reflect the contours of the prehistoric cultural landscape. An important challenge to future research in coastal North Carolina will be to determine the extent to which temporal and geographic differences in the tempering traits observed in archaeological pottery reflects purposive pottery making practices that relate to culturally transmitted traditions.

Temper Types and Surface Treatments

Without question, significant difficulties are presented by sand-tempered pottery, and this problem is generally acknowledged throughout the Southeast. For example, a comprehensive list of pottery types appearing in technical reports submitted to the Office of Archaeological Research in Alabama was recently compiled, described, and mapped (Futato 1998). A quick perusal of the table of contents indicates no less than 149 different types of sand-tempered pottery. Even accounting for the variation in surface treatment that distinguishes many of these types, there also exists a great deal of redundancy, which may tend to mask rather than illuminate regional cultural patterns. Fortunately, in coastal North Carolina we have many fewer sand-tempered types with which to contend. Our situation is nevertheless challenging. The practice of adding sand to clay paste appears in the earliest pottery tradition, Stallings, and persists through the Colonial period. Sand-tempered fabric-impressed pottery is characteristic of Early Woodland New River, Middle Woodland Cape Fear, Middle Woodland Mount Pleasant, Late Woodland Middle Town, and Contact and Colonial period Cashie types. The distinction between these types must be demonstrable; differences in geographic or chronometric context are not sufficient to justify the definition of a ceramic taxon.

Another area of concern for distinguishing temper classes is the accurate identification of grog. Less is actually known about the characteristics of grog-tempered pottery than might be hoped. South (1960) described Hanover as “sherd tempered” leaving no doubt about the source of grog particles. Loftfield’s (1976:154) description of Carteret (Hanover) temper as crushed sherds, or “fire-hardened pieces of clay” that “soften and lose definition in relation to the plastic portion of the paste”. Such a characterization suggests that the “grog” may be something other than crushed pottery. In retrospect, the shift from the identification of crushed sherds, to hardened clay, and ultimately to lumpy paste, appears to represent a slippery taxonomic slope upon which one could slide from purposefully added crushed pottery, to naturally occurring lumpy clay representing very different technological processes. At the same time this blurring of class distinctions has taken place, ceramic petrography has risen in popularity. Unfortunately, ceramic petrographers have no more experience distinguishing between crushed sherds, fire-hardened clay, and natural lumps than do archaeologists. The petrographers’ job is further complicated by commonly occurring argillaceous clots, ferric or limonitic concretions, and opaque bodies (Cuomo di Caprio and Vaughan 1993; Whitbread 1986, 1987) that may look a lot like grog. Consequently, at present there is considerable uncertainty about the perceptible characteristics that distinguish grog from natural inclusions.

In both the instances mentioned, sand and grog temper must be identified with care and described in detail (see, Espenshade 1996:44–46). The chances for accurate identification are immensely improved by low-powered (10-x) binocular microscopy with fiber-optic lighting, focusing on freshly broken or cut and polished sherd cross-sections. Description of particle sizes with Wentworth classes (Shepard 1985:118, Table 5), and particle angularity and relative abundance descriptions that follow standard soil science protocols (Schoeneberger et al. 2002; U.S. Department of Agriculture 2002) could also help to sharpen distinctions. Future research and experimentation will be critical in addressing concerns with distinguishing incidental naturally occurring inclusions from temper.

Expanding Date Ranges

The contributions to Middle and Late Woodland research provided by the Contentnea Creek (Millis 2001) and Mabry Bridge (Bamann 2004) projects cannot be overestimated. The many radiocarbon dates for features in which Mount Pleasant pottery, Roanoke triangular projectile points, and maize was found provide unequivocal evidence of a Late Woodland component characterized by pottery consistent with the Mount Pleasant culture phase, but in this case dating as late as A.D. 1300 (Millis, this volume). At the Contentnea Creek site, the frequency of Mount Pleasant Fabric Impressed pottery (88 percent) was much higher than Mount Pleasant Cord Marked (8 percent) but otherwise, the pottery found in the features that dated to the Late Woodland period is essentially indistinguishable from earlier Mount Pleasant ware. Future research focused on precise documentation of Mount Pleasant pottery from dated contexts is needed to expose additional temporally sensitive differences.

Mitigation of the Wiccocan site (31HF99) recovered an assemblage of several thousand sherds consisting entirely of pottery identified as Mount Pleasant series (Holm et al. 1999). Careful analysis of variation in particle size led Holm and others (1999:41–52) to conclude that six subsets of temper could be lumped into two broad classes: one with granule and pebble sized quartz inclusions, and one without. The former class, with larger inclusions, was interpreted as Mount Pleasant, following Phelps'original definition for the series, and comprised 38 percent of the identifiable pottery from the site. The second class, also considered representative of the Mount Pleasant series but lacking granules, comprised 62 percent of identifiable sherds. Although members of these two temper classes were not dated at the Wiccocan site, the authors conclude that the materials lacking granules are a late variant of the Mount Pleasant series referred to as Middle Town (Holm et al. 1999:45–46, Table 5). As part of the Pomeiooc Project (Green 1987:23), Middle Town was defined as a provisional taxon for sand-tempered pottery from "closed stratigraphic context below the Colington occupation" at site 31HY43. Recent reanalysis of the pottery from the Bandon site (31CO1) shell midden clearly illustrates a similar pattern: granule-tempered, net-impressed pottery dominates the lowest five levels and very coarse, sand-tempered, fabric-impressed ware exhibits the highest relative abundance in the upper ten levels (Herbert 2003:84–94). This very coarse sand-tempered ware from the Bandon site was tentatively classified to the Cape Fear series to emphasize a lack of conformity to the definition of Mount Pleasant that specifies the presence of pebble inclusions, but perhaps classifying it to the Mount Pleasant series Middle Town type, would be more appropriate. Proposing a Late Woodland Mount Pleasant type lacking pebble inclusions is not without problems: the Mount Pleasant pottery from the Contentea Creek site that was dated to the Late Woodland period *is* tempered with granules. So it seems there remain some important gaps in our knowledge regarding sand-, or pebble-tempered ware from the northern coastal region. Future research that distinguishes these temper types, documents and dates single-type components, and assesses the geographic distribution of these types is necessary to evaluate the appropriateness of the proposed Middle Town type and its relationship to the Mount Pleasant series.

Another surprising development over the past decade is the significant number of Late Woodland dates associated with Hanover pottery. With 35 percent of the 48 dates for Hanover pottery now falling in the Late Woodland period, the question could reasonably be asked whether the Late Woodland pottery classified as Hanover differs in any way from that dating to the Middle Woodland period. Answering this will of course require an in-depth comparison of Hanover collections.

Moreover, this expansion of the date range for Hanover is exactly what might be expected to result if the identification of grog has become less precise or more inclusive over the last 25 years (the slippery slope referred to earlier). If the criteria for classifying pottery as Hanover has shifted from the identification of curshed sherds as temper, to hardened clay lumps, or lumpy paste, then this shift could potentially result in an expansion of geographic and temporal domains; the meaning of the series definition having shifted from one focused on detecting the technological process of using crushed pottery as temper, to one reflecting the use of clay resources with inherently lumpy texture. Solving this potential problem will require a systematic evaluation of clay resources in the region, and replication of technological processes necessary to provide unequivocal examples of the traits exhibited by pottery made using each of the two methods.

Without a doubt, the analysis of pottery from the North Carolina Coastal Plain has become a more sophisticated science over the past quarter century. Accelerator mass spectrometry dating of surface soot and sherd organics, together with luminescence, have greatly expanded opportunities to obtain absolute age estimates that more accurately date the cultural event of interest. The routine use of low-powered microscopy, petrography, and optical mineralogy is elevating to a new level analytical methods for identifying and quantifying ceramic constituents. The data resulting from these advances holds great promise for resolving some of the problems mentioned above, but the effectiveness of future research will be measured by the degree to which it explains phenomena in the context of a clear understanding of the technological processes appropriate to the historic cultures of interest.

Table 4.1. Chronometric Data and Associated Woodland Pottery from Coastal North Carolina.

Sample[a]	Site	Name	Target	Lab Number	Material	Age[b]	Error[c]	2-σ[d]	1-σ	Intercepts or Mean	1-σ	2-σ	Reference
126	31HY43	Amity	Colington Simple Stamped	B-31110	charcoal[e]	210	50	1530	1648	1665, 1784, 1789	1947	1949	Gardner 1990
2	31BF58	Midgette Point	Townsend and Hanover Series[f]	Si-1	oyster shell[g]	320	60	1566	1666	1707	1850	1950	Claassen 1980
117	31HT355	Fort Bragg	Hanover I Fabric Impressed, var. 3[h]	UW-445	TL	324	59	1559	1616	1675	1734	1791	Herbert et al. 2002
221	31WL37	Contentnea Creek	Cashie; Mount Pleasant; Series-1 (provisional)	B-136679	wood charcoal	210	70	1615	1645	1665	1685	1955	Millis 2001
1	31BF25	Archbell Point	Colington Simple Stamped	Si-2	oyster shell	570	60	1488	1546	1655	1691	1816	Claassen 1980
53	31CR218	Broad Reach	Townsend	B-58943	human bone[i]	410	70	1479	1534	1653	1681	1943	Mathis 1999
219	31W170		Mount Pleasant	B-48782	charcoal	270	50	1484	1525	1645	1662	1946	Hargrove 1992
51	31CO5	Hollowell	Townsend	B-73740	human bone	490	60	1476	1524	1641	1666	1796	Hutchinson 2002
83	31ED333	Mabrey Bridge	Cashie Simple Stamped; Mount Pleasant Fabric Impressed	B-178118	charcoal	290	60	1460	1510	1640	1660	1950	Bamann 2004
222	31WL37	Contentnea Creek	Cashie; New River; Series 2 (provisional)	B-132253	wood charcoal	300	50	1460	1615	1635	1650	1665	Millis 2001
45	31CK9	Baum	Townsend	UGa-1089	oyster shell	635	70	1442	1490	1562	1665	1706	Phelps 1980b, 1983
71	31DR14	Kitty Hawk Bay	Townsend	UGa-3847	oyster shell	630	80	1437	1488	1547	1672	1796	Phelps 1981a
91	31HF30	Liberty Hill	Townsend Fabric Impressed	B-8134	nutshell	310	50	1451	1490	1531, 1545, 1635	1649	1790	Phelps 1984b
38	31CD594	Fort Bragg	Hanover II Fabric Impressed, var. 2	UW-397	TL	496	156	1197	1347	1503	1659	1809	Herbert et al. 2002
78	31DR33	White Court	Townsend Fabric Impressed	UGa-1087	oyster shell	720	65	1402	1444	1498	1551	1660	Phelps 1981a
119	31HT392	Fort Bragg	Hanover II Fabric Impressed, var. 2	UW-447	TL	518	58	1367	1423	1481	1539	1595	Herbert et al. 2002
169	31ON305	Flynt, Ossuary	Townsend	B-30209	human bone	560	60	1415	1442	1479	1526	1645	Loftfield 1987b
223	31WL37	Contentnea Creek	none noted	B-132256	maize	400	70	1410	1575	1460	1625	1650	Millis 2001
52	31CR14	Piggott	Townsend	B-72741	human bone		20	1420	1440	1460	1620	1640	Truesdell 1995
46	31CK9	Baum	Townsend	B-77127	human bone	640	40	1421	1439	1456	1486	1521	Phelps, personal communication 1997
54	31CR218	Broad Reach	none noted	B-58947	wood charcoal	500	50	1407	1430	1444	1473	1622	Mathis 1999
127	31HY43	Amity	Colington Simple Stamped	B- 17507	wood charcoal	450	100	1300	1405	1441	1616	1652	Gardner 1990

Sample[a]	Site	Name	Target	Lab Number	Material	Age[b]	Error[c]	2-σ[d]	1-σ	Intercepts or Mean	1-σ	2-σ	Reference
128	31HY43	Amity	Colington Simple Stamped	B-34062	charcoal	480	80	1302	1403	1434	1469	1631	Gardner 1990
55	31CR218	Broad Reach	Townsend	B-52529	wood charcoal	480	50	1331	1412	1434	1445	1483	Mathis 1999
56	31CR218	Broad Reach	Townsend; Hanover	B-53075	human bone	670	80	1297	1337	1424	1459	1522	Mathis 1999
47	31CK9	Baum	Townsend	B-73734	human bone	510	60	1304	1334	1421	1441	1478	Phelps, personal communication 1997
84	31ED333	Mabrey Bridge	Mount Pleasant, Cashie	B-178119	nutshell	510	30	1400	1410	1420	1430	1440	Bamann 2004
177	31ON33	Uniflite	Townsend; Hanover	UGa-2552	oyster shell	855	50	1303	1338	1415	1449	1490	Loftfield 1979
10	31BW73	Bluff Island	Hanover I Fabric Impressed, var. 1	B-7353	charcoal	830	50	1302	1325	1415	1437	1448	Wilde-Ramsing 1984:73
8	31BR7	Jordan's Landing	Cashie (ladle)	UGa-1086	charcoal	525	70	1298	1328	1414	1440	1480	Phelps 1983
224	31WL37	Contentnea Creek	Series-1 (provisional)	B-136688	maize	550	60	1295	1390	1410	1425	1445	Millis 2001
195	31ON665	Hammocks Beach West	Hanover Cord-Marked; Mockley Net-Impressed; Townsend Fabric-Impressed	B-127359	wood charcoal	540	50	1302	1329	1409	1431	1443	Daniel (1999:160) Table 8.1
196	31ON665	Hammocks Beach West	Townsend	B-127369	oyster shell	870	60	1290	1325	1407	1446	1490	Daniel (1999:160, Table 8.1).
197	31ON665	Hammocks Beach West	Hanover Fabric-Impressed; Townsend Fabric-Impressed and Plain	B-127360	charcoal	550	70	1292	1313	1406	1435	1353	Daniel (1999:160) Table 8.1
198	31ON665	Hammocks Beach West	none noted	B-127364	wood charcoal	550	60	1297	1322	1406	1431	1445	Daniel (1999:160) Table 8.1
178	31ON33	Uniflite	Townsend	UGa-2550	charcoal	550	65	1295	1318	1406	1433	1449	Loftfield 1979
225	31WL37	Contentnea Creek	Series-1 (provisional); Series-2 (provisional); Hanover; Roanoke Small Triangular	B-136686	wood charcoal	570	60	1290	1380	1405	1425	1440	Millis 2001
143	31NH331	Eagle Point	Hanover	B-128620	wood charcoal	560	50	1298	1322	1403	1422	1439	Hargrove 2000
48	31CK9	Baum	Townsend	B-73735	human bone	560	80	1284	1302	1403	1435	1471	Phelps, personal communication 1997
72	31DR14	Kitty Hawk Bay	Townsend Fabric Impressed	UGa-1090	oyster shell	905	65	1258	1305	1385	1432	1473	Phelps 1981a
129	31HY43	Amlty	Townsend	B-30866	charcoal	660	50	1275	1286	1299, 1375, 1375	1390	1404	Gardner 1990
3	31BR1	Shipyard Landing	Townsend Fabric Impressed; maize	B-4395	wood charcoal	660	60	1262	1284	1299, 1375, 1375	1393	1410	Phelps 1983

Sample[a]	Site	Name	Target	Lab Number	Material	Age[b]	Error[c]	2-σ[d]	1-σ	Intercepts or Mean	1-σ	2-σ	Reference
199	31ON665	Hammocks Beach West	coarse sand-tempered (uspecified); Hanover Fabric Impressed; Townsend Fabric Impressed	B-127363	wood charcoal	650	70	1258	1284	1301, 1372, 1378	1398	1423	Daniel (1999:160) Table 8.1
160	31ON190	Cape Island	New River Simple Stamped; Townsend Plain	B-104465	charred wood	650	60	1266	2186	1301, 1372, 1378	1396	1413	Jones, Espenshade and Kennedy 1997
163	31ON196	Permuda Island	Townsend Fabric Impressed	B-11939	charcoal recovered from washings	650	50	1277	1289	1301, 1372, 1378	1393	1407	Loftfield and Watson 1985
176	31ON309	Jarretts Point	none noted	UGA-5467	human bone	615	65	1264	1297	1318, 1368, 1387	1408	1430	Loftfield 1987a; 1990
200	31ON665	Hammocks Beach West	Townsend Fabric Impressed	B-127357	wood charcoal	630	50	1281	1295	1304, 1367, 1385	1398	1414	Daniel (1999:160) Table 8.1
4	31BR1	Shipyard Landing	Townsend Fabric Impressed; Roanoke Triangular point	B-4394	nutshell and wood	630	60	1277	1293	1304, 1367, 1385	1401	1423	Phelps 1983
188	31ON624	Jarman Point (NRAS)	Hanover; sand/grit tempered (unspecified); shell/grog tempered (unspecified)	B-112272					1275	1355	1435		Botwick and Neville 1998
57	31CR218	Broad Reach	Townsend	B-58944	wood charcoal	610	50	1285	1299	1323, 1350, 1390	1403	1423	Mathis 1999
82	31DR38	Hatteras Village	Townsend	B-77128		600	70	1279	1297	1327, 1346, 1393	1413	1439	Phelps, personal communication 1997
201	31ON665	Hammocks Beach West	Townsend Fabric Impressed	B-127366	wood charcoal	590	60	1286	1300	1329, 1343, 1395	1413	1437	Daniel (1999:160) Table 8.1
58	31CR218	Broad Reach	Townsend Fabric Impressed	B-58946	wood charcoal	570	50	1297	1312	1334, 1336, 1400	1417	1438	Mathis 1999
189	31ON624	Jarman Point (NRAS)	none noted	B-112271					1235	1330	1425		Botwick and Neville 1998
70	31DR1	Cape Creek	Colington I Phase, Townsend series	B-140202	scallop shell	1030	70	1250	1295	1320	1310	1445	Phelps personal communication 2008
147	31NH690	Papanow	Cape Fear Cord Marked, var. 2	UW-225	TL	631	192	943	1127	1319	1511	1695	Herbert 1997
226	31WL37	Contentnea Creek	Mount Pleasant; Series-1 (provisional); Series-2 (provisional); Roanoke Small Triangular	B-136687	wood charcoal	650	60	1265	1285	1300	1395	1415	Millis 2001

Sample[a]	Site	Name	Target	Lab Number	Material	Age[b]	Error[c]	2-σ[d]	1-σ	Intercepts or Mean	1-σ	2-σ	Reference
9	31BR7	Jordan's Landing	Cashie	B-73742	charcoal	670	60	1258	1282	1297	1390	1407	Phelps, personal communication 1997
227	31WL37	Contentnea Creek	Series-2 (provisional)	B-136684	wood charcoal	670	60	1255	1280	1295	1315	1410	Millis 2001
202	31ON665	Hammocks Beach West	Hanover Fabric Impressed; Townsend	B-127365	wood charcoal	700	50	1243	1278	1290	1379	1394	Daniel (1999:160) Table 8.1
203	31ON665	Hammocks Beach West	Townsend Fabric Impressed	B-127368	wood charcoal	700	70	1214	1268	1290	1385	1404	Daniel (1999:160) Table 8.1
204	31ON665	Hammocks Beach West	Hanover Fabric Impressed; Townsend Fabric Impressed; Townsend Plain	B-127361	oyster shell	1020	60	1158	1229	1290	1326	1408	Daniel (1999:160) Table 8.1
228	31WL37	Contentnea Creek	Mount Pleasant; Roanoke Small Triangular	B-136685	wood charcoal	700	60	1225	1270	1290	1305	1400	Millis 2001
142	31NH330	Feature 7	Hanover Fabric Impressed; New River Simple Stamped; New River Fabric Impressed		charcoal	730	60	1257	1275	1282	1291	2198	Hargrove 2000
59	31CR218	Broad Reach	Townsend	B-58945	wood charcoal	730	70	1164	1255	1282	1376	1396	Mathis 1999
42	31CD7	McClean Mound	Hanover II Fabric Impressed; Pee Dee Plain	B-145510	wood charcoal	760	100	1033	1192	1276	1376	1403	Herbert et al. 2002
170	31ON305	Flynt	Townsend	B-12816	not specified	760	70	1159	1218	1276	1294	1388	Loftfield 1987b
243	31DR1	Cape Creek	Colington I Phase: Townsend series	B-115587	scallop shell	1150	60	1160	1220	1275	1305	1345	Phelps personal communication 2008
161	31ON190	Cape Island	none noted	B-104169				1020	1175	1270	1305	1420	Jones, Espenshade and Kennedy 1997
229	31WL37	Contentnea Creek	Mount Pleasant	B-136683	wood charcoal	770	60	1170	1220	1265	1285	1300	Millis 2001
73	31DR15	Rush Point	Mount Pleasant (with pebbles)	UGa-3849	oyster shell	1060	80	1048	1172	1265	1313	1405	Phelps 1981a
167	31ON235	Pelican Point	Townsend Fabric Impressed; Hanover Fabric Impressed; fine sand-tempered fabric impressed	B-842464	charred wood	780	70	1059	1211	1263	1287	1382	Hargrove 1996

Sample[a]	Site	Name	Target	Lab Number	Material	Age[b]	Error[c]	2-σ[d]	1-σ	Intercepts or Mean	1-σ	2-σ	Reference
213	31ON82	Hammocks Beach East	Townsend Fabric Impressed	B-11937	wood charcoal from flotation sample	800	90	1024	1161	1256	1287	1388	Loftfield 1986
152	31NS3	Thorpe	Cashie Simple Stamped; Cashie Fabric Impressed	UGa-3143	Charred hickory nutshells	800	65	1042	1189	1256	1282	1298	Phelps 1980a
64	31CR53	Shelly Point	Townsend	B-69590	shell	700	60			1250			Reid and Simpson 1994
130	31JN2	Long Point	Townsend	UW- 451	?	1249	149	957	1100	1249	1398	1541	Shumate and Evans 2000
190	31ON624	Cape Island	none noted	B-104167				1085	1180	1240	1285	1315	Jones, Espenshade and Kennedy 1997
191	31ON624	Jarman Point (NRAS)	none noted	B-112275					1175	1235	1295		Botwick and Neville 1998
220	31WL304	Toisnot	Cashie	B-240936	AMS-soot	810	40	1160	1210	1230	1260	1280	Beaman (2008)
85	31ED333	Mabrey Bridge	Mount Pleasant Fabric Impressed; Mount Pleasant Cord Marked	B-178121	charcoal	830	50	1050	1180	1220	1260	1280	Bamann 2004
185	31ON379	Courthouse Bay	Hanover Cord Marked; Hanover Fabric Impressed, Onslow Fabric Impressed; Townsend Fabric Impressed;	UW-633	TL	781	192	844	1028	1220	1412	1596	Greene and Millis 2003
124	31HT450	Fort Bragg	Hanover I Fabric Impressed, var. 2	UW-448	TL	780	256	717	965	1219	1475	1721	Herbert et al. 2002
205	31ON665	Hammocks Beach West	Hanover Fabric-Impressed; Townsend Fabric-Impressed; Townsend Plain	B-127362	oyster shell	1110	60	1039	1126	1218	1283	1318	Daniel (1999:160) Table 8.1
65	31CR53	Shelly Point	fabric impressed (unspecified)	B-69588	shell	830	60	1036	1161	1218	1275	1288	Reid and Simpson 1994
171	31ON305	Flynt	Onslow; Townsend Fabric Impressed	B-12815	charcoal	850	60	1027	1070	1212	1260	1283	Loftfield 1987b
230	31WL37	Contentnea Creek	Mount Pleasant; Roanoke Small Triangular	B-132252	nutshell	840	50	1040	1170	1210	1255	1275	Millis 2001
231	31WL37	Contentnea Creek	Mount Pleasant; Series-1 (provisional); Series-2 (provisional)	B-132257	wood charcoal	840	50	1040	1170	1210	1255	1275	Millis 2001

Sample[a]	Site	Name	Target	Lab Number	Material	Age[b]	Error[c]	2-σ[d]	1-σ	Intercepts or Mean	1-σ	2-σ	Reference
232	31WL37	Contentnea Creek	Mount Pleasant; Series-1 (provisional); Series-2 (provisional); Roanoke Small (provisional); Clarksville Triangular	B-136681	wood charcoal	840	60	1035	1160	1210	1260	1285	Millis 2001
144	31NH331	Eagle Point	Hanover	B-122725	shell			1050	1125	1200	1260	1295	Hargrove 1998
141	31NH28	Cold Morning	Cape Fear; Hamp's Landing	B-1285	human bone	1000	80	1012	1049	1191	1268	1298	Coe et al. 1982; Ward and Wilson 1980
86	31ED333	Mabrey Bridge	Mount Pleasant; Hanover; Cashie	B-178120	nutshell	870	40	1040	1160	1180	1220	1260	Bamann 2004
172	31ON305	Flynt	none noted	B-12353	charcoal	880	50	1024	1043	1163, 1173, 1180	1219	1264	Loftfield 1987b
233	31WL37	Contentnea Creek	Mount Pleasant; Roanoke Small Triangular	B-132260	nutshell	890	50	1025	1040	1170	1210	1255	Millis 2001
168	31ON235	Pelican Point	Townsend Fabric Impressed; Hanover Fabric Impressed	B-79500	charred wood	890	90	984	1024	1161	1256	1288	Hargrove 1996
164	31ON196	Permuda Island	Townsend Fabric Impressed; Carteret Fabric Impressed	B-11940	charcoal from washings	900	60	1018	1033	1160	1216	1264	Loftfield and Watson 1985
123	31HT435	Fort Bragg	Hanover	UW-796	TL	1156	226	713	930	1156	1382	1599	Abbott et al. 2005
131	31JN2	Long Point	Townsend	UW-452	TL	1141	99	947	1042	1141	1240	1335	Shumate and Evans 2000
184	31ON379	Courhouse Bay	Hanover Fabric Impressed; Hanover Plain	UW-632	TL	885	105	910	1011	1116	1221	1322	Greene and Millis 2003
132	31JN2	Long Point	Townsend; Mount Pleasant; Hanover	B-130060	charcoal	940	60	989	1021	1040, 1100, 1116, 1141, 1151	1183	1222	Shumate and Evans 2000
140	31NH142	Hamp's Landing	Hanover	B-63184	shell?					1110			Hargrove 1993
192	31ON624	Jarman Point (NRAS)	sand/grit temper (unspecified); Hanover; Townsend	B-112273					1000	1108	1215		Botwick and Neville 1998
87	31ED333	Mabrey Bridge	Mount Pleasant Cord Marked; Mount Pleasant Fabric Impressed	B-178117	charcoal	930	40	1020	1030	1050, 1100, 1140	1170	1200	Bamann 2004

Sample[a]	Site	Name	Target	Lab Number	Material	Age[b]	Error[c]	2-σ[d]	1-σ	Intercepts or Mean	1-σ	2-σ	Reference
234	31WL37	Contentnea Creek	Mount Pleasant; Roanoke Small Triangular	B-132254	wood charcoal	920	70	995	1025	1055, 1085, 1150	1205	1260	Millis 2001
120	31HT392	Fort Bragg	Hanover II Fabric Impressed, var. 2	UW-398	TL	933	124	841	960	1084	1208	1327	Herbert et al. 2002
94	31HK1546	Fort Bragg	Yadkin Net Impressed	UW-1635	TL*/IRSL/OSL	930	40	1002	1040	1080	1120	1158	McNutt and Gray 2009
186	31ON536	(LeJeune)	Hanover; Townsend	not reported	charcoal	950	60			1040			Davis and Child 1996
66	31CR53	Shelly Point	Townsend; sand tempered (unspecified)	B-136918	clam shell	1270	60	894	983	1035	1115	1212	Davis et al. 2001
235	31WL37	Contentnea Creek	Deep Creek; Mount Pleasant; Roanoke Small Trianular	B-132259	wood charcoal	960	50	995	1015	1035	1155	1195	Millis 2001
43	31CD7	McClean Mound	Hanover Fabric Impressed; Hanover Plain	M-1354	wood charcoal (pine)	980	110	782	979	1025	1205	1277	MacCord 1966
236	31WL37	Contentnea Creek	Mount Pleasant; Roanoke Small Triangular	B-132255	wood charcoal	980	50	980	1095	1025	1140	1175	Millis 2001
153	31NS3	Thorpe	Cashie	UGa-3142	charcoal	1000	70	894	984	1021	1155	1210	Phelps 1980a
67	31CR53	Shelly Point	White Oak Fabric Impressed	B-131572	charcoal	1010	60	896	984	1020	1148	1162	Davis and Child 1996, 2000; Davis et al. 1997; Davis et al. 2001
237	31WL37	Contentnea Creek	New River; Mount Pleasant	B-136682	wood charcoal	1000	70	895	990	1020	1050	1195	Millis 2001
238	31WL37	Contentnea Creek	Mount Pleasant, Series 1 (provisional); Series 2 (provisional)	B-132258		1020	70	885	980	1010	1040	1175	Millis 2001
239	31WL37	Contentnea Creek	Mount Pleasant	B-136680	wood charcoal	1040	60	888	970	1005	1025	1055	Millis 2001
62	31CR305	Goose Creek	Hanover Cord Marked; Townsend	B-131575	shell	1320	110	726	876	1003	1091	2145	Davis et al. 2001
68	31CR53	Shelly Point	Townsend; sand/grit tempered (unspedified)	B-69589	shell	1040	60	889	904	1000	1025	1157	Reid and Simpson 1994
122	31HT402	Fort Bragg	Cape Fear III Cord Marked	UW-401	TL	1002	123	756	874	997	1120	1238	Herbert et al. 2002
69	31CR53	Shelly Point	White Oak Fabric Impressed	B-131573	shell	1060	60	785	899	991	1022	1152	Davis and Child 1996, 2000; Davis et al. 1997; Davis et al. 2001

Sample[a]	Site	Name	Target	Lab Number	Material	Age[b]	Error[c]	2-σ[d]	1-σ	Intercepts or Mean	1-σ	2-σ	Reference
76	31DR1	Cape Creek	Colington I Phase, Townsend series: Colington Fabric Impressed; Colington Simple Stamped; Colington Punctate	B-140204	wood charcoal	1070	60	870	900	990	1015	1040	Phelps personal communication 2008
173	31ON305	Flynt	New River; Carteret; Onslow; Townsend	B-9381	charcoal from washings	1070	50	887	899	984	1018	1030	Loftfield 1987b
206	31ON665	Hammocks Beach West	Hanover Cord Marked; Hanover Fabric Impressed; Townsend Fabric Impressed; Toownsend Plain; Mockley Cord Marked and Net Impressed	B-127356	wood charcoal	1080	50	785	896	981	1017	1025	Daniel (1999:160) Table 8.1
240	31WL37	Contentnea Creek	Mount Pleasant; Roanoke Small Triangular	B-132261	wood charcoal	1100	60	795	890	980	1005	1030	Millis 2001
80	31DR35	Tillett	Townsend Fabric Impressed; Townsend Plain; Mount Pleasant Fabric Impressed; Mount Pleasant Cord Marked	UGa-3434	charcoal	1090	85	723	886	979	1021	1157	Phelps 1984a
113	31HT344	Fort Bragg	Hanover I Fabric Impressed, var. 1	UW-444	TL	1053	233	489	713	946	1179	1403	Herbert et al. 2002
88	31HF20	Mount Pleasant	Colington	UGa-4011	wood charcoal	1125	95	684	779	898, 921, 945, 946, 955	1017	1154	Phelps 1983, Green 1986
193	31ON624	Jarman Point (NRAS)	none noted	B-112278					865	943	1020		Botwick and Neville 1998
183	31ON379	Courthouse Bay	Hanover Fabric Impressed	UW-631	TL	1062	109	725	830	939	1048	1153	Greene and Millis 2003
11	31CB114	Riegelwood	Hanover II Fabric Impressed, var. 3	UW-656	TL	1070	154	629	777	931	1085	1233	Herbert 2003
174	31ON305	Flynt	Onslow	B-12817	charcoal	1140	60	722	782	894, 925, 935	982	1019	Loftfield 1987b
175	31ON305	Flynt	New River; Carteret; Onslow; Townsend	B-9382	charcoal from washings	1100	50	782	892	904, 910, 976	998	1022	Loftfield 1987b
60	31CR218	Broad Reach	Townsend	B-58942	human bone				775	888	997		Mathis 1999

Sample[a]	Site	Name	Target	Lab Number	Material	Age[b]	Error[c]	2-σ[d]	1-σ	Intercepts or Mean	1-σ	2-σ	Reference
41	31CD750	Middle Toe	Hanover I, Fabric-Impressed var.2	UW-441	TL	1135	160	550	704	864	1024	1178	Herbert et al. 2002
133	31JN2	Long Point	Townsend; Mount Pleasant; Hanover	B-130905	charcoal	1200	50	687	734	782, 790, 815, 842, 859	892	977	Shumate and Evans 2000
81	31DR35	Tillet	Mount Pleasant Fabric Impressed; Mount Pleasant Cord Marked	UGa-3435	oyster shell	1490	85	644	701	798	910	1021	Phelps 1984a
75	31DR1	Cape Creek	Hanover Fabric Impressed; Hanover Cord Marked	B-140203	wood charcoal	1220	60	670	705	785	885	970	Phelps personal communication 2008
137	31L1	Tower Hill	Cashie Fabric Impressed; Cashie Plain	B-43628	nutshell	1230	100	640	673	778	942	1017	Eastman et al. 1997
134	31JN2	Long Point	none noted	B-130059	charcoal	1250	50	662	688	775	860	893	Shumate and Evans 2000
40	31CD7	McClean Mound	Hanover II Fabric Impressed	B-143709	soot	1250	40	675	700	770	795	880	Herbert et al. 2002
102	31HK1620	Fort Bragg	Hanover Fabric Impressed	B-227811	sherd organics	1250	40	690	690	770	780	880	McNutt and Gray 2009
179	31ON33	Uniflite	Townsend	UGa-2549	charcoal	1265	60	656	676	721, 743, 770	851	894	Loftfield 1979
154	31NS3	Thorpe	Clements Cord Marked	UGa-3144	wood charcoal	1265	75	643	665	721, 743, 770	878	961	Phelps 1980a
61	31CR218	Broad Reach	Hanover Fabric Impressed	B-58941	human bone	1420	90	598	660	718	855	968	Mathis 1999
155	31ON1236	Mile Hammock Bay 2	Hanover Fabric Impressed var. 3	UW-994	TL	1292	92	530	618	710	802	890	Millis 2008
138	31MR241	Fort Bragg	Hanover I Check Stamped	UW-449	TL	1294	174	365	532	706	880	1047	Herbert et al. 2002
12	31CB114	Riegelwood	Hanover II Cord Marked, var. 1[j]	UW-647	TL	1300	311	91	390	701	1012	1311	Herbert 2003
242	31ON1246		Onslow Fabric Impressed	B-202616	soot	1290	40	660	680	700	770	790	Millis 2009b
207	31ON665	Hammocks Beach West	Hanover Cord-Marked; Hanover Fabric Impressed; White Oak	B-127355	wood charcoal	1300	70	621	659	689	778	890	Daniel (1999:160) Table 8.1
145	31NH486	Pond Trail	Hanover Fabric Impressed, var. 2	UW-222	TL	1270	145	396	535	680	825	964	Herbert 1997
13	31CB114	Riegelwood	Hanover II Cord Marked, var. 2	UW-651	TL	1326	172	338	503	675	847	1012	Herbert 2003
208	31ON665	Hammocks Beach West	none noted	B-127367	wood charcoal	1340	60	603	651	666	765	780	Daniel (1999:160) Table 8.1

Sample[a]	Site	Name	Target	Lab Number	Material	Age[b]	Error[c]	2-σ[d]	1-σ	Intercepts or Mean	1-σ	2-σ	Reference
244	31DR33	Brooks Island	Hanover	B-140206	oyster shell	1760	70	510	595	655	695	775	Skinner 2002
214	31ON82	Hammocks Beach East	none noted	B-119389	charcoal from floatation	1400	60	541	604	652	669	765	Loftfield 1986
74	31DR15	Stick Site	Mount Pleasant (without pebbles)	UGa-1088	oyster shell	1685	65	449	556	643	690	773	Phelps 1981a
209	31ON665	Hammocks Beach West	White Oak Fabric Impressed; Mockley Cord-Marked; Mockley Net Impressed	B-127358	wood charcoal	1430	50	539	599	640	658	680	Daniel (1999:160) Table 8.1
103	31HK1620	Fort Bragg	Hanover Fabric Impressed	B-227812	sherd organics	1420	40	610	610	640	650	660	McNutt and Gray 2009
14	31CB114	Riegelwood	Hamp's Landing Punctate *var. Allendale*	UW-645	TL	1367	393	-136	241	634	1027	1404	Herbert 2003
165	31ON196	Permuda Island	Townsend Fabric Impressed	B-11941	charcoal from washings	1450	80	427	540	620, 634, 636	660	759	Loftfield and Watson 1985
241	3ON596		Hanover Cord Marked	UW-?	TL	1375	246	139	375	621	867	1103	Reid and Simpson 1997
77	31DR32	Brooks Island	Hanover	B-140205	oyster shell	1740	60	555	620	665	700	775	Skinner 2002
180	31ON33	Uniflite	Townsend	UGa-2547	charcoal	1495	60	426	534	564, 569, 579, 588, 597	640	660	Loftfield 1979
50	31CO167	Riversound	Mount Pleasant Cord Marked; Mount Pleasant Fabric Impressed	B-237696	charcoal	1400	40	484	510	550	590	616	Seibel and Russ 2008
181	31ON33	Uniflite	Townsend	UGa-2548	charcoal	1550	65	386	426	536	600	644	Loftfield 1979
146	31NH556	Stoney Brook	Hanover	B-701 1	charcoal	1560	60	386	425	533	596	639	Wilde-Ramsing 1984:114
15	31CB114	Riegelwood	Hanover I Fabric Impressed, var. 2	UW-659	TL	1473	301	-62	-227	528	829	1118	Herbert 2003
114	31HT344	Fort Bragg	Hanover I Fabric Impressed, var. 2	UW-443	TL	1516	173	144	310	483	656	822	Herbert et al. 2002
98	31HK1616	Fort Bragg	Yadkin Fabric Impressed	UW-1639	TL/OSL	1540	90	294	380	470	560	646	McNutt and Gray 2009
135	31JN2	Long Point	Townsend; Mount Pleasant; Hanover; Hamp's Landing	B-130904	charcoal	1570	60	357	420	422, 448, 468, 482, 530	560	636	Shumate and Evans 2000
16	31CB114	Riegelwood	Hanover I Cord Marked, var. 2	UW-649	TL	1539	148	172	314	462	610	752	Herbert 2003

Sample[a]	Site	Name	Target	Lab Number	Material	Age[b]	Error[c]	2-σ[d]	1-σ	Intercepts or Mean	1-σ	2-σ	Reference
139	31MR93	Fort Bragg	Hanover I Cord Marked, var. 2	UW-450	TL	1564	314	-180	121	435	749	1050	Herbert et al. 2002
49	31CK9	Baum	Mount Pleasant	UGa-1085	Fragments of woven juncus grass mat	1590	65	263	409	433	541	619	Phelps 1980b, 1983
216	31PT259	Barber Creek	none noted	B-150187	charcoal	1630	60	260	380	420	520	560	Daniel pers com 2008
156	31ON1236	Mile Hammock Bay 2	Hanover Fabric Impressed, var. 2	UW-993	TL	1582	92	240	328	420	512	600	Millis 2008
39	31CD622	Fort Bragg	New River Net-Impressed	UW-442	TL	1594	272	-128	133	405	677	938	Herbert et al. 2002
44	31CK32	Point Harbor	Mount Pleasant Fabric Impressed	B-48970	wood charcoal	1670	60	240	261	397	428	537	Mathis (personal communication)
89	31HF30	Liberty Hill	Mount Pleasant	B-73744		1680	70	219	258	388	428	539	Phelps personal communication 1997
99	31HK1616	Fort Bragg	Yadkin Fabric Impressed	UW-1638	OSL	1730	100	84	180	280	380	476	McNutt and Gray 2009
158	31ON1238	Mile Hammock Bay 1	Cape Fear Fabric Impressed, var. 2	UW-996	TL	1736	101	68	165	266	367	464	Millis 2008
157	31ON1236	Mile Hammock Bay 2	Hanover Fabric Impressed var. 3	UW-992	TL	1754	102	48	146	248	350	448	Millis 2008
17	31CB114	Riegelwood	Hanover I Cord Marked, var. 2	UW-648	TL	1817	241	-288	-57	184	425	656	Herbert 2003
148	31NH690	Papanow	Hanover Cord Marked, var. 2	UW-223	TL	1779	228	-274	55	173	401	620	Herbert 1997
166	31ON196	Permuda Island	none noted	B-11942	charcoal from flotation	1840	60	30	85	134, 159, 170, 196, 209	243	340	Loftfield and Watson 1985
111	31HK1649	Fort Bragg	Yadkin Net Impressed	UW-1648	TL	1860	590	-1016	-450	140	730	1296	McNutt and Gray 2009
115	31HT347	Fort Bragg	Yadkin I Smoothed Net Impressed	UW-399	TL	1878	290	-447	-169	121	411	689	Herbert et al. 2002
37	31CD551	Fort Bragg	Cape Fear I Cord-Marked	UW-396	TL	1880	229	-331	-111	118	347	567	Herbert et al. 2002
112	31HT269	Fort Bragg	Yadkin Net Impressed	UW-395	TL	1881	233	-339	-114	118	350	575	Herbert et al. 2002
63	31CR305	Goose Creek	Hanover; Townsend	B-131574	charcoal	1940	80	-150	-38	69	131	243	Davis et al. 2001
95	31HK1567	Fox Ridge	Yadkin Cord Marked	UGA-12557	soot	1980	-51	-47	-38	25, 43, 47	70	124	Ruggiero 2003
104	31HK1620	Fort Bragg	Hanover II Fabric Impressed	UW-1645	OSL	1970	140	-244	-110	30	170	304	McNutt and Gray 2009
194	31ON624	Jarman Point (NRAS)	none noted	B-112276					-180	20	220		Botwick and Neville 1998

Sample[a]	Site	Name	Target	Lab Number	Material	Age[b]	Error[c]	2-σ[d]	1-σ	Intercepts or Mean	1-σ	2-σ	Reference
18	31CB114	Riegelwood	Cape Fear Cord Marked, var. 2	UW-650	TL	1996	206	-399	-201	5	211	409	Herbert 2003
19	31CB114	Riegelwood	Cape Fear Cord Marked, var. 2	UW-655	TL	1997	184	-357	-180	4	188	365	Herbert 2003
118	31HT355	Fort Bragg	Cape Fear I Cord-Marked, var. 1	UW-446	TL	2081	196	-466	-278	-82	114	302	Herbert et al. 2002
105	31HK1620	Fort Bragg	Hanover I Fabric Impressed	UW-1643	OSL	2110	160	-424	-270	-110	50	204	McNutt and Gray 2009
106	31HK1620	Fort Bragg	New River Cord Marked	UW-1642	IRSL/OSL	2140	90	-306	-220	-130	-40	46	McNutt and Gray 2009
20	31CB114	Riegelwood	Cape Fear Cord Marked, var. 2	UW-661	TL	2169	186	-533	-354	-168	18	197	Herbert 2003
182	31ON33	Uniflite	Townsend	UGA-2551	clam shell	2405	60	-379	-336	-193	106	-12	Loftfield 1979
21	31CB114	Riegelwood	Cape Fear Cord Marked, var. 2	UW-652	TL	2200	185	-562	-384	-199	-14	164	Herbert 2003
109	31HK1622	Fort Bragg	Hanover II Check Stamped	UW-1646	OSL	2210	140	-474	-340	-200	-60	74	McNutt and Gray 2009
22	31CB114	Riegelwood	Hamp's Landing Cord Marked, var. 1	UW-654	TL	2222	249	-709	-470	-221	28	267	Herbert 2003
212	31ON765	Highest Use Testing 2	Cape Fear Cord Marked, var. 2	UW-1758	TL	2242	180	-593	-420	-240	-60	113	Millis 2009 a
90	31HF30	Liberty Hill	Mount Pleasant	B-73743		2240	60	-402	-390	-360, -273, -260	-202	-124	Phelps personal communication 1997
36	31CD486	Fort Bragg	Cape Fear I Cord-Marked, var. 2	UW-393	TL	2277	370	-1003	-648	-278	92	447	Herbert et al. 2002
92	31HK1484	Fort Bragg	Hanover II Paddle-Edge Stamped	UW-1633	OSL	2340	230	-781	-560	-330	-100	121	McNutt and Gray 2009
125	31HT471	Fort Bragg	New River Cord Marked, var. 1	UW-394	TL	2368	259	-882	-663	-374	-115	134	Herbert et al. 2002
149	31NH690	Papanow	New River Fabric Impressed, var. 2	UW-226	TL	2384	250	-924	-684	-434	-184	56	Herbert 1997
187	31ON542		New River Plain	UW-?	TL	2589	441	-1457	-1034	-593	-152	271	Reid and Simpson 1997
107	31HK1620	Fort Bragg	Hanover I Fabric Impressed	UW-1644	TL/OSL	2660	400	-1434	-1050	-650	-250	134	McNutt and Gray 2009
23	31CB114	Riegelwood	Hanover; Hamp's Landing; New River	B-115425	wood charcoal	2470	40	-787	-762	-757, -695, -541	-412	-405	Sanborn and Abbott 1999:6,Tables 1-2
93	31HK1540	Fort Bragg	Hanover Fabric Impressed, var. 4	UW-1634	TL/OSL	2790	280	-1329	-1060	-780	-500	-231	McNutt and Gray 2009

Sample[a]	Site	Name	Target	Lab Number	Material	Age[b]	Error[c]	2-σ[d]	1-σ	Intercepts or Mean	1-σ	2-σ	Reference
151	31NH771	Wilmington Bypass	Hamp's Landing		soot					-800			Barse et al. 2001
136	31JN2	Long Point	Townsend; Mount Pleasant; Hanover; Hamp's Landing	B-130061	charcoal	2680	60	-969	-897	-826	-800	-788	Shumate and Evans 2000
100	31HK1619	Fort Bragg	Cape Fear Cord Marked	UW-1640	OSL	2970	240	-1430	-1200	-960	-720	-490	McNutt and Gray 2009
116	31HT347	Fort Bragg	Yadkin I Smoothed Net Impressed	UW-400	TL	2962	356	-1661	-1319	-963	-607	-265	Herbert et al. 2002
159	31ON1241	Mile Hammock Bay 3	New River Cord Marked	UW-995	TL	2972	201	-1364	-1171	-970	-769	-576	Millis 2008
24	31CB114	Riegelwood	Cape Fear Cord Marked, var. 2	UW-653	TL	3001	819	-2605	-1181	-1000	-181	605	Herbert 2003
218	31WH12	Lake Phelps, canoe	New River Net Impressed	B-16675	wood, cypress	2850	60	-1255	-1125	-1002	-920	-836	Bright 1987
5	31BR201	Windsor	Deep Creek Cord Marked	UW-1622	OSL/TL	3080	150	-1364	-1220	-1070	-920	-776	Seibel and Russ 2008
101	31HK1619	Fort Bragg	New River Plain	UW-1641	TL/OSL	3090	150	-1374	-1230	-1080	-930	-786	McNutt and Gray 2009
121	31HT392	Fort Bragg	New River Net Impressed	UW-402	TL	3170	541	-2231	-1712	-1171	-630	-111	Herbert et al. 2002
97	31HK1612	Fort Bragg	New River	UW-1637	TL	3200	550	-2268	-1740	-1190	-640	-112	McNutt and Gray 2009
150	31NH690	Papanow	New River Cord Marked, var. 1	UW-224	TL	3171	436	-2076	-1657	-1221	-785	-366	Herbert 1997
215	31ON834	Highest Use Testing 1	Cape Fear Cord Marked, var. 1; Cape Fear Cord Marked, var. 2	UW-1757	TL	3242	220	-1671	-1460	-1240	-1020	-809	Millis 2009 a
25	31CB114	Riegelwood	Thom's Creek (?) Cord Marked, var. 1	UW-658	TL	3248	329	-1892	-1576	-1247	-918	-602	Herbert 2003
26	31CB114	Riegelwood	New River Cord Marked, var. 1	UW-660	TL	3386	569	-2500	-1954	-1385	-816	-270	Herbert 2003
6	31BR201	Windsor	Deep Creek Cord Marked	UW-1621	OSL	3520	170	-1843	-1680	-1510	-1330	-1177	Seibel and Russ 2008
110	31HK1623	Fort Bragg	Plain	UW-1647	TL/OSL	3530	260	-2030	-1780	-1520	-1260	-1010	McNutt and Gray 2009
7	31BR201	Windsor	Deep Creek Cord Marked	UW-1620	OSL/IRSL	3600	180	-1953	-1780	-1600	-1420	-1247	Seibel and Russ 2008
27	31CB114	Riegelwood	New River Cord Marked, var. 2	UW-662	TL	3766	714	-3164	-2479	-1765	-1051	-366	Herbert 2003
210	31ON751	Highest Use Testing 3	New River Cord Marked, var. 2	UW-1760	TL	3782	170	-2113	-1950	-1780	-1610	-1447	Millis 2009 a

Sample[a]	Site	Name	Target	Lab Number	Material	Age[b]	Error[c]	2-σ[d]	1-σ	Intercepts or Mean	1-σ	2-σ	Reference
211	31ON751	Highest Use Testing 3	New River Simple Stamped, var. 1	UW-1759	TL	3822	150	-2114	-1970	-1820	-1670	-1526	Millis 2009 a
162	31ON190	Cape Island	Hamp's Landing Fabric Impressed; Refuge Allendale Punctate	B-104165	charred wood	3610	70	-2194	-2112	-1950	-1833	-1748	Jones, Espenshade and Kennedy 1997
28	31CB114	Riegelwood	Thom's Creek (?) Cord-Marked	B-115428	wood charcoal	3630	70	-2198	-2130	-2012, -2000, -1978	-1885	-1773	Sanborn and Abbott 1999:6,Tables 1-2
96	31HK1612	Fort Bragg	Refuge Allendale Punctate	UW-1636	TL/OSL	4090	230	-2531	-2310	-2080	-1850	-1629	McNutt and Gray 2009
29	31CB114	Riegelwood	Hamp's Landing Simple Stamped	B-115427	wood charcoal	3700	50	-2273	-2193	-2129, -2082, -2043	-1982	-1942	Sanborn and Abbott 1999:6,Tables 1-2
30	31CB114	Riegelwood	Hamp's Landing Cord Marked; Hamp's Landing Simple Stamped	B-115429	wood charcoal	3700	40	-2200	-2141	-2129, -2082, -2043	-1984	-1957	Sanborn and Abbott 1999:6,Tables 1-2
217	31PT259	Barber Creek	none noted	B-188954	charcoal	4140	40	-2880	-2870	-2850, -2820, -2680	-2800	-2580	Daniel personal communication 2008
31	31CB114	Riegelwood	New River	B-115426	wood charcoal	4290	50	-3018	-2918	-2898	-2881	-2764	Sanborn and Abbott 1999:6,Tables 1-2
32	31CB114	Riegelwood	Hamp's Landing Simple Stamped	UW-657	TL	5057	2598	-8148	-5654	-3056	-458	2036	Herbert 2003
108	31HK1620	Fort Bragg	Hanover I	UW-1644	TL/OSL	5180	310	-3778	-3480	-3170	-2860	-2562	McNutt and Gray 2009
34	31CD403		none noted	B-171292	wood charcoal	4510	70	-3490	-3355	-3330, -3215, -3180, -3155, -3125	-3090	-2930	Terrell et al. 2000
35	31CD403		none noted	B-171291	wood charcoal	5090	80	-4040	-3970	-3940	-3785	-3695	Terrell et al. 2000

[a] Sample numbers referenced in text and figures.

[b] Measured or conventional age in years B.P.

[c] Standard error (1-σ).

[d] For luminescence dates standard deviations are mathematically calculated at the 95% (2-σ) and 68% (1-σ). confidence intervals below and above mean age estimates. For radiocarbon dates confidence interval values are calibrated data; where multiple intercepts (and ranges) occur only the uppermost and lowermost values are listed.

[e] All radiocarbon dates are calibrated with Calib 4.3 using INTCAL98 and corrected for δ13C isotope fractionation; non-marine samples use decadal atmospheric curve (Stuiver and Reimer 1993).

[f] In cases where more than one pottery type is associated, the types are listed in order of most frequent, to least frequent.

[g] Marine shell age estimates are corrected by applying the ΔR value (-5 ± 20) derived from Bahamas coral dates (Stuiver and Braziunas 1993).

[h] Fabric impressed varieties are: Var 1, coarse weft-faced (weft diameter > 2 mm, interwoven over non-cordage warp); Var 2, medium weft-faced (weft diameter 1–2 mm, interwoven over non-cordage warp); Var 3, fine weft-faced (weft diameter < 1 mm, interwoven over non-cordage warp); Var 4, flexible warp (coarse–medium weft-faced, interwoven over cordage or fiber warp); Var 5, spaced weft (coarse–fine weft, spaced on non-cordage warp) (Herbert 2003: Appendix A).

[i] Samples of human bone collagen are assumed to represent a mixture of 50 % marine and 50 % terrestrial carbon (Herbert 2003: 49).

[j] Cord marked varieties are: Var 1, parallel; Var 2, perpendicular/oblique (Herbert 2003: Appendix A).

REFERENCES CITED

Abbott, Lawrence E., E. E. Sanborn, L. E. Raymer, L. D. O'Steen, W. J. Cleary, and G. C. Turner

1999 *Data Recovery at 31CB114, Columbus County, North Carolina: Prehistoric Settlement and Subsistence Practices within the Lower Cape Fear River Valley*. Draft Report. New South Associates Technical Report No. 618. New South Associates, Inc., Mebane, North Carolina. Submitted to the International Paper Company, Inc., Riegelwood Operations, Columbus County, North Carolina.

Abbott, Lawrence E., Keith C. Seramur, Erica E. Sanborn, Joel D. Gunn, Leslie E. Raymer, Irwin Rovner, Lisa D. O'Steen and Scott Halverson

2005 *Archaeological Data Recovery at Site 31HT435: Upland Site Structure in the Sandhills Region of North Carolina, Harnett County, North Carolina*. New South Associates, Stone Mountain, Georgia. Submitted to the North Carolina Department of Transportation, Project Developmehnt and Environmental Analysis Branch, Raleigh. Federal Aid Project No. HBF-87(4), State Project 8.T540302, TIP Project No. 2238.

Adams, Natalie and Michael Trinkley

1993 *Archaeological Survey of the Seaside Farms Tract, Charleston County, South Carolina*. Research Series 35. Chicora Foundation, Inc., Columbia, South Carolina.

Anderson, David G., Charles E. Cantley, and A. Lee Novick

1982 *The Mattassee Lake Sites: Archaeological Investigation along the Lower Santee River in the Coastal Plain of South Carolina*. Special Publication, National Park Service, Interagency Archeological Services, Atlanta.

Anderson, David G., John S. Cable, Niels Taylor, and Christopher Judge

1996 *Indian Pottery of the Carolinas: Observations from the March 1995 Ceramic Workshop at Hobcaw Barony*. Council of South Carolina Professional Archaeologists, South Carolina Department of Archives and History.

Artusy, Richard

1976 An Overview of the Proposed Ceramic Sequence in Southern Delaware. *Maryland Archaeology* 12(2):1–15.

Bamann, Susan E.

2004 *Archaeological Data Recovery at the Mabrey Bridge Site (31ED333) Bridge 53 over Fishing Creek Edgecombe County, North Carolina*. Coastal Carolina Research, Inc. Submitted to the North Carolina Department of Transportation, Project Development and Environmental Analysis Branch, Raleigh. TIP No. B-3170.

Barka, Norman F., and Ben C. McCary

1977 *Early Shell Tempered Pottery in the James River Valley, Virginia*. Eastern States Archaeological Federation, Bulletin 36.

Barse, William P., Marvin A. Brown, and Jennifer Marston
2001 *Archaeological Data Recovery Excavations at Site 31NH707, Wilmington Bypass, Center Alternative, New Hanover County, North Carolina*. URS Corporation, Raleigh. Submitted to the North Carolina Department of Transportation, Project Development and Environmental Analysis Branch, Raleigh. TIP No. R-2633-C.

Beaman, Thomas E., Jr.
2007 *"Next to Two Rivers:" The Wilson County Sesquicentennial Archaeological Survey to Locate the Late Woodland and Protohistoric Tuscarora Community of Tosneoc*. Tar River Archaeological Research, Wilson. Submitted to the Wilson County Historical Association, Wilson, North Carolina. In Press.

Binford, Lewis R.
1964 *Archaeological and Ethnohistorical Investigations of Cultural Diversity and Progressive Development among Aboriginal Cultures of Coastal Virginia and North Carolina*. Ph.D. dissertation, Department of Anthropology, University of Michigan. University Microfilms, Ann Arbor.

1965 Colonial Period Ceramics of the Nottoway and Weanock Indians of Southeastern Virginia. *Quarterly Bulletin of the Archaeological Society of Virginia* 19(4):78–87.

Blaker, Margaret C.
1952 Roanoke Simple Stamped. *American Antiquity* 3:257–258.

1963 Aboriginal Ceramics: The Townsend Site, Lewes Delaware. *The Archeolog* 15(1):14–29.

Botwick, Brad, and Ashley M. Neville
2000 *Phase I and II Archaeological Investigations at Sites 31ON624, 31ON625 and 31ON664, Marine Corps Air Station, New River, Onslow County, North Carolina*. Gray and Pape, Inc., Richmond, Virginia. Submitted to EDAW, Inc., Alexandria, VA. Copies available at the North Carolina Office of State Archaeology, Raleigh. Bibliographic No. 4290 (Lejeune VIId).

Bright, Leslie S.
1987 Candied Canoes of North Carolina. Paper presented at the 18th annual conference in Underwater Archaeology, Savannah.

Caldwell, Joseph R.
1952 The Archaeology of Eastern Georgia and South Carolina. In *Archeology of Eastern United States,* edited by James B. Griffin, pp. 312–321. The University of Chicago Press.

Claassen, Cheryl
1980 *Secoton Project Final Report*. Submitted to the Department of Cultural Resources, Office of State Archaeology. Copies available at the North Carolina Office of State Archaeology, Raleigh. Bibliographic No. 754 (Beaufort).

Clark, Wayne E.
1976 The Application of Regional Research Designs to Contract Archaeology: The Northwest Transportation Corridor Archaeological Survey Project. Unpublished M.A. Thesis, Department of Anthropology, American University, Washington, D.C.

1980 The Origins of the Piscataway and Related Indian Cultures. *Maryland Historical Magazine* 75(1):8–22.

Coe, Joffre L.
1964 *The Formative Cultures of the Carolina Piedmont*. Transactions of the American Philosophical Society Vol. 54, No. 5. American Philosophical Society, Philadelphia.

1995 *Town Creek Indian Mound: A Native American Legacy*. University of North Carolina Press, Chapel Hill.

Coe, Joffre L., H. Trawick Ward, Martha Graham, L. Navey, S. Homes Hogue, and Jack H. Wilson, Jr.
1982 *Archaeological and Paleo-Osteological Investigations at the Cold Morning Site, New Hanover County, North Carolina*. Research Laboratories of Anthropology, University of North Carolina, Chapel Hill. Submitted to the National Park Service, Interagency Archaeological Services, Atlanta. Contract no. C-55082 (79). Copies available at the North Carolina Office of State Archaeology, Raleigh. Bibliographic No. 1462 (New Hanover).

Crawford, Robert Guy Hodges
1966 *An Archaeological Survey of Lenoir County, North Carolina*. M.A. thesis, Department of Anthropology, University of Florida, Gainesville.

Cuomo di Caprio, N., and S. Vaughan
1993 An Experimental Study in Distinguishing Grog (Chamotte) from Argillaceous Inclusions in Ceramic Thin Sections. *Archeomaterials* 7:21–40.

Daniel, I. Randolf, Jr.
1999 *Archaeological Excavations at Hammocks Beach West (31On665): A Woodland Shell Midden on the North Carolina Coast*. Occasional Papers No. 1. Phelps Archaeology Laboratory, East Carolina University, Greenville.

Daniel, I. Randolf, Jr., Keith C. Seramur, Tara L. Pots, and Matthew W. Jorgenson
2008 Searching a Sand Dune: Shovel Testing the Barber Creek Site. *North Carolina Archaeology* 57:50–77.

Davis, Thomas W., and Kathleen M. Child
1996 Phase III Data Recovery of Site 31ON536 and Phase II Evaluation of the Prehistoric Component at Site 31ON534, Marine Corps Base, Camp Lejeune, North Carolina. R. Christopher Goodwin and Associates, Inc., Frederick, MD. Submitted to Atlantic Division, Naval Facilities Engineering Command, Norfolk. Copies available at the North Carolina Office of State Archaeology, Raleigh. Bibliographic No. 4049 (Lejeune VIIb–c).

2000 Late Woodland Ceramics on the Coastal Plain: A Possible New Type from Carteret County, North Carolina. *North Carolina Archaeology* 49:78–92.

Davis, Thomas W., Kathleen M. Child, Ellen Saint Onge, William Lowthert, and Thomas Majarov
2001 *Supplemental Archeological Investigations at Marine Corps Air Station Cherry Point and Marine Corps Auxiliary Landing Field Bogue, Cravn and Carteret Counties, North Carolina*. R. Christopher Goodwin & Associates, Inc. Frederick, MD. Submitted to the Atlantic Division, Naval Facilities Engineering Command, Norfolk, VA, and Marine Corps Air Station Cherry Point. Copies available at the North Carolina Office of State Archaeology, Raleigh. Tracking No. ER 97-7897.

Eastman, Jane M.
1994 The North Carolina Radiocarbon Date Study. *Southern Indian Studies* 42:1–47.

Eastman, Jane M., Loretta Lautzenheiser, and Mary Ann Holm
1997 A Re-Evaluation of Ceramics from the Tower Hill Site (31Lr1), Lenoir County, North Carolina. *North Carolina Archaeology* 46:109–120.

Egloff, Keith T., and Stephen R. Potter
1982 Indian Ceramics from Coastal Plain Virginia. *Archaeology of Eastern North America* 10:95–117.

Espenshade, Christopher T.
1996 South Carolina Prehistoric Pottery: Reflections on the 1995 Conference at Georgetown, S.C.. In *Indian Pottery of the Carolinas: Observations from the March 1995 Ceramic Workshop at Hobcaw Barony*. Edited by David G. Anderson, John S. Cable, Niels Taylor, and Christopher Judge. South Carolina Department of Archives and History, and the Council of South Carolina Profession Archaeologists, Columbia, SC.

Evans, Clifford
1955 *A Ceramic Study of Virginia Archeology*. Bureau of American Ethnology Bulletin 160, Washington.

Futato, Eugene M. (editor)
1998 *Interim Data on Alabama Pottery Types and their Distribution*. Alabama Archaeological Society. Prepared for the Alabama Association of Professional Archaeologists Pottery Workshop, Moundville, Alabama.

Gardner, Paul S.
1990 *Excavations at the Amity Site: Final Report of the Pomeiooc Project: 1984–1989*. Archaological Research Report No. 7. David S. Phelps Archaeology Laboratory, Department of Anthropology, East Carolina University, Greenville, North Carolina.

Gardner, William, and Charles W. McNett
1971 *Early Pottery in the Potomac*. Proceedings of the Middle Atlantic Archaeology Conference. Catholic University, Washington, D.C.

Green, Paul R.
1986 *The Archaeology of "Chowanoke": Results of the 1983–1984 Investigation of Mount Pleasant and Liberty Hill, Hertford County, North Carolina.* Department of Sociology and Anthropology and Economics, East Carolina University, Greenville, North Carolina. Copies available from the North Carolina Office of Archaeology, Raleigh, Bibliographic No. 3279.

1987 *The Archaeology of 31HY43, "Pomeiooc" 1985–1986 Field Seasons.* An America's Four Hundredth Anniversary Publication. Department of Sociology and Anthropology, East Carolina University, Greenville. Electronic document, http://homepages.rootsweb.ancestry.com/~jmack/algonqin/amity1.htm, accessed May 22, 2009.

Greene, Lance, and Tracy L. Millis
2003 *Archaeological Monitoring of the Courthouse Bay Site (31ON379/379**), Marine Corps Base, Camp Lejeune, Onslow County, North Carolina*. TRC Garrow Associates, Inc., Durham, North Carolina. Submitted to the Wilmington District, U.S. Army Corps of Engineers, Wilmington, North Carolina. Contract no. DACW54-98-D-0006-0002. Copies available at the North Carolina Office of State Archaeology, Raleigh. Bibliographic No. 5007 (Lejeune VIIe).

Griffin, James B.
1943 *An Analysis and Interpretation of the Ceramic Remains from Two Sites near Beaufort, South Carolina.* Anthropological Papers, No. 22, Bureau of American Ethnology, Bulletin 133:155–168.

Griffith, Daniel R.
1982 Prehistoric Ceramics in Delaware (An Overview). *Archaeology of Eastern North America* 10:46–68.

Hargrove, Thomas H.
1992 *Archaeological Test Excavations of 31WL170, Buckhorn Reservoir, Wilson County, North Carolina*. Archaeological Research Consultants, Inc., Raleigh. Submitted to Hazen &Sawyer, Engineers, Raleigh. Copies available at the North Carolina Office of State Archaeology, Raleigh. Bibliographic No. 3426 (Wilson).

1993 *Archaeological Excavations at 31NH142, Hamp's Landing, River Road Park, New Hanover County, North Carolina*. Archaeological Research Consultants, Inc., Raleigh. Submitted to New Hanover County, Department of Parks and Recreation, Wilmington, North Carolina. Copies available at the North Carolina Office of State Archaeology, Raleigh. Tracking No. ER 93-8840 and ER 92-7821; Bibliographic No. 3491.

1996 *Archaeological Excavation of 31ON235, the Pelican Point Project, Chadwick Bay, Onslow County, North Carolina*. Archaeological Research Consultants, Inc., Raleigh. Submitted to Live Oak Development Company, Wilmington, North Carolina. Copies available at the North Carolina Office of State Archaeology, Raleigh. Tracking No. ER 95-7447, Bibliographic No. 5515 (Onslow).

1998 *An Archaeological Survey of the Proposed Eagle Point Golf Club, Porters Neck, New Hanover County, North Carolina*. Archaeological Research Consultants, Inc., Raleigh. Submitted to McKim & Creed, Engineers, Wilmington, North Carolina. Copies available at the North Carolina Office of State Archaeology, Raleigh. Bibliographic No. 632 (New Hanover).

2000 *Archaeological Excavations of 31NH330 and 31NH331, Eagle Point Golf Club, Porters Neck, New Hanover County, North Carolina*. Archaeological Research Consultants, Inc., Raleigh. Submitted to McKim & Creed, Engineers, Wilmington, North Carolina. Copies available at the North Carolina Office of State Archaeology, Raleigh.

Hargrove, Thomas H., and Jane M. Eastman

1997 Limestone- or Marl-Tempered Ceramics from the Lower Cape Fear River Region, New Hanover County, North Carolina. *North Carolina Archaeology* 46:91-108.

1998 Limestone- or Marl-Tempered Ceramics from the Lower Cape Fear River Region, New Hanover County, North Carolina. Paper presented to the 55th Annual Meeting of the Southeastern Archaeological Conference, Greenville.

Harrington, J. C.

1948 Plain Stamped Shell Tempered Pottery from North Carolina. *American Antiquity* 3:251–252.

Herbert, Joseph M.

1995 *The Thomas Point Site (18ST570): Emerging Late Woodland Traditions in Southern Maryland*. Jefferson Patterson Park and Museum Occasional Papers No. 5, Maryland Historical Trust, Annapolis.

2003 Woodland Ceramics and Social Boundaries of Coastal North Carolina. Unpublished Ph.D. dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.

2008 The History and Practice of Shell Tempering in the Middle Atlantic: A Useful Balance. *Southeatern Archaeology* 27(2):265–285.

2009 *Woodland Potters and Archaeological Ceramics of the North Carolina Coast*. University of Alabama Press.

Herbert, Joseph M., and Mark A. Mathis
1996 An Appraisal and Re-evaluation of the Prehistoric Pottery Sequence of Southern Coastal North Carolina. In *Indian Pottery of the Carolinas: Observations from the March 1995 Ceramic Workshop at Hobcaw Barony*, edited by David G. Anderson. Council of South Carolina Professional Archaeologists.

Herbert, Joseph M., James K. Feathers, and Ann S. Cordell
2002 Building Ceramic Chronologies with Thermoluminescence Dating: A Case Study from the Carolina Sandhills. *Southeastern Archaeology* 21(1):92–108.

Holm, Mary Ann, Clay Swindell, and Loretta Lautzenheiser
1999 Data Recovery at 31HF99, Hertford County, North Carolina. Coastal Carolina Research, Tarrboro, North Carolina. Submitted to the North Carolina Department of Transportation, Project Development and Environmental Analysis Branch, Raleigh. TIP No. B-1231.

Hutchinson, Dale L.
2002 *Foraging, Farming, and Coastal Biocultural Adaptation in Late Prehistoric North Carolina*. University of Florida Press, Gainesville.

Johnson, J. S.
1988 Effects of Firing Temperature on the Fate of Naturally Occurring Organic Matter in Clays. *Journal of Archaeological Science* 15:403–414.

Jones, David C., Christopher T. Espenshade, and Linda Kennedy
1997 *Archaeological Investigation at 31ON190, Cape Island, Onslow County, North Carolina*. Garrow and Associates, Atlanta. Submitted to The Island Development Group, Inc., Ringgold, VA. Copies available from the North Carolina Office of State Archaeology, Raleigh.

Jorgenson, Matthew W.
2001 Mount Pleasant Phase Pottery in the North Carolina Coastal Plain: Vessel Form, Function, and Foodways at the Wilson Bypass Site. Unpublished M.A. thesis, Department of Anthropology, East Carolina University.

Loftfield, Thomas C.
1976 *A Brief and True Report...: An Archaeological Interpretation of the Southern North Carolina Coast.* Ph.D. Dissertation, Department of Anthropology, University of North Carolina, Chapel Hill. University Microfilms, Ann Arbor.

1979 *Excavations at 31On33: A Late Woodland Seasonal Village*. Department of Anthropology, University of North Carolina, Wilmington. Submitted to the National Park Service, Interagency Archaeological Services, Contract No. C-5558(78).

1986 *Testing and Excavations at 31ON82*. Department of Anthropology, University of North Carolina, Wilmington. Submitted to the North Carolina Division of Parks and Recreation.

1987a *Archaeological Data Recovery and Osteological Analysis at 31On309, U.S. Marine Corps Base, Camp Lejeune, North Carolina*. Department of Anthropology, University of North Carolina, Wilmington. Submitted to the National Park Service, Interagency Archaeological Services, Contract No. Copies available at the North Carolina Office of State Archaeology, Raleigh. Bibliographic No. 5963 (Lejeune VIIi).

1987b *Excavations at 31ON305, The Flynt Site at Sneads Ferry, North Carolina*. Department of Anthropology, University of North Carolina, Wilmington. Submitted to Wilmington District, U. S. Army Corps of Engineers, Wilmington, North Carolina. Copies available at the North Carolina Office of State Archaeology, Raleigh. Bibliographic No. 2190 (Onslow, Flynt Site).

1990 Ossuary Interments and Algonquian Expansion on the North Carolina Coast. *Southeastern Archaeology* 9(2).

Loftfield, Thomas C., and C. Bryan Watson
1985 Archaeological Testing and Excavation at 31ON196, Permuda Island. Department of Anthropology, University of North Carolina-Wilmington. Submitted to Permuda Inc., Sneads Ferry, North Carolina. Copies available at the North Carolina Office of State Archaeology, Raleigh. Bibliographic No. 1884 (Onslow, Permuda Island).

Loughlin, Gerald F., Edward Wilbur Berry, and Joseph A. Cushman
1921 *The Limestone and Marls of North Carolina*. Bulletin No. 28 North Carolina Geological Survey. Edwards and Broughton Printing, Raleigh.

MacCord, Howard A., Sr.
1966 The McLean Mound, Cumberland County, North Carolina. *Southern Indian Studies* 18:3–45.

McNutt, Charles H., Jr., and Jay W. Gray
2009 *Phase II Testing of Twenty Four Sites, Cumberland, Hoke, and Richmond Counties, Fort Bragg, North Carolina*. TRC Environmental Corporation, Inc., Chapel Hill, North Carolina. Submitted to Engineer Research and Development Center, Construction Engineering Research Laboratory, Champaign, IL. Contract No. DACA42-00-D-0010.

Marshall, Adam
1999 Interior Rim Impressions as an Indicator of Typological Relationships. *North Carolina Archaeology* 48:87–94.

Martin, Tracy A.

2004 *An Examination of Deep Creek Ceramics from the Parker Site and Barber Creek Site: Refining the Deep Creek Definition*. M. A. thesis, Department of Anthropology, East Carolina University.

2008 Refining the Deep Creek Definition: An Examination of Deep Creek Ceramics from the Parker and Barber Creek Sites. *North Carolina Archaeology* 57:78–96.

Mathis, Mark A.

1999 *Mortuary Processes at the Broad Reach Site.* Office of State Archaeology, Archaeology and Historic Preservation Section, North Carolina Division of Archives and History. Electronic document (http://homepages.rootsweb.ancestry.com/~jmack/algonqin/mathis.htm), accessed July 17, 2009.

Millis, Heather

2001 *Data Recovery Excavations at the Contentnea Creek Site (31WL37), Wilson County, North Carolina*. TRC Garrow Associates, Inc., Chapel Hill. Submitted to the North Carolina Department of Transportation, Project Development and Environmental Analysis Branch. TIP No. R-1023. Copies available from the North Carolina Office of State Archaeology, Raleigh.

Millis, Tracy L.

2008 *Archaeological Survey and Phase II Evaluation at Mile Hammock Bay, Marine Corps Base, Camp Lejeune, Onslow County, North Carolina*. TRC Environmental Corporation, Chapel Hill, North Carolina. Submitted to the U.S. Department of the Army, Wilmington District Corps of Engineers, Wilmington, North Carolina. Contract Number DACW54-98-D-0006, Delivery Order Numbers 24 And 25. Copies available at the North Carolina Office of State Archaeology, Raleigh.

2009a *Phase II Investigations at Highest Use Training Area MB, Marine Corps Base, Camp Lejeune, Onslow County, North Carolina*. TRC Environmental Corporation, Chapel Hill, North Carolina. Submitted to the U.S. Department of the Army, Wilmington District Corps of Engineers, Wilmington, North Carolina. Contract Number DACW54-03-D-0004, Delivery Order Number 09. Copies available at the North Carolina Office of State Archaeology, Raleigh.

2009b Phase II Evaluation Excavations at the Onslow Beach Site (31ON1246), Marine Corps Base, Camp Lejeune, Onslow County, North Carolina. TRC Environmental Corporation, Chapel Hill, North Carolina. Submitted to the U.S. Department of the Army, Wilmington District Corps of Engineers, Wilmington, North Carolina. Contract Number DACW54-03-D-0004, Delivery Order Number 01. Copies available at the North Carolina Office of State Archaeology, Raleigh.

Moser, Jason D., William Green, and Kimberly Nagle
2009 Archaeological Data Recovery Excavations at the Barnards Creek Site (31NH747) and Supplemental Phase II Testing at the Marine Village Site (31NH456/456**) New Hanover County, North Carolina. S&ME, Inc, Columbia, SC. Submitted to Newland Communities, Wilmington, North Carolina.

Opperman, Anthony F.
1980 A Study of the Prehistoric Ceramics from Maycocks Point, Prince George County, Virginia. Unpublished B.A. thesis, Department of Anthropology, William and Mary, Williamsburg.

Peck, Donald W.
1978 Preliminary Test Excavations at the Waveland Farm Site (18AN17), Anne Arundel County, Maryland. *Maryland Archeology* 14(1–2):17–23.

Phelps, David S.
1968 Thom's Creek Ceramics in the Central Savannah River Locality. *The Florida Anthropologist* 21(1):17-30.

1975 *Test Excavation of the Parker Site (31ED29) at Speed, Edgecombe County, North Carolina.* Archaeology Laboratory, Department of Sociology and Anthropology, East Carolina University, Greenville.

1980a *Archaeological Salvage of the Thorpe Site and other Investigations along the US 64 Bypass, Rocky Mount, North Carolina.* East Carolina University Archaeological Research Report No. 3, Phelps Archaeology Laboratory, Department of Anthropology, East Carolina University, North Carolina. Copies available from the North Carolina Office of State Archaeology, Raleigh.

1980b *Archaeological Salvage of an Ossuary at the Baum Site*. Phelps Archaeology Laboratory, Department of Anthropology, East Carolina University, Greenville, North Carolina. Copies available from the North Carolina Office of State Archaeology, Raleigh.

1981a *Archaeological Survey of Four Watersheds in the North Carolina Coastal Plain*. North Carolina Archaeological Council Publication 16.

1981b *The Archaeology of Colington Island.* Archaeological Research Report No. 3. Archaeology Laboratory, Department of Sociology and Anthropology, East Carolina University, Greenville, North Carolina.

1983 Archaeology of the North Carolina Coast and Coastal Plain: Problems and Hypotheses. In *The Prehistory of North Carolina: An Archaeological Symposium* edited by Mark A. Mathis and Jeffrey J. Crow, pp. 1-51. Division of Archives and History, North Carolina Department of Cultural Resources, Raleigh.

1984 *Archaeology of the Tillett Site: The first Fishing Community at Wanchese, Roanoke Island*. Archaeological Research Report No. 6. David S. Phelps Archaeology Laboratory, Department of Anthropology, East Carolina University, Greenville, North Carolina.

Phelps, David S., and Charles L. Heath

1998 *Cashie Series Ceramics from the Interior Coastal Plain of North Carolina*. Paper presented at the 55th Annual Meeting of the Southeastern Archaeological Conference, Greenville, South Carolina.

Potter, Stephen R.

1982 An analysis of Chicacoan Settlement Patterns. Unpublished Ph.D. dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.

1993 *Commoners, Tribute, and Chiefs: The Development of Algonquian Culture in the Potomac Valley*. University of Virginia Press, Charlottesville.

Reid, William H., and Kay Simpson

1994 *Archaeological Survey Shelly Point Site (31CR53) Marine Corps Auxiliary Landing Field, Bogue, North Carolina*. The Cultural Resources Group, Louis Berger and Associates, Inc., Richmond. Submitted to the Marine Corps Base, Camp Lejeune. Copies available from the North Carolina Office of State Archaeology, Raleigh.

1997 *Phase II Investigation of Nine Prehistoric Sites and Phase I Survey of the P-028 Range Area, Greater Sandy Run Acquisition Area, Marine Corps Base, Camp Lejeune, Onslow County, North Carolina*. The Cultural Resources Group, Louis Berger and Associates, Inc., Richmond. Submitted to the Marine Corps Base, Camp Lejeune, Contract No. DACW 54-93-D-0003. Copies available from the North Carolina Office of State Archaeology, Raleigh. Tracking no. ER 93-7865.

Ruggiero, Dino A.

2003 *Phase I Archaeological Reconnaissance of 4,109 Acres (1,659 Hectares) at Fort Bragg and Camp Mackall, Cumberland, Hoke, and Richmond Counties, North Carolina*. TRC Garrow Associates, Inc., Durham, North Carolina. U.S. Army Construction Engineering Research Laboratory, Champaign, Illinois. Contract # DACA42-00-D-0010.

Sanborn, Erica E., and Lawrence E. Abbott, Jr.

1999 Early Ceramic Traditions on the Southern Coastal Plain of North Carolina : Radiocarbon Data from 31CB114. *North Carolina Archaeology* 48:3–17.

Sassaman, Kenneth E.

1993 *Early Pottery in the Southeast*. The University of Alabama Press, Tuscaloosa.

Schoeneberger, P.J., Wysocki, D.A., Benham, E.C., and Broderson, W.D. (editors)
2002 *Field Book for Describing and Sampling Soils*, Version 2.0. Natural Resources Conservation Service, USDA, National Soil Survey Center, Lincoln, Nebraska. Electronic document, http://soils.usda.gov/technical/fieldbook/acknowledge.html, accessed June 23, 2009.

Shepard, Anna O.
1985 *Ceramics for the Archaeologist*. Braun-Brumfield, Inc., Ann Arbor. Originally published 1956, Publication No. 609, Carnegie Institution of Washington, Washington, D.C.

Skinner, Larry C.
2002 Archaeological Investigations at the Brooks Island and Moore Sites: Two Middle Woodland Sites on Hatteras Island, North Carolina. Manuscript on file, Phelps Archaeological Laboratory, East Carolina University, Greenville, North Carolina.

Smith, Gerald P.
1971 *Protohistoric Sociopolitical Organization of the Nottoway in the Chesapeake Bay-Carolina Sounds Region*. Ph.D. dissertation, Department of Anthropology, University of Missouri. University Microfilms, Ann Arbor.

South, Stanley A.
1960 An Archaeological Survey of Southeastern Coastal North Carolina. Ms. on file, North Carolina Office of State Archaeology, Raleigh.

1976 *An Archaeological Survey of Southeastern Coastal North Carolina.* The Institute of Archeology and Anthropology Notebook, Vol. VIII. The University of South Carolina, Columbia.

Stephenson, Robert L., Alice L. L. Ferguson, and H. G. Ferguson
1963 *The Accokeek Creek Site: A Middle Atlantic Seaboard Culture Sequence*. Anthropological Papers No. 20. Museum of Anthropology, University of Michigan, Ann Arbor.

Steponaitis, Laurie C.
1980 *A Survey of Artifact Collections from the Patuxent River Drainage, Maryland*. Maryland Historical Trust Manuscript Series, No. 7, Department of Housing and Community Deveopment, Annapolis.

1986 Prehistoric Settlement Patterns in the Lower Patuxent Drainage, Maryland. Unpublished Ph.D. dissertation, Department of Anthropology, SUNY Binghamton.

Stoltman, James B.
1972 The Late Archaic in the Savannah River Region. In *Fiber-Tempered Pottery in Southeastern United States and Northern Columbia: Its Origins, Context and Significance*, edited by R. P. Bullen and J. B. Stoltman, pp. 37-62. Florida Anthropological Society Publications 6.

1974 *Groton Plantation: An Archaeological Study of a South Carolina Locality*. Monographs No.1. Peabody Museum of Archaeology and Ethnography, Harvard University, Cambridge.

Stuiver, Minze, and Paula J. Reimer
1993 Extended ^{14}C Database and Revised CALIB Radiocarbon Calibration Program. *Radiocarbon* 35:215–230.

Terrell, William, Kenneth W. Robinson, Kristin Hill, and J. Ned Woodall
2000 *Archaeological Data Recovery – Testing Phase Investigations at Site 31NH707, Wilmington Bypass, New Hanover County, North Carolina*. Wake Forest University, Archaeology Laboratories, Wake Forest, North Carolina. Submitted to the North Carolina Department of Transportation, Project Development and Environmental Analysis Branch, Raleigh. TIP No. R-2633-C, Federal Aid No. STPNHF-17[1].

Truesdell, S. W.
1995 Paleopathological and Paleodemographic Analysis of the Piggott Ossuary (31CR14) Carteret County, North Carolina. Unpublished M.A. thesis, Department of Anthropology, Wake Forest University, Winston-Salem.

U.S. Department of Agriculture
2002 Field Book for Describing and Sample Soils, Version 2.0, National Soil Survey Center, Natural Resources conservation Service, U.S. Department of Agriculture. Electronic document, ftp://ftp-fc.sc.egov.usda.gov/NSSC/Field_Book/FieldBookVer2.pdf, accessed January 30, 2009.

Ward, H. Trawick, and Jack H. Wilson, Jr.
1980 Archaeological Investigations at the Cold Morning Site. *Southern Indian Studies* 32:5–40.

Waselkov, Gregory A.
1982 *Shellfish Gathering and Shell Midden Archaeology*. Unpublished Ph.D. dissertation, Department of Anthropology, University of North Carolina, Chapel Hill. University Microfilms, Ann Arbor.

Whitbread, I. K.
1986 Characterization of Argillaceous Inclusions in Ceramic Thin Sections. *Archaeometry* 8:79–88.

1987 A Proposal for the Systematic Description of Thin Sections Towards the Study of Ancient Ceramic Technology. In *Archaeometry*: Proceedings of the 25th International Symposium, edited by Y. Maniatis, pp. 127–138. Elsevier, Amsterdam.

Wilde-Ramsing, Mark
1978 *A Report on the New Hanover County Archaeological Survey: A C. E. T. A. Project*. Report submitted to the North Carolina Office of State Archaeology, Raleigh, North Carolina.

1984 Archaeological Survey and Testing on Prehistoric shell Midden Sites in New Hanover County, North Carolina. Unpublished M.A. thesis, Department of Anthropology, Catholic University of America, Washington D.C.

Wright, Henry T.
1973 *Archaeological Sequences in the Middle Chesapeake Region of Maryland*. Johns Hopkins University Press, Baltimore.

WOODLAND PERIOD SITE DISTRIBUTION AND LANDSCAPE USE IN THE COASTAL PLAIN OF SOUTHEASTERN NORTH CAROLINA

Tracy L. Millis

This article presents a review of past and current Woodland period research in the New River estuary of southeastern North Carolina. It is largely concerned with the distribution of various ceramic wares present in this area in order to offer information and interpretations for locations of Woodland period occupations. This assessment of the distribution of Woodland period pottery series present in the New River estuary relies exclusively on work conducted through an ambitious 10-year program to inventory cultural resources on Camp Lejeune. Differences in the spatial distribution of Woodland period components within the study area provide a basis for comparing Woodland occupations in the interior drainages with those on larger tributaries of the estuary.

Camp Lejeune is located in Onslow County in southeastern North Carolina (Figure 5-1). Onslow County encompasses an area of 820 square miles and is bounded by the Atlantic Ocean to the south, by Pender and Duplin counties to the west, by the White Oak River and Jones County to the north, and by the White Oak River and Carteret County to the east. Combined, the base is approximately 142,866 acres in size and occupies more than one-fourth of the county.

The New River estuary and its primary tributaries, Northeast Creek, Southwest Creek, Wallace Creek, and French Creek, drain Camp Lejeune (Figure 5-2). The New River estuary is more than a shallow wetland that marks the transition of freshwater to saltwater; but rather its brackish waters serve as a vital habitat for diverse marine life. Topographically, a number of permanent and intermittent streams that are often surrounded by extensive linear swamps dissect the Base. Expansive marshes, swamps, bogs, and pocosins are found in the area, particularly along the shores of estuarine areas. In general, relief on the Base varies from level or nearly level to gently rolling, and land surfaces range from sea level to 94 feet AMSL (0-29 m) in elevation. Generally, elevation increases as one moves toward the interior on the west side of the New River. A second area of higher landforms represent a series of relict sand dunes that stretch in a northeast trending arc from Mile Hammock Bay toward the headwaters of Mill Creek.

Sounds and estuaries of major rivers, including the New River, White Oak, and Cape Fear rivers are located behind the barrier islands that line the coastal region of southeastern North Carolina. Many small drainages and tributaries are also located along the coast and drain directly into tidal marshes, bays, and the Intracoastal Waterway. Landforms and streams located up to three miles inland are affected by tidal fluctuations.

Sea level rise during the Holocene period and subsequent flooding of estuaries and other lowlands in Onslow County, have had a significant impact on settlement patterns throughout the prehistoric and historic periods of the region. The influences of these environmental changes are reflected in the frequencies and distribution of archaeological components in the region and suggest concomitant changes in human adaptations during the Holocene period.

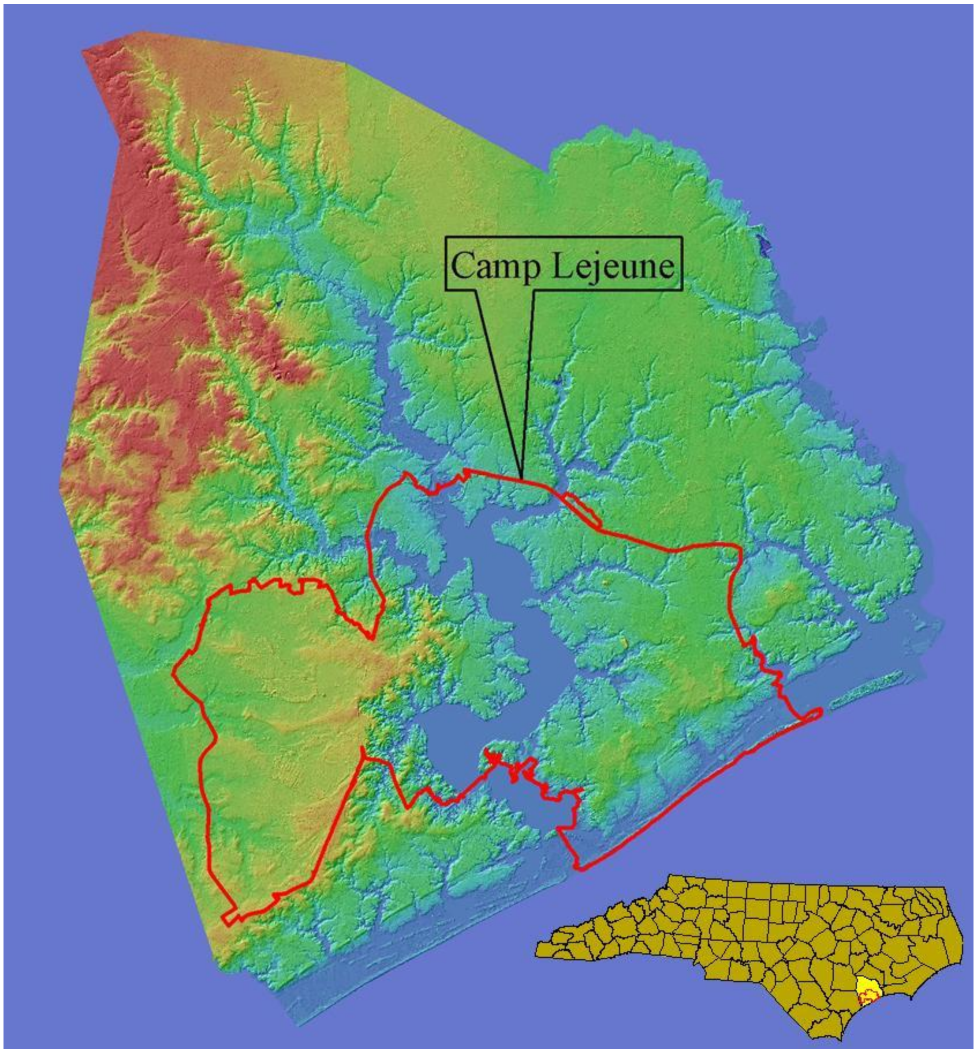


Figure 5-1. Location of study area within Onslow County.

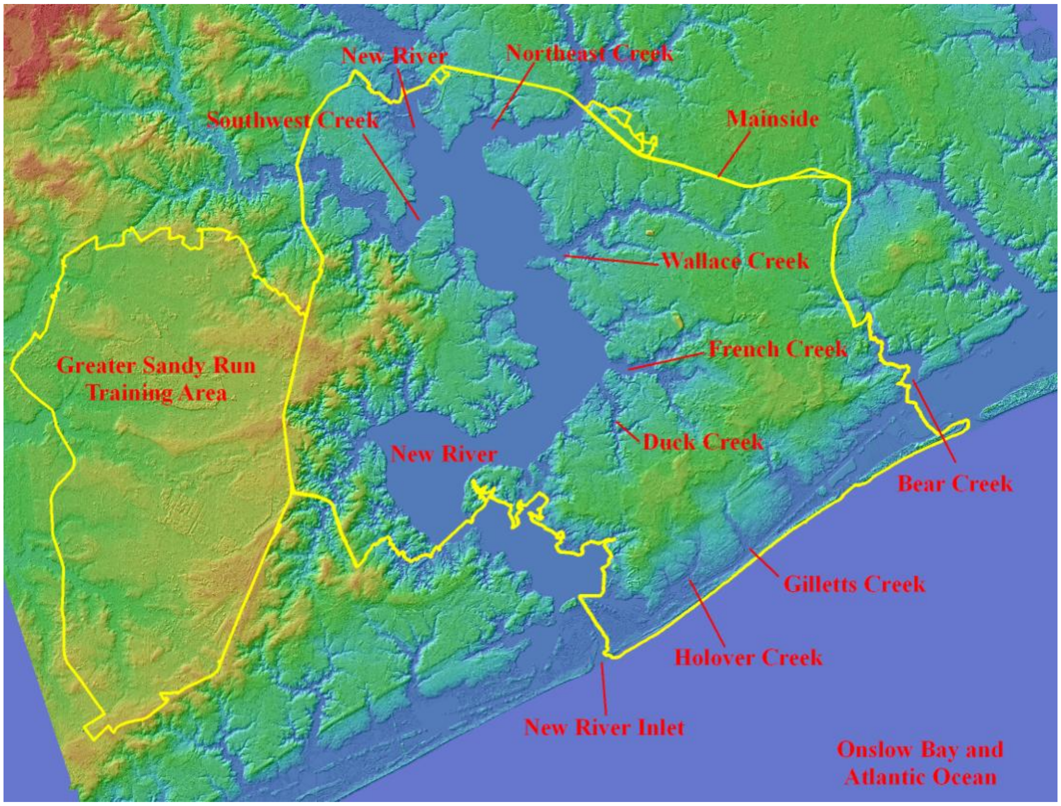


Figure 5-2. Major drainages of Camp Lejeune.

PREVIOUS RESEARCH

Archaeological survey at Camp Lejeune started in the mid 1960s when researchers associated with the University of North Carolina at Chapel Hill recorded some of the earliest sites registered in the county (Loftfield 1981:4). Loftfield (1976) conducted the earliest and most comprehensive investigations of Camp Lejeune in the early 1970s as part of his dissertation research at UNC. In the early part of the 1980s, Loftfield continued extensive investigations of Camp Lejeune. The purpose of these investigations was primarily to conduct a reconnaissance survey of a representative sample of the Base in order to help predict site locations across the landscape. The Base was stratified based on biotic communities, and site frequencies were studied relative to topography, water, and biota in order to generate a model of the environmental and cultural factors that determine site location. As a result, Loftfield (1976, 1981) was among the first to observe within Camp Lejeune the positioning of prehistoric sites and their association with soil types, specific types of water sources, landform elevation, elevation of water sources, and proximity to water, particularly during the Middle Woodland and Late Woodland periods.

His observations concerning distance to water, topography, and changes in site elevation led him to formulate one of the first settlement pattern models for prehistoric occupation of Onslow County, and Camp Lejeune in particular. First, he noted that prehistoric sites are associated with fresh water or salt water and are within 100 m of a water source (Loftfield 1976, 1981). Second, he observed that Archaic and Early Woodland sites tend to occur on elevated landforms adjacent to a water source. Third, he found that site selection during Middle

Woodland and Late Woodland periods was focused on aquatic resources and salt water environs at lower elevations, especially floodplains or flat lands adjacent to saltwater.

While Loftfield (1976, 1981) was among the first to conduct archaeological investigation on Camp Lejeune, investigations continued throughout the 1980s and early 1990s by other researchers. Identification of sites during surveys conducted during this time have allowed for the formulation of three generalized regional models of site placement on Camp Lejeune: flat pattern, ridge pattern, and site-soil models. The flat pattern model was formulated by Loftfield (1981, 1988) and proposes that the preferred Late Woodland site locations are situated next to, or within a relatively short distance of, salt water and were more likely to occur on landforms 10 feet in elevation above sea level. Loftfield speculated that arable land found on flat terraces was occupied primarily for agricultural purposes, with estuarine settings providing access to aquatic resources during times of agricultural stress.

The ridge pattern model of site placement proposed by Gunn and Espenshade (1990) is focused primarily on Early Woodland and Middle Woodland site locations. The proposed settlement pattern for these two periods is marked by a tendency for sites to be located on toe ridges bordered by wetlands on two or three sides. Presumably, this provided access to resources along stream drainages or interior wetlands, as well as upland or upland margin resources. This pattern would suggest hunting based broad-spectrum resource orientation that utilized both interior wetland resources and upland or upland margin resources like deer and turkey. The ridge pattern model does not appear to represent the entire Early Woodland settlement pattern, however, as Loftfield (1981) found that Early Woodland sites occur at all elevations.

The site-soil model proposed by Poplin and Jones (1992) is based on the assumption that archaeological sites are correlated with edaphic factors within specific environmental settings. Prior to their research, soil properties had been previously demonstrated as good predictors for archaeological site distribution elsewhere in the North Carolina Coastal Plain, particularly with the extensive work of Wilde-Ramsing (1980, 1981) and Hay et al. (1982) in New Hanover County. Poplin and Jones (1992) stratified Camp Lejeune based on soil series and found that the highest density of archaeological sites, based on the frequency of sites and the total number of acres surveyed, occurred on nine different soil series, which were later incorporated into a formal predictive model used by Camp Lejeune.

They noted that site locations within Camp Lejeune were clearly patterned by soil types, particularly for Early Woodland and Middle Woodland components (Poplin and Jones 1992:56–57). Similarly, Claassen (1979a, 1979b) found a high correlation of Late Woodland sites with specific soils (Onslow series) during her survey along the White Oak River, between Onslow and Carteret counties, while Loftfield (1981, 1988) observed that Late Woodland sites on Camp Lejeune frequently occurred on one specific soil series (Wando soils). However, later research conducted by Poplin and Jones (1992:54) on Camp Lejeune found that Late Woodland sites do not appear to have similar frequencies for Onslow and Wando soils. When they explored Wando soils in the inland portions of the Base, these researchers found no Late Woodland sites, and suggested that the association of Late Woodland sites with the Wando series may be affected by distance from the Atlantic shore.

Other than Onslow County, research conducted elsewhere in the southern and northern Coastal Plain of North Carolina also indicates that elevated landform, well-drained soil, and proximity to water, or more importantly stream confluences, are the main criteria for site selection (Claassen 1979b; Hay et al. 1982; Loftfield 1976, 1981; Phelps 1983; Poplin and Jones 1992; Wilde-Ramsing 1980, 1981). Lautzenheiser (1989) later refined this model of prehistoric settlement for the Inner Coastal Plain to include sites located on the rims of Carolina Bays, as well as fringes of swamps, or other micro-relief landforms associated with rivers, streams, or bays since these types of water sources were crucial and reliable sources of plant and animal resources.

Claassen (1979b:37) has observed that archaeological sites are predominantly located on elevated ground, and in most cases, situated either on top of a narrow ridge or along bluffs overlooking large streams. Farther north along the Chowan River, Phelps (1978:32) has also noted a similar tendency for sites to be located in elevated areas. Phelps (1983) also observed that archaeological sites within the Coastal Plain tend to occur in proximity to water. Investigations conducted in the region by Phelps and other researchers indicate that the largest settlements occurred along the major river systems, with a noticeable reduction of sites, particularly Late Archaic period sites, along the smaller tributary streams (Phelps 1983). Mathis (1979) further indicates that larger, more permanent habitation sites are likely to occur at the confluence of a high order stream and a smaller tributary.

METHODOLOGY

The fluorescence of prehistoric occupations in the Coastal Plain occurred during the Woodland period. Cultural chronologies have traditionally ascribed a tripartite division of the Woodland period into the Early, Middle, and Late Woodland subperiods. Large suites of radiometric and thermoluminescence (TL) dates obtained over the last 10–15 years have helped to refine the chronological sequence of the different Woodland ceramic series present in the Coastal Plain. Given our current understanding, these new data have demonstrated greater temporal variability of the various pottery traditions, and it now appears evident that some of the Woodland ceramic series are associated with multiple temporal periods (see Herbert this volume).

Of the nearly 1,300 prehistoric and historic sites identified on the Base, only 13 sites have yielded absolute dates in the form of radiocarbon or TL dates (cf. Davis and Childs 1996; Greene and Millis 2003; Loftfield and McCall 1986; Millis 2009a, 2009b, 2009c; Norris and Abbott 2004; Reid and Simpson 1997). Due to the low frequency of absolute dates, it becomes important to view temporal distribution data based on typologically distinct ceramic series. This is particularly crucial considering that occupations associated with various Woodland ceramic traditions cannot necessarily be defined by a single temporal period, but rather it now appears more likely that duration span for some of the ware groups transcends multiple Woodland periods. Due to these considerations, and since there is more regional and cultural variability than is present in current models of pottery type distribution, cultural data and the spatial distribution of archaeological resources used for this study were based on components assigned by ceramic artifacts considered to be diagnostic of specific ceramic ware groups. One caveat about site distribution patterns, however, is that not all sites contain temporally diagnostic ceramic assemblages. Therefore, isolated find locations or small sites without diagnostic artifacts may prove later to be important components of the relationship of pottery type distribution and settlement organization. Moreover, there is no expectation that any of the pottery types correspond to a specific ethnic or linguistic group. While it is possible that some ceramic traditions, such as the Colington and White Oak series, may be correlated with distinct cultural groups, it is just as likely that a cultural group was associated with more than one pottery series.

Camp Lejeune is divided into two different portions: Mainside and Greater Sandy Run Training Area (GSRA). Since 1998, TRC has conducted survey investigations of more than

14,400 acres within the Mainside portion of the Base (Figure 5-3). Of the nearly 1,300 prehistoric and historic sites recorded on Camp Lejeune, more than 1,060 of these sites were recorded or relocated during our investigations (Figure 5-4). While Archaic period occupations are represented on the Base, for the purpose of this study, only sites containing Woodland components will be discussed. Although sites are located on GSRA, only Woodland components identified within the Mainside portion of the base will be discussed.

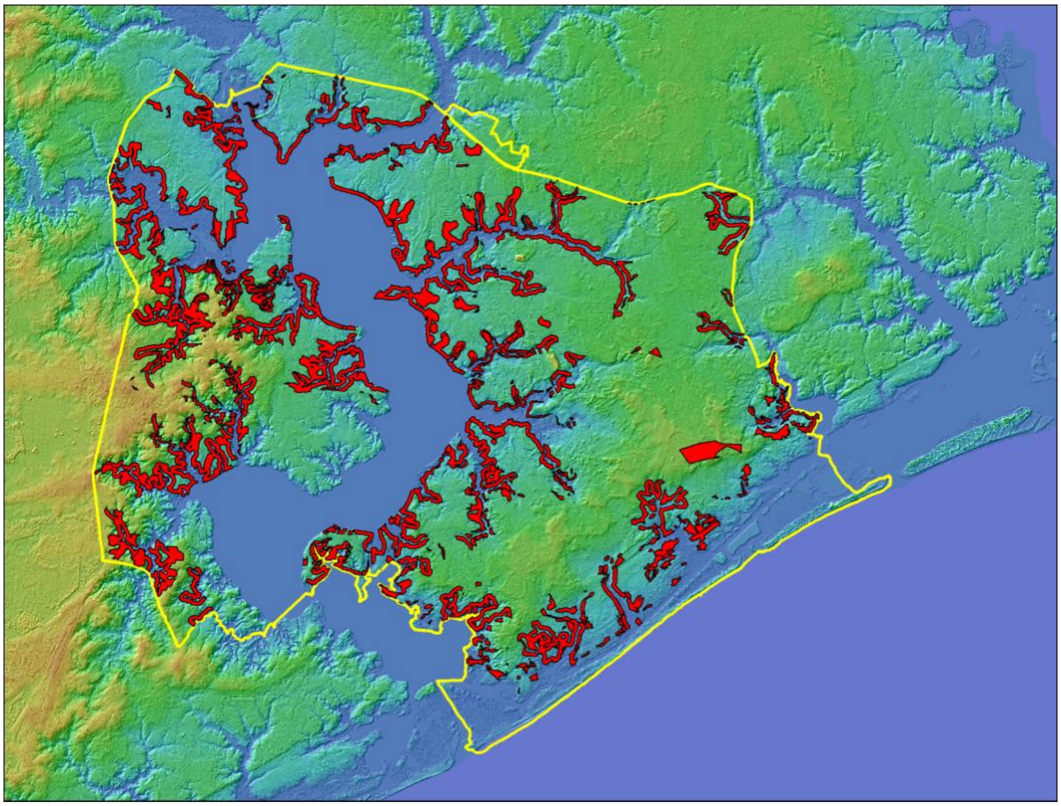


Figure 5-3. TRC survey areas 1998–2008.

In order to assess the spatial distribution of Woodland components in the New River drainage, almost 28,000 sherds representing more than 1,900 diagnostic assemblages from 782 prehistoric sites were analyzed (Figure 5-5). Distribution patterns at Camp Lejeune were discerned by characterizing differences in the spatial, chronological, and cultural distinction of ceramic series across the landscape. Once the known resources were identified for each ceramic tradition, their frequency and location were evaluated. While these observations must be treated as measures of basic tendencies, generalizations about where, and to what extent, particular types of Woodland period resources are located will serve to define potential areas that need attention and to illustrate particular patterns of prehistoric settlement with regard to socio-cultural boundaries as illustrated by the distribution of temporally separate and/or coeval ceramic traditions.

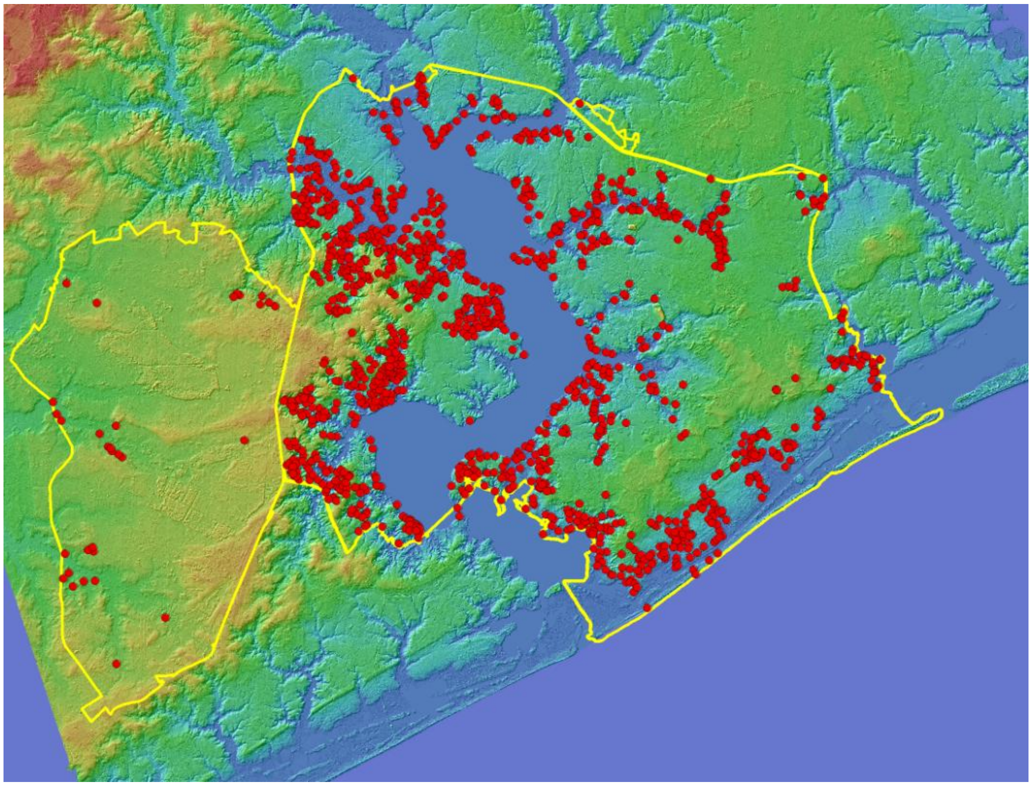


Figure 5-4. Camp Lejeune site distribution.

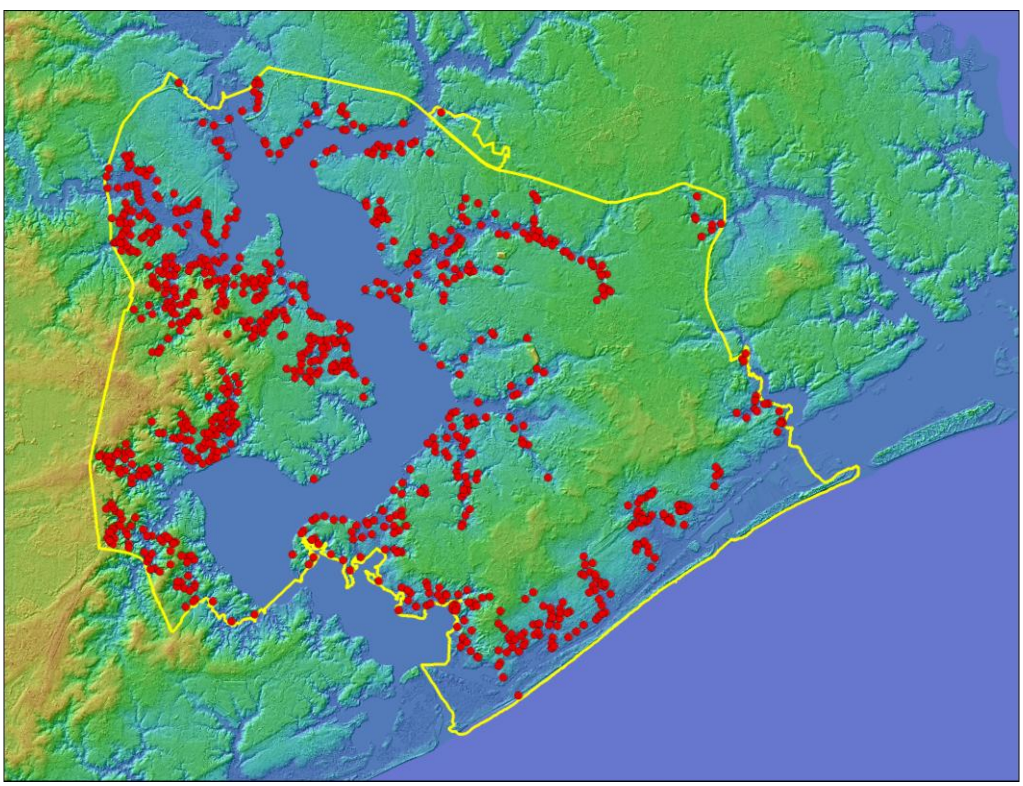


Figure 5-5. Prehistoric sites located on Mainside.

Many of the sites utilized for this study are multi-component, suggesting extensive use and reuse during site occupancy. They also demonstrate considerable temporal duration, often producing diagnostic sherds representative of ceramic series ranging from Early Woodland Thom's Creek through Late Woodland White Oak ceramic traditions, with some of the occupations by groups making pottery associated with the New River, Cape Fear, Hanover, and White Oak ceramic series particularly intensive.

SPATIAL DISTRIBUTION OF CERAMIC SERIES

Chronology and models of Woodland period settlements in the Coastal Plain have been developed by Phelps (1983) for the northern Coastal Plain and by Loftfield (1976) and South (1976) for the southern Coastal Plain. Since the study area is located in the south coastal region, only a review of Woodland prehistory in this region is pertinent.

Based on diagnostic ceramic artifacts represented within the project areas included in this study, components with Stallings and Thom's Creek series pottery were sparse, but an increase in the spatial distribution of Hamp's Landing and New River series pottery elsewhere in the New River drainage during the Early Woodland period is evident (Figure 5-6). The New River watershed was intensely occupied by groups making Cape Fear and Hanover series pottery, considering the marked increase in the number of prehistoric sites that contain these components identified in the study area. In general, sites with Deptford, Onslow, and White Oak components decreased in frequency across the Base during the Middle Woodland and through the end of the Late Woodland period. Mockley, Brunswick, and Swansboro components were rarely encountered on the Base. A more thorough discussion of the spatial distribution of these various ceramic traditions follows.

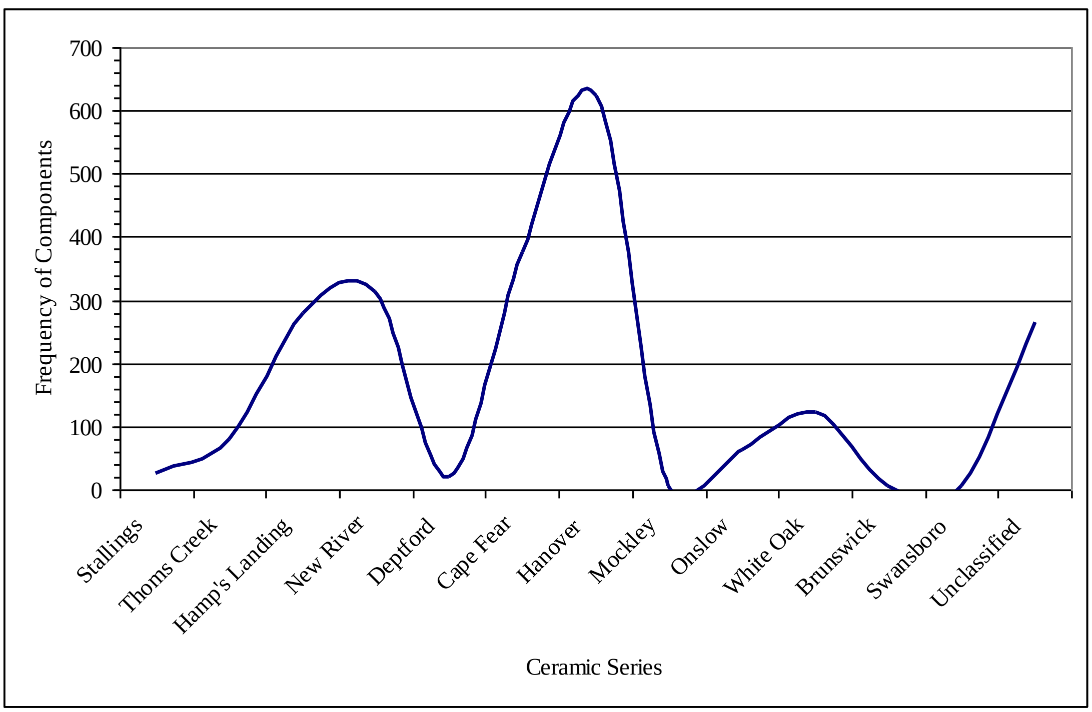


Figure 5-6. Distribution of Woodland components in the New River drainage.

Early Woodland (1,000 B.C.–A.D. 300)

The Early Woodland period in the south coastal region is characterized by the Stallings, Thom's Creek, Hamp's Landing, and New River ceramic series. Little is known about the settlement practices during the Early Woodland period, but Phelps (1983:32) has suggested that the lifeways of these peoples seem to have changed little from those of their Late Archaic predecessors. The frequency of sites attributed to the Early Woodland period shows an increase over the preceding Late Archaic period (Claassen 1979b; South 1976). Claassen (1979b:49) has attributed the increase in sites during this time to normal population growth. Alternatively, it is possible that the increase in frequency of Early Woodland sites is due to greater movements across the landscape as a result of a more mobile settlement pattern, thus accounting for greater archaeological visibility for sites assigned to this period. Since lithic artifacts, particularly temporally diagnostic lithic artifacts, do not occur in large quantities at either Archaic or Woodland period sites within the study area, it is also probable that the introduction of pottery during this time has resulted in a more conclusive identification of components associated with the Early Woodland period.

Research has found that Early Woodland sites tend to be located on relatively few specific soil types, following a pattern established during the Late Archaic period, with sites during this period apparently focused on salt water or estuarine margins (Claassen 1979b:43, 47). In contrast, Loftfield (1981:137) found that Early Woodland sites on Camp Lejeune have a tendency to be located more inland than later Woodland period sites, which generally occur in estuarine settings. Research conducted by Poplin and Jones (1992) at Camp Lejeune indicate that Early Woodland sites were scattered in upland settings or on terrace slopes adjacent to drainages and were generally located on sandy soils. Gunn and Espenshade (1990:92) also noted that Early Woodland and Middle Woodland sites tend to occur at higher elevations than Late Woodland and historic sites and suggested that these changes in site placement are likely the result of changes in sea level and local climate.

The Stallings series, characterized by fiber temper and plain or smooth surfaces with punctate decorations, was manufactured around 2500 to 1100 B.C. in North Carolina. Current knowledge of the Stallings tradition is limited, but sherds have been reported from a small number of sites in the Coastal Plain. The majority of these are south of the Neuse River drainage, however, fiber tempered sherds are found as far north as the Chowan River in Gates County (Herbert 2003; Phelps 1983). Stallings series sherds were found at 27 sites during our study at Camp Lejeune, most of which occurred in the northwestern portion of the Base around Southwest Creek and the lower part of the New River, near the inlet and along the southeastern portion of the coast (Figure 5-7). Sites with Stallings components are generally found along primary or secondary tributaries of the New River, but a few sites are located in inland settings. Thom's Creek series pottery has an expected manufacture range of 2000–1000 B.C. and is a minority pottery type in the Coastal Plain region. It can be found as far north as the Neuse River drainage, and its occasional presence along the southern coast of North Carolina suggests a northern migration of this ware (Phelps 1968, 1983; Trinkley 1976, 1980, 1989). Thom's Creek pottery was found in relatively small amounts at 79 sites across the Base (see Figure 5-6). A majority of the sites with Thom's Creek components were also occupied by groups associated with Hamp's Landing, New River, Cape Fear, Hanover, and White Oak wares. Areas of particular concentration for sites containing Thom's Creek components occur within the northwestern portion of the Base, in the Southwest Creek drainage; in the Town Creek drainage,

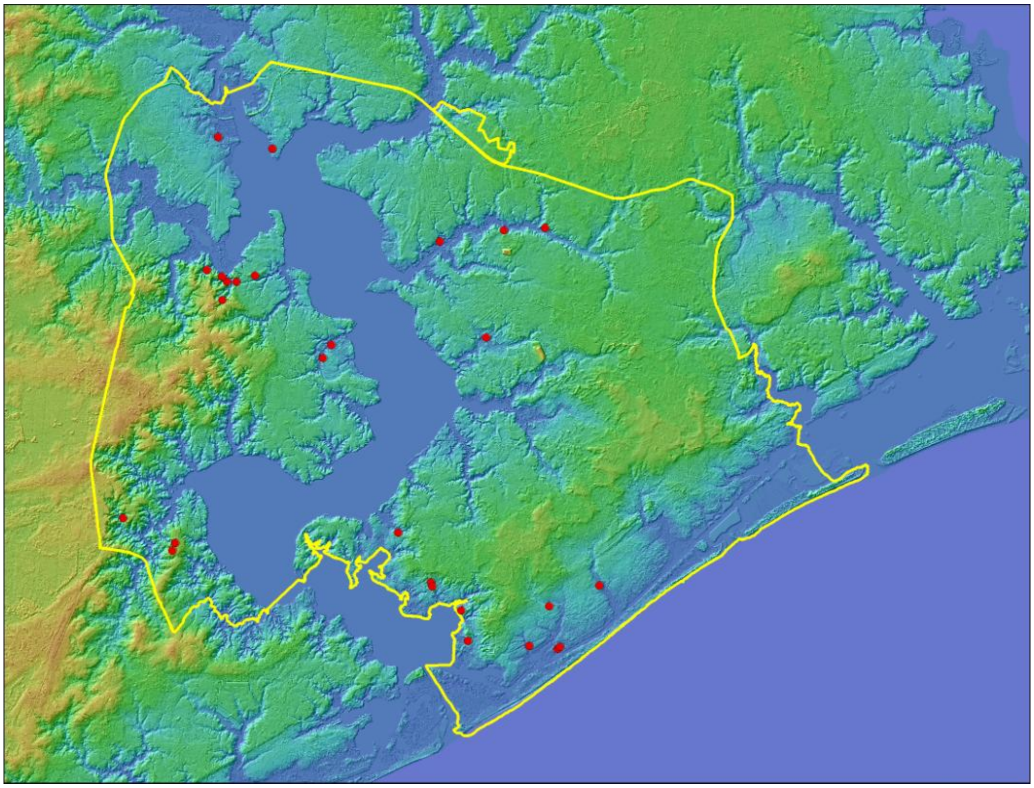


Figure 5-7. Distribution of Stallings series.

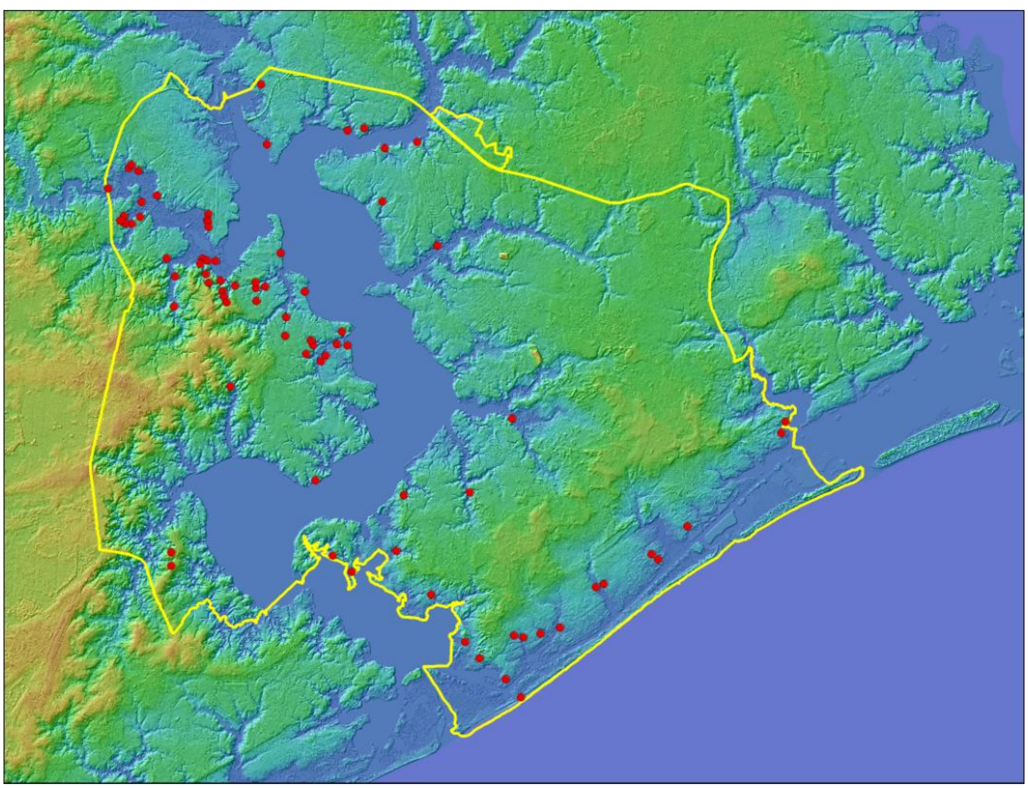


Figure 5-8. Distribution of Thom's Creek series.

along the western side of the middle portion of the New River; and in the southeastern part of the base, from the east side of the lower New River and extending eastward to Browns Inlet and Bear Creek (Figure 5-8). Sites yielding Thom's Creek series sherds are typically found along major drainages or primary tributaries, while sites located along secondary streams or upper headwaters appear to be relatively uncommon.

Hamp's Landing series pottery is characterized by limestone, or in some instances marl and sand, temper, with cord marked, fabric impressed, net impressed, simple stamped, and plain surface treatments (Herbert and Mathis 1996). Stratigraphic association of the Hamp's Landing type suggests a late Early Woodland to early Middle Woodland temporal placement (Hargrove 1993; Hargrove and Eastman 1997:100; Herbert and Mathis 1996:145–146, 157). Herbert (2003:180) observed wide variability in surface treatment on Hamp's Landing sherds, including surface treatments typically found early in the chronological sequence as well as treatments that are found later in the sequence. This led him to suggest that the date range for the Hamp's Landing type could extend later than is indicated by the current suite of dates.

Numerous sites with Hamp's Landing series pottery were identified in the study area and exhibit a strong preference for settlement along most of the major drainages of the base, such as New River, Southwest Creek, Northeast Creek, Wallace Creek, Duck Creek, Holover Creek, Gillets Creek, and Freeman Creek (Figure 5-9). In addition to settlement along major water courses and lower reaches of high order tributaries, groups making Hamp's Landing series pottery appear to have begun to establish more dispersed settlements throughout the area. Although evidence of settlements within upland settings and along low order streams is still uncommon, there are indications that middle portions of primary tributaries, and even the headwaters in a few instances, were used.

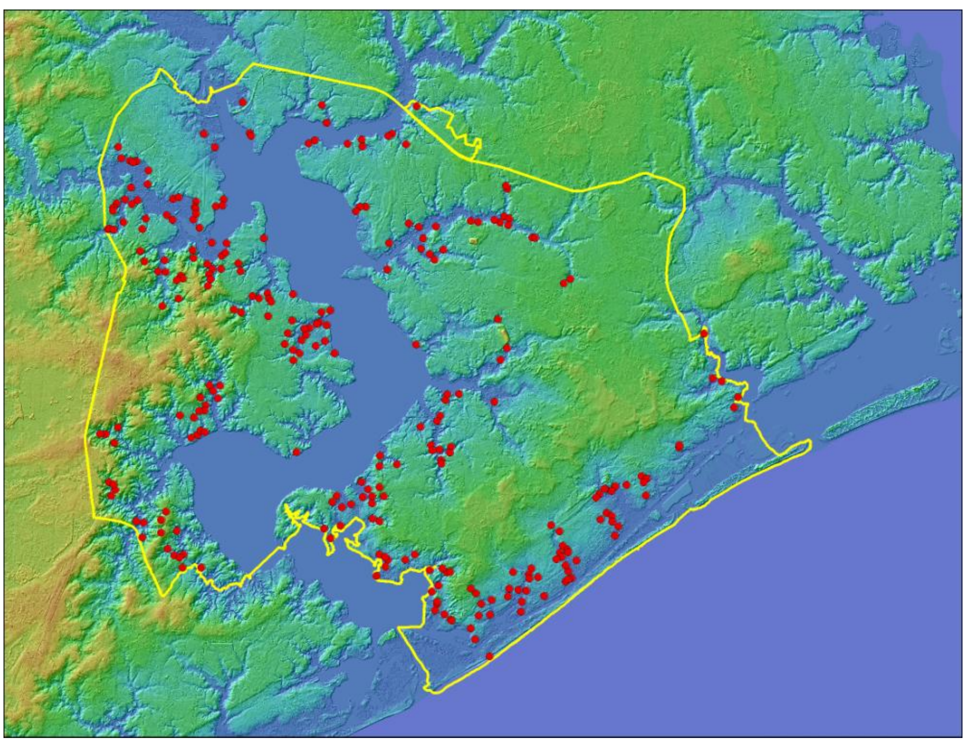


Figure 5-9. Distribution of Hamp's Landing series.

The New River series has been found to date between 1800–450 B.C. and is characterized by coarse sand and/or grit temper with cord marked, fabric impressed, net impressed, simple stamped, or plain surface treatments (Herbert 1997, 1999, 2003; Herbert and Mathis 1996; Loftfield 1976; Millis 2009a, 2009b; Reid and Simpson 1997). The New River series was initially defined by Loftfield (1976) and is comparable to the Early Woodland sand tempered Deep Creek series defined by Phelps (1983) for the northern Coastal Plain. The mapped distribution of sites with New River components essentially follows patterns similar to those of sites with Hamp's Landing components, but with an increase in site density (see Figure 5-6). Mainly sites with New River series sherds are found along the New River and its primary tributaries, with evidence of settlements extending into the middle valleys. There appears to be a growing emphasis on interior locations with respect to site selection, as sites yielding New River series pottery are observed extending into the headwaters in upland settings and along secondary tributaries; but many other portions of stream headwaters do not show evidence of occupations (Figure 5-10).

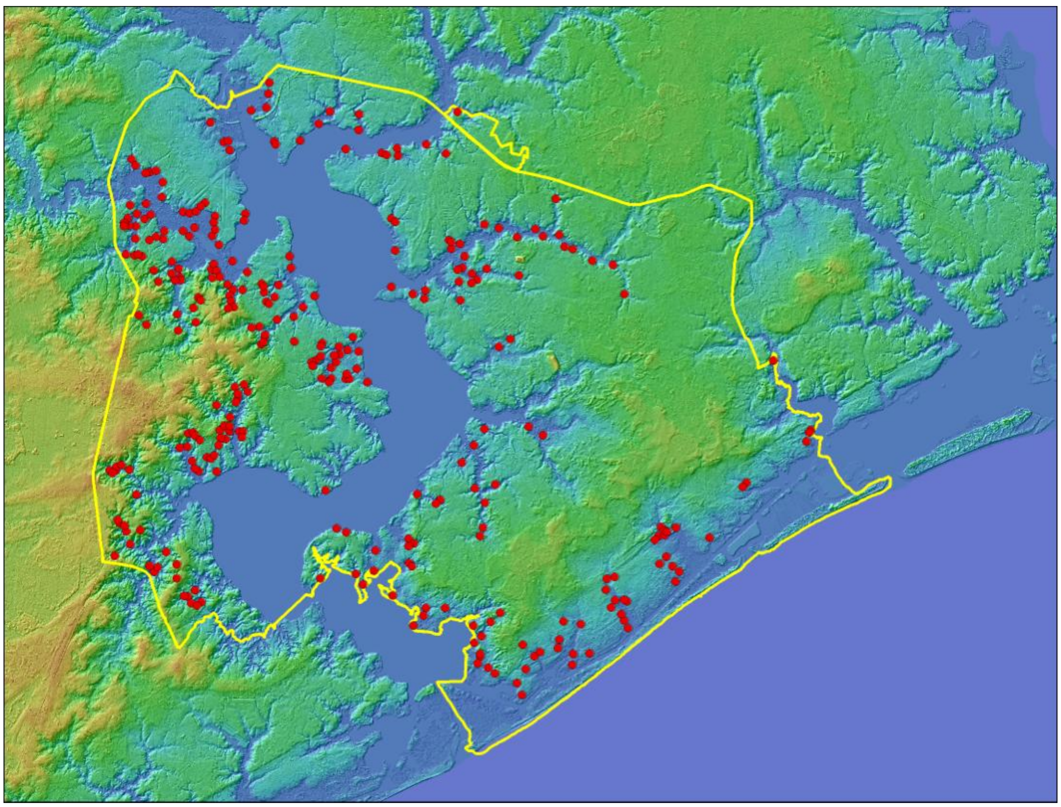


Figure 5-10. New River sites.

Middle Woodland (A.D. 300-800)

Marine transgression during the Middle Woodland period led to changes in estuary regime and drainage systems in the region. Brooks et al. (1989) have identified four different periods of high sea level during the Middle Woodland and part of the Late Woodland periods in

South Carolina, suggesting that estuaries had expanded considerably over the preceding periods due to gradually rising sea level, resulting in marked changes in the subsistence-settlement patterning. In fact, Brooks et al. (1989) hypothesize that land mass was reduced during the Middle Woodland and part of the subsequent Late Woodland period as a result of rising sea level. They suggest that this likely reduced the size of band territory, resulting in a dispersion of populations into small economic units focused on exploiting a narrow range of highly productive, low-risk, seasonal resources (Brooks et al. 1989:96). Research conducted in South Carolina indicates that sites tend to cluster during periods of high sea level stands due to a reduction in the amount of well to moderately well drained soil (Brooks et al. 1989). Since the amount of acreage available for exploitation is reduced during high sea level, there is a greater tendency for more nucleated sites to be located on higher, well drained soils.

During the Middle Woodland period, there is an increase in the frequency of large and small sites in the Coastal Plain of North Carolina (South 1976; Claassen 1979b). There is a wide and intense distribution of Middle Woodland sites, which account for more sites than any other period of prehistory. In fact, Poplin and Jones (1992:57) found that Middle Woodland components on Camp Lejeune increased nearly two-fold over the preceding period.

Numerous large and small sites have been found dating to this period, suggesting periodic aggregation and dispersion or some kind of a base camp/extractive camp specialization dichotomy. This general trend toward not only an increase in the number of sites, but also in the intensive use of sites and site dispersal, is reflected elsewhere in the Coastal Plain. Claassen (1979b:49) has suggested that an increase in Middle Woodland sites is likely due to an influx of population groups from both the north and the south. Alternatively, it is likely that at least some of the increase in site frequencies may be attributed to a highly mobile settlement system adapting to the changing environment. It is suggested that procurement sites operated as satellite sites of more centrally located base camps, and that these extractive forays were established on a frequent basis in order to exploit the diverse estuarine resources. This hypothesis is in line with the observation that Middle Woodland sites are located on a variety of soil types, which could be a result of the exploitation of diverse biotic communities.

Research conducted by Claassen (1979a, 1979b) and Loftfield (1976) indicates that Middle Woodland occupations in the southern Coastal Plain were more widely dispersed than those of the preceding time period, with settlement patterns indicating a focus on riverine or estuarine environments, which is similar to the pattern observed by Phelps (1983) in the northern Coastal Plain. Loftfield (1981:42) further notes that settlement patterns during the Middle Woodland period in the south coastal region not only shifted from the proceeding Early Woodland period, but also generally involve more varied landforms at differing elevations. Sites are also more frequently located along major salt water sounds, as shell midden sites suggesting the first large-scale exploitation of this food source begin to appear during the Middle Woodland period (Loftfield 1981). Aside from an emphasis on riverine and estuarine environments, Loftfield (1981:137) found that Middle Woodland sites were also typically located inland, away from estuarine settings, whereas Claassen (1979b) observed that Middle Woodland sites were typically located on bluffs and knolls. Poplin and Jones (1992:58) have also suggested that Middle Woodland sites tend to be located in more inland situations.

The Middle Woodland period in the southern Coastal Plain is identified by Cape Fear and Hanover, and less occasionally, Deptford ceramic traditions (Loftfield 1976; Phelps 1983; South 1976; Herbert and Mathis 1996). The northerly extent of Deptford pottery, which is rarely found in the area, is the Cape Fear River and the northern tributaries of the Pee Dee River (Loftfield

1976; Phelps 1983:28). Sites with Deptford components are rarely represented on the Base. Of the 19 sites that have Deptford sherds, many are located within the Southwest Creek watershed, or the Holover, Gillets, and Freeman's Creek drainages in the southeastern portion of the Base (Figure 5-11). Although the sample is very small, sites with Deptford series pottery are located along major drainages, but a few occur along smaller tributaries, particularly between Mill Creek and Muddy Creek on the western side of the Base.

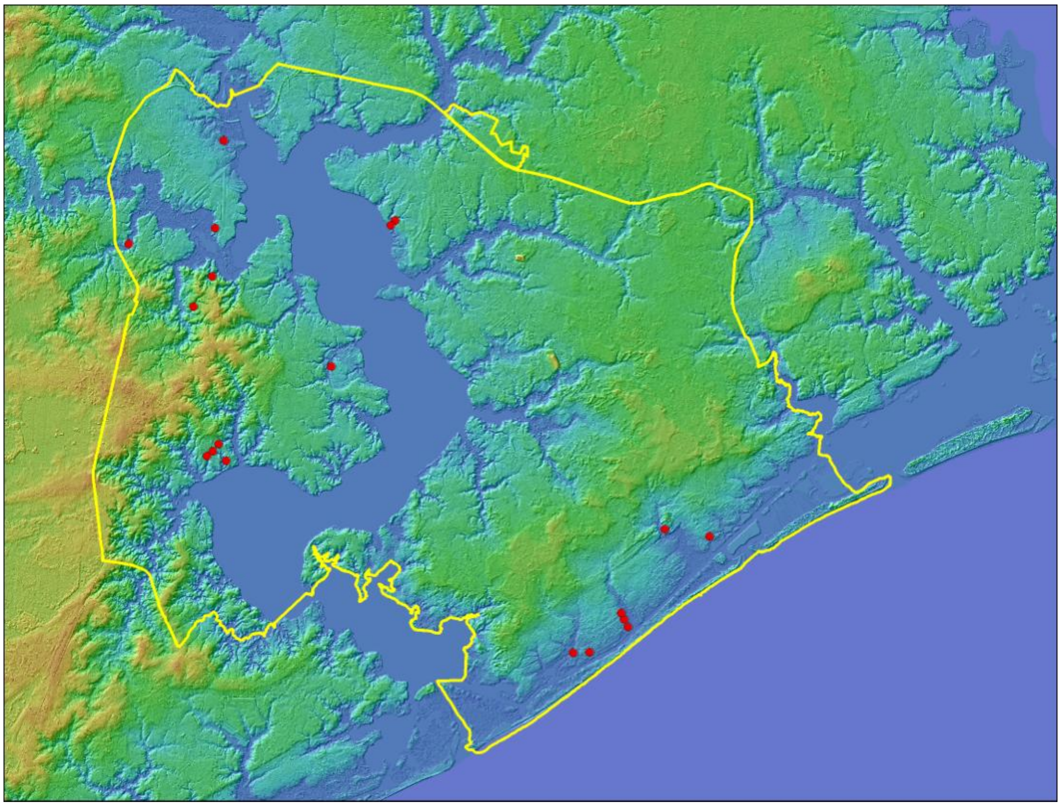


Figure 5-11. Distribution of Deptford series.

Cape Fear ceramics are primarily sand tempered and are similar in many respects to the Mount Pleasant ceramic series to the north (Phelps 1983:35; South 1976). The Cape Fear series was initially defined as medium sand tempered pottery finished with cord wrapped or fabric wrapped paddles, with net impressing represented infrequently. This series was originally placed at the end of the Middle Woodland period (South 1976). Radiocarbon and TL dates suggest an age range from 400 B.C.–A.D. 400; however, several dates post-date A.D. 1000, suggesting continuation into the Late Woodland period (Greene and Millis 2003; Herbert 1997, 1999, 2003; Millis 2009a, 2009b; Norris and Abbott 2004; Reid and Simpson 1997).

Sites with Cape Fear series pottery are represented only slightly more intensively as sites with New River series sherds, as the two series are essentially evenly represented by frequency (see Figure 5-10, Figure 5-12). There does not seem to be any difference in site placement by groups associated with Cape Fear wares, as sites with Cape Fear components appear to have been established in similar environmental settings as previous sites with New River components, or in the case of sites with Hanover components, are perhaps contemporaneous occupants of the area. The New River and its major tributaries remain the primary focus of settlement by groups making Cape Fear pottery, augmented by sites situated along secondary tributaries, or extending upstream and into the middle valleys. Occasionally, headwaters and upland areas were occupied, and a few sites with Cape Fear series pottery are located along low ranking streams.

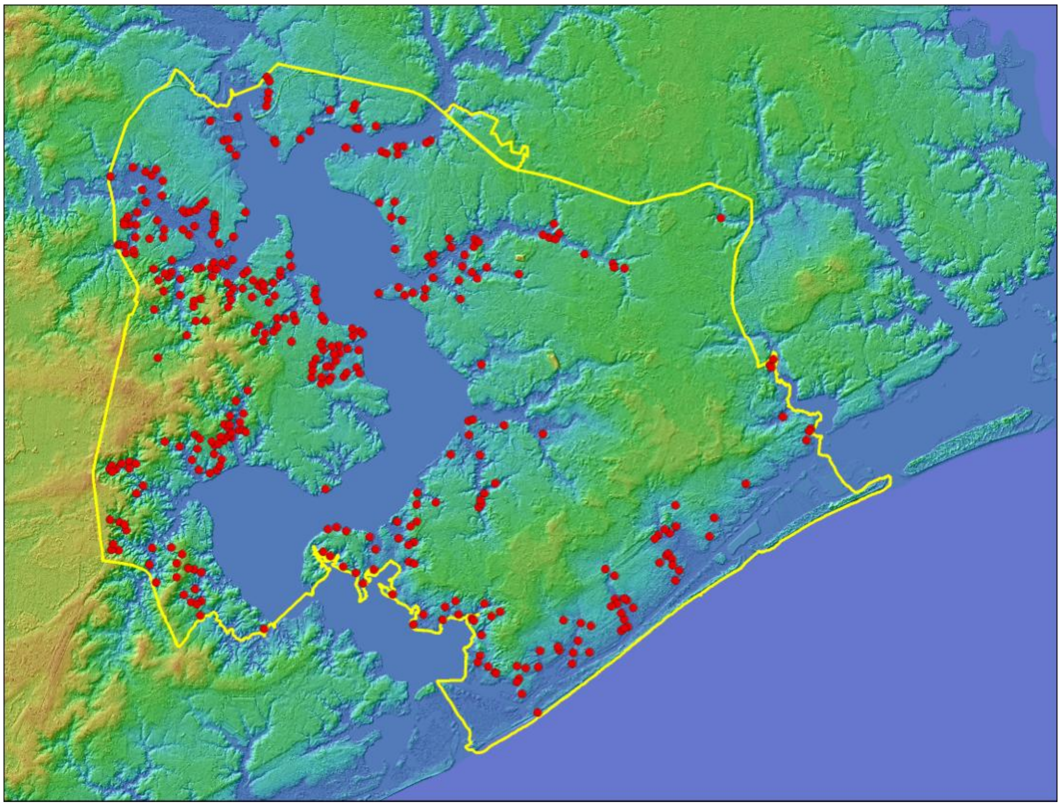


Figure 5-12. Distribution of Cape Fear series.

The clay tempered Hanover series ceramics occur in higher frequency along the coast and are generally found in association with Mount Pleasant ceramics in the interior of the Coastal Plain (Phelps 1983). Hanover series ceramics were originally assigned to the Middle Woodland period, but current radiocarbon and TL dates indicate a general range of ca. 200 B.C.–A.D. 800 (Hargrove 1993; Hargrove and Eastman 1997; Herbert and Mathis 1996:163; Herbert 1997, 2003; Millis 2009a; Norris and Abbott 2004; Reid and Simpson 1997; South 1976:16). There is some indication that the tradition of tempering with clay or grog in the southern Coastal Plain may extend well into the Late Woodland period (Herbert 1999:39, 2003:74, 19, 193–194). In fact, there are several TL dates obtained from Hanover sherds on Camp Lejeune that post date A.D. 800 (Greene and Millis 2003).

A significant increase in site density is evident for sites with Hanover series pottery, which are more prevalent than any other component on the Base (see Figure 5-6). Earlier and later groups also occupied many of these sites, as a large number of sites with Hanover components also contain evidence of occupation by groups making Hamp's Landing, Thom's

Creek, New River, Cape Fear, and White Oak wares. Like the spatial distribution of Cape Fear pottery series, sites with Hanover components demonstrate a strong preference for major drainages and their primary and secondary tributaries (Figure 5-13). A substantial number of sites with Hanover series sherds are located adjacent to interior stream confluences and there is some evidence that headwaters and lower order streams extending into the uplands were occupied. However, in some areas sites with Hanover components are confined to the lower and middle portions of drainages, and there is an absence of occupations extending into the upper reaches of streams.

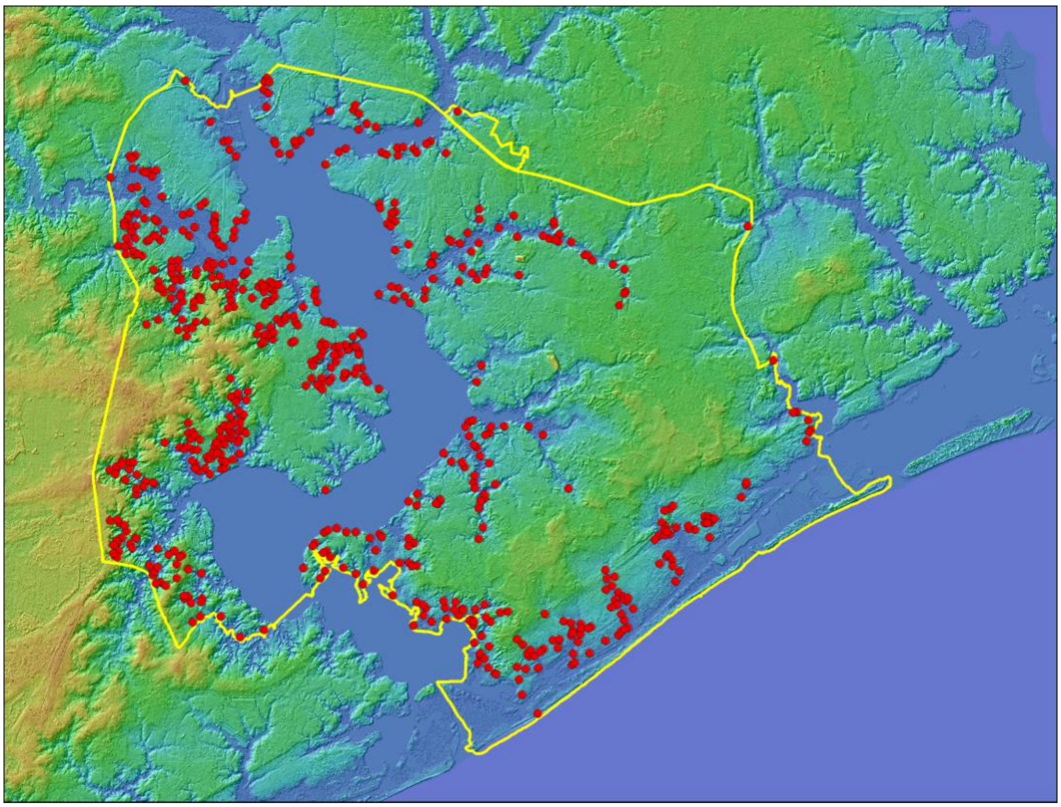


Figure 5-13. Distribution of Hanover series.

In addition to the Deptford, Cape Fear, and Hanover ceramic traditions, Loftfield (1976) has identified the Onslow series as a grit tempered ware that is characterized by cord marked, simple stamped, and plain surface treatments. Very little is known of the chronology of Onslow series sherds and, with the exception of one AMS date of A.D. 660 from the Onslow Beach site (31ON1246) on Camp Lejeune (Millis 2009c), we have not been able to contribute any information based on conventional absolute dating techniques to resolve this problem. On the basis of seriation sequence, stratigraphic test excavations, and one radiocarbon date of A.D. 810 obtained from the Flynt site (31ON305) located just to the southeast of the Base, Loftfield (1976:199; 1987a) suggests that the Onslow series likely occurs between the Hanover and White Oak series, indicating a Middle Woodland or early Late Woodland temporal placement.

Sites with evidence of Onslow series pottery primarily occur in several separate portions of the Base (Figure 5-14). One cluster occurs in the northern part of the New River estuary and includes Southwest, Northeast, and Wallace creeks. Another cluster of Onslow sites is located in the lower New River, particularly along Courthouse Bay, Traps Bay, and Howard Bay and extending northeastward along the coast. Nearly all of the sites with Onslow components co-occur with sites also containing Hamp's Landing, New River, Cape Fear, Hanover, and White Oak components. Consequently, spatial distribution across the landscape follows a pattern similar to that noted for these ceramic traditions.

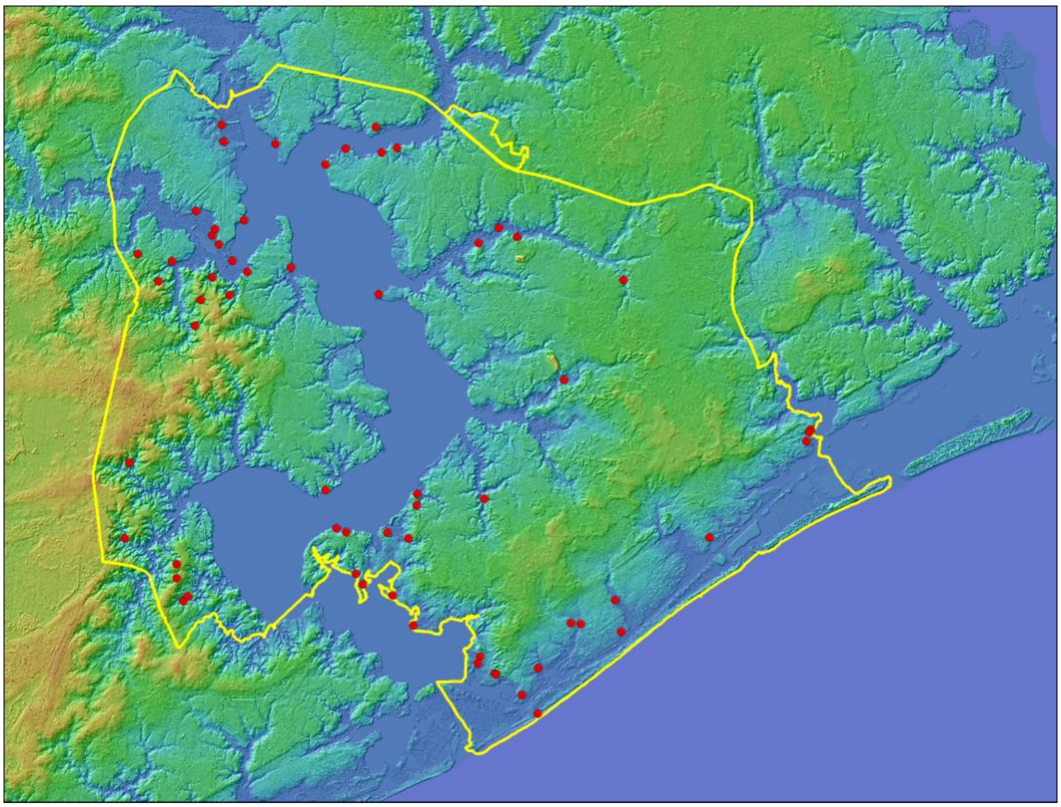


Figure 5-14. Distribution of Onslow series.

Late Woodland (A.D. 800-1585)

A decline in the number of sites dating to the Late Woodland period has been observed during earlier investigations of the southern Coastal Plain in and around Onslow County (Claassen 1979b; South 1976). It has been suggested that this results, not from a population collapse, but rather a coalescing of population groups into larger occupied sites, such as villages (Claassen 1979b:50). The decline in the frequency of sites from this period may also be associated with severe environmental changes. Stahle (Stahle and Cleveland 1996; Stahle et al. 1988) has found evidence among millennium-old bald cypress trees from the Black River, approximately 40 miles west of the Camp Lejeune study area, that suggest the period between A.D. 1100–1300 was marked by several prolonged droughts. After the droughts had ended, the area was characterized by relatively wet conditions following the onset of the Little Ice Age from approximately A.D. 1300–1600.

Late Woodland sites on Camp Lejeune are generally located in estuarine settings, with shell-tempered ceramics rarely found on interior sites (Loftfield 1981:137). Although Late Woodland groups practiced horticulture, they preferred estuarine settings in order to exploit shellfish and an abundance of other coastal resources during periods of low agricultural output. An increased emphasis on shellfish collecting, and to some extent horticulture, during this period suggests that Late Woodland groups were engaged in a focal economy (Poplin and Jones 1992:57).

During the Late Woodland period, native populations became permanent and year-round residents of the coast. Larger settlements were comprised of villages consisting of several longhouses, likely based on kin-groups, spaced over considerable distances along the shoreline (Loftfield and Jones 1995:133; Mathis 1995), an example of which is the Broad Reach site to the north of the study area in Carteret County (see H. Millis, this volume). The sites are characterized by dense shell middens that presumably accumulated on a seasonal basis. Other resources, including a variety of fish, terrestrial mammals, birds, and plants were also heavily exploited (Scarry and Scarry 1997). The relatively low frequency of corn and other cultigens recovered from archaeological contexts suggests that horticulture was practiced on a limited basis and that crop cultivation was not a significant part of the subsistence strategy until the end of the Late Woodland period, possibly as late as the 15th century (Mathis 1995). Although there was a seasonal shift in resource procurement, this apparently did not necessitate a complete residential move (Mathis 1995).

It has been postulated that the Neuse River drainage served as a demarcation zone for the coastal populations. Phelps (1983) noted that by the Late Woodland period and extending up until the time of European contact, there were three identifiable linguistic groups occupying the Coastal Plain of North Carolina. The Iroquoian speaking Tuscarora, Meherrin, and Nottaway occupied the north coastal region in the Inner Coastal Plain, with the southern boundary thought to be around the Neuse River. Phelps (1983) noted that in the tidewater region of the Coastal Plain, archaeological sites associated with Algonquin groups are generally located north of the Neuse River, while archaeological sites associated with the Siouan speaking Waccamaw and Cape Fear are usually located south of the Neuse. As shell tempered ceramics occur as far south as the Cape Fear River, however, others have suggested that the Neuse River was not the line of demarcation, but rather that the Cape Fear drainage was more likely the southern terminus of the Algonquian influence and territory (Loftfield 1976, 1987b, 1990; Mathis 1995). Based on his excavations of an ossuary at Camp Lejeune, Loftfield (1987b) suggests that Algonquians had moved into the central coastal region from a northerly center and subsequently acquired southern traits as they assimilated with their Siouan neighbors.

There is substantial archaeological evidence that suggests that the prehistoric Carolina Algonquin territory, or at least strong Algonquin influences, extended well south of the Neuse River, and possibly as far south as the Cape Fear River, which is also the southern terminus of the Tidewater environmental region. Several cultural traits strongly suggest that the Carolina Algonquians occupied a portion of the south coastal region, at least as far south as Pender County and possibly into New Hanover County. The White Oak shell tempered series appears related to the Mockley, Townsend, and Colington series pottery associated with Algonquin populations located to the north in Maryland, Virginia, and the North Carolina Tidewater regions. However, techno-functional elements, such as tempering, can transcend temporal, cultural, and linguistic boundaries; therefore, the presence of shell tempered ceramics alone may reflect trade and exchange, rather than actual Algonquian settlement (Mathis 1995).

The White Oak ceramic series, initially defined by Loftfield (1976), represents the only major shell tempered pottery identified within the southern Coastal Plain. Numerous radiocarbon dates place the White Oak series firmly in the temporal range of A.D. 800–1500 (Eastman 1994:25–26; Herbert and Mathis 1996:171). Based on these data, Algonquian groups appear to be present as far south as the New River Inlet and the Camp Lejeune study area by A.D. 900 (Mathis 1995).

White Oak sherds are the second most common ware represented in our artifact assemblages (*n*=7,754), only slightly behind Hanover sherds, which are the most common series based on frequency (*n*=10,943) and sherd weight (Figure 5-15). With the exception of Hanover ware, sherds representative of the White Oak series were recovered more than any other ware type, yet they are represented at about one-third (*n*=122) of the number of sites as those producing the Early Woodland New River series (*n*=312) (see Figure 5-6, Figure 5-15). Even though there are significantly fewer sites with White Oak components, these sites tend to be considerably larger in size than sites with other components, a pattern observed by other researchers. Consequently, the lower frequency of White Oak settlements likely does not represent population decline or area abandonment, but rather the area inhabitants coalescing into fewer but larger communities.

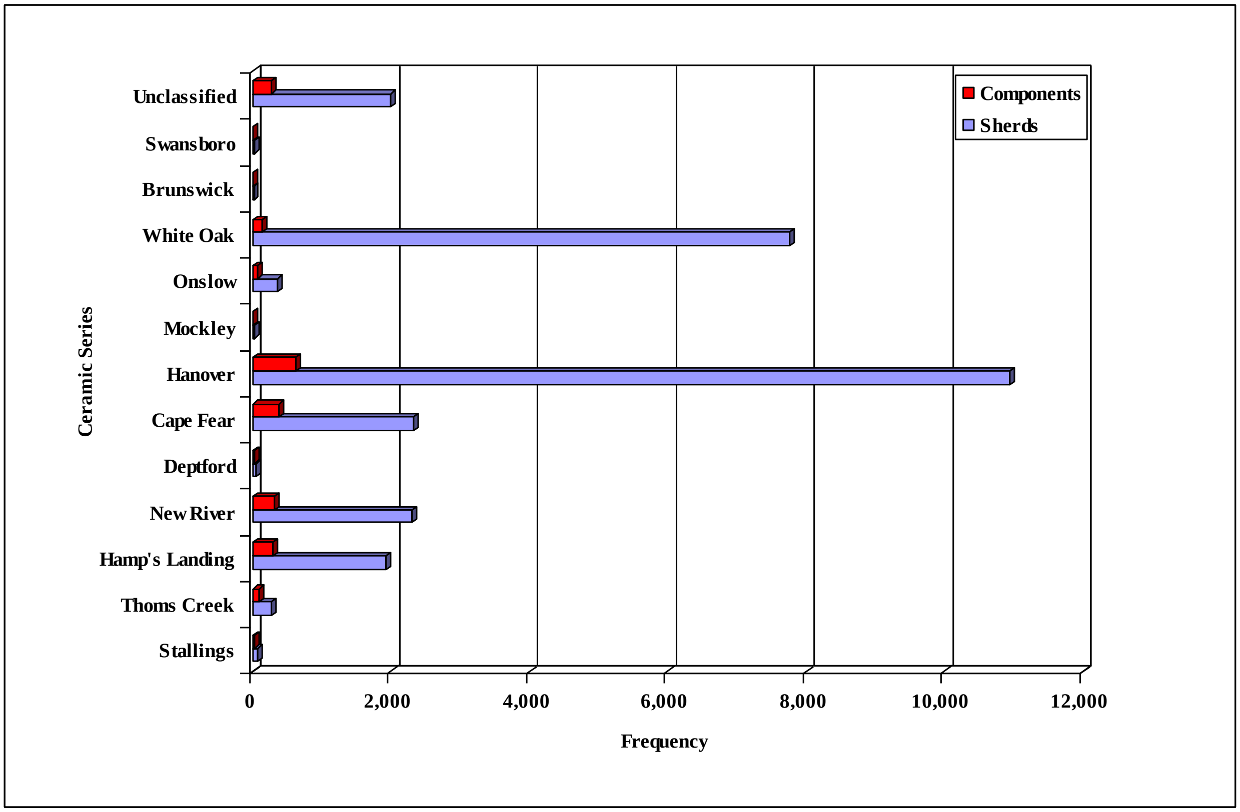


Figure 5-15. Frequency of sherds and components by ceramic series.

The upper and middle sections of the New River estuary north of Town Point and Hadnot Point, including the major tributaries Southwest Creek and Northeast Creek, were occupied by groups making White Oak series pottery (Figure 5-16). One of the larger known concentrations of sites with White Oak components is clustered around the mouth of the New River and along the Atlantic coastline. The major focus of sites with White Oak series pottery in this area extends from Pollocks Point downstream in a southeasterly direction to Howard Bay and then northeast along the coast, especially within the Holover, Gillets, and Freeman creeks drainages. Sites with White Oak components are typically located immediately adjacent to water sources within the coastal environs, but a number of sites that we recorded are located either upstream of primary tributaries, such as the upper portion of Duck Creek, or situated in interior settings along smaller secondary tributaries, particularly in the Southwest Creek and Stones Creek drainages.

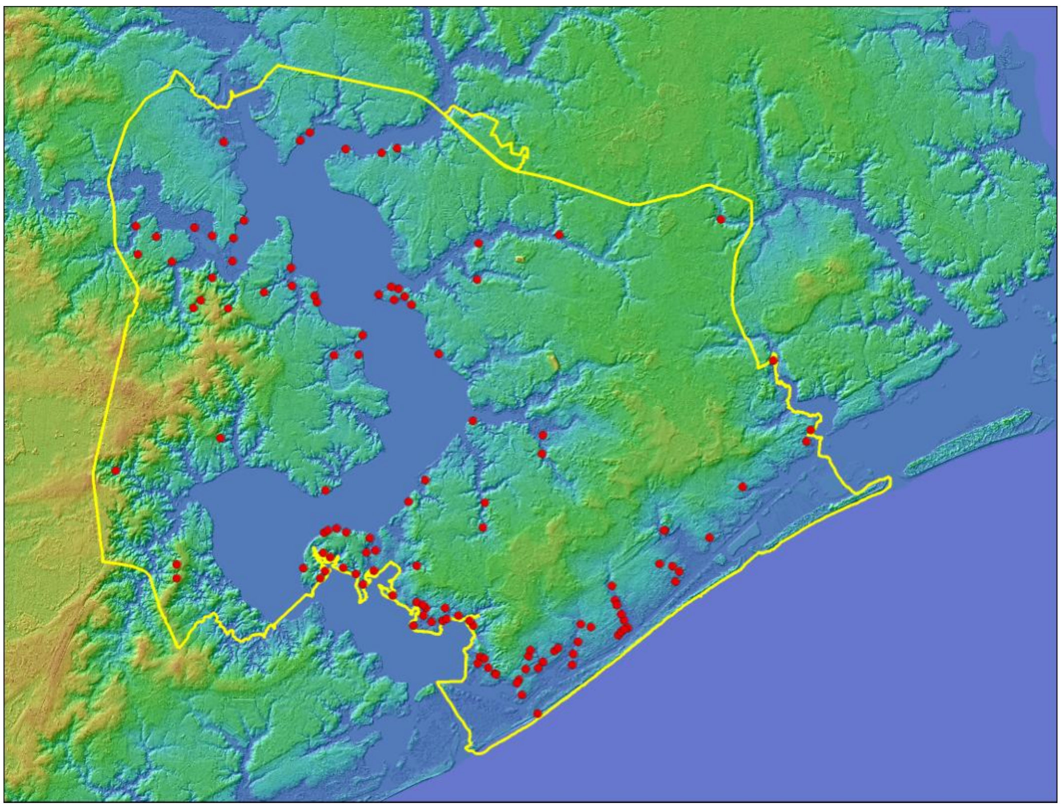


Figure 5-16. Distribution of White Oak series.

Although the White Oak series is typically regarded as the only major shell tempered series present in this region, aside from Swansboro ware, a small number of sherds represented in our collection were tempered with shell, but fall outside of these series classification parameters. These sherds display net impressed surface treatments, and often the paste is thick and poorly molded. Classified as Mockley and possibly associated with the Middle Woodland period or early in the Late Woodland sequence, pottery sherds of this series were recovered from only five sites that are dispersed along the middle valley of the Wallace and Duck creeks drainages and along the shore of the New River (Figure 5-17).

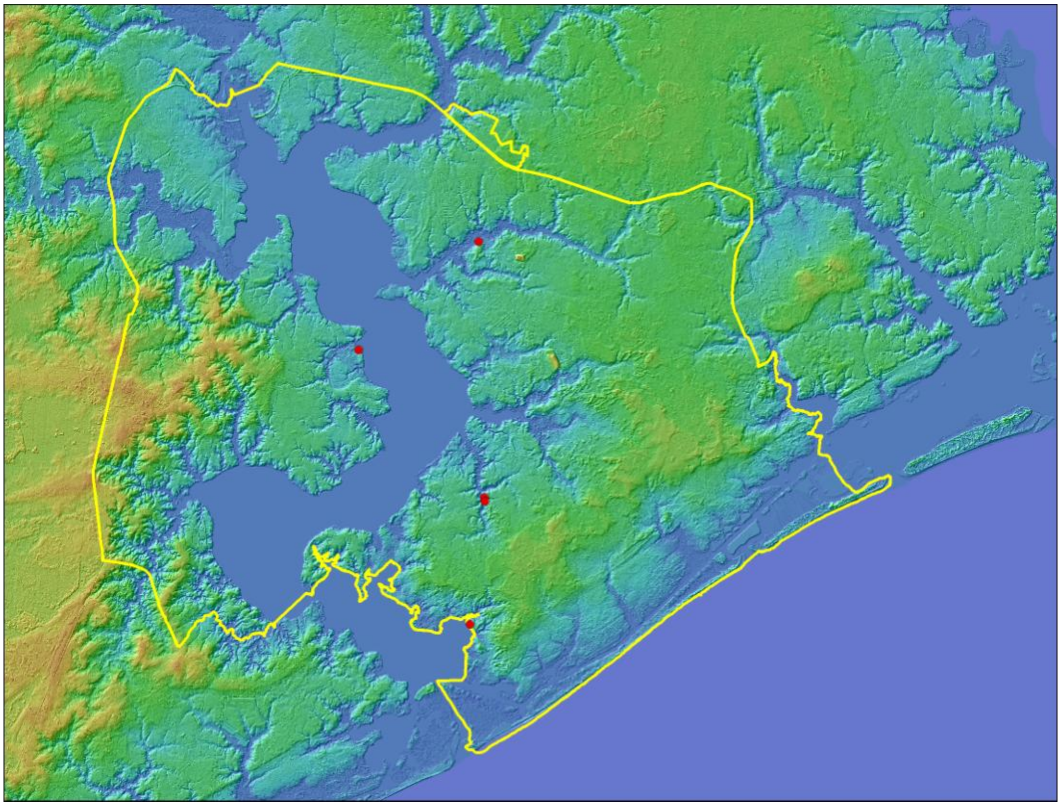


Figure 5-17. Distribution of Mockley series.

The presence of net impressed surface treatment on shell tempered sherds is known from only a few sites on the central coast (Herbert 2002:313). However, it has been observed elsewhere in Onslow County at the Hammocks Beach West site (Daniel 1999) and farther to the north in Carteret County at the Long Point (Shumate and Shumate 2000) and the Broad Reach sites (see H. Millis, this volume). Although Loftfield (1976) included the net impressed variety within the White Oak series, Mathis (1999) has argued against placement of this surface treatment into the White Oak series. Based on his excavations at Hammocks Beach West, Daniel (1999:128) suggests that if net impressed surfaces on shell tempered pottery mark the beginning of the use of this temper during the Middle Woodland period, then these sherds may represent a close association with the more northern Mockley ware found in the northern Coastal Plain of North Carolina and the Middle Atlantic states.

Historic Native Americans (1585–1715)

The Historic period began during the latter part of the sixteenth century and Native American occupation of Onslow County continued into the Colonial period. This era was a time in which Native Americans were exposed to unprecedented cultural changes as a result of increasing encroachment and settlement of their territory by European settlers. Native American encounters with the new settlers ultimately led to major changes in the demographics of the indigenous population of the region, but it was not until the Tuscarora War of 1711–1713 that the coastal Indian population was eventually relocated.

Based on the limited linguistic information, Mathis (1995) suggested that the area along the southern shore south of the Neuse River was inhabited by either Iroquoian or Siouan speakers by the late sixteenth century, rather than by Algonquian groups. Sometime between A.D. 1500 and A.D. 1585 when the Roanoke Colony was established, the Algonquian groups appear to have abandoned much of the area south of the Neuse River (Mathis 1995). It is uncertain if the native populations were acculturated into an expanding population of Siouan or Iroquoian speaking groups, or if the Algonquian groups retreated northward toward tidewater Virginia as a result of their declining population or some other environmental stress. Based on the lack of radiocarbon dates associated with White Oak pottery after A.D. 1450, Mathis (1995) suggested that this retraction or cultural absorption occurred, or was well underway, prior to Spanish or English contact during the fifteenth century and that the Algonquians were no longer in control of their land south of the Neuse River by the 1580s, if not earlier. In fact, it is likely that Algonquians occupied the region south of the Neuse River until the fifteenth and sixteenth centuries, after which Siouan speaking people expanded into the vacated Algonquian land.

Ethnohistorical observations suggested to Loftfield (1976) that shellfish were exploited during the late spring and summer months, primarily from late April through July, during the agricultural growing season. Claassen (1982:184, 1986:26) provides evidence that suggests shellfish were indeed seasonally exploited, however, the collecting season during the Middle and Late Woodland periods typically began in the fall and continued into the spring, with the major period of exploitation occurring from November through April. On the basis of seasonality studies at a few sites in Onslow County where summer collections were indicated, Claassen (1982:188–189; 1986:26, 31) has proposed that the aboriginal seasonal round shifted from winter and spring coastal camps to summer coastal camps. This change in settlement pattern was likely fostered by the desire to trade with European ships that ventured into the sounds and bays during this time of year (Claassen 1982:189, 1986:26, 31–33). According to Quinn (1955:158–253), between 1584–1602, English ships typically departed from England in April and arrived on the North Carolina coast in July or August. On the basis of the change in settlement patterns observed both archaeologically and reported ethnographically, it is likely that the annual arrival and departure of European ships between the late sixteenth and early seventeenth centuries attracted indigenous groups to the coast during summer months, and it was the potential for trade during this time of the year that provided an impetus to establish coastal summer camps at a time in which the area was not normally as intensively occupied (Claassen 1982:189). Interestingly, a shift in seasonal rounds at the end of the Late Woodland and during the Contact and early Historic periods has been noted elsewhere along the Atlantic coast, as far north as New York and Rhode Island. Several researchers working in the Northeast region have proposed that the population shift in this region during the early Historic period was in order to facilitate greater access to, and increase trade with, Europeans (Ceci 1977; Pagoulatos 1990).

The last indigenous ceramic wares found in the study area are the Swansboro Burnished and Brunswick Burnished types (South 1962, 1976). The Swansboro series is associated with the latter part of the Late Woodland and the Contact period and is characterized by fine or medium crushed shell temper and a burnished surface. The Brunswick ware type dates to the Proto-historic and Historic period, up to the third quarter of the eighteenth century (Herbert 2003:82; South 1976:33–38). This ware is characterized by a very compact paste with either no discernible temper, or very fine sand temper, and a burnished surface.

At some point during the end of the Late Woodland and Contact periods, the New River estuary was apparently abandoned. The only evidence of Native American occupations that may post-date the White Oak series is the presence of Swansboro pottery sherds at six sites and Brunswick series pottery at six sites (Figures 5-18 and 5-19). However, since burnishing is represented within the White Oak assemblage, it is possible that some of these Swansboro components are contemporaneous with the White Oak components, rather than post-dating them. In addition to sites with Swansboro series sherds we recorded on Camp Lejeune, Southerlin excavated a burial associated with a Swansboro bowl at 31ON1578, just to the southwest of the Base (Bobby Southerlin, personal communication 2008). Our sample of sites with Swansboro and Brunswick components is relatively small, so observations about series distribution within various environmental settings are tenuous. It appears that, with the exception of one site in the middle Duck Creek and one site in the middle Southwest Creek drainages, the lower portions of the New River and along the Atlantic coast may have been the focus of settlement by groups making Swansboro and Brunswick series pottery during the very late prehistoric and early historic periods. If the Swansboro and Brunswick burnished sherds indeed post-date the White Oak ceramic tradition, then this pattern could support a population shift toward coastal locations, potentially in response to a desire for increased access to European traders as noted elsewhere for the Contact and early Historic periods.

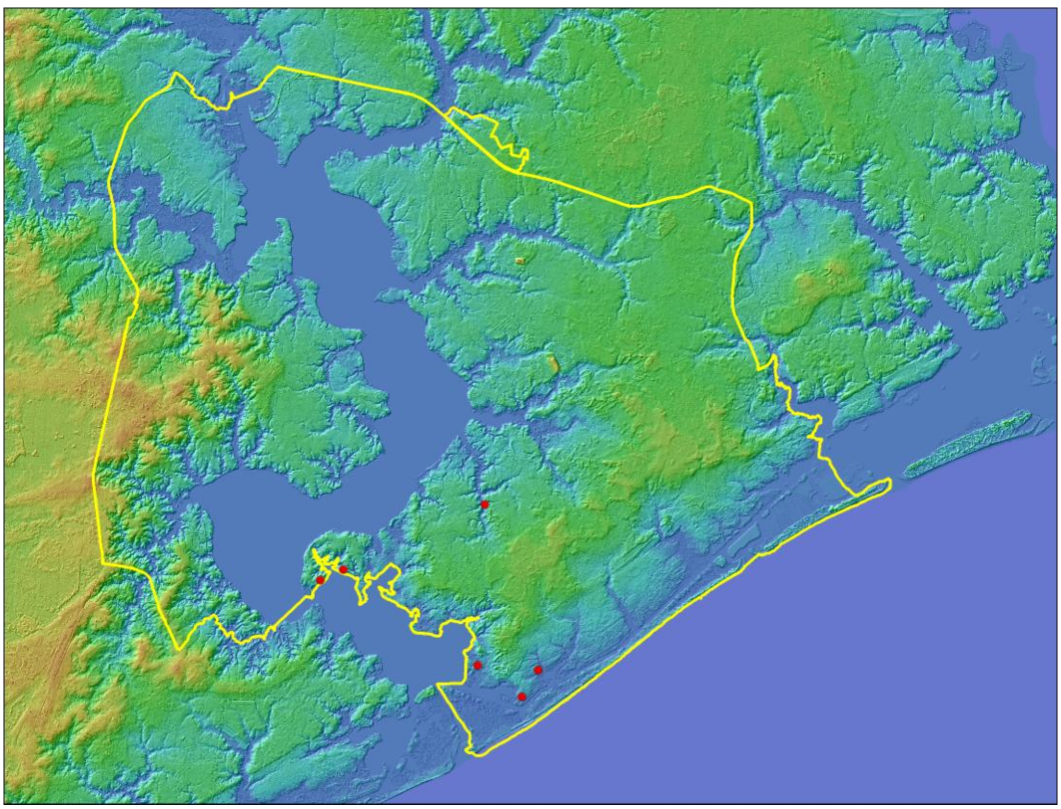


Figure 5-18. Distribution of Swansboro series.

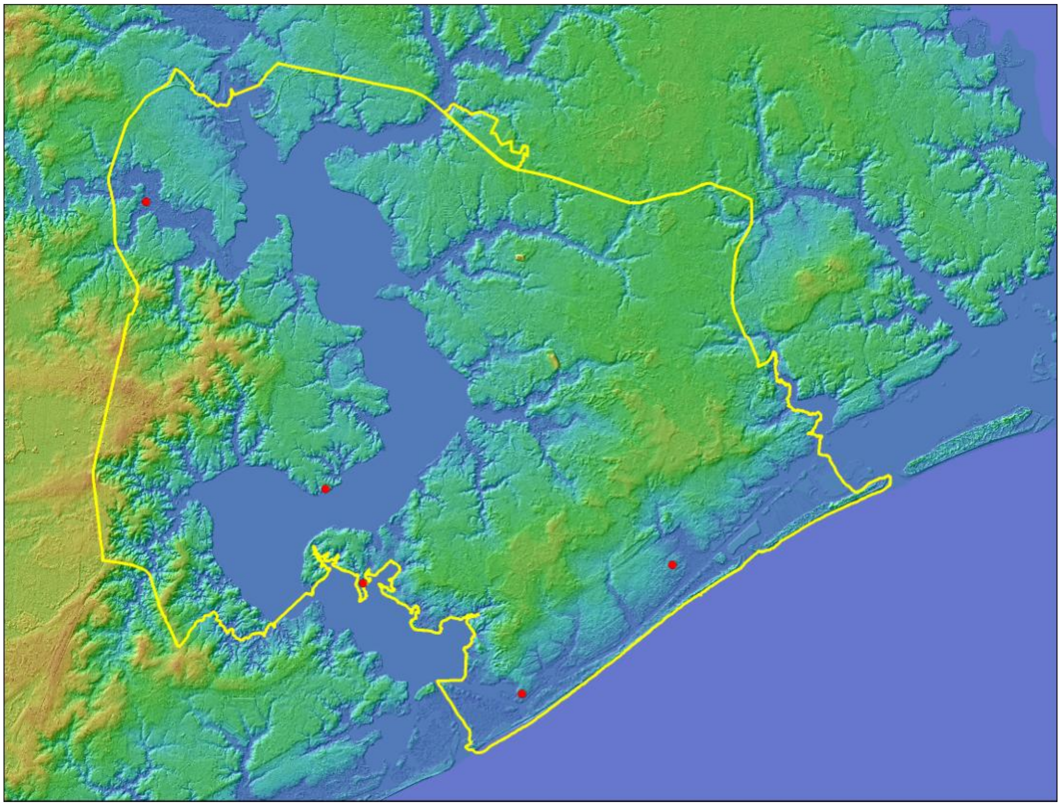


Figure 5-19. Distribution of Brunswick series.

CONCLUSIONS

Intensive surveys conducted from 1998–2008 provided the basis for an examination of Woodland period occupations in the New River estuary. Many of the sites recorded on Camp Lejeune during this time contain multiple components, suggesting extensive use and reuse of the sites during the Woodland period. By considering the data obtained from the assemblages included in this study, major trends in spatial distribution are apparent and general patterns of geographic distribution of ceramic traditions can be discerned within the New River drainage system. Data presented in this study, coupled with comparisons to results from other regional studies, suggests movements between the stream drainages and potential resource exploitation, and still support some of the initial observations of prehistoric settlements in Onslow County formed more than 30 years ago.

During the Early Woodland period, there seems to have been a rapid increase in the number of components associated with the different ceramic traditions dating to this period. There was also a strong preference for sites associated with this temporal period to be located along estuarine margins and near major stream channels and tributaries rather than on headwaters, which could suggest an emphasis on aggregation. With regard to landscape preferences along drainage systems, we found that many of the known site locations with Thom’s Creek components show a very definite orientation toward major drainages and primary tributaries. Sites with Hamp’s Landing and New River components have similar preferences, but by the time the area was occupied by groups making Hamp’s Landing and New River series pottery, the lower and middle valleys of the tributaries were used, with occupations also occurring along the headwaters in upland settings.

Site frequency reached its highest point during the Middle–Late Woodland periods, and sites displaying evidence of Hanover components occur more frequently than sites containing any of the other Woodland ceramic traditions. While the Middle–Late Woodland period Cape Fear and Hanover traditions coexisted and overlapped in time with the succeeding White Oak pottery series, distribution of sites associated with these three ware groups do not exhibit any spatial differences that would suggest clearly defined boundaries of group territories. Instead, the emerging pattern is that these groups coexisted on the same landscape within the New River drainage.

Location of sites with Cape Fear and Hanover components were less constrained than other Woodland phase settlements and were widely distributed over various environmental settings. Sites associated with these ceramic series can be anticipated in most settings, a pattern not observed with sites containing the other ceramic traditions, as sites containing other Woodland pottery series appear to exhibit a narrow range of environmental preferences in terms of site selection. While sites with Cape Fear and Hanover components are predominantly concentrated on terraces along major and minor water courses, there was also an increase in usage of inland resource areas and upland zones. Groups making Cape Fear and Hanover wares appear to have settled along the New River and its major tributaries, and extended upstream into the middle valleys or occasionally along headwaters and within upland areas along low order streams. The increase in sites with Cape Fear and Hanover series pottery may or may not be related to population density, as it could also suggest a higher degree of mobility or settlement fragmentation and scattering.

Locations of sites associated with Onslow wares reflect an emphasis on primary and secondary tributaries in the upper part of the estuary, as well as the lower New River and along the coast. Sites with Mockley sherds are sparsely present and found along the New River or the middle valley of primary and secondary tributaries. During the Late Woodland period, a trend toward fewer, larger sites is evident by groups making White Oak series pottery. The White Oak phase settlement range was more limited, with a general contraction to riverine settings at relatively lower elevations. The upper and middle regions of the New River and its major tributaries contain sites with White Oak assemblages, but there are some sites upstream of primary tributaries or along secondary drainages. However, the primary focus of sites with White Oak series pottery was on the lower New River and along the coast. During the late prehistory, the focus of sites with Swansboro and Brunswick pottery sherds was primarily along the lower part of the New River and along the coast, suggesting that the area had been largely abandoned by the early Historic period.

Recent research into Woodland period chronology of the Coastal Plain forces us to acknowledge a dynamic culture history. Rather than abrupt or wholesale geographic displacement of Woodland groups producing a particular ceramic series, data from Camp Lejeune suggest that there was more of a blending and/or gradual shift in characteristics of the various regional ceramic traditions. Based on radiometric and TL dates presented by Herbert (1999, 2003, this volume), there appears to be considerable temporal overlap of ware types, with several, particularly Cape Fear, Hanover and White Oak series, apparently coexisting, at least for a time. This could suggest that these wares were in circulation at the same time, and that shell tempered, sand tempered, and clay tempered pottery share a common period of usage. It is uncertain if these three ware groups are representative of distinct socio-cultural groups, or if these three traditions were manufactured by the same group. If they represent separate ethnic or linguistic groups, the groups utilizing these three ceramic traditions appear to have been moving within overlapping territories, occasionally occupying the same sites and possibly exchanging vessels and/or sharing technology. Spatial segregation of these three groups within the New River estuary is not apparent, and there may have been direct competition for estuarine resources by those groups associated with Cape Fear, Hanover, and White Oak ceramic traditions.

The observations presented here offer insight into group ranges and economic or environmental constraints associated with environmental setting and provide a foundation on which to build future Woodland period interpretations. Future research regarding landscape use should focus on distinguishing functionally discrete site locations to determine if they represent economic differences, particularly during the Early Woodland period. Spatial and temporal overlap of various ware types and similar land use patterns also open discussion of social dynamics, and continued research in the region should address the nature of the correlations between two or more ceramic traditions and the processes under which one ceramic tradition could come to replace and/or be integrated with another geographically. As our knowledge about site preferences grows, our understanding of the complex Woodland cultural landscape in the southern Coastal Plain will be more complete and we will be able to make more definitive statements concerning usage of the New River estuary.

Acknowledgements. I would like to thank Rick Richardson, Camp Lejeune Base archaeologist; Tara Speth, Erin Santos, and Kristine Keenan, Camp Lejeune contract archaeologists; and Richard Lewis, contracting officer's representative of Wilmington District, U.S. Army Corps of Engineers for their assistance, advice, and support during our archaeological investigations. I would also like to thank the numerous field crews, and C. Damon Jones, Timothy Mulhern, Tracy Martin, Cheri Williams, James Daniels, Erin Grantham, and Matt Pare of TRC for their help in completing the investigations on Camp Lejeune since 1998; without their contributions, data for this study would not be available. Finally, I would also like to thank Matt Pare and Judith Bartos of TRC for their advice and assistance with the GIS analysis.

REFERENCES CITED

Brooks, Mark J., Peter A. Stone, Donald J. Colquhoun, and Janice Brown

1989 Sea Level Change, Estuarine Development and Temporal Variability in Woodland period Subsistence-Settlement Patterning on the Lower Coastal Plain of South Carolina. In *Studies in South Carolina Archaeology: Essays in Honor of Robert L. Stephenson*, edited by A. Goodyear and G. Hanson, pp. 91–100. Anthropology Studies 9. Occasional Papers of the South Carolina Institute of Archeology and Anthropology, University of South Carolina, Columbia.

Ceci, Lynn

1977 The Effect of European Contact and Trade on the Settlement Pattern of Indians in Coastal New York State, 1524–1665: The Archaeology and Documentary Evidence. Ph.D. dissertation, Department of Anthropology, City University of New York, New York.

Claassen, Cheryl P.

1979a *Prehistoric Settlement Patterns in Onslow County*. Paper presented to the Archaeological Society of North Carolina, Raleigh. Ms. on file, Office of State Archaeology, Raleigh.

1979b *Onslow County Archaeological Assessment*. Ms. on file, Office of State Archaeology, Raleigh.

1982 Shellfishing Patterns: An Analytical Study of Prehistoric Shell From North Carolina Coastal Middens. Ph.D. dissertation, Department of Anthropology, Harvard University, Cambridge.

1986 Shellfishing Seasons in the Prehistoric Southeastern United States. *American Antiquity* 51(1):21–37.

Daniel, I.R., Jr., with contributions by Kandace R. Detwiler, C. Margaret Scarry, Mary Ann Holm, and Dale L. Hutchinson

1999 Archaeological Excavations at Hammocks Beach West (31ON665): A Woodland Shell-Midden on the North Carolina Coast. *Occasional Papers of the Phelps Archaeology Laboratory No. 1*, Department of Anthropology and Phelps Archaeology Laboratory, East Carolina University, Greenville. Prepared for Hammocks Beach State Park, North Carolina Division of Parks and Recreation.

Davis, Thomas W., and Kathleen M. Childs

1996 Phase III Data Recovery of Site 31ON536 and Phase II Evaluation of the Prehistoric Component at Site 31ON534, Marine Corps Base, Camp Lejeune, North Carolina. Prepared by R. Christopher Goodwin and Associates, Frederick, Maryland.

Eastman, Jane M.

1994 The North Carolina Radiocarbon Date Study. *Southern Indian Studies* 42.

Greene, Lance, and Tracy L. Millis
2003 Archaeological Monitoring of the Courthouse Bay Site (31ON379), Marine Corps Base, Camp Lejeune, Onslow County, North Carolina. TRC, Durham, North Carolina. Submitted to U.S. Army Corps of Engineers, Wilmington District.

Gunn, Joel D., and Christopher T. Espenshade
1990 *Site Specific Survey of Twelve Sites, Camp Lejeune, North Carolina*. Brockington and Associates, Atlanta, Georgia. Submitted to the U.S. Army Corps of Engineers, Wilmington District.

Hargrove, Thomas
1993 *Archaeological Excavations of 31NH142, Hamp's Landing, River Road Park, New Hanover County, North Carolina*. Archaeological Research Consultants, Inc., Raleigh, North Carolina. Ms. on file, Office of State Archaeology, Raleigh.

Hargrove, Thomas, and Jane M. Eastman
1997 Limestone- or Marl-Tempered Ceramics From the Lower Cape Fear River Region, New Hanover County, North Carolina. *North Carolina Archaeology* 46:91–108.

Hay, Conran A., Catherine E. Bollinger, Alan N. Snavely, Thomas E. Scheitlin, and Thomas O. Maher
1982 *Archaeological Predictive Models: A New Hanover County Test Case*. North Carolina Archaeological Council Publication 18. Raleigh, North Carolina.

Herbert, Joseph M.
1997 Refining Prehistoric Culture Chronology in Southern Coastal North Carolina: Pottery from the Papanow and Pond Trail Sites. Report submitted to the Office of State Archaeology, North Carolina Division of Archives and History, Raleigh.

1999 Prehistoric Pottery Taxonomy and Sequence on the Southern Coast of North Carolina. *North Carolina Archaeology* 48:37–58.

2002 A Woodland Period Prehistory of Coastal North Carolina. In *The Woodland South*, edited by David G. Anderson and Robert C. Mainfort, Jr., pp. 292–317. University of Alabama Press, Tuscaloosa.

2003 *Woodland Ceramics and Social Boundaries of Coastal North Carolina*. Ph.D. dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.

Herbert, Joseph M., and Mark A. Mathis
1996 An Appraisal and Re-Evaluation of the Prehistoric Pottery Sequence of Southern Coastal North Carolina. In *Indian Pottery of the Carolinas: Observations from the March 1995 Ceramic Workshop at Hobcaw Barony*, assembled and edited by David G. Anderson, John S. Cable, Niels Taylor, and Christopher Judge, pp. 136–189. Council of South Carolina Professional Archaeologists.

Lautzenheiser, Loretta

1989 *Carolina Bays and Microrelief: Prehistoric and Historic Settlement of the Inner Coastal Plain of North Carolina*. Paper presented at the 46th Annual Meeting of the Southeastern Archaeological Conference, Tampa, Florida.

Loftfield, Thomas C.

1976 "A briefe and true report . . ." An Archaeological Interpretation of the Southern North Carolina Coast. Ph.D. dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.

1981 *Archaeological and Historical Survey of U.S.M.C. Base Camp Lejeune, Volumes I and II*. Submitted to the Department of the Navy, Washington, D.C. Prepared by the Department of Anthropology, University of North Carolina at Wilmington. Ms. on file, Office of State Archaeology, Raleigh.

1987a *Excavations at 31ON305, the Flynt Site at Sneads Ferry*. Ms. on file, Office of State Archaeology, Raleigh.

1987b Archaeological Data Recovery and Osteological Analysis at 31ON309, Marine Corps Base, Camp Lejeune, North Carolina. National Park Service, Atlanta.

1988 Prehistoric Oysterman of the Central North Carolina Coast. In *Sea and Land: Cultural and Biological Adaptations in the Southern Coastal Plain*, edited by J. L. Peacock and J. C. Sabella, pp. 106–121. Southern Anthropological Society Proceedings 21. M. W. Helms, Series Editor. University of Georgia Press, Athens.

1990 Ossuary Interments and Algonquian Expansion on the North Carolina Coast. *Southeastern Archaeology* 9(2):116–123.

Loftfield, Thomas C., and David C. Jones

1995 Late Woodland Architecture on the North Carolina Coast: Structural Meaning and Environmental Adaptation. *Southeastern Archaeology* 14(2):120–135.

Loftfield, Thomas C., and Dale McCall

1986 Osteological Data Recovery and Analysis at U. S. Marine Corps Base, Camp Lejeune, North Carolina. Ms. on file, Office of State Archaeology, Raleigh.

Mathis, Mark A.

1979 North Carolina Statewide Archaeological Survey: An Introduction and Application to Three Highway Projects in Hertford, Wilkes, and Ashe Counties. North Carolina Archaeological Council and the Office of State Archaeology, Raleigh.

1995 *The Carolina Algonquians: Comments From the Fringe (The Coastal Frontier).* Paper presented at the 27th Algonquian Conference, Chapel Hill, North Carolina.

1999 Oak Island: A Retiring Type. *North Carolina Archaeolog*y 48:18–36

Millis, Tracy
2009a Archaeological Survey and Phase II Evaluation at Mile Hammock Bay, Marine Corps Base, Camp Lejeune, Onslow County, North Carolina. TRC, Chapel Hill, North Carolina. Submitted to the U.S. Army Corps of Engineers, Wilmington District.

2009b Phase II Evaluation at Highest Use Training Area MB, Marine Corps Base, Camp Lejeune, Onslow County, North Carolina. TRC, Chapel Hill, North Carolina. Submitted to the U.S. Army Corps of Engineers, Wilmington District.

2009c Phase II Evaluation Investigations at the Onslow Beach Site (31ON1246), Marine Corps Base, Camp Lejeune, Onslow County, North Carolina. TRC, Chapel Hill, North Carolina. Submitted to the U.S. Army Corps of Engineers, Wilmington District.

Norris, Sean P., and Lawrence E. Abbott
2004 *Archaeological Data Recovery at Site 31ON716, Marine Corps Base, Camp Lejeune, Onslow County, North Carolina*. New South Associates, Stone Mountain, Georgia. Submitted to U.S. Army Corps of Engineers, Wilmington District.

Pagoulatos, Peter
1990 Late Woodland and Contact Period Land-Use Patterns in Rhode Island: Continuity and Change. *Bulletin of the Massachusetts Archaeological Society* 51(2):69–82.

Phelps, David S.
1968 Thom's Creek Ceramics in the Central Savannah River Locality. *The Florida Anthropologist* (21)1:17–30.

1978 *Archaeological Studies in the Northern Coastal Plain of North Carolina*. North Carolina Archaeological Council Publication 6. Raleigh, North Carolina.

1983 Archaeology of the North Carolina Coast and Coastal Plain: Problems and Hypotheses. In *The Prehistory of North Carolina: An Archaeological Symposium*, edited by Mark A. Mathis and Jeffrey J. Crow, pp. 1–49. North Carolina Department of Cultural Resources, Division of Archives and History, Raleigh.

Poplin, Eric, and David C. Jones
1992 *Intensive Sample Survey of Areas of Marine Corps Base Camp Lejeune, Onslow County, North Carolina*. Brockington and Associates, Inc., Atlanta, Georgia. Submitted to the U.S. Army Corps of Engineers, Wilmington District.

Quinn, David Beers
1955 *The Roanoke Voyages, 1584–1590*. Hakluyt Society, vols. 104 and 105. London.

Reid, William H., and Kay Simpson
1997 Phase II Investigations of Nine Prehistoric Sites and Phase I Survey of the P-028 Range Area, Greater Sandy Run Acquisition Area, Marine Corps Base, Camp Lejeune, Onslow County, North Carolina. Louis Berger & Associates, Inc., Richmond, Virginia. Submitted to the U.S. Army Corps of Engineers, Wilmington District, North Carolina.

Scarry, John F., and C. Margaret Scarry
1997 *Subsistence Remains from Prehistoric North Carolina Archaeological Sites.* Ms. on file at the North Carolina Office of State Archaeology, Raleigh.

Shumate, M. Scott and Patti Evans-Shumate
2000 Archaeological Investigations at Long Point (31JN2) and Haywood Landing (31JN3) on Croatan National Forest, Jones County, North Carolina. Submitted to National Forests in North Carolina, Asheville, North Carolina. Appalachian State University Laboratories of Archaeological Science & Blue Ridge Cultural Resources, Asheville, North Carolina.

South, Stanley
1962 An Archaeological Survey of Two Islands in the White Oak River near Swansboro, North Carolina. Ms. on file, Office of State Archaeology, Raleigh, North Carolina.

1976 An Archeological Survey of Southeastern Coastal North Carolina. In *The Institute of Archeology and Anthropology Notebook*, edited by Robert L. Stephenson, pp. 1–55. University of South Carolina, Columbia.

Stahle, David W., and Malcolm K. Cleveland
1996 Large-Scale Climatic Influences on Baldcypress Tree Growth Across the Southeastern United States. In *Climatic Variations and Forcing Mechanisms of the Last 2000 Years*, edited by Philip D. Jones, Raymond S. Bradley, and Jean Jouzel, pp. 125–140. Springer, published in cooperation with NATO Scientific Affairs Division, Berlin, Germany.

Stahle, David W., Malcolm K. Cleveland, and John G. Hehr
1988 North Carolina Climate Changes Reconstructed from Tree Rings: A.D. 372 to 1985. *Science* 240:1517–1519.

Trinkley, Michael B.
1976 *A Typology of Thom's Creek Pottery for the South Carolina Coast*. M.A. thesis, Department of Anthropology, University of North Carolina, Chapel Hill.

1980 *Investigation of the Woodland Period Along the South Carolina Coast*. Ph.D. dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.

1989 An Archaeological Overview of the South Carolina Woodland Period: It's the Same Old Riddle. In *Studies in South Carolina Archaeology: Essays in Honor of Robert L. Stephenson*, edited by Albert C. Goodyear and Glenn T. Hanson, pp. 73–89. Anthropological Studies 9. Institute of Archaeology and Anthropology, University of South Carolina, Columbia.

Wilde-Ramsing, Mark

1980 Prehistoric Site Distributions and Environmental Zones in New Hanover County. Ms. on file, Office of State Archaeology, Raleigh.

1981 A Study of New Hanover County Soils and Associated Prehistoric Remains. Ms. on file, Office of State Archaeology, Raleigh.

BROAD REACH REVISITED: PRELIMINARY RESULTS OF THE 2006 DATA RECOVERY EXCAVATIONS

Heather Millis

The Broad Reach site is located in southwestern Carteret County, about 5 miles east of the town of Swansboro. The site occupies at least 50 acres of a broad terrace immediately adjacent to the Bogue Sound south of Sikes Creek. It has been suggested that this section of the North Carolina coast was an area where the territories of at least Protohistoric, but possibly also prehistoric, groups overlapped—an area where the archaeological record shows a mix of traits typically associated with the Siouan, Algonquian, and Tuscarora that indicate either trade, borrowing, intermarriage, assimilation or a combination of the above. During brief field sessions in 1991 and 1992 Mark Mathis of the Office of State Archaeology and many other archaeologists and volunteers conducted salvage excavations on a portion of the Broad Reach site (31CR218). Mathis's studies were confined to the area of a planned marina, access channel, and spoil basin, but he believed that by working in the area just outside the established site boundary and core midden area, he would be able to examine the less "noisy" habitation area where features could be more easily assigned to components and postmold patterns could be more easily distinguished (Mathis 1993a). Mathis found hundreds of features, the outlines of several structures, and the remains of as many as 30 people placed in a variety of burial forms, and although he came back with a great deal of data he ended up with just as many questions as answers. The marina and access channel have been in use for awhile, but plans for the development of a subdivision were postponed for many years.

For five months in the spring to summer of 2006 TRC archaeologists were able to examine much more of the Broad Reach site, and although the area investigated included portions of the core midden area and the immediate periphery and can be characterized as "noisy," many structural and other features could be easily delineated and this area was most certainly within the habitation area. Investigations began with a Phase II that involved stripping a several meter wide swath along the proposed development's road system and within the planned sedimentation ponds. This determined that the site was indeed confined to about the southern 250 meters of the landform, primarily consistent with the extent of the shell midden, but extending farther to the north and capped in large areas by soil midden or overburden rather than shell midden. The shell midden was as thick as 25 cm in the south-central portion of the site and pinched out to the north and east, but continues onto the adjacent property to the west. The portion of the site containing the densest features was largely below the shell midden, and although it is tempting to say that this area was simply protected from the plow by the shell midden, the fact that large areas of intact features (including structural features) were found north of this core shell midden area and that during the Phase II stripping almost no artifacts or cultural features were located north of the southern 250 m of the landform strongly indicate that the site did not extend farther to the north even before historic agricultural activities began. That is, no indications were found that habitation or cemetery areas exist outside the periphery of the shell midden. No post molds or evidence of human remains were found during data recovery investigations on three sites located about 400 m to the north, providing further evidence that the habitation area associated with the Broad Reach site is confined to the area beneath and immediately adjacent to the shell midden.

During the data recovery, large areas east and west of the marina were stripped, beginning in the higher density areas observed during the Phase II and expanding out as feature density dictated. The data recovery was confined to the area north of the CAMA set back so an approximately 100 foot strip adjacent to the sound was not examined during this study. Considering how actively the shoreline is currently eroding, it is very likely that the site originally extended much farther south and the portion of the site examined during the data recovery is just the northern portion of a much larger site. At the end of the data recovery fieldwork at Broad Reach almost nine acres of topsoil, overburden, and midden had been stripped and 25 human burials, 16 dog burials, 30 pot busts, 744 shell pits, 1,585 soil filled pits, five lithic caches, 53 charcoal pits, and 22,265 post molds had been exposed (Figure 6-1). The southwestern corner of the study area contained the highest density of features, but the low and wet area between this corner and the marina access channel was virtually devoid of features and this pattern continued into the southwestern corner of the area east of the marina. Feature density also dropped off abruptly to the north across the project area and to the northeast in the area east of the marina.

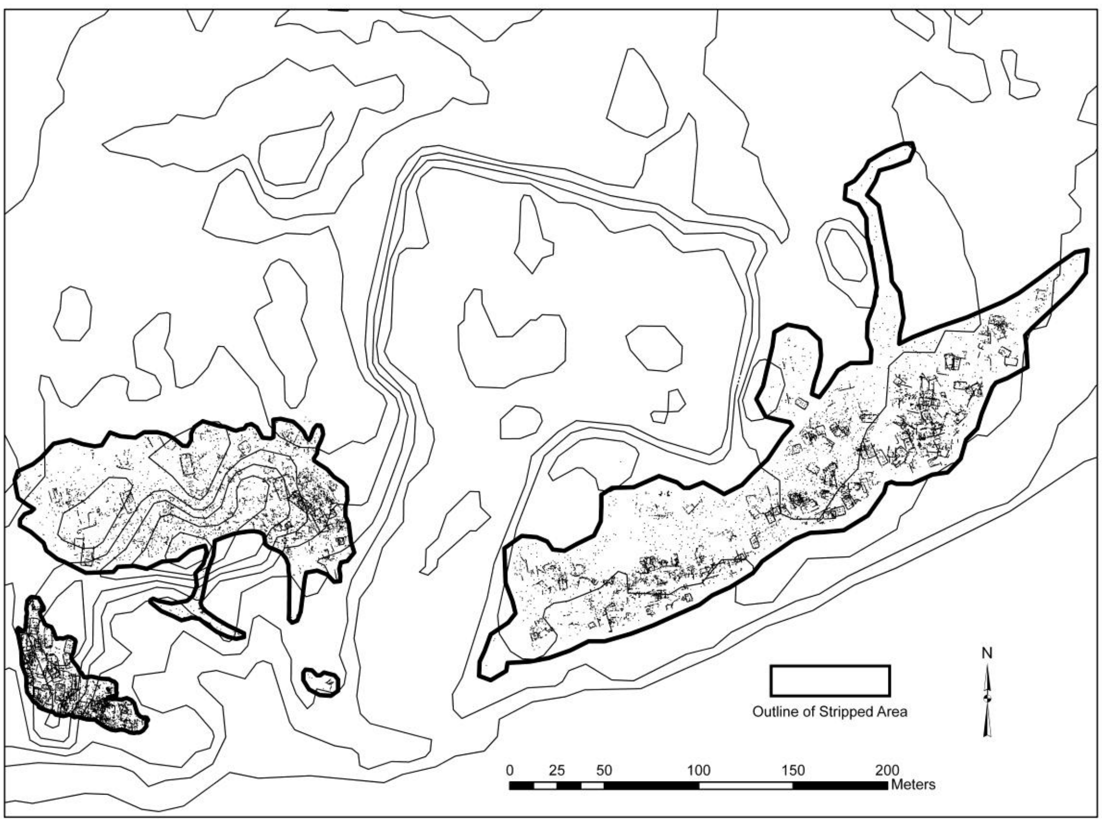


Figure 6-1. Plan map of Broad Reach Site showing features and stripped area outline.

PIT FEATURES

The pits containing dense shell debris ranged from 30 cm to several meters in diameter and were found across the entire site. The vast majority of the shell observed in these pits and in the parts of the midden visible during the study was oyster, with some clam, and small amounts of scallop and whelk. Sixty percent of the almost 50 thousand faunal elements analyzed are some type of fish remains, including those of sturgeon, catfish, toadfish, bass, menhaden, burrfish, gar, flounder, croaker, drum, shark, and ray. Other fauna represented in features include six different types of turtle (including sea and snapping), Canada goose, hawk, loon, turkey, heron, finch, white tailed deer, red wolf, fox, raccoon, skunk, mink, cottontail, beaver, opossum, squirrel, harbor seal, and dolphin. Although few features contained obvious deer remains (MNI=4), thirty one features produced deer antler and it is likely that these were used as tools at the site. Obviously the shellfish, and to some extent the other marine resources, were the big attraction for the site, probably for all components represented. A few pits contained burnt and crushed shell, but by far most of the shell pits contained entire halves or large pieces of shell likely representing the remnants of individual episodes of roasting. Faunal preservation was excellent in the shell pits and many shell pits were excavated just because faunal material was observed in the mix.

Charcoal or smudge pits were very uniform in size and depth—about 30 cm in diameter and 20 cm deep. The function of these pits is debated, but they were clearly not used as bug repellent devices at this site since the constant wind was an effective deterrent of airborne bugs and only one charcoal pit was found on the three sites investigation a few hundred meters to the north where very little of the wind's effects could be felt and numerous flying bugs assailed the crew. Likely these features served as cooking pits in lieu of rock hearths, perhaps for drying fish or for pottery construction. A GIS analysis performed using a nearest neighbor clustering program showed that 41 of the 53 charcoal pits were within 10 meters of a structure—perhaps not saying a lot since there are so many structures—but also that half of the charcoal pits were clustered in three groupings that appear to be centrally located in relation to groups of structures. These may represent communal cooking or processing areas. The contents of these pits involved primarily burnt wood fragments, but *zea maize* fragments were found in at least three of the charcoal pits. *Zea maize* fragments were also recovered from other feature types, including one dog burial, two large soil filled pits, and one large shell pit. Wood charcoal from seven charcoal pit features sent for radiocarbon analysis returned calibrated intercept dates of A.D. 670 (Beta 249170), A.D.1280 (Beta-249173), A.D. 1280 (Beta-249166), A.D.1290 (Beta 249168), A.D.1400 (Beta 249172), A.D.1430 (Beta-249167), and A.D.1480 (Beta-249165). Although these features are clearly associated with the Late Woodland occupation of the site, only one of these pits contained cultural material—several White Oak sherds were found in the feature dated to A.D. 1430.

STRUCTURAL FEATURES

Post mold patterns formed partial to almost complete outlines of one circular, 10 square, and almost 100 rectangular structures (Figures 6-2 and 6-3). Only 80 of the square to rectangular outlines have at least three walls and three corners and can be measured for maximum length and width with confidence. Many of these overlapped and it will not be possible to attribute all of the features falling inside a structure's post outline with that structure. The majority of the post molds were 6 cm in diameter in plan view, at least 12 cm deep, had either a pointed or a slightly

Figure 6-2. Close up of post mold patterns in a portion of the site east of the marina.

Figure 6-3. Close up of post mold patterns in the southwestern corner of the site.

rounded base, and contained shell fragments (Figures 6-4 and 6-5). One interesting pattern noted was that the posts in the walls of many of the structures excavated as individual units angled in toward the interior of the structure.

The largest structure uncovered during the 2006 fieldwork measured 15 × 6 meters—the largest structure found during the 1991–1992 fieldwork had one wall that was almost 19 meters long, although this was not fully uncovered and may have involved more than one structure—and the smallest rectangular structure on the site measured 3 × 5 meters. Common structure sizes include 12 × 5 and 4 × 7, with 8 × 4.5 the most common size in the southwestern corner of the site and 4 × 6.5 the most typical for the area east of the marina. Clearly there was not a standard house size and clearly, although most are *longer* along one dimension than the other, most are not what we would actually call *longhouses*. These structures would have comfortably housed nuclear families and perhaps portions of an extended family, but not a large extended family, and are typical of Algonquian houses rather than Iroquoian houses in this regard. The one clear circular pattern is only 2.5 m in diameter and probably represents a special use structure. The small 2 × 2 to 3 × 3 meter square outlines are also good candidates for special use structures. Assuming that the larger square and rectangular structures were primarily houses and not special use structures—and that may not be true for all of them but is certainly true for many of them—they seem to have been tailored to the size or perhaps the status of the family they were meant to house.

Figure 6-4. View of typical structure outline in the southwestern corner of the site.

Figure 6-5. View of post mold profile along structure wall.

John White depicts structures of varying sizes at Pomeiooc, although as Loftfield and Jones (1995) note, the construction technique appears to be somewhat different from that used to construct houses at Broad Reach and other coastal Carolina sites and the site layout is much more centralized and organized than that observed at Broad Reach. White’s depiction of the village of Secotan also shows a variety of structure sizes and a less centralized site layout, but the construction technique seems to be similar to that at Pomeiooc. Post molds at Broad Reach were spaced from 5 to 10 cm apart, but were typically at the shorter interval and most were only 6 cm in diameter. The frames of the structures depicted by White were constructed with much thicker saplings and these were placed much farther apart. Also, most of the structure outlines at Broad Reach had rounded corners.

Most of the structures at Broad Reach were outlined by a continuous series of posts with gaps only where large pit features overlapped. Because large pit features overlapped parts of structures it may be difficult to determine where openings or doorways might have been. Almost all of the rectangular structures are oriented with the long axis running roughly north-south. Prevailing winds are from the west and are constant, differing by day or time of day only in velocity. During the late spring and summer months this wind serves to clear this portion of the project area of bugs and keep it noticeably cooler than the area just a few hundred meters to the north. In the winter and early spring, however, this wind is a powerful and unfriendly force, making this location much colder than the area a few hundred meters to the north and throwing any soil or light debris not covered with vegetation into the air. If doorways were on the short end as depicted on many of the structures in White’s drawings then structures oriented with the long axis north-south would have provided more protection from the elements during any season. As Loftfield and Jones (1995) note also, the close spacing of posts seen on many coastal Carolina structures including those at Broad Reach would have resulted in a stronger wall and may have afforded more protection from this wind.

Few structures have been found on other Coastal Plain sites that are identical to those at Broad Reach. The closest may be the structure uncovered at the Uniflite site in Onslow County that was 13 × 6 m and had rounded corners and closely spaced posts (Loftfield 1979). Other presumed Late Woodland Coastal Plain structures have been found that are dissimilar to those at Broad Reach in some or all aspects, such as the partial structure outline uncovered at the Minnessott Beach marina near the Neuse River that was almost 10 m wide and had 6 to 10 cm diameter posts spaced 25 to 35 cm apart (Cassedy and Jorgenson 2005); the two structures at the Amity site had rounded corners and were similar in dimensions to those at Broad Reach, although posts are spaced farther apart (Gardner 1990); the structure at Hammocks Beach West was 17 × 4.5 m and had posts spaced 30 cm apart (Daniel 1999); and the structure found at the Permuda site in Onslow County was 8 × 4 m wide, but had squared off corners and widely spaced posts (Loftfield 1985). There is some indication thus far that the round structures are earlier than the square to rectangular structures, but further confirmation is needed.

ARTIFACTS

Half of the over 11 thousand ceramics from the data recovery at this site are Hanover series sherds, one-third are White Oak series sherds, and the remainder are small amounts of Hamp's Landing, Mockley, Cape Fear, New River, Stallings Island, and Mount Pleasant. A few shell tempered burnished sherds were found, but these are considered to be White Oak specimens. The distribution patterns of White Oak and Hanover sherds are very similar in overall areal extent, but more features in the eastern portion of the site and more features in the southwestern corner of the site produced White Oak sherds and more features in the area just west of the marina produced Hanover sherds (Figure 6-6). Only a few radiocarbon dates have been obtained for the 2006 Broad Reach investigations so far—wood charcoal from a feature containing White Oak sherds returned a calibrated intercept date of A.D. 1430 (Beta-249167) and wood charcoal from six features containing Hanover sherds returned calibrated intercept dates of A.D. 220 (Beta-251291), A.D. 230 (Beta-251298), A.D. 250 (Beta-249180), A.D. 250 (Beta-251296), A.D. 400 (Beta-249171), and A.D. 1160 (Beta-249176). Radiocarbon dates obtained from material collected during Mathis's studies include a calibrated intercept date of A.D. 430 (Beta-58941) for Hanover, and dates of A.D. 1280 (Beta 58945), A.D. 1350 (Beta-58943), A.D. 1350 (Beta-58944), and A.D. 1412 (Beta-58946) for White Oak.

As is typical of coastal sites, only about 2,500 lithic artifacts were collected during the data recovery at Broad Reach. Just for comparison, almost the same number of features were excavated at the Contentnea Creek site in the Inner Coastal Plain as at Broad Reach—roughly 600—and 48,000 lithics were recovered from that site (Millis 2009). As another point of reference—2,100 lithic artifacts were found in a single feature at the Long Point site, which is just a short distance up the White Oak River from Broad Reach (Shumate et al. 2000). Three-quarters of the lithic material from Broad Reach is quartz, and smaller amounts of quartzite, chert, and rhyolite were found. Almost one-third of the lithic artifacts are pieces of debitage, but many of the more than 100 battered cobbles found must have been used for purposes other than lithic reduction since so little evidence of lithic reduction activity was found. Sixty three of the 74 projectile points found are Swannsboroughs (following Loftfield's spelling) and another 12 Swannsborough points were recovered during the 1991–1992 fieldwork. The Swannsborough points were found across the site, but one-third of them were found in the small area stripped in the southwestern corner. An area of about 30 by 100 meters was stripped in this portion of the site and in addition to the large number of Swannsborough points, this area also contained a high

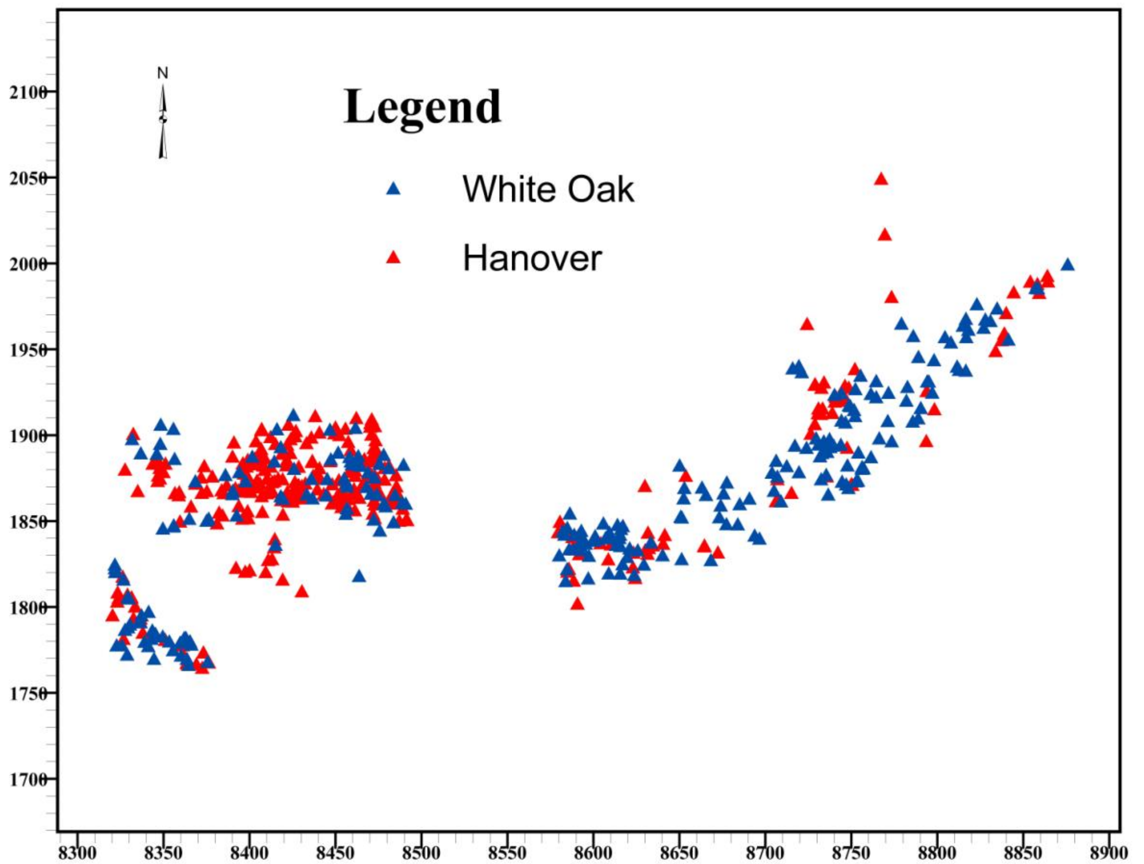


Figure 6-6. Distribution of features containing White Oak and Hanover sherds.

density of rectangular structures, the largest shell pit, and a predominance of features containing White Oak sherds. Swannsborough points were the majority type at Long Point site as well, where they were associated with radiocarbon dates from A.D 480 to 1040 (Shumate et al. 2000), and a radiocarbon date of A.D. 980 is associated with three Swannsborough points from Hammocks Beach West (Daniel 1999). Cassedy et al. (2001) point out the similarities in the morphology of the Swannsborough points to that of the Middle Woodland Yadkin, Potts, and Nomini types, but although Middle Woodland period ceramic types were recovered from Broad Reach, there appears to be a stronger association between the Swannsborough type and the Late Woodland White Oak component.

HUMAN BURIALS

The remains of 25 individuals were found during the 2006 fieldwork. Mathis noted in 1993 (Mathis 1993b) that the only burial types missing from this site are extended individuals and isolated cremations—three isolated cremations were identified during this investigation. These were in shallow to deep circular pits that appeared to be typical soil-filled pits on the surface. They each contained what appeared to be the remains of one individual scattered throughout the pit. Two of these were in fairly close proximity in the northeastern portion of the study area and the third was on the west side of the marina. Only one individual was found in what might have originally been intended as an ossuary, but no true ossuaries were encountered during the 2006 excavations. This individual was found in a small separate pit within a 5 m diameter pit (the largest pit on the site and in the southwestern corner) that was covered with a layer of midden soil and then a layer of oyster shell. Seven other apparently empty pits were found in this large pit, but no other human remains were discovered. Other burials found during the 2006 fieldwork include 14 individuals placed in single interments in oval pits, one burial containing the partially burned remains of an adult and a child, and five persons individually interred in various shaped pits. Human burials were found across the site, but several are in close proximity to others and a definite cemetery area was located in the western portion of the site. This cemetery appears to be associated with the Hanover occupation of the site. Two individuals in this cluster were found with almost complete Hanover pots, Hanover sherds were found with two other individuals in this cluster and the six closest features to this cemetery also produced Hanover sherds. In addition to the Hanover sherds found with four of the individuals interred in this cemetery, pit fill containing three other human burials produced Hanover sherds—all of these were also on the west side of the marina. Fill containing five of the human burials east of the marina and the one cremation burial west of the marina yielded White Oak sherds.

A variety of grave goods were found during the earlier investigations, including shell and copper beads, clam shells, a stone cup, shark teeth, and turtle shells. One individual found during the 2006 excavations was interred with a turtle shell below the mandible. Three individuals were interred with a hammerstone, and in addition to a hammerstone, one individual was also interred with a gorget and 22 shark teeth. A few clam shells were found in the burial pits of three individuals and because these were found at the base of a pit containing only soil, they were regarded as potential funerary offerings. Oyster shell is by far the most predominant type of shellfish present on the site and the clam shells and hammerstones may have been rare enough to be considered worthy funerary offerings.

CANINE BURIALS

Dog burials are probably the most intriguing features at Broad Reach. The remains of 16 dogs were found during the 2006 investigation. All of the dogs were found in relatively shallow soil-filled pits, although it is not clear whether the pits were excavated solely for the purpose of burying the dogs. Half of the dogs were laid in the pit on their side and the other half were disarticulated to an extent that it is possible that they had been defleshed prior to burial (Figures 6-7 and 6-8). Hanover sherds were found in the fill of pits containing six of the canine burials, and White Oak sherds were found with two of the canine burials. Two dog burials were found within the western cemetery and the remainder were spread across the site, although more were found west of the marina than east of the marina. Only preliminary results are available for the study of the dog remains, but some interesting observations were made—pathological changes on numerous vertebral elements suggest that several of the dogs carried or hauled heavy loads and the stable isotope analysis results show all of the dogs within the range of C_4 plant consumption, typically indicating a strong maize component to the diet (Heather Lapham, personal communication 2008).

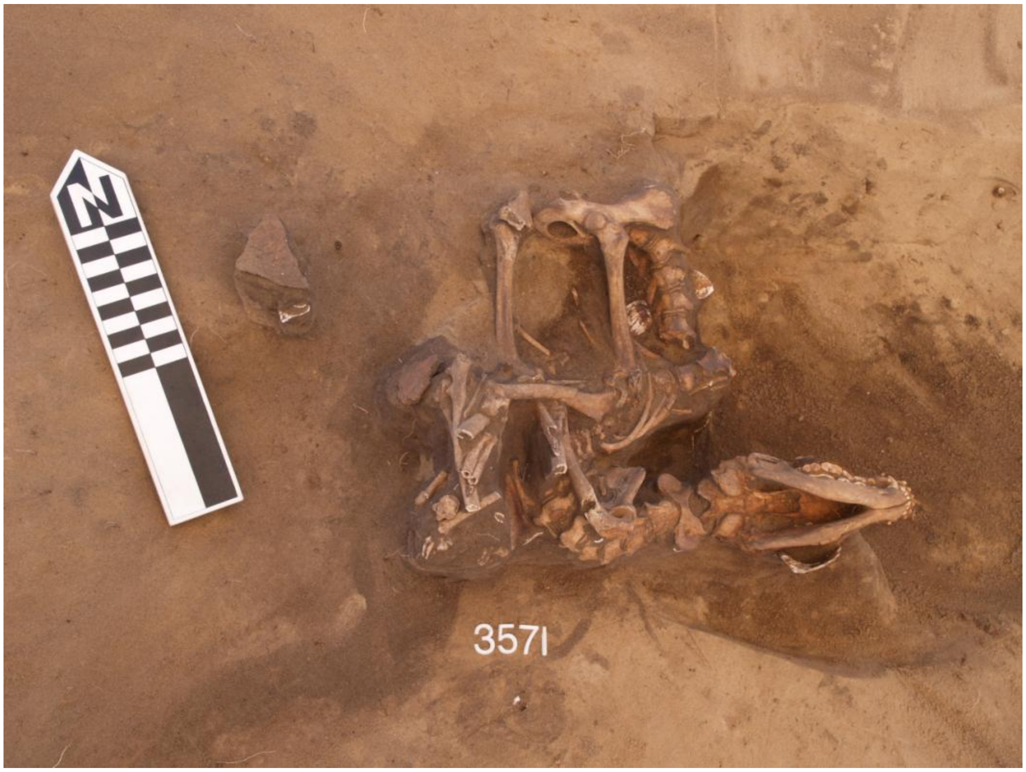


Figure 6-7. View of canine burial Feature 3573.

Figure 6-8. View of canine burial Feature 24570.

SUMMARY

As with many multicomponent sites, occupations by different groups did overlap horizontally and further analysis of the data is necessary to attempt to assign features to specific components. Thus far, features do not seem to conform to Mathis's model of shell midden accumulation and habitation progression across the landscape—that is the presumed earlier (Hanover) habitation area does not seem to be south of the presumed later (White Oak) habitation area. In fact, the area containing the most Hanover sherds and the cemetery area associated with Hanover occupation is located north of the densest White Oak occupation. Twenty post molds contained Hanover sherds, but 42 post molds contained White Oak sherds. If the Hanover at this site is earlier than the White Oak—and the radiocarbon dates we have so far indicate that it is—then it is a little easier to explain how a Hanover sherd ended up in the fill of a White Oak structure post than how a White Oak sherd ended up in the fill of a Hanover structure post, making a stronger case for the structures to be associated with the White Oak occupations. One other line of evidence is the distribution of these ceramic types—White Oak sherds were predominant in the southwestern corner, which is the area of the densest structure outlines, and also in the area east of the marina where many other rectangular to square structure patterns were found. Hanover sherds were predominant in the area west of the marina where, with the exception of the easternmost portion, there are large areas with no discernable structure patterns.

The 2006 investigations have added even more dimensions to an already complex picture of human burial practices at this site and it may be that some of the differences in burial types are related to the timing of the death, the manner of death or some internal groupings such as clan or status rather than broader temporal or cultural patterns. Clearly though, at least some of the burials can be associated with a particular pottery type and radiocarbon and osteological data will provide additional clues for grouping burials on the site and hopefully patterns will emerge. One thing we can be reasonably sure of is that the occupations at Broad Reach occurred during the prehistoric and Protohistoric periods—not a single historic period artifact was found in any of the features at Broad Reach.

Acknowledgments. A version of the paper was originally presented at a Coastal Plain symposium at ECU and I would like to thank the organizers of this conference—Charlie Ewen, John Mintz, and Lea Abbott—for the opportunity to include this material in this volume. I am very much indebted to Mark Mathis for all of his efforts and dedication to this site and for his meticulous and copious notes. I wish Mark could have seen what we got to see. Numerous archaeologists and scientists have provided comparative data, insights, and/or participated in some aspect of the research on data generated by this project and they will all be properly recognized for their efforts in the technical report detailing all the results of the investigations at this site. Due to difficulties in project funding, this report will likely not be finalized for several years though. Several of the specialized analyses are still in progress and the accumulation of site data will be ongoing. Researchers interested in any specific data are encouraged to contact the author.

REFERENCES CITED

Cassedy, Daniel, and Matthew Jorgenson

2005 Another Algonquian Longhouse from Coastal North Carolina. Paper presented at the 62nd annual meeting of the Southeastern Archaeological Conference, Columbia, South Carolina.

Cassedy, Daniel, Mark Mathis, and I. Randolph Daniel

2001 Swansboro Points: A Chronological and Technological Update from Coastal North Carolina. Poster presented at the 2001 Society for American Archaeology Conference, New Orleans, Louisiana.

Daniel, I.R., Jr.

1999 *Archaeological Excavations at Hammocks Beach West (31ON665): A Woodland Shell-Midden on the North Carolina Coast.* Occasional Papers of the Phelps Archaeology Laboratory No. 1, Department of Anthropology and Phelps Archaeology Laboratory, East Carolina University, Greenville. Prepared for Hammocks Beach State Park, North Carolina Division of Parks and Recreation.

Garner, Paul S.

1990 *Excavations at the Amity Site: Final Report of the Pomeiooc Project: 1984–1989.* Archaeological Research Report 7. Archaeology Laboratory, Department of Sociology and Anthropology, East Carolina University, Greenville.

Loftfield, Thomas C.

1979 *Excavations at 31ON33, A Late Woodland Seasonal Village*. The University of North Carolina at Wilmington, Marine Science Fund. Submitted to the Heritage Conservation and Recreation Service.

1985 *Archaeological Testing and Excavations at 31ON196, Permuda Island,* Permuda Island Inc., Sneads Ferry, North Carolina. Department of Sociology and Anthropology, University of North Carolina, Wilmington.

Loftfield, Thomas C., and David C. Jones

1995 Late Woodland Architecture on the Coast of North Carolina: Structural Meaning and Environmental Adaptation. *Southeastern Archaeology* 14(2)120–135.

Mathis, Mark A.

1992a North Carolina Archaeological Site Form—Site 31CR260. On file, Office of State Archaeology, Raleigh, North Carolina.

1992b Status Report and Proposal: Broad Reach Archaeological Project, 1991–1992. On file, OSA, Raleigh, North Carolina.

1993a Broad Reach: A Unique Site Or The Truth About What We've Missed. In *Site Destruction in Georgia and the Carolinas*, edited by David G. Anderson and Virginia Horak, pp. 39–48. Readings In Archaeological Resource Protection Series, No. 2, Interagency Archeological Services Division, National Park Service, Atlanta.

1993b *Mortuary Practices at the Broad Reach Site*. Paper presented at the 50th Annual Meeting of the Southeastern Archaeological Conference, Raleigh, North Carolina.

1994 Sherds to Shovels: A Case for Recycling. Paper presented at the 51st annual meeting of the Southeastern Archaeological Conference, Lexington, Kentucky.

1995 The Carolina Algonquians: Comments from the Fringe (the Coastal Frontier). Paper presented at the 27th Algonquian Conference, Chapel Hill, North Carolina.

Millis, Heather
2009 *Data Recovery Excavations at the Contentnea Creek Site (31WL37), Wilson County, North Carolina*. TRC Environmental Corporation, Chapel Hill, North Carolina. Submitted to North Carolina Department of Transportation, Raleigh.

Monahan, Elizabeth I.
1994 Bioarchaeological Interpretation of the Broad Reach Site, Coastal North Carolina (31CR218). Unpublished M.A. Thesis submitted to Wake Forest University, Department of Anthropology, Winston-Salem, North Carolina. On file, OSA, Raleigh, North Carolina.

Shumate, M. Scott, Patti Evans-Shumate, Thomas R. Whyte, Larry R. Kimball, Keith Seramur, Gary Crites, James Feathers, and Brett Riggs
2000 *Archaeological Investigations at Long Point (31JN2) and Haywood Landing (31JN3) on the Croatan National Forest, Jones County, North Carolina*. Report submitted to the National Forest Service, Asheville, North Carolina.

HISTORICAL ARCHAEOLOGY ON THE COASTAL PLAIN IN THE POST-SOUTH ERA

Charles R. Ewen

When *The Prehistory of North Carolina: An Archaeological Symposium* was being assembled, Mark Mathis and Jeffrey Crow solicited the essays with two purposes in mind. "First, they reflect the status of archaeological studies and knowledge in North Carolina in the 1980s. Second, just as importantly, they synthesize the nineteenth century and document the uncertain efforts to identify, interpret, and understand North Carolina's prehistory." (Mathis & Crow 1983:xiii). While it was successful in achieving these goals, the goals themselves were incomplete. Five hundred years of North Carolina's past were omitted.

Today's archaeology is not limited to the prehistoric past; it is a way of studying the entire past of North Carolina. From the time the first inhabitant knapped a fluted point right up until this author empties the wastepaper basket containing earlier drafts of this manuscript. Historical archaeology has much to tell us about the post-prehistoric period of the Coastal Plain.

To be fair to our predecessors, historical archaeology wasn't really established in the United States until the late 1960s. However, North Carolina has a long track record of work in historical archaeology. Stanley South, one of the leading scholars in the field worked on NC historic sites since the 1950s and 60s. Elsewhere in the country the idea of archaeologists digging on anything other than prehistoric sites was only beginning to be accepted. Some of the earliest work on the Coastal Plain took place at Fort Raleigh (Williams 1896; Harrington 1949, 1951, 1962, 1966), Tryon Palace (Williams 1961; Garlid 1978), the Newbold-White House (Garrow 1975; Stone 1970; South 1973) , and Brunswick town (South 1958, 1962, 1967). A commitment on the part of the NC state government (both OSA and Historic Sites) to historic sites put NC in the vanguard of historical archaeology. However, a lot of the steam went out of the State program when Stanley South headed south of the border in 1968.

Since 1983, the coastal plain has seen a gradual shift in the principal practitioners of historical archaeology. In the twenty-first century the State is still a strong participant, though when the Division of Historic Sites gave up their archaeologists, the amount of actual fieldwork the State undertook on its properties declined. Fortunately, there were others to pick up the mantle.

Legislation in the late 1960s brought contract archaeologists into the picture. Although technically always covered by Sec. 106 of the National Historic Preservation Act, historic sites, especially those more recent than the Civil War, were for many years under-reported by the profession or deemed non-significant. Much of this seeming neglect can be attributed to these sites not being seen as eligible for the National Register as well as the lack of qualified CRM personnel conducting Phase 1 and 2 investigations. However, by the early 80s this was changing and today most firms have at least one person on their staff that has some training in historical archaeology. In some firms, it is actually their primary focus.

In the decades since the passage of the National Historic Preservation Act, a great deal of historic data has been lost to development. Nowhere is this more true than along the coast where development during the last decade of the twentieth century was especially intense. An example of this kind of investigation can be seen in the chapter by Lautzenheiser et al.

The private firms were not the only archaeologists mitigating adverse affects to threatened cultural resources. Federal land managers had been charged with inventorying and assessing archaeological sites on their lands since the passage of Executive Order 11593 in 1971. The U.S. Forest Service, through their own archaeologists and contract private firms, have managed the resources of the Croatan National Forest on the Coastal Plain near New Bern. An example of such management-oriented work is that conducted at Civil War sites at Flanner's Beach and so-called Croatan Blockhouse (Daniel et al. 2000) on their property.

Another major player is the U.S. military. They take the management of the cultural resources on multiple bases in North Carolina seriously and have set up a civilian infrastructure to deal with them. Camp Lejeune, near Jacksonville, is a good example of this type of program

Ironically, the universities were actually the last player to fully engage in historical archaeology in North Carolina. In fact, Stanley South was academically shunned by his mentor, when he starting working on historic sites in the state. "I asked Joffre Coe about taking that job [archaeologist at Brunswick Town] and leaving Town Creek to move into historical archaeology. He said: Well, if you want to end your career in archaeology I guess you could do that." (Joseph 2010:134) David Phelps and Tom Loftfield both excavated historic sites, yet their primary interest was in the prehistoric period or studying the effects of European colonization on the indigenous peoples. Several historic sites or sites with historic components were excavated in the 80s, but little was published on them beyond the required reports to the sponsor. The amount of sustained field work increased when East Carolina University decided in the 1990s to develop a graduate program in historical archaeology. The resulting influx of graduate students seeking thesis projects has resulted in a profusion of historic site investigation. Many of these have built on the early excavations of Stanley South or discoveries made during CRM projects.

In practice there is a lot of overlap in the archaeological practitioners of North Carolina. Sites initially excavated by the State have become fodder for the Academy's graduate students. And students that graduate and take a job in the CRM realm have sometimes returned to sites they investigated while in school. The result, at least on the Coastal Plain, has been a happy symbiosis between the State, the Private Sector, and Academia, with the Office of State Archaeology safeguarding important historic sites and the university students performing much needed interpretative investigation upon them.

HISTORIC SETTLEMENTS

Ft. Raleigh

The first site to be settled in NC was also the first to be investigated, beginning with Talcott Williams in 1895. Several decades of field research undertaken by J.C. "Pinky" Harrington under the sponsorship of the NPS found some 16th c. material, but uncovered little in the way of structural features (Harrington 1949, 1951, 1962, 1966). The search kicked into higher gear when Ivor Noel Hume and later Bill Kelso and Nick Lucketti come down from Virginia to find the lost colony. Hume eventually comes to the conclusion that everyone had been digging in the wrong place (Hume 1996). Into the 21st century, the search has been resumed by the First Colony Foundation, which has continued more of the same but other leads as well (Luccketti 2007, Watts 2008).

Exciting discoveries related to the "Lost Colonists' were made during the late 1990s at David Phelps' excavations at the Cape Creek site on Hatteras Island. Thought to be the site of the principal village of the Croatan chiefdom, the site has yielded late prehistoric pottery and early historic European artifacts. The recovery of a 16th century flintlock and a gold signet ring from the site were especially intriguing (Figure 7-1).

Figure 7-1. Sixteenth-century Snaphaunce gunlock and signet ring from 31DR1.

Charles Town

South of Wilmington, on the Cape Fear lies the site of the failed settlement of some of the earliest colonists (ca. 1664) of North Carolina. The archaeological investigations of Charles Town, on the lower Cape Fear, though preliminary, were promising. Early efforts in the 1960s and 70s were focused on simply finding this early settlement. However, in 1987, UNC-W field schools, under the direction of Tom Loftfield, expanded the scope of the inquiry. Loftfield was interested in understanding the influence that Barbados played on the layout and character of the settlement. After five seasons of excavation, he was able to show that the colony failed for failing to adjust quickly enough to the different physical and cultural environment they encountered in North Carolina (Loftfield 2005).

Newbold-White house

The Newbold-White house was once believed to have been constructed by Joseph Scott around 1685. However, a recent (1994) dendrochronological study dated the structure to 1730, prompting a reexamination of the previous archaeology completed at the site (Stone 1970, Outlaw 1973 & 1993, South 1973, Garrow 1975, Clauser 1985, Hartley 1986, and Allen 1989-1994). This is where the academic-CRM partnership proved useful.

Stephanie Bandy in her MA thesis (ECU, Department of Anthropology 2000) reassessed the late 17th and early 18th century occupation of the site. She reviewed the work on the earlier component of the site and compared her findings with other contemporary sites in the region (e. g. Eden house site and Kings Reach, MD). She concluded that the original structure was a relatively modest earthfast structure with an associated outbuilding (possible tobacco house) and that traces of these had already been found, but not initially recognized as such, to the southwest of the present structure near a reconstructed arbor. Bandy's thesis also serves as a research design to guide future research at the site.

Bath

Founded in 1705, Bath is North Carolina's oldest town (Watson et al. 2005). Today, the State owns a sizeable chunk of the town and interprets it as a State Historic Site. The archaeological projects undertaken in Bath, over the years, including those by Stanley South (1960a,b,c,d & 1965), have largely been of a CRM compliance-oriented variety, undertaken by Historic Sites archaeologists (Allen 1997, 1998, 2000; Beidleman 1976; Broadwater et al. 1979; Clauser 1990; Harper 1984, 1991; Lautzenheiser 1993; OSA 1963a,b,c; Oliver 1995; Payne & Dahlin 1987;). The town has not grown appreciably since its founding and therefore presented an ideal setting to pursue archaeological research into the Proprietary Period of North Carolina's history.

An ECU MA thesis by Dan Baicy (2003a) constructed a regional research design to guide planned archaeological investigations for the community. He divided the research into thematic areas (Backyard Archaeology, Feminist Archaeology, Plantation & Slave Life, Commercial/Industrial Archaeology, and Civic Life), which have been incorporated into ECU's current projects in Bath. This thesis has served as a guide for East Carolina University's on-going archaeological investigations in the town.

From 2001-2010 East Carolina University archaeologists have been conducting research in Bath, NC. Initial work examined the area of the 3rd courthouse (Baicy 2003b) and the alleged site of John Lawson's house (Mullens 2010). In the summer of 2005, East Carolina University Anthropology students began a systematic survey of the area enclosing the 18th-century town of Bath. Like similar surveys undertaken at St. Augustine (Deagan 1981) and St. Catherine's Island (Thomas 1993), the Bath survey has both immediate and long-term goals. The immediate goal is to identify areas of social activity during the early 18th century. A brick cellar revealed during the survey became the current focus of the 2009 field school (Figure 7-2). A summary article briefly discussing the ECU archaeological program in Bath was published in the NC Historical Review (Ewen 2010).

Figure 7-2. Eighteenth-century cellar excavation at Bath, NC.

New Bern

Though the town of New Bern and its environs were settled in the early 18th c., archaeological work has centered primarily on Tryon Palace, the governor's residence, which was completed in 1770. Virtually no work, including the ECU summer field schools in the late 20th c. have investigated the Proprietary period settlement. An exception to this was Stanley South's (1963) search for Brice's Fort, an area south of New Bern where settlers fled to during the Tuscarora uprising. In the late 80s, a large contract project mitigated the impacts of airport development on the Freedman's colony at James City (Hargrove 1986, Abbot 1988, and Wheaton et al. 1990). While large CRM projects were conducted at sites in the city of New Bern such as: Christ Church (South 1964), Attmore-Oliver House (South 1962b), Gabriel Rains House (Espenshade and Elliot 1990), Tannery (Garrow and Joseph 1985), United Carolina Bank (Lautzenheiser and Eastman 1993), and Tryon Palace (Kelso et al. 1994, Joy 1997).

Kim Zawacki, in a report prepared for the Kellenberger Foundation (1997b -Appendix), compiled the historical archaeology that had been completed in the area. She subdivided geographically into five areas: Reconnaissance Surveys, South of New Bern Archaeology, Historic District Archaeology, Palace Archaeology, and Underwater Archaeological Investigations. She used this previous work to help construct a research design for New Bern archaeology (Zawacki 1997b).

A multi-year research project at Tryon Palace by East Carolina University began in 1994. The ensuing 5 years examined the Robert Hay House (Ewen 1996, Heath 199, Magoon 1998) (Figure 7-3), the New Bern Academy (Zawacki 1997a, Zawacki et al. 2000), and the Palace gardens (Ewen et al. 2002). This resulted in a couple of MA theses including another research design (Zawacki 1997c), which synthesizes the known history and archaeology and one that specialized on the Civil War earthworks (Joseph 2001) in the vicinity.

Figure 7-3. Excavation of the front porch of the Robert Hay House, New Bern, NC.

Edenton

In 1663, Charles II granted governance of the Carolinas to eight Lords Proprietors. Settlement, though, was still sporadic through the 17th century. In 1672, the Quakers established the first stable church in the Albemarle, though this became problematic after the Anglican Church gets a foothold in the region. The result was Cary's Rebellion. Still, profitable settlement occurred in the Albemarle with the establishment of Roanoke, which was renamed Queen Anne's Town. It became the region's focus by 1710. By 1722 the town had been renamed Edenton and designated the capital of North Carolina.

A number of the historic properties in and around Edenton have been actively restored and our presented as historical attractions. Being under State care, many archaeological projects (e.g. Iredell House, Cupola House) have been conducted in the area to comply with state and Federal mandates. While Beaman (2008) presents an excellent summary all of this work, two of the larger undertakings are discussed below.

Eden House Site

One of the earliest historic sites excavated in the Albemarle is Eden House. The site is named after former North Carolina Governor Charles Eden, who had a plantation at this location in the early eighteenth century. The archaeological project came about as the result of a highway project designed to widen US 17 and replace the bridge over the Chowan River (Lautzenheiser et al. 1998). Coastal Carolina Research, Inc. (CCR), was contracted to conduct extensive archaeological excavations at the site. The earliest historic occupation, represented by a small stockaded settlement with at least four structures, is believed to date as early as 1660. Besides the report, CCR worked with the North Carolina Department of Transportation to construct a website to share the results of their research with the general public (http://www.ncdot.org/doh/preconstruct/pe/ohe/archaeology/edenhouse/).

Chowan County Courthouse

The 1767 Chowan County Courthouse is a National Historic Landmark. A series of archaeological excavations were begun in 2001 by State Historic Sites archaeologists to assist with its interior restoration. Excavations were also conducted underneath the main courtroom to better understand the construction techniques and identify features predating the courthouse (Carnes- McNaughton and Beaman 2003).

This restoration project also involved the excavation of trenches in the rear yard, around the nineteenth century jail and associated residence. Additional investigations around the 1767 Courthouse have included the discovery of the original ground level and number of steps to the street along the front of the structure (Clauser 1996), as well as the subterranean reservoir for a later structure behind the West Wing (Clauser and Joy 1993). East Carolina University graduate student Wesley Willoughby (2007a) utilized the data recovered from the courthouse to compare with other courthouses on the east coast to develop a public structure pattern.

PLANTATION ARCHAEOLOGY

Somerset Place

Somerset Place was one of the largest plantations in North Carolina prior to the Civil War. The Collins family owned over 300 slaves and 14,000 acres of land at the height of its prosperity. However, after the Civil War, the plantation quickly declined, dwindling to just 4,428 when the state acquired it in 1950. The main house and a few outbuildings now stand as a restored historic site.

Since the early 1950s archaeology has been used to reveal undocumented information about Somerset Place. Early work focused on the areas around the main house and gardens (Tarlton 1954). In the late 90s, Carl Steen (1995, 2001, 2002) investigated the African American aspect of the plantation's history to complement the historical research. The end result was the public interpretation of several buildings in the slave community. Other work has also been undertaken by State and ECU archaeologists (Byrd 1992; Byrd & Heath 1996; Carnes-McNaughton 200, 2001, 2002; Carnes-McNaughton and Harper 2003; Harper 1994, 1997, 1998; Wilson 1985) culminating with an M.A. thesis/research design by Robert Penny (2003).

Hope Plantation

Hope Plantation is located in Bertie County, in the northeastern region of the state's coastal plain. The site is best known for its renovated plantation house, which was built around 1803 by David Stone, a prominent politician at both the state and national level. Archaeological evidence suggests that a domestic structure was built on the property before the house that stands today, sometime in the eighteenth century. Today, the Historic Hope Foundation, Inc owns a 47-acre parcel of land surrounding the house, and operates the site as a public historical attraction.

The Hope Plantation site has been the focus of a number of archaeological projects over the past half century. The initial work focused on the existing plantation house (Demmy 1966, Phelps 1980, Stone 1970). However, in recent years, an effort has been made to address other topics as the subject for archaeological projects at Hope Plantation, and a comprehensive research design has been developed for the site (Joyce 1998).

One of the first stages of implementing the research design for Hope Plantation was the completion of an overall survey of the available land surrounding the site (Buck 1999a). In addition to this project, a variety of historical and archaeological resources have been analyzed in an attempt to reconstruct the historic spatial layout at this particular plantation (Buck 1999b). Spatial patterns in general are an important element to consider in any analysis of plantation systems, and this subject factors considerably in the implementation of the research design for the site.

Foscue Plantation

To foster a growing local interest in archaeology, Craven Community College formed a partnership with East Carolina University to conduct an archaeology field school at Foscue Plantation in Jones County, North Carolina. Foscue Plantation dates to the early nineteenth century, and was a producer of cash crops and naval stores. Archaeological excavations were initiated at Foscue Plantation in 2005, in conjunction with an archaeology field school offered by

Craven Community College (CCC) in partnership with East Carolina University (ECU). The 2005 excavation resulted in the production of Master's thesis (Seifert 2006) entitled The Possibilities of Foscue Plantation: A Management Plan for a Nineteenth Century Naval Stores Plantation.

This report established the working research map for the plantation. Subsequent work focused on locating the area of the original plantation house (Willoughby 2007b, Flood et al. 2008, Schleier 2009, McMillan 2010, Keeny 2011) (Figure 7-4). Another thesis (Seeman 2011) investigated the original family vault. Not only did it recover more individuals than documents suggested, but also provided osteobiographies of elite rural families as well.

Figure 7-4. Excavations at Foscue Plantation, Jones County, NC.

MILITARY SITES

Though coastal North Carolina has been spared much of the ravages of war, there still are sites of that have been investigated. Beginning with the conflicts between the early colonists and the local inhabitants and continuing through the Civil War, Battlefield Archaeology has been practiced both on land and under the sea. The next three sites are examples of the terrestrial side of the conflict, while evidence of naval conflict will be discussed by Richard Lawrence (this volume).

Neoheroka

The Tuscarora War essentially marks the end of indigenous habitation of eastern North Carolina. After the conclusion of the conflict in 1715, colonial settlement stabilized as the native threat was eliminated and a more stable, Royal Governor was put in place. Neoheroka Fort, constructed by Tuscarora, was the location of the largest and most important battle of the war. The fall of the fort in 1713 was the climax of the Tuscarora War and essentially ended the conflict.

Excavations at the site of the fort were conducted by David Phelps of East Carolina

University during the decade of the 1990s (Heath & Phelps 1998). This research spawned a survey that searched for the towns and forts along Contentnea Creek that comprised the bulk of the Tuscarora settlement of the area (Byrd & Heath 2004). Other Tuscarora War-related projects include preliminary investigations at Ft. Barnwell, Ft. Hancock and the Lillington property in Bath (Ewen 2005) that supposedly burned during the war.

Fort Macon

Fort Macon is North Carolina's most visited State Park. Its placement next to a beautiful beachfront may have something to do with its popularity, however, the structure itself is impressive and worth visiting. Built in the early 19th century, Fort Macon was the 3rd attempt to fortify Beaufort Inlet. The earth and masonry fortification appears impregnable, but actually fell to Union forces after an 11 hour bombardment with siege guns. Only limited, compliance-oriented archaeological work had been undertaken prior to the 21st century (Mintz & Beaman 2001).

In 2000 an ECU field school was undertaken in cooperation with Fort Macon State Park. The archaeological goals of this project were to locate the remains of the Eliason House, a two story frame house, located outside the fort walls, built during the construction of Fort Macon in 1827. Lieutenant William A. Eliason was the chief engineer of the fort and lived in the house during his tour of duty at the fort. Later the house was used as the commandant's quarters.

From May 14 to June 19, 2001, The East Carolina University field school undertook excavations at the Eliason House site at Fort Macon State Park. The area was cleared and the grid from earlier test excavations reestablished. To assist in unit placement, both Paul Branch's earlier auger tests and five types of remote sensing were used. Remote sensing consisted of magnetometry, resistivity, magnetic susceptibility, ground-penetrating radar, and electro-magnetic conductivity. Excavation revealed the rear portion of the house and recovered over 14,000 artifacts (Bregger et al. 2003). Follow excavations in 2011 established the footprint of the house and provided additional insights into the inhabitants of the house and the siege of Fort Macon.

Fort Branch

After Union forces captured Roanoke Island, Elizabeth City and Edenton, Confederate forces on the interior coastal plain became increasingly concerned over the safety of the railroads. Fort Branch was constructed on the Roanoke River to protect the strategic hub at Weldon. However, the confederates were not able to find sufficient troops to defend it. So, in early 1865, when the Union troops advanced, the small Confederte force hastily abandoned the fort after dumping their cannon into the river.

It was these cannon that attracted the first archaeological interest. A group of Civil War enthusiasts recovered several hundred shot and shell and three cannon from the river. These were later confiscated by the State and more professional archaeological investigation initiated (Watts et al. 1979). In 1973, and again in 1990, limited work was undertaken within the confines of the fort by David Phelps and students from East Carolina University (Phelps & Pennington 1990). Meanwhile, the Underwater Archaeology Branch was able to recover additional cannon from the river in 1987. This work has been summarized and a research design for future archaeological investigation prepared by Keith Heinrich (2004) in his M.A. thesis.

CEMETERY WORK

The increasing needs of space for the living often take precedence over the needs for space for the dead. In the spirit of service learning, ECU archaeology classes have undertaken a series of cemetery studies, which include the relocation of unmarked graves. St. Peters Episcopal (Russ & Ewen 2001, Cherry Hospital (Potts & Smith 2003), Beebe Park (Wilde-Ramsing) and the Sara Howser (Amato 2008) project were the larger among the undertakings.

The most ambitious project concerned the relocation and excavation of former governor Richard Caswell's grave. Caswell was a hero of the Revolutionary War and North Carolina's first Federal Period governor. His exact resting place, though thought to be in Kinston, had been lost over the intervening years since his death in 1789.

Initial clues prompted a project in downtown Kinston in Caswell's original family cemetery, now abandoned. Excavations were undertaken in the Fall of 2000 by an ECU Public Archaeology class under the direction of Charles Ewen. Two iron coffins were discovered, which dated to the mid-19th century (Jorgenson et al. 2001). These were later exhumed and transported to the Smithsonian, where a team of pathologists examined the remains and determined them to be two middle-aged women, one of whom may have been Luisa Hernadez (Ewen 2007).

The discovery of an early 20th century photo, placing the grave in Caswell's second family cemetery in the western part of Kinston, prompted another project. Led by ECU graduate student Sheri Balko (2009), investigations were directed to the space between Caswell's first and second wives. An unmarked grave was delineated and excavated to a depth below the water table. Shockingly, only the bottom of a rough wooden coffin was found leaving most spectators to believe the grave had been robbed (Figure 7-5). Further analysis of the soil by Balko, however, revealed that the coffin and its inhabitant had simply decayed away due to the rising and lowering water table. This demonstrated that a grave *had* been found and that it was probably that of Caswell. Skeptics still abound, though.

Figure 7-5. Bottom panel from what is believed to be Governor Richard Caswell's coffin.

PUBLIC ARCHAEOLOGY

Most of the projects presented in the original *The Prehistory of North Carolina* were done by archaeologists, for archaeologists. If anyone else saw them, it was a bit of serendipity. Times change, however, and the majority of the projects in this chapter were done under the watchful eyes of the general public. Indeed, rather than viewing the public as an impediment to doing archaeology, most archaeologists today go out of their way to include them or at least make their interpretations more accessible.

Public interpretation of archaeology is being accomplished in a number of ways. University presses ask their authors to write in a way that the material is accessible to interested lay persons. Many universities and large projects have websites that present their findings. John McGowan, an independent scholar working out of his home, has been digitizing and posting old archaeological reports relating to the coastal Algonkians (http://homepages.rootsweb.ancestry.com/~jmack/algonqin/algonqin.htm).

Archaeologists at ECU have begun looking at how to bring together site documentation and dissemination is through the development of video podcasts. The podcasts will allow visitors the opportunity to learn about archaeological work at a site, even when there is no excavation going on. The podcasts can be carried to sites to allow visitors to visualize the work that has gone on there. The podcasts can also be used in the classroom, from elementary and secondary school classes studying local history to college classes studying archaeological processes and findings. Most of the podcasts are short, about five minutes at most. By using this short form archaeological vignettes can easily be incorporated into class lectures or posted on websites. It allows for the examination of the individual parts of the archaeological process, from surveys to excavations to analysis. Various artifacts and features can be highlighted and local informants interviewed. Best of all, this information can be easily archived on a DVD or on-line.

CONCLUSION

Archaeology is alive and well on the coastal plain of NC. In fact, the past 25 years have witnessed an explosion of archaeological activity along the coast by many different agencies. CRM projects record dozens of new sites each year, which the State faithfully manages. Universities in the east continue to expand their research into historic archaeology and their students have undertaken research on sites from Corolla to Cape Lookout. Good thing there is a lot for them to do!

REFERENCS CITED

Allen, Steven C.

1995 *Archaeological Investigations at the Newbold-White House Site, Perquimans County, North Carolina, Arbor Area Excavations 1989-1994*. Ms. on file, Perquimans County Restoration Association. Hertford, NC.

1997 *Van Der Veer House Phone Line Project*. Fieldwork Summary. Ms. on file, Office of State Archaeology, Raleigh.

1998 *Archaeological Investigations at the Bath African Methodist Episcopal Zion Church Site*. Site Report. North Carolina Department of Cultural Resources, Division of Archives and History, Raleigh.

2000 *Van Der Veer House New Drain Line Project*. Fieldwork Summary. Ms. on file, Office of State Archaeology, Raleigh.

Amato, Thomas

2008 *The Search for Sarah Howser's Grave, Somerset Place Historic Site, Creswell, North Carolina*. Ms. on file, Phelps Archaeology Laboratory, East Carolina University.

Baicy, D.

2003a Historic Bath: A Research Design for the Study of a Colonial Community. (master's thesis, East Carolina University,)

2003b *Assessing Sauthier: Excavations at Lot 14 in Bath*, NC. Ms. on file, Phelps Archaeology Laboratory, Greenville, NC.

Balko, Sheri

2009 Richard Caswell, Lost Governor: Memory in Historical Archaeology. (master's thesis, East Carolina University,)

Bandy, Stephanie

2000 ". . . With All the Housing Thereon": A Reassessment of the 17th and Early 18th c. Occupation of the Newbold-White House Site, Perquimans County, North Carolina. (master's thesis, East Carolina University,)

Beaman, Jr., Thomas

2000 "Fables of the Reconstruction: Morley Jeffers Williams and the Excavation at Tryon Palace, 1952-1962," *North Carolina Archaeology* 49, 1-22.

2001 The "Castle" and the "Palace": Comparing Artifact Patterns at Russellborough and Tryon Palace, Two Elite Residences of Colonial North Carolina. (master's thesis, East Carolina University,) 2008 Thirty-Six Years of Urban Archaeology in Edenton: An Exploration of Three Centuries of Historic Identity in a Colonial Port Town. *North Carolina Archaeological Society Newsletter* 18(3):4-9.

Beidleman, Katherine D.
1976 *Excavations at the Palmer-Marsh House (31BF85)*. Ms. on file, Office of State Archaeology, Raleigh.

Tara Bregger, Kenneth Cronin, Keith Heinrich
2003 *Archaeological Investigations at 31CR261**1, the Eliason House, Fort Macon, North Carolina: Investigating Military Life in the Antebellum South*. Ms. on file, Phelps Archaeology Lab, East Carolina University

Buck, Sabrina C.
1999a *An Archaeological Survey of Hope Plantation, Windsor, North Carolina*. Phelps Archaeology Laboratory, Department of Anthropology, East Carolina University. On file at the Office of the State Archaeologist, Raleigh.

1999b Reinterpreting Hope: An Archeological Perspective on the Spatial Layout of an Eastern North Carolina Plantation. Unpublished Master's thesis, Department of Anthropology, East Carolina University, Greenville, NC.

Broadwater, John, David Hazzard, and Martha McCartney
1979 *Historical Bath Archaeological Final Report*. Ms. on file, Historic Sites Section, Division of Archives and History, Raleigh.

Byrd, John
1992 *A Preliminary Report of Archaeological Investigations at Somerset Place State Historic Site (31WH14).* Ms. on file, Phelps Archaeological Laboratory, East Carolina University, Greenville.

Byrd, John and Charles Heath
1996 *Report of Survey and Excavations in the Formal Garden, Somerset Place State Historic Site.* Ms. on file, Phelps Archaeological Laboratory, East Carolina University, Greenville.

Carnes-McNaughton, Linda
2000 *Archaeological Field Notes, Somerset Place Archaeological Excavations*, Ms. on File, Office of State Archaeology, Raleigh.

2001 *Archaeological Field Notes, Somerset Place Archaeological Excavations*, Ms. on File, Office of State Archaeology, Raleigh.

2002 *Archaeological Field Notes, Somerset Place Archaeological Excavations*, Ms. on File, Office of State Archaeology, Raleigh.

Carnes-McNaughton, Linda and Terry Harper
2003 *Archaeological Field Notes, Somerset Place Archaeological Excavations*, Ms. on File, Office of State Archaeology, Raleigh.

Carnes-McNaughton, Linda F., and Thomas E. Beaman, Jr.
2003 In, Under and Around: Archaeological Excavations at the 1767 Chowan County Courthouse, Edenton, North Carolina. Paper presented at the 36th Annual Meeting of the Society for Historical Archaeology Conference, Providence, Rhode Island.

Clauser, John
1985 *Clearance Archaeology at the Newbold-White House, Perquimans County, North Carolina*. Ms. on file, NC Office of State Archaeology, Raleigh

1990 *Investigations at the Palmer-Marsh House, Historic Bath, Beaufort County, North Carolina*. Site report No. 2753. Ms. on file, Office of State Archaeology, Raleigh.

1996 *Archaeological investigations of the Chowan County Courthouse front steps*. Ms. of file, Office of State Archaeology, Raleigh.

Clauser, John W., and Deborah Joy
1993 *Excavations at Chowan County Courthouse*. Ms. on file, Office of State Archaeology, Raleigh.

Daniel, I. Randolph, Jr., Charles R. Ewen, Adam Marshall, and John M. Joseph
2000 *Archaeological Investigations at Six Locations in the Croatan National Forest, Craven and Carteret Counties, North Carolina.* Phelps Archaeology Laboratory, East Carolina University.

Deagan, Kathleen A.
1981 Downtown Survey: The Discovery of Sixteenth-Century St. Augustine in an Urban Area. *American Antiquity* 46(3):626-634.

1982 Avenues of Inquiry in Archaeology. In *Advances in Archaeological Method and Theory*, Vol. 5, edited by Michael B. Schiffer. Pp. 151-175

1988 Neither History or Prehistory: the Questions that Count in Historical Archaeology. *Historical Archaeology* 22(1):7-12

DePratter, Chester B., and Stanley South
1990 Charlesfort: The 1989 Search Project. South Carolina Institute of Archaeology and Anthropology, Research Manuscript Series 210.

Espenshade, Christopher T. and R. F. Elliot
1990 *Archaeological Testing at the Present Site and the Proposed New Site of the Gabriel Rains House, New Bern, North Carolina*. Ms, on file, Office of State Archaeology, Raleigh.

Ewen, Charles R.
1996 *Archaeological Investigations at the Robert Hay House*. Ms. on file, Office of State Archaeology, Raleigh.

Ewen, Charles R., Matt Jorgenson, and Anna Moss
2001 *Final Report on Archaeological Investigations at Vernon Hall* Ms. on file, Phelps Archaeology Laboratory, East Carolina University.

2007 Lost Governors, Iron Coffins, and Driven Descendants. Paper presented to the 43rd annual meetings of the Society for Historical Archaeology, Williamsburg.

Ewen, Charles, Patricia Samford and Perry Mathews
2002 The Formal Gardens at Tryon Palace: Myth or Reality? *The North Carolina Historical Review* 79(3):327-346.

Flood, Lindsay N.; Rasberry, Mattie M. and Willoughby, Wesley R.
2008 *Results of the 2007 and 2008 Craven County Community College Historical Archaeology Field School at Foscue Plantation (31JN111 and 31JN112) Jones County, North Carolina*. Phelps Archaeology Laboratory, East Carolina University: Greenville, NC.

Garlid, Jennifer
1978 "Archaeological Clearance of the Fire Security Alarm System at Tryon Palace," report, Tryon Palace Historic Sites and Gardens, New Bern,

Garrow, Patrick

1975 Newbold-White House Report. Ms. on file, NC Office of State Archaeology, Raleigh
Harper,Terry
1984 *Monitoring the Installation of Electrical Lines to the Van Der Veer House*. Ms. on file, Office of State Archaeology, Raleigh.

1991 *Clearance for a Temporary Electrical Pole*. Ms. on file, Office of State Archaeology, Raleigh.

1994 *Fieldwork Summary, Somerset Place Archaeological Excavations*, Ms. on File, Office of State Archaeology, Raleigh.

1997 *Fieldwork Summary, Somerset Place Archaeological Excavations*, Ms. on File, Office of State Archaeology, Raleigh.

1998 *Fieldwork Summary, Somerset Place Archaeological Excavations*, Ms. on File, Office of State Archaeology, Raleigh.

Harrington, J.C.
1949 Archaeological Explorations at Fort Raleigh National Historic Site. *North Carolina Historical Review* 26 (April):127-149.
1951 Historic Relic Found: An Old Iron Sickle from Fort Raleigh, North Carolina. *Iron Worker* 15 (Summer): 12-15.

1962 *Search for the Cittie of Ralegh: Archaeological Excavations at Fort National Historic Site, North Carolina*. Archaeological Research Series, No. 6. Washington, National Park Service.

1966 *An Outwork at Fort Raleigh: Further Archaeological Excavations at Fort National Historic Site, North Carolina*. Philadelphia, Eastern National Parks and Monuments Association.

Hartley, Michael O.
1986 A House on the Albemarle: The 1986 Excavations at the Newbold-White House, Perquimans County, North Carolina. Ms. on file, NC Office of State Archaeology, Raleigh

Heath, Charles & David Phelps
1998 Architecture of a Tuscarora Fortress: The Neoheroka Fort and the Tuscarora War (1711-1715), Paper presented at the 63rd annual meeting of the Society for American Archaeology, Seattle.

Heikkenen, Herman J.
1994 The Last Year of Tree Growth for Selected Timbers Within the Newbold-White House as Derived by Key-year Dendrochronology. Ms. on file, Perquimans County Restoration Association. Hertford, NC.

Heinrich, K.
2004 Fort Branch, Martin County, North Carolina: Research Design and Site Management Plan. (master’s thesis, East Carolina University,)

Hume, Ivor Noël
1994 *The Virginia Adventure, Roanoke to James Towne: An Archaeological and Historical Odyssey*. Alfred A. Knopf, New York.

1996 In Search of This and That: Tales from an Archaeologist’s Quest. Colonial Williamsburg Foundation, Williamsburg.

Jorgenson, Matthew, Eric Giles and Anna Moss
2001 *Report On Archaeological Testing And Excavation Of Graves In The Cemetery At Vernon Hall*. Ms. on file, Phelps Archaeology Laboratory, East Carolina University.

Joseph, J. M.
2001 The Longue Duree of 19th c. Fortifications in and Around, New Bern, North Carolina. (master's thesis, East Carolina University,)

Joy, Deborah
1997 *Archaeological Monitoring for Street Improvements in the New Bern National Register Historic District Craven County, North Carolina*, report, Planning and Environmental Branch, Division of Highways, Raleigh,

Joyce, Amy
1998 An Archaeological Research Design for Early 19th century Slave Life at Hope Plantation. (master's thesis, East Carolina University,)

Keeny, Amanda
2011 *Results of the 2011 Craven Community College Historical Archaeology Field School at Foscue Vault Field Site (31JN112) Jones County, NC.* Ms. on file, Phelps Archaeology Laboratory, East Carolina University.

Kelso, William, Nicholas Luccketti, and Margaret Wood
1994 *Preliminary Archaeological Investigations of the 18th-century Gardens at Tryon Palace, New Bern, Craven County*. Ms. on file, Office of State Archaeology, Raleigh.

Lautzenheiser, Loretta
1993 *Archaeological Test Excavations Saint Thomas Episcopal Church, Bath, Beaufort County, North Carolina*. Coastal Carolina Research, Inc., Tarboro.

Lautzenheiser, Loretta and Jane Eastman
1993 *Archaeological Survey and Testing, Proposed United Carolina Bank, New Bern, North Carolina*. Ms. on file, Office of State Archaeology, Raleigh.

Lautzenheiser, Loretta, Patricia Samford, Jaquelin Drane Nash, Mary Ann Holm, and Thomas Hargrove
1998 *I was Moved of the Lord to Come to Carolina: Data Recovery at Edenhouse*. Report submitted to the North Carolina Department of Transportation. Coastal Carolina research, Inc., Tarboro.

Lawson, John
1967 A new voyage to Carolina. Edited with an introd. and notes by Hugh Talmage Lefler. Chapel Hill, University of North Carolina Press

Loftfield, Thomas
2005 Lost Charles Towne: Local Manifestation of World Events. *North Carolina Archaeology* 54:34-48.

Luccketti, Nicholas

2007 *Archaeological Survey of Prince Woods, Fort Raleigh National Historic Site, Roanoke Island, North Carolina*. Ms. on File, NPS Southeast Archaeological Center, Tallahassee.

Lusardi, Wayne R.

2006 The Beaufort Inlet Shipwreck Artifact Assemblage. In *X Marks the Spot: The Archaeology of Piracy*, edited by Russell K, Skowronek and Charles R. Ewen, pp. 196-218. University Press of Florida, Gainesville.

Magoon, Dane

1998 The Ceramics of Craftsman Robert Hay and Family: An Analysis of Middle Class Consumer Choice in Antebellun New Bern, North Carolina. (master's thesis, East Carolina University,)

Mathis, M. and J. Crow

1983 The Prehistory of North Carolina: An Archaeological Symposium. Division of Archives & History, Raleigh.

McMillan, Lauren

2010 *Results of the 2010 Craven Community College Historical Archaeology Field School at Foscue Vault Field Site (31JN112) Jones County, NC.* Ms. on file, Phelps Archaeology Laboratory, East Carolina University.

Miller, J. William, John E. Callahan, James R. Craig, and Katherine M. Whatley

2005 'Ruling Theories Linger': Questioning the Identity of the Beaufort Inlet Shipwreck: A Discussion. *International Journal of Nautical Archaeology* 34 (2):339-340

Miller, S.

2001 Internship in Public Archaeology: The East Carolina University-Tryon Palace Historic Sites and Gardens Partnership. (master's thesis, East Carolina University,)

Mintz, John J. and Thomas E. Beaman Jr.

2001 'Excavating the Fort Area': Milton F. Perry and the History of Archaeology at Fort Macon State Park." *North Carolina Archaeology* 50:73-84.

Moore, David D.

2005 Technical Comments Relating to 'Ruling Theory' and the Identification of the Beaufort Inlet Wreck. *International Journal of Nautical Archaeology* 34 (2):335-339.

Moore, David G., Robin A. Beck, Jr. & Christopher B. Rodning

2004 Joara and Fort San Juan: culture contact at the edge of the world Antiquity Vol 78 No 299 March.

Morris, Glenn,

2005 North Carolina beaches. Chapel Hill : University of North Carolina Press

Moss-Brown, A.
2002 Examination of Consumer Choice Between Domestic and European Ceramics in North Carolina Household Assemblages. (master's thesis, East Carolina University,)

Office of State Archaeology
1963a *Bath Historic District Bonner House Rear Yard*. Site Report No. BF85. Ms. on file, Office of State Archaeology, Raleigh.

1963b *Bath Historic District Bonner House Rear Yard*. Site Report No. BF86. Ms. on file, Office of State Archaeology, Raleigh.

1963c *Bath Historic District Bonner House Rear Yard*. Site Report No. BF87. Ms. on file, Office of State Archaeology, Raleigh.

Oliver, William
1995 Plum Point: Teach Site. Site Report No. BF85. Ms. on file, Office of State Archaeology, Raleigh.

Outlaw, Alain
1973 *Historical Archaeology at the Newbold-White House. Perquimans County, North Carolina*. Ms. on file, NC Office of State Archaeology, Raleigh

1993 *Newbold-White House Archaeology: A Retrospective Look at the Evidence After Twenty Years, 1973-1993*. Ms. on file, Perquimans County Restoration Association. Hertford, NC.

Payne, Ted M. and Bruce H. Dahlin
1987 *A Phase I Archaeological Survey 31BF115 and 31 BF117 and a Phase II Archaeological Survey 31BF115*. US Army Corps of Engineers. Site Report #2208 on file at the Office of State Archaeology, Raleigh.

Penny, R.
2003 An Historical and Archaeological Overview of Somerset Plantation. (master's thesis, East Carolina University,)

Phelps, David Sutton
1980 An Archaeological Study of the King-Bazemore House, Bertie County, North Carolina, with Appendix: Additional Research at Hope Plantation. Phelps Archaeology Laboratory, Department of Anthropology, East Carolina University. Submitted to the Historic Hope Foundation, Inc.

Phelps, David and Susan Pennington
1990 *Archaeological Investigation of Selected Features at Fort Branch, Hamilton, North Carolina*. Ms. on file, Phelps Archaeology Laboratory, East Carolina University.

Potts, Tara and Miranda Smith
2003 *Cherry Hospital Project*. Ms. on file, Phelps Archaeology Laboratory, East Carolina University.

Rodgers, Bradley A., Nathan Richards, and Wayne R. Lusardi
2005 'Ruling Theories Linger': Questioning the Identity of the Beaufort Inlet Shipwreck. *The International Journal of Nautical Archaeology* 34 (1): 24–37

Russ, Terri and Charles Ewen
2001 *St. Peter's Episcopal Church Cemetery Project*. CD on File, Phelps Archaeology Laboratory, East Carolina University.

Schleier, Jonathan
2009 *Results of the 2009 Craven Community College Historical Archaeology Field School at Foscue Vault Field Site (31JN112) Jones County, NC.* Ms. on fiel, Phelps Archaeology Laboratory, East Carolina University.

Seifert, L.
2006 The Possibilities of Foscue Plantation: A Management Plan for a 19th c. Naval Stores Plantation. (master's thesis, East Carolina University,)

Smith, K.
2009 Comparative Analysis of Cask Material from Late 16th through Early 19th c. Shipwrecks. (master's thesis, East Carolina University,)

South, Stanley
1958 Excavation Report Unit S10, Lot 29 Brunswick Town, N. C. Nath Moore's Front 1728-1776. North Carolina Department of Archives and History.

1960a *Progress Report on the Exploratory Excavation in the Yard to the North of the Palmer House in Bath (Beaufort County), North Carolina*. Site Report No. 521. Ms. on file at the Office of State Archaeology, Raleigh.

1960b *Progress Report Number 2. The Exploratory Excavation in the Yard to the North of the Palmer House in Bath (Beaufort County), North Carolina*. Site Report No. 522. Ms. on file at the Office of State Archaeology, Raleigh.

1960c *Progress Report Number 3. The Exploratory Excavation in the Yard to the North of the Palmer House in Bath (Beaufort County), North Carolina*. Site Report No. 523. Ms. on file at the Office of State Archaeology, Raleigh.

1960d *Progress Report Number 4. The Exploratory Excavation in the Yard to the North of the Palmer House in Bath (Beaufort County), North Carolina*. Site Report No. 524. Ms. on file at the Office of State Archaeology, Raleigh.

1962a *Locating the Excavation Units at Brunswick Town State Historic Site*, report, Historic Sites Section, Division of Archives and History, Raleigh, 3.

1962b *Examination of the Chapman-Taylor (Attmore-Oliver) House in New Bern, NC*. Ms. on file, Office of State Archaeology, Raleigh.

1963 *The Search for Brice's Fort*. North Carolina Department of Cultural Resources, Division of Archives and History, Office of State Archaeology, Raleigh.

1964 *Report on the Examination of the Graveyard at Christ Episcopal Church in New Bern, NC*. Ms. on file, Office of State Archaeology, Raleigh.

1965 *An examination of the area of the garden at the Palmer-Marsh house, Bath, North Carolina*. Report on file, North Carolina Historic Sites Section, Archaeology Branch, Raleigh.

1967 "Russellborough":Two Royal Governors' Mansion at Brunswick Town," *North Carolina Historical Review* 44 (Autumn), 363.

1973 Archaeological Consultation Report on the Newbold-White House, Perquimans County, North Carolina. Research Manuscript Series, Number 46. Division of Advanced Studies and Research, Institute of Archaeology and Anthropology, University of South Carolina, Columbia, SC.

1977 Method and Theory in Historical Archaeology. Academic Press, New York

Steen, Carl

1995 *The Somerset Place Restoration Excavations 1994*. Ms. on File, Office of State Archaeology, Raleigh.

2001 *Further Excavations at the Large Slave Quarter: Somerset Place State Historic Site*. Ms. on File, Office of State Archaeology, Raleigh.

2002 *Plantation Archaeology of the Carolinas*. Ms. on File, Office of State Archaeology, Raleigh.

Stone, Garry Wheeler

1970a The Newbold-White House, Perquimans County, North Carolina: Archaeological Reconnaissance. Ms. on file, NC Office of State Archaeology, Raleigh

1970b Original unpublished field notes from the Hope Plantation project. Ms. on file at the Office of the State Archaeologist, Raleigh.

Tarlton, William

1954 *Somerset Place and Its Restoration*. Division of State Parks, Raleigh, NC.

Thomas, David H.
1993 The Archaeology of Mission Santa Catalina de Guale: Our First 15 Years. In *The Spanish Missions of La Florida*, edited by B. G. McEwan. Gainesville: University Press of Florida.

Watts, Gordon
2008 *2007 Raleigh Colony Investigation: Magnetic Anomaly Identification & Assessment, Roanoke Sound and Shallowbag Bay, Roanoke Island, North Carolina*. Ms. on file, First Colony Foundation, Durham, NC.

Watts, Gordon, Leslie Bright, James Duff, Dina Hill, Richard Lawrence, James Pleasants, Jr., and J. Reed Whitesell
1979 *Fort Branch Survey and Recovery Project*. Ms. on file, Office of State Archaeology, Raleigh.

Wilde-Ramsing, Mark U.
2004 *Historical and Archaeological Investigations at Bishop Joseph Alvin Beebe Memorial Park, Bridge & Eleventh Streets, Washington, NC*. Ms. on file, Phelps Archaeology Laboratory, East Carolina University.

2006 The Pirate Ship *Queen Anne's Revenge*. In *X Marks the Spot: The Archaeology of Piracy*, edited by Russell K, Skowronek and Charles R. Ewen, pp. 160-195. University Press of Florida, Gainesville.

Williams, Morley Jeffers
1961 *Site Report of the East Wing of Tryon's Palace, New Bern, North Carolina*. On file, Tryon Palace Historic Sites and Gardens, New Bern

Williams, Talcott
1896 The Surroundings and Site of Raleigh's Colony. In *Annual Report of the American Historical Association of 1895*. Washington, Government Printing Office.

Willoughby, Wesley R.
2007a Revisiting the Public Structure Artifact Pattern: Cultural Patterning at Two Eighteenth Century Government Sites. Unpublished Master's Thesis, Department of Anthropology, East Carolina University, Greenville.

2007b *Results of the Archaeological Survey Work Conducted by the 2006 Craven Community College Summer Field School in Historical Archaeology at Foscue Plantation, Jones County, North Carolina*. Phelps Archaeology Laboratory, East Carolina University, Greenville, NC.

Zawacki, Kimberly
1997a *Archaeological Investigations at the New Bern Academy: Report for Field Season, Summer 1996*. Phelps Archaeology Laboratory, East Carolina University.

1997b Tryon Palace and Historic New Bern; a Design for the Archaeology of Community. Report prepared for the Kellenberger Historical Foundation. Phelps Archaeology Laboratory, East Carolina University.

1997c "Tryon Palace and Historic New Bern; a Design for the Archaeology of Community" (master's thesis, East Carolina University,)

Zawacki, Kimberly, Thomas Beaman, Eric Giles, and Charles Ewen
2000 *Archaeological Investigations at the New Bern Academy Volume II, Report for the Summer 1997 Field Season*, report, Department of Anthropology, Phelps Archaeology Laboratory, East Carolina University.

"...THEY IN RESPECT OF TROUBLING OUR INHABITING AND PLANTING, ARE NOT TO BE FEARED:" ARCHAEOLOGY AND ETHNOHISTORY OF NATIVE COASTAL POPULATIONS BEFORE AND AFTER EUROPEAN CONTACT

John J. Mintz

Thomas E. Beaman, Jr.

Paul J. Mohler

Writing in 1983 David Phelps (1983:1) stated somewhat plaintively that, [the] North Carolina Coastal Plain has been the least known archaeological region of the state, received less professional attention, and had until recently witnessed fewer archaeological project" than either the Piedmont or Appalachian physiographic region. The same sentiment has been also echoed by (Ward and Davis) who writing in 1999 note "[T]he coastal region of North Carolina has received more archaeological attention and more archaeological dollars that any other area in North Carolina. Yet today is arguably the least understood of all the major physiographic regions in the state (1999:226).

Now some 25 years later, thanks in large part to the "rediscovery" of the region by promoters of heritage tourism and commercial development, the reverse is true. This rediscovery has resulted in a plethora of Cultural Resource Management studies which have allowed researchers to greatly increase our understanding of this once relatively unknown area. These studies have ranged in size and scope from a few acres for a public utility project to one-hundred acre plus multidisciplinary investigations of complex and intact Woodland Period village sites evincing 100s of intact subsurface features, including aboriginal storage pits, food preparation areas, burials, and architectural evidence in the form of "post molds" and house patterns.

Unfortunately the same cannot be said for our understanding of the Terminal Woodland-Contact period era. The first English encounter with the Native Americans occurred when an expedition under the direction of Philip Amadas and Arthur Barlowe arrived off the Outer Banks in July 1584. Accompanying the expedition were the artist John White and the noted scientist Thomas Harriot whose writings and drawings of the local inhabitants serves as our first introduction to the region (Powell 1989:15-16). In fact, it is this information that allowed John White to produce a series of maps illustrating the locations of some 27 villages. Of these 27 villages, not one has been definitively relocated and investigated archaeologically, though several have been postulated as being contemporary with villages depicted on the 1585 John White map.

ETHNOHISTORIC INVESTIGATIONS

In the twilight of the Late Woodland era, two different linguistic groups occupied the Outer Coastal Plain of North Carolina, the Algonkian and the Siouan with their cultural frontiers meeting in what is now modern Onslow and Pender counties. In the southern region, a Souian linguistic group, archaeologists refer to as the Cape Fear Indians first encountered European explorers Lucas Vásques de Ayllón and Giovanni da Verrazona in the 1520s, and endured the brief Bajan colonial settlement of Charles Towne between 1661 and 1667. However, the Cape

Fear Indians had disappeared by 1725 when permanent settlement in the Cape Fear Region began by British colonists from South Carolina. In the northern region, members of the Algonkian cultural group endured coastal exploration and settlement attempts by British colonists on Roanoke Island before they too disappeared. Similar to the southern region, Algonkian populations had retreated as settlement of the Albemarle commenced by the 1650s. *Archaeological and ethnohistoric data will be used to describe these two different cultural groups before and after European contact and abortive settlement attempts-to understand how this cultural contact changed their traditional culture and ways of life.* Herein, we proposed a date range of 1584-1650 for the contact period of the North Coastal region and 1520s-1725 for the South Coastal region.

Contact period archaeological assemblages in the Northern Coastal region can be related to ethnohistoric information and studies, thus providing the relative comfort of social and linguistic identities and the use of the direct historical approach. The Southern Coastal region is less well known both archaeologically and ethnohistorically, and correlation of historic with prehistoric/protohistoric data is more difficult (Phelps 1983). Although the recent work by Herbert (2003; 2009) and others (Mintz 1996) is providing a better assessment than was previously know (Herbert 2003). As noted above the Northern Coastal region was the home of two distinct ethnic and linguistic groups at the time of European contact, the Carolina Algonquians, who resided within the Tidewater zone and the Tuscarora, on the Inner Coastal Plain (Phelps 1983). Mook (1944) and Feest (1978) have summarized the available ethnographic and historical data for the Algonquians whereas Paschal (1953) and Boyce (1978) have focused on the Tuscarora and their Iroquoian-speaking neighbors to the north, the Meherrin and the Nottoway.

ARCHAEOLOGICAL INVESTIGATIONS, NORTH COASTAL REGION

Archaeological assemblages generally associated with the Terminal Late Woodland and Contact period in the North Coastal region are comprised primarily of Collington Phase (A.D. 800- 1650) pottery; Collington is the phase name given to the Algonquian culture of the tidewater region (Phelps 183:36). Current radiocarbon dates for Collington Phase pottery range from A.D. 800-1650 (Herbert 2009; this volume).

The development of the Cape Hatteras National Seashore in the 1950s created the impetus for the first systematic archaeological investigation of the Tidewater region of the coastal plain. This investigation was undertaken by William G. Haag and later published by Louisiana State University Press in 1958 (Haag 1958). Interestingly, funding for this investigation was provided by the Office of Naval Research (possibly one of the first federal contacts administered in North Carolina). This study had two goals: 1). was to find evidence of the "Lost Colony" which was not realized; and 2). was to delve into the Indian past and reconstruct an occupation of the region from earliest times until the dispersal of the Indian Culture by white men; this goal was realized and laid the groundwork for future additions and modification to the regions culture history (Haag 1958:1-2). Haag and others examined, archaeologically an area extending from the Neuse estuary north to the Virginia border resulting into the recordation of some 81 sites, of which, several were subjected to more intensive testing.

One of the more interesting sites visited by Haag was the Cape Creek site (31DR1) located near Buxton. It is thought by some to be the location of the protohistoric Algonkian village of Coratan which figured prominently in friendly relations with the 1587 colony. Haag in describing the site noted that it had the best “midden” found on the Outer Banks and had received prior visits from Porter and Harrington (1938) and the University of North Carolina-Chapel Hill (1958:28) . As a precursor to America‟s Four Hundredth Anniversary Celebration of the Roanoke Voyages, Phelps revisited the Cape Creek site and in 1984 suggested that the site may contain not only English artifacts but also English skeletons. Later investigations undertaken by Phelps, Charles Heath, and Clay Swindell uncovered numerous European artifacts (i.e., iron spikes, cooper farthings, gun flint and a brass fragment) in association with Native American artifacts thereby demonstrating that Cape Creek was indeed a contact period site, making it one of a select few that have actually been archaeologically excavated. Though, no uncompromising evidence has been discovered to date to link it to the Lost Colony.

Several other large scale archaeological surveys were under taken in the region. In 1977 a systematic pedestrian survey was completed by the Research Laboratories of Anthropology at the University of North Carolina- Chapel Hill. This survey focused on portions of a six county region that bordered the Chowan River. One of the goals of this investigation was the “identification of specific archaeological sites as historically known localities” (Wilson 1977:1) To this end 122 sites were recorded with 46 dating to contact and/or historic period. Most notably of these sites was the possible location of “Chowanoak” (31HF20) the capital town of the Chowan Chiefdom first visited in the 1580s by Ralph Lane. According to Wilson (1977:17) and Phelps (1982:15) this site fits Lane‟s description of Chowanoak and produced Woodland and Contact period artifacts.

The Pomeioc Project was another project whose stated goal was to locate and identify the archaeological signature of the Algonquian town of Pomeioc first visited in 1585 by members of the now “infamous” Lost Colony. The drawing by John White depicts a rather large palisaded village containing some 18 longhouses. During the course of this investigation over 6200 acres were examined by archaeologists; with the net result of one newly discovered site. Artifacts recovered from The Amity Site (31HY43), thought initially to be Pomeioc consisted of glass projectile points, glass seed beads and kaolin pipe stems parts that yield a mean pipe stem date of 1661 using Lewis Binford‟s revised formula. These artifacts place the portion of the site that was archaeologically investigated in the mid-seventeenth century. Further research at the site failed to obtain data that could be used to directly link this site with the Algonquian town of Pomeiooc.

ARCHAEOLOGICAL INVESTIGATIONS, SOUTH COASTAL REGION

As for the southern Coastal Plain of North Carolina, South (1976) has summarized the documentation for the Waccamaw, Cape Fear, and other groups in the region, presumably correlating these with his Oak Island ceramic complex, adopted as the phase name for the Late Woodland in the southern Coastal Plain. Part of the problem for this region is a relative lack of information and insufficient excavation data, so our synopsis here will be restricted to the ethnohistoric record and very sparse archaeological information obtained by Loftfield regarding the Cape Fear Indians.

The Cape Fear Indians, a protohistoric Native American group indigenous to the lower Cape Fear region, are known to archaeologists and historians primarily from the observations and documents of early European explorers. Despite a history of contact dating from circa 1524 until 1808, little is known about this aboriginal group besides their European-designated name and geographical location. Detailed information relating to their linguistic affiliation, settlement and subsistence patterns, social-political organization, and population is scant (Mintz 1996, 1997).

Among the numerous European explores to the lower Cape Fear region in the sixteenth, seventeenth, and eighteenth centuries, the most detailed accounts of the Cape Fear Indians were provided by Giovanni da Verrazzano and William Hilton. Verrazzano, a Florentine navigator who sailed in the service of King Francis I of France, was the first known European visitor to the Cape Fear region, who in an attempt to escape a storm made landfall around March 1, 1524 at or near the mouth of the Cape Fear River. Soon after, he sent ashore a boat whose occupants encountered a number of Native Americans, forever known as Cape Fear Indians. Verrazzano notes that the group appeared to be friendly and "came hard to the Seaside, seeming to rejoice very much at the site of us; and marveling greatly at our apparel, shape, and whiteness, showed us by sundry signs where we might most commodiously come a-land with our boat, offering us their victuals to eat."

Although Verrazzano"s encounter is thought to be the first, our best description of them comes from the narratives of a New England colony planted on Cape Fear River in 1661 under the direction of Capt. William Hilton. These settlers seized some of the Indian children and sent them away under pretense of instructing them in the ways of civilization and were themselves driven off. Two years later, a colony from Barbados also under Hilton"s direction, settled here but they too soon abandoned the area. In 1665, a third colony established itself at the mouth of Oldtown Creek in Brunswick County, on land bought from the Indians, but, though the latter were friendly, like the others this attempt at settlement was soon abandoned. It is thought by some (Loftfield 2005; Mintz 1996, 1997) that the location of this settlement was the Native American village of Necoes and is what was known by the Europeans as Charles Towne (Site 31BW133) which is located approximately 12 miles south of Wilmington on the west bank of the Cape Fear River. This site was investigated intermittingly throughout the late 1960s-1990s and numerous aboriginal artifacts and 17th century artifacts were found in direct association with European artifacts. Unfortunately no detailed, definitive site report has been written to date. The Indian census of 1715 reports approximately 206 Cape Fear Indians (76 men and 130 women) residing in five villages along the Cape Fear River. Of the five reported villages, site 31BW133 is the only contact period site recorded in the area. While visiting the town of Brunswick located approximately two miles south of site 31BW133, Hugh Meredith in 1731 noted "There is not an Indian to be seen in this Place, the Senekas (who have always lived in amity with the English) with their tributaries the Susquehannah and Tuskarora Indians have almost totally destroyed those called Cape Fear Indians and the small remains of them abide among the thickest of the South Carolina inhabitants..."

SUMMARY

After a brief overview of the ethnographic record and what little archaeology has been completed for Contact-period studies in this region, several overarching themes for continued research is evident. Despite decades of ethnohistoric research conclusive archaeological data that, supports, expands, or refutes the ethnohistory of the region is surprisingly sparse. One explanation may be that, perhaps we are and have been too focused on searching for single nucleated villages, when instead we should be employing a derivative of what we term the Byrd/Heath model of site distribution model. Too often in archaeology, models are treated as "plug and play devices" without using recovered data to either reevaluate to expand upon them by addressing larger issues of cultural subsistence and settlement patterns and behaviors.

It is a relatively accepted fact, that Native American communities, including the Algonkians and Cape Fear moved their settlements every so often once the local resources were diminished A related phenomenon was observed by John Byrd and Charles Heath with the other residents of the Northern Coastal Plain, the Tuscarora, who practiced a more dispersed pattern of settlement with sites of numerous functions. Perhaps we should begin to develop a similar model for Algonkian and Cape Fear Indian sites that employs the same factors of proximity to water, soil type and elevation, thereby using these and other factors in an effort to reconsider Contact period settlement patterns and village location models.

There is also, an absence of, for the lack of a better term, 'finished' work for the region that could aid in the location and identification of historic period Native American village sites. According to Phelps (1982, 1984), various Indian villages in the region have been assigned State archaeological site numbers, but only based on cursory archaeological evidence. For example, survey and testing of the Chowanoc town of Ohanoak (31BR3) near Colerain in Bertie County and the before mentioned Chowanoc town of Ramushonouk (31HF1) at Parker"s Ferry in Hertford County were planned but never accomplished. In addition, locations for several Weapemeoc towns (Metachkwem, 31BR56 or 31BR49; Waratan, 31CO1; Mascoming, 31CO30) have been estimated, but each require further verification, either archaeologically or ethnographically. Another example are the archaeological remains of Chowanoc, the capital town of the Carolina Algonquian society of the same name, which were recorded as two separate sites, 31HF20 and 31HF30 with each site further subdivided into areas. Even though Phelps (1984) conducted extensive excavations at the site in the early eighties, valuable evidence has yet to be analyzed or recovered from the largest town of the most politically powerful Carolina Algonquian society. The Indiantown site (31CM13) in Camden County most certainly has information relating to culture change and acculturation of the Weapemeoc-Yeopim society from its traditional form to that of Colonial society, and Phelps (1984) believed that excavation of the site could address the causal factors of social system collapse through population reduction from disease, inadequate subsistence, and other factors, yet further excavation of the site was never accomplished.

Overall, in terms of locating and identifying Contact-period village sites, much of the region still requires comprehensive survey, whether in the form of digging in the dirt or through the copious mounds of paper records at state repositories, in order to provide not only distributional data but also site locations, which may correlate with recorded towns.

It is also quite clear that we have a poor understanding of the reservation period in eastern North Carolina; what has become of the reservation tracts, though occupationally short-lived, for the Chowanoc, the Meherrin, and the amalgamated group of Matchapunga and Coree?

Finally, what of the reservation tract along lake Mattamuskeet that was granted to the Matchapunga, Coree, and other tribes who were colonial enemies during the Tuscarora War? According to Garrow (1975: v) this reservation consisted of ca four square miles lf marsh and low ridges along the lake in Hyde County. Phelps (1982:47) called for a survey of the southwest side of the lake in order to search for the town of Pomeioc, not even mentioning the possibility of discovering the Matchapunga reservation. In all, there are at least three reservation tracts in Hertford, Gates, and Hyde Counties that have not been afforded proper attention given their potential to aid our understanding of change and acculturation processes during the Reservation period and, thus, further Contact-period studies in the region.

Most people will agree that acculturation means the modification of the culture of a group or individual as a result of contact with a different culture, but such a meaning does not suggest a Eurocentric hold on such change. With the blending of so many native groups at and during the time of Contact, numerous tribes lost their own identity while taking on that of a more dominant society. Garrow further notes that it is quite evident from the available material that the Hyde County Indians declined in both population and social cohesiveness during the second half of the 18th century (1975:45). Interestingly, the Mattamuskett descendents were not referred to as Indians after 1804 and were generally associated with "free persons of color" (Garrow 1975). The archaeology of the reservation tracts that are known in the region, if ever completed, may be able to address such a dichotomy.

The Indian way of life in the centuries following contact with Europeans, and especially after their possible conversion to Christianity, is poorly known, partly as a result of the neglect of the topic by scholars, and partly because the documentary record is so fragmentary. The writings of Rev. Alexander Stewart (1761/1763), an SPG missionary, allude to the fact that an effort to „civilize" or „Christianize" the Indians in the region (in his instance the Matchapunga, the Hatteras, and the Roanoke) was apparently underway. The presence of the missionary Giles Rainsford among the Chowanoc in 1712 also lends credence to this movement.

However, further ethnographic research is clearly warranted in order to determine the intensity of such efforts and if such efforts could have left an unrecognizable trace, save for the archaeological record, whether in the form of a meeting house or a site from which such missions embarked, like the Gatesville Landing site (31GA7), which Phelps (1982) attributes to George Fox, although this can not be verified any more because of recent disturbances.

In closing, the increasing sophistication of our understanding of the nature of cultural contact and change calls in turn for a reevaluation of the ways in which artifactual remains reflect cultural change in other aspects of native society. The concept of acculturation, or transculturation, that posits a progressive departure of a subordinate cultural group from traditional ways in favor of those of a dominant culture with which it has come into contact, has long since been abandoned in favor of a more sophisticated way of understanding cultural change; one which focuses instead on the creative reworking of new concepts, objects, and practices by both groups in contact, a process occurring whenever groups come together, regardless of their original similarities and differences. The convergence of these otherwise distinctive cultural and linguistic groups in the central coastal area of North Carolina provides an excellent opportunity to examine the prehistoric and protohistoric archaeological implications of cultural exchange and interaction. Unfortunately, it also presents us with an extraordinarily confused and complex archaeological record which, at this point, does little more than confirm the notion that the area was, in fact a cultural "frontier" in which several social, economic, and perhaps even biological interaction and exchange occurred over a period of several centuries (Mathis 1995).

REFERENCES CITED

Boyce, Douglas W.

1978 "Iroquoian Tribes of the Virginia-North Carolina Coastal Plain." In *Handbook of North American Indians*, Vol. 15 (Northeast), edited by Bruce G. Trigger, 282-289. Smithsonian Institution, Washington, D.C.

Feest, Christian F.

1978 "North Carolina Algonquians." In *Handbook of North American Indians*, Vol. 15 (Northeast), edited by Bruce G. Trigger, 271-281. Smithsonian Institution, Washington, D.C.

Garrow, Patrick H.

1975 *The Mattamuskeet Documents: A Study in Social History*. Archaeology Branch, Division of Archives and History, North Carolina Department of Cultural Resources, Raleigh.

Haag, William G.

1958 *The Archaeology of Coastal North Carolina*. Coastal Studies Series 2. Louisiana State University, Baton Rouge.

Herbert, Joseph M.

2009 Recent Woodland Archaeology of Coastal North Carolina. Paper presented at the Coastal Plain Symposium, East Carolina University, Greenville, NC.

2003 *Woodland Ceramics and Social Boundaries of Coastal North Carolina*. A dissertation submitted to the faculty of the University of North Carolina Chapel Hill in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Department of Anthropology. Chapel Hill.

Loftfield, Thomas C.

2005 Lost Charles Towne: Local Manifestation of World Events. *North Carolina Archaeology* 54:36-37.

Mathis, Mark A.

1995 Personal communication to authors. North Carolina Office of State Archaeology, Raleigh.

Mintz, John J.

1997 The Cape Fear Indians: Gone But Not Forgotten. North Carolina Archaeological Society *Newsletter* 7(2):1-2.

1996 The Cape Fear Indians: Enthnohistorical and Archaeological Inquires Along the Lower Cape Fear River. Paper presented at the 53rd Meeting of the Southeastern Archaeological Conference, Birmingham, Alabama.

Mook, Maurice A.
1944 Algonkian Ethnohistory of the Carolina Sound. *Journal of the Washington Academy of Sciences* 34(6-7).

Paschal, Herbert R.
1953 *The Tuscarora Indians in North Carolina*. Unpublshed MA Thesis. Department of History, University of North Carolina, Chapel Hill.

Phelps, David S.
1984 *Archaeology of the Native Americans: The Carolina Algonkians*. Department of Sociology, Anthropology and Economics, East Carolina University, Greenville, North Carolina.

1983 "Archaeology of the North Carolina Coast and Coastal Plain: Problems and Hypotheses." In *The Prehistory of North Carolina: An Archaeological Symposium*, edited by Mark A. Mathis and Jeffrey J. Crowe, 1-51. Third Printing (2000). North Carolina Department of Cultural Resources, Division of Archives and History, Raleigh.

1982 *A Summary of Colington Phase Sites in the Tidewater Zone of North Carolina*. Archaeology Laboratory, Department of Sociology and Anthropology, East Carolina University, Greenville, North Carolina.

Powell, William S.
1989 *North Carolina Through Four Centuries*. The University of North Carolina Press, Chapel Hill.

South, Stanley A.
1976 An Archaeological Survey of Southeastern North Carolina. University of South Carolina Institute of Archaeology and Anthropology Notebook 93.

Stewart, Alexander
1763 Letter from Alexander Stewart to Daniel Burton, November 6, 1763. *The Colonial Records of North Carolina*, Ed. William L. Saunders. Vol. 6. Raleigh, NC: P.M. Hale, Printer to the State, 1886. 995-6. *Documenting the American South*. 2008. University Library, The University of North Carolina at Chapel Hill. 1 October 2008 <http://docsouth.unc.edu/csr/index.html/document/csr06-0281>.

1761 Letter from Alexander Stewart to Philip Bearcroft, May 22, 1761. *The Colonial Records of North Caroli*na, Ed. William L. Saunders. Vol. 6. Raleigh, NC: P.M. Hale, Printer to the State, 1886. 562-4. Documenting the American South. 2008. University Library, The University of North Carolina at Chapel Hill. 1 October 2008 <http://docsouth.unc.edu/csr/index.html/document/csr06-0146>.

Ward, H. Trawick, and R. P. Stephen Davis, Jr.
1999 *Time Before History: The Archaeology of North Carolina*. The University of North Carolina Press, Chapel Hill.

Wilson, Jack H., Jr.
1983 *A Study of Late Prehistoric, Protohistoric, and Historic Indians of the Carolina and Virginia Piedmont: Structure, Process, and Ecology*. Unpublished dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.

ARCHAEOLOGICAL RESEARCH AT FORT RALEIGH - PAST AND PRESENT

Nicholas M. Luccketti

Eric C. Klingelhofer

Phillip W. Evans

The history of the English settlements at Roanoke Island has been researched in great detail and extensively published; accordingly it is unnecessary to provide a comprehensive repetition of the story of the Roanoke Voyages in this report. Nevertheless, it is important for evaluating past archaeological investigations to briefly describe those events that may have left archaeological remains at Roanoke Island in the sixteenth century.

In 1584, Sir Walter Raleigh received a charter from Queen Elizabeth I to colonize part of North America in hopes of establishing an English empire in America. A reconnaissance voyage that same year to what is now North Carolina resulted in the English explorers visiting an Algonquian village on Roanoke Island and returning with a promising report of the country, which was named Virginia after Elizabeth, the Virgin Queen. Raleigh's first colony, 108 men under the leadership of Sir Richard Grenville and Ralph Lane, landed at the north end of Roanoke Island in July of 1585. A letter written by Ralph lane to Richard Hakluyt was addressed "From the new Fort in Virginia, the 3. day of September 1585" and another letter to Sir Francis Walsingham from "the Newe Forte in Verginia" on September 8, 1585. (Quinn 1991:210-214). The records also suggest that the colonists built a town separate from the fort, as Ralph Lane in the spring of 1586 reported that the Roanokes intended to attack the colonists at both the town and the fort (Noel Hume 1994:37). In addition to exploring the surrounding country, observations and experiments were conducted by scientist Thomas Hariot and by Joachim Gans, a metallurgist or "mineral man" as he was called at the time. Archaeological research, discussed below, indicates that a scientific workshop for Hariot's and Gans' work was set up apart from both the town and fort. When supply ships commanded by Sir Richard Grenville, who had returned to England in August of 1585, were late in returning to the colony in 1586, the discouraged colonists abandoned Roanoke Island and returned to England aboard Sir Francis Drake's fleet that arrived off the Outer Banks after a Caribbean raiding expedition in June of that year.

The second colony is a consequence of the late arrival of Grenville's resupply. In August of 1586, Grenville returned to England after finding the settlement on Roanoke Island abandoned, however, he left a garrison of 15 men there to hold the land for the Queen. Pedro Diaz, a Spanish pilot captured in 1585 and taken by Grenville on the expedition in 1586, although he was not allowed to leave the ship, reported that the settlement had "...a wooden fort of little strength..." (Quinn 1991:790).

Raleigh dispatched another colony to Roanoke Island in 1587. The 117 men, women, and children arrived to find the 1585 fort ruined. The old houses were relatively unhurt and were quickly repaired. New cottages were also built and the settlement apparently was to be protected by a new fort. Governor John White, perhaps less than an effective leader, was persuaded to return to England for supplies, leaving on Roanoke Island his daughter Eleanor and her husband Ananais Dare, the parents of the fabled Virginia Dare, the first English child born in Virginia.

Due to war between England and Spain, White was unable to return to Roanoke Island until 1590, when he found no one on Roanoke Island. He did find, in his words, that the houses were taken down and

> ...the place very strongly enclosed with a high palisado of great trees, with curtains and flankers very Fort-like, and one of the chiefe trees or posts at the right side of the entrance had the barke taken off, and 5 foote from the ground in faire Capitall letters was graven Croatoan without any crosse of distresse, this done, we entered into the palisado, where we found many barres of Iron, two pigges of lead, four iron fowlers, Iron saker shot, and such like heavie things, thrown here and there, almost overgrown with weeds and grass (Quinn 1991:614).

Despite attempts in the early years of the Jamestown colony to search for survivors, they were never found and Raleigh's second expedition to the new World passed into history as the legendary "Lost Colony." A small earthen fort known by the nineteenth century as Fort Raleigh has been shown on maps since 1768 and traditionally has been associated with Lane's fort, but exactly who built it and how it fits into the story of Raleigh's colonies, if at all, is not entirely clear.

Documentary evidence of the actual location and physical remains of Raleigh's settlements is not only scanty but subject to a wide variety of interpretation. The first recorded visit to Roanoke Island by an Englishman after John White was reported by Francis Yeardley of Virginia in 1654 when he described an eyewitness account made the year before by traders who visited Roanoke Island and were shown by the resident Indians the ruins of "Sir Walter Raleigh's fort" (Powell 1965:15-16). The next known account of Fort Raleigh came in 1701, when surveyor John Lawson examined the site and wrote that "the Ruins of the Fort can be seen at this day." In addition to some old English coins, Lawson wrote that there was also "a brass gun, a powder horn, and a small quarter deck gun made of iron staves" at the site (Powell 1965:19). A number of visitors to Roanoke Island in the mid-19th century left intriguing observations of the site. In 1849 tutor George Higby Throop described seeing "the remains of the fort and glass globes containing quicksilver" (Powell 1965:26). Less than a year later, historian Benson J. Lossing stated that "slight traces of the fort may be seen near the north end" of Roanoke Island (Powell 1965:26). In a detailed description of the remains made by artist Edward Bruce in an 1860 article in *Harper's New Monthly Magazine* , Bruce reported seeing "The trench is clearly traceable in a square of about forty yards each way," while Charles H. Johnson sketched the surviving earthwork in 1862 (Powell 1965:27-28, Quinn 1985:383).

Although the earthwork at the north end of Roanoke Island has been the center of attention for Raleigh settlement scholars and archaeologists, there has always been one persistent concern about the earthwork – namely that it is only big enough to hold about 15 people, so then what is it? In 1895, Talcott Williams, a talented amateur archaeologist, sought to answer this question and was the first non-looter to put a shovel to the earthwork. Williams excavated 13 trenches in and around the earthwork. In his published report, Williams was puzzled, not only by the small size of the earthwork, but more so by the paucity of sixteenth-century artifacts that were found during his testing (Powell 1965:34).

J.C. Harrington undertook the first professional archaeological work at Fort Raleigh National Historic Site (FORA), the official name of the 150 acre park acquired by the National Park Service in 1939. Harrington's surveys in 1947 and 1948 consisted of the excavation of 5-

foot wide trenches across and around the earthwork and other selected areas of the park (Figure 9-1); and in 1950 Harrington excavated the interior of the earthwork and its silted-in ditches (Harrington 1962). Harrington's surveys included approximately 38 five-foot wide trenches which comprised about 3, 3 20 linear feet or 16,600 square feet of excavated ground. The survey recovered musket balls, and sherds of crucible and olive jars, but the paltry number of sixteenth-century artifacts found during the survey – 18 in all -- lead Harrington to conclude that the town site was elsewhere (Harrington 1962:38). Harrington's excavation of the earthwork produced 57 more sixteenth-century artifacts, including 22 olive jar sherds, 3 jettons, and 2 copper nuggets, but the finds were still clearly non-domestic.

Harrington returned to Fort Raleigh in 1965 to excavate what he called -- for lack of a more definitive term -- an "Outwork" that was located just west of the entrance of the earthwork. The outwork, which was thought to have been some type of defensive structure, was first discovered during utility trench construction in 1959. Six years later, Harrington's returned to excavate the area and uncovered a 9' square structure that was manifested by log stains with postmolds at the four corners of the structure and log stains that also extended off two corners of the Outwork. Inside the sunken floor of the Outwork were 3 pits, one of which contained Indian pottery, 16 sherds from a Normandy flask, and several bricks, some of which had been ground or worn to form curved sides. Harrington tentatively suggested that the Outwork was some form of fortification and that the one of the pits might have supported a forge (Harrington 1966). Later, the Outwork would become the inspiration for renewed work in the 1980's and 1990's.

Former FORA Ranger Phillip Evans has been a central figure in research at Fort Raleigh for more than three decades. As the park historian at FORA, Evans' observed that Harrington's Outwork closely resembled the footprint of the rectangular bastions that were part of a 1619 wooden fort at Martin's Hundred that had been excavated in the 1970's by renowned archaeologist Ivor Noel Hume for the Colonial Williamsburg Foundation (Noel Hume 1982). Evans wondered whether Harrington's Outwork was actually the bastion or watchtower of a wooden fort that preceded the construction of the earthwork, an especially tantalizing prospect given a statement made in March 1589 by Pedro Diaz, a Spanish pilot captured by Sir Richard Grenville in 1585 and taken on his voyage back to Roanoke Island in 1586, that the English had built there a "wooden fort of little strength" (Quinn 1991:790). This hypothesis prompted an investigation of the outwork area by the Southeast Archaeological Center (SEAC) of the National Park Service (NPS) in 1982 and 1983 – which by good fortune just happened to coincide with the forthcoming 400th anniversary of the Roanoke voyages in 1984. NPS archaeologists John Ehrenhard, William Athens, and Gregory Komara conducted magnetometer and soil resistivity surveys west of the earthwork in 1982 that located numerous metal targets and soil anomalies that were ground-truthed the following year. However, Raleigh's settlements remained elusive as no features were found that belonged to the sixteenth-century fort or town. But the NPS archaeologists had recovered 38 European artifacts, mostly ceramics that ultimately proved to be sherds of crucibles, Normandy flasks, and tin-enameled ointment pots, and interestingly they were found only in one area -- near the entrance of the earthwork (Ehrenhard, Athens, and Komara 1983, Ehrenhard and Komara 1984).

In 1982, Evans made another significant discovery; this time he found the bottom part of a barrel and a hollow log in the low water along the shore at the north end of the Roanoke Island about 900' from the earthwork. Radiocarbon dating revealed that the barrel dated to A.D. 1285 – 1660 and the hollow log to A.D. 1340 – 1650, thus both objects could date to the time of the

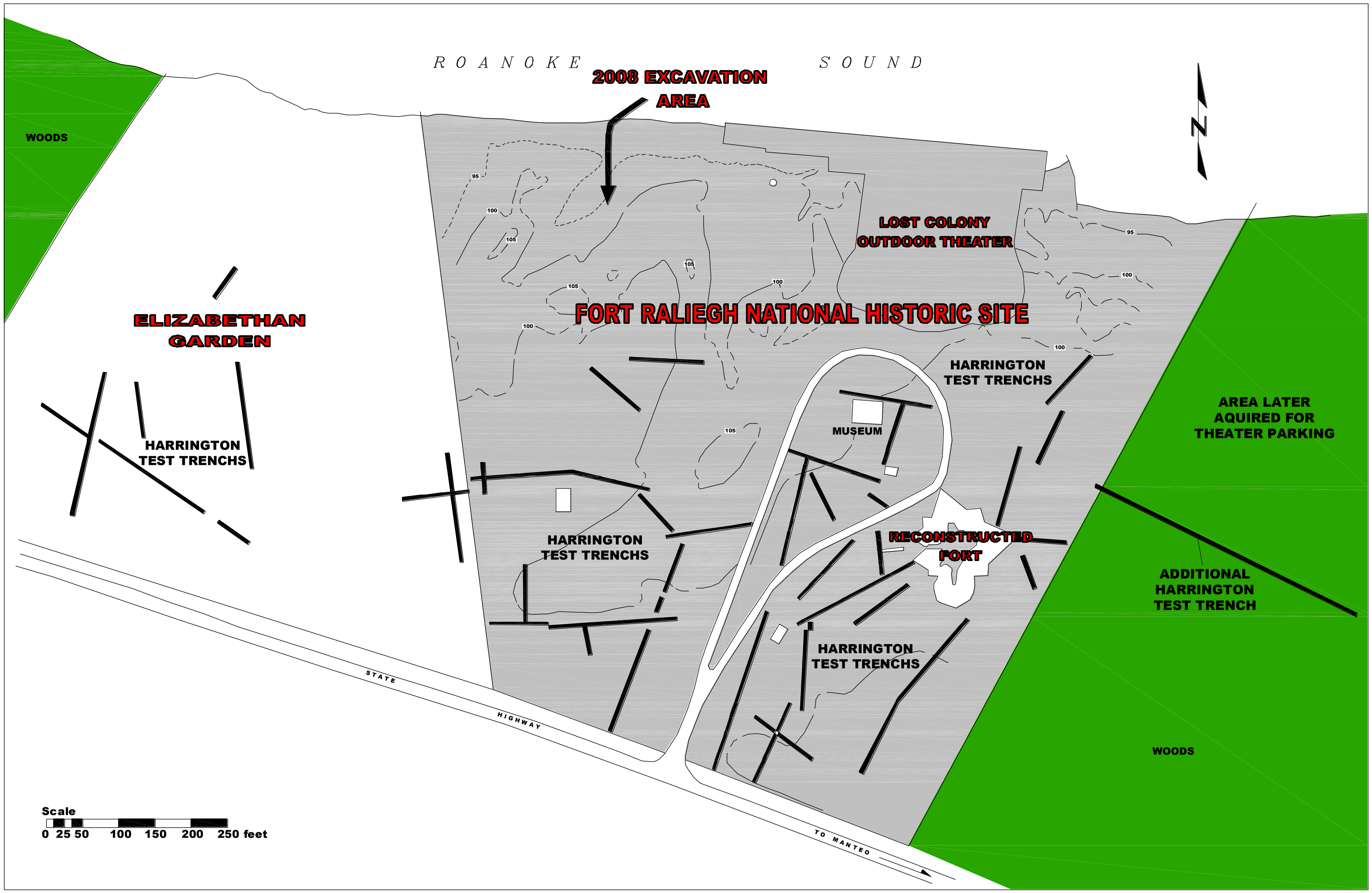


Figure 9-1. Plan of Fort Raleigh National Historic Site showing the locations of Harrington's test trenches.

Raleigh settlements. The barrel is thought to have been the bottom of a barrel-lined well, while two sources have suggested that the log possibly was a Native American corn sheller (Bolling, 2008, Smith 2008). This is the very same area where in years past, sporadic probable sixteenth-century artifacts have been found such as an ax head of sixteenth-century form. Dr. David Phelps also recovered several unidentified "green-glazed" sherds from this area during a 1983 survey of the shallow water of the beach adjacent to the exposed bluff (Phelps 1984). The "green-glazed" sherds, upon later examination, proved to be fragments of Iberian olive jars (Klingelhofer 1984).

So by 1990, there was a hodgepodge of bits and pieces of 16th-century activity at Fort Raleigh, which all in all, still produced a jumbled picture of what happened at the north end of Roanoke Island in the 1580's and the Raleigh settlements were still nowhere in sight. Part of the Roanoke puzzle, however, was painstakingly pieced together by Ivor Noel Hume after his 1991-1993 excavations at Fort Raleigh, although the results were not what the project intended to find.

Noel Hume organized a project under the auspices of the non-profit Virginia Company Foundation (VCF), an organization devoted to the study of early European settlements in the Chesapeake, to investigate further Phil Evans' "Outwork-as-fort bastion" theory. Even though most of the Outwork had been destroyed by the early 1990's, Noel Hume and 4 colleagues were able to relocate the remains of the Outwork in the spring of 1991 thanks to Harrington's meticulous field records. That fall, Noel Hume with SEAC archaeologist Dr. Bennie Keel led a team of archaeologists, who all had much experience working on early English settlement sites in Virginia, in open area excavations around the Outwork to see if there was any evidence that it was part of a wooden fort.

The 1991/92 VCF excavations opened 32 ten foot squares around the Outwork and 3 ten foot squares inside the earthwork. As the excavation proceeded, much of the ground outside the earthwork was found to be deeply disturbed. The reason for this regrettable situation was aptly described by David Beers Quinn who wrote "between 1895 and 1936 various horrors were perpetrated on the site" (Quinn 1985:385). Some of the horrors alluded to by Quinn include the making of a movie about the Lost Colony in 1921, the physical interpretation of the site in the 1930's that involved the construction of log cabin houses, a log cabin museum, and a log stockade with all the requisite utility trenches, and still later an asphalt road that once allowed Franklin Delano Roosevelt to drive to the Lost Colony theater.

The VCF excavation uncovered many features, and despite the many modern intrusion, a few postholes that were believed to be Raleigh period. Nonetheless, sixteenth-century European artifacts continued to be recovered, particularly in one small area where a buried "A" horizon survived undisturbed about 30' west of the entrance to the earthwork (Figure 9-2). Amazingly, this black sand layer, only a few feet from Harrington's Outwork, contained a concentration of sixteenth-century European and Native American artifacts in situ, mostly ceramics. The total number of ceramics recovered by the VCF excavations included 119 crucible sherds and nine pieces of cupels (small shallow cups used to separate precious metals) that undoubtedly represent metallurgical activity. The remainder of the ceramic finds consisted of only four different types of pottery; 17 tin-enameled ointment pot sherds, 19 sherds of West of England butterpot (butterpots were intimately involved in sixteenth-century metallurgy as it was believed at the time that eating butter prevented lead poisoning), 136 sherds of Normandy flask (a common use of Normandy flasks was as the receiver in distilling operations), and two sherds of Iberian olive jar. Especially significant was a chunk of antimony (an essential ingredient in separating silver

Figure 9-2. VCF excavation of 1585 scientific workshop area with undisturbed “A” horizon in the center of the excavation, facing northeast.

from copper), chemical glassware, and crucible sherds encrusted with copper smelting residue including one crucible sherd with a prill or small bead of copper attached to it.

Noticeably absent from the assemblage were faunal remains and artifacts associated with food preparation, consumption, or storage; indeed there was nothing that could be attributed to the day-to-day living of 100 people. Noel Hume then examined all the artifacts recovered from the previous Harrington and SEAC excavations in the area and found the same thing, all the ceramics found in previous archaeological excavations consisted of sherds of crucibles, Normandy flasks, ointment pots, and Iberian olive jars. The distinctive artifact signature of the combined excavations could not possibly represent a domestic site but rather the finds all pointed to assaying and distilling activities. And contemporary accounts are quite clear that scientist Thomas Hariot and metallurgist Joachim Gans were part of the 1585 colony only and that there were no scientists or metallurgists among the 1587 colony. Consequently, Noel Hume concluded that this area actually was the site of Hariot’s and Gans’ 1585 metallurgical and scientific workshop; and that Harrington’s Outwork was the footprint of a furnace that served the workshop. Indeed, the bricks with curved sides found inside the Outwork likely formed the ring of the glory holes or openings that provided access the metallurgical furnace (Noel Hume 1994a, 1994b, 1995). Of course, if this area is a workshop from 1585, then what is the earthwork? Several explanations have been put forth; that the earthwork was built to protect the workshop, that it one of Ralph Lane’s sconces, that it was built to protect the 15 men left on the island in 1586 to await the arrival of John White’s 1587 colony, that the earthwork does not date to the Raleigh settlements but was constructed in the mid-eighteenth century, and most recently that the earthwork is related to the permanent English settlement of the Albemarle c. 1670.

With the location of the fort and village of the Raleigh settlements still to be found, VCF archaeologists resumed survey work at FORA in 1994 when they conducted area excavations north and west of the earthwork to investigate several posthole-like features that had been recorded during Harrington's survey. The features proved to be nothing more than treeholes and no European or Native American artifacts were found. Sobered by the utter lack of any sixteenth-century artifacts or features in the immediate vicinity of the Hariot/Gans workshop area, the VCF archaeologists moved away from the Hariot/Gans workshop and earthwork and excavated nine 5' squares near the dune ridge to the north and at various locations east and southwest of the earthwork. These too proved to be equally devoid of any recognizable cultural features and again not a single sixteenth-century European artifact was found. But, one 5' square pit excavated about 400' west of the earthwork in the Hariot Nature Trail Woods revealed a buried A layer that yielded 22 sherds of Late Woodland Colington pottery (Figure 9-3), suggesting that this was a land surface that could have dated to the time of the Roanoke settlements (Luccketti 1996).

Figure 9-3. 1994 test square excavated in the Hariot Woods Nature Trail showing buried "A" horizon, facing south.

The VCF team returned to this area in 1995 for a one-week follow-up survey. Shovel test holes and test squares soon produced more Late Woodland pottery from the buried A horizon; however this time a small number of European artifacts were recovered as well including Iberian olive jar sherds, one small lead shot, a gunspall, and one crucible sherd. While the quantity of artifacts did not indicate that this was this was the site of the fort or village, they did suggest that the buried "A" horizontal was the land surface in the sixteenth century and that the Roanoke colonists did do something, insubstantial as it might be, in this part of the Hariot Nature Trail Woods. The VCF report on their 1994/95 work also presented a simple comparison of the amount of area excavated and the number and kinds of artifacts recovered from the excavations at Fort Raleigh, the 1604 French settlement at St. Croix, Maine, and the first years of excavations at 1607 Fort St. George, all colonies of about 100 men that lasted about 1 year (Luccketti 1996). The dramatic differences in the artifact assemblages from the sites underscored the, as yet, absence of a 1585 or 1587 domestic site at FORA. There is virtually a complete absence of domestic artifacts at Fort Raleigh while St. Croix and Fort St. George have relatively large numbers of architectural materials – nails, brick, and daub – as well as much ceramics, glass, animal bone, and shell. Therefore, while the nature of the earthwork remains the subject of much debate, the comparative archaeological evidence supports the conclusion that the site the just outside its entrance excavated by Harrington, SEAC, and the VCF must be the 1585 scientific workshop of Thomas Hariot and Joachim Gans.

There was a lull in archaeological research at FORA although archaeologists Bennie Keel and David Phelps conducted occasional construction area surveys in the 1990's, as they had done during the previous decade with the same results – no evidence of Raleigh's settlements. In 2000, SEAC archaeologists conducted a remote sensing survey of parts of FOR A including the Hariot Nature Trail Woods. Ground penetrating radar (GPR) detected several large subsurface anomalies in the woods along the Hariot Nature Trail Woods, but these features were not able to be tested at the time.

In 2003, a core of VCF veterans established a new organization, the First Colony Foundation (FCF) headed by Phil Evans, as a vehicle to continue historical and archaeological research related to the 1585 and 1587 Raleigh settlements. One of the initial projects undertaken by the FCF provided supplemental funds for NPS research in Spanish archives. In 2005, the FCF signed a Memorandum of Agreement with FORA to continue archaeological fieldwork at Fort Raleigh. That same year, the FCF commissioned Dr. Gordon P. Watts, Jr., to conduct a magnetic anomaly identification and assessment investigation of underwater anomalies that were detected during a 2002 survey of the north shoreline of Roanoke Island and Shallowbag Bay. Not surprisingly, none of the anomalies that were examined dated to the Raleigh settlements period (Watts 2006). Also in 2005, FCF archaeologists investigated a report of features and yet another green-glazed sherd exposed in bluff between the Lost Colony theatre on the east and the Prince House to the west, the same area where the barrel remains and other probable sixteenth-century artifacts had been found in years past. The feature proved to be one more of those exasperating "probably a treehole but it kind of looks like it possibly might have been a posthole 400 year ago" soil stains like those found around the Hariot/Gans scientific workshop and earthwork. Noel Hume identified the green-glazed sherd as coming from a type of an Iberian olive jar made in the late sixteenth century, thus the area north of the parking lot, where artifacts probably related to the Raleigh settlements has been found intermittently on the beach over the past 25 years, continued to be an area of high interest and serious concern.

The prospect of continuing erosion of the bluff along the Prince House Woods has been a major concern of the NPS for decades. A geological study by Robert Dolan and Kenton Bosserman of the north end of Roanoke Island in 1972 documented the severe loss of land in this area; the authors estimated that more than 900' has been lost since mid 19th century (Dolan and Bosserman 1972). Further erosion studies resulted in the construction of granite block revetments along the Dough Cemetery and Waterside Theatre in 1980. Concern over the loss of potential archaeological resources was expressed in 1993 at Roanoke Decoded conference and at a special erosion conference later that year. The 2003 Raleigh National Historic Site Administrative History report also details the more recent development at the north end of the island which has accelerated erosion of unprotected shoreline (Binkley and Davis 2003). In addition, Hurricane Isabel in 2003 and Hurricane Katrina in 2005, both Category 5 storms, caused significant erosion of the bluff. Accordingly, in 2006, the FCF conducted a 2 week investigation of the Prince House Woods behind the dune ridge that overlooks the exposed bluff.

The purpose of the 2006 FCF project is to determine whether there were archaeological resources - artifacts, features, or strata - associated with the Raleigh settlements in this area that may be endangered by the continual erosion of the exposed bluff. The investigation consisted of excavating of 1.5m test units at 5 meter intervals along a transect that ran parallel to the base of the dune ridge and as close as practicable to the bluff. The survey of the Prince House Woods did not locate any archaeological features associated with Native American occupation or with the Raleigh settlements; nevertheless the survey did reveal that there is a generally consistent stratigraphic sequence throughout the Prince House Woods. Beneath the root mat and humus were various recent sand layers that lay above a typically thick layer of white sand that corresponded with the dune ridge. Under the dune sand was a layer of very dark grey to black sand that constituted a buried "A" horizon, which in turn sealed a layer of light grey or silver grey sand. Like the buried "A" horizon in the Prince House Woods, the buried "A" in the Hariot Nature Trail Woods stratigraphically was immediately below a thick layer of white sand that comprises the existing dune ridge. Based on stratigraphy, the buried "A" horizons in the Prince House Woods and the Hariot Nature Trail are almost certainly the same horizon as the buried "A" horizon that was found in the1980's NPS and 1990's VCF excavations of the 1585 scientific workshop and earthwork. The 2006 FCF survey did recover 64 Colington sherds, several of which mended and all almost certainly from the same vessel, from the buried A horizon in one test unit. While Colington ceramics are found throughout the Woodland period, it could be argued that the presence of a single Native American vessel was more likely attributable to English use as there is no archaeological evidence of any other Native American activity in the immediate area (Luccketti 2007).

During the 2006 survey, two collectors brought artifacts they had picked up over the years from the beach along the Prince House Woods. Most of the artifacts were small Native American sherds, but there were two sherds of possible sixteenth-century European ceramics. One was another sherd of Sevillian olive jar and the other was a sherd of London Post-Medieval Redware. Both were quite water-worn, unlike the Sevillian olive jar sherd found in the bluff face or the sherd found in 2006. These sherds could be further evidence of a sixteenth-century landing site, although their context is uncertain. A follow-up 2008 magnetometer survey of the untested dune ridge along the bluff edge located only modern metal debris, confirming the 2006 conclusions that the area was one of light Elizabethan activity, but not occupation or industry. The 2006 project had collected data on elevations and soils, including a profile of the bluff face to compare with that drawn by Phelps's team in 1982, which will help reconstruct the 16th-century landscape at FORA.

Scheduled for 2007, but postponed until January 2008, was the testing of a new remote sensing technology, radar tomography (RT), developed by Witten Technologies Inc (WTI). Four different ground surface types were chosen to gauge the comparative results of RT, in relation to adjacent areas of excavation: parking lot, grass, asphalt drive, and open woodland. The findings for each section of survey were displayed by WTI as two products: a "virtual excavation" of vertical videos descending from 1" to 100" below ground surface; and an overall CAD drawing map showing major anomalies as interpretive features, typically utility features.

The WTI test survey employing RT displayed remarkable clarity of detail, and in 2008, FCF carried out 'ground truthing' excavation in three areas of remote sensing. These units verified the accuracy of the RT test, with features accurately located within a few centimeters in plan and depth. WTI is interested in further collaboration with FCF at FORA, and a fuller survey the four acres around the reconstructed Fort Raleigh earthwork is scheduled for later in 2009.

Also in 2008, the FCF launched the largest excavation at FORA since the Noel Hume's project in the early 1990's. The objective of the FCF excavation project was to conduct "ground-truthing" test excavations on anomalies of potential archaeological significance located during SEAC's 2000 GPR survey in the Hariot Nature Trail Woods focusing on two anomalies that were in the same area as the buried "A" horizon that yielded sixteenth-century European artifacts in 1995. In the spring of 2008, the FCF received an inquiry from Time Team USA, the American version of a long-running BBC archaeological series, about the feasibility of conducting a joint archaeological project at FORA. The basis of Time Team USA approach is intensive fieldwork that brings together a large number of specialists and technicians to work on a project for just three days. The fieldwork aspect of Time Team USA projects invariably employ geophysical prospecting to locate features followed by mechanical removal of overburden by an expert machine operator. The Time Team USA archaeological staff then works with the host project institution on the excavation of features. The possibility of a joint FCF and Time Team USA project in the Hariot Nature Trail Woods Woods was proposed to FORA and SEAC who approved the plan contingent upon it adhering to the general research design originally submitted by the FCF.

The 2008 excavation area in the Hariot Nature Trail Woods lies approximately 1200 feet west of the earthwork and about 300 feet south of the beach along Roanoke Sound. A professional survey crew employed by Time Team USA relocated the 2000 SEAC GPR survey baseline and two potential cultural anomalies in the Hariot Nature Trail Woods. The surveyors then established a grid across the area. A professional geophysical prospecting company employed by Time Team USA then conducted a ground-penetrating radar survey of the area. The vicinity of the larger SEAC anomaly was investigated by two adjacent area excavations, Block 1measured 3 m by 12 m, while Block 2 measured 3 m by 7.5 m. The humus and white sand strata were mechanically removed by a Case compact excavator with a smooth edge bucket. The mechanical excavation did not strip the bottom 6cms of sand that sealed the buried "A" horizon; this was removed by shovel schnitting and troweling. Once the buried A horizon was exposed in the two blocks, each block was divided into 1.5 m squares that were assigned individual context numbers.

Excavation of the buried "A" stratum, a very dark brown to black fine sandy loam yielded over 200 sherds of Native American pottery, one partial Native American pipe, and a small number of European artifacts. The Native American pottery was largely Colington shell-tempered ware, while the temperless straight stemmed "onion bowl" tobacco pipe is similar to other pipes found at Late Woodland through seventeenth-century Algonkian, Tuscarora, and piedmont Siouan sites. A nearly identical pipe was found by Harrington in the earthwork ditch.

The European artifacts recovered from the buried "A" included tobacco pipe bowl fragments from the second half of the seventeenth century, tobacco pipe stem fragments and Pennsylvania-type coarseware from the mid-to-late eighteenth century. Sherds of Staffordshire blackware could date to anytime between c. 1650-1750, while fragments of wrought iron nails could date from the sixteenth century to the early nineteenth century. One sherd of a red

Martincamp costrel was found in the 2008 excavation that almost certainly is associated with the Raleigh settlements. There is no research at this time that definitively shows that red Martincamp costrels were made in the sixteenth century; yet the available evidence strongly suggests that red Martincamp costrels were available in the 1580's. Red Martincamp has been found on only two sites in Virginia, Jamestown and the Second Church at Kecoughtan in Hampton, and in both cases the red Martincamp sherds have come from 1607-1610 contexts. It is noteworthy that no red Martincamp ceramics have been found on any of the numerous sites that date to the 1620's that have been excavated in Virginia.

Numerous features were uncovered in the two blocks, and with rare exception they had the same appearance as the non-cultural features found in the 1990's excavations of the scientific workshop and earthwork periphery. However, two highly significant features were found in one of the excavation blocks. Feature 13 was oval shaped; measuring about 38 cms by 50 cms and appeared as a very light grey (10YR7/1) soil stain. Removal of an Optically Stimulated Luminescence sample tube at the south edge of the feature revealed an oyster shell at the bottom of the light grey sandy fill. Troweling around the oyster shell uncovered a copper alloy square that had a small hole at one end while the opposite corner was broken off – presumably because it had been weakened because it also had a hole. Further excavation of Feature 13, which was no greater than 25 cms deep, revealed 13 more copper plates mixed with some oyster shells (Figure 9-4). Each plate was pierced by holes at opposite corners of the plate, and they were lying corner to corner as if they were strung together to hang like lozenges. Two of the plates also have holes pierced in the center. The plates were of different sizes and apparently were strung with the plates graduated from smallest to largest. The smallest plate measured 19mm by 21mm and the largest measured 32 mm by 34 mm. The copper plates were covered by a dark organic material which microscopic examination indicates may be leather. Preserved by copper salts, the dark organic material was seen only lying on the copper plates.

Figure 9-4. Detail of Feature 13 showing copper plates in situ.

The copper plates were removed in situ on a pedestal of soil. The pedestal was X-rayed at the Colonial Williamsburg Foundation's Archaeological Conservation Department. No other artifacts or objects were detected in the pedestal. Some of the copper plates are being analyzed for their elemental composition, but the results of that testing were not available at the time of this report.

About one-half meter away from Feature 13 was another light grey fine sandy loam filled feature. Feature 16 had comparatively distinct straight edges with right-angle corners, implying that probably is a feature related to the English presence in the area. It was 55 cms north-south, and at least 22 cms east-west and about 28 cms deep; the feature continued into the sidewall of the block and thus it was not entirely exposed. Excavation of the Feature 16 produced 15 white glass beads; the beads did not appear to be strung together as they were scattered throughout the bottom of the feature. Other than a few oyster shells, the only other artifact found in Feature 16 was a copper alloy object that seemed to be either part of a tubular bead or possibly an aiglet.

Since Colington pottery and sixteenth, seventeenth, and eighteenth-century European artifacts were found in the buried A horizon, it seems that the buried A horizon represents the land surface during that time period before agriculture and deforestation resulted in the formation of sand dune ridges on the north end of Roanoke Island. The attribution of Features 13 and 16 presently is uncertain, though ongoing scientific testing and geoarchaeological analysis of the site may provide additional important information. One possibility, given that Iberian olive jar sherds and one crucible sherd were found in the immediate vicinity during the 1995 survey, is that the copper plates and glass beads are related to Thomas Hariot's presence in the area. Alternatively, the features containing copper plates and glass beads might be the result Native American activity on the north end of Roanoke Island in the first half of the seventeenth century. Regardless of the genesis of the two features, one thing seems eminently clear; the paucity of sixteenth-century European artifacts recovered by the excavations in the Hariot Nature Trail Woods indicates that this area cannot be the site of the Raleigh colonists' fort or village.

Nevertheless, the discoveries made by the 2008 FCF excavations have inspired plans for continued archaeological research. The FCF will expand excavations in the Hariot Nature Trail Woods in an effort to determine what this site represents, it will initiate intensive archaeological surveys in other locations at the north end of Roanoke Island that have been suggested as the possible locations of the fort and/or village, and it also will endeavor to locate whatever remains, if anything, of the Indian village of Roanoc. Hopefully, these efforts ultimately will result in a greater understanding of what transpired between the Native American and the English at the north end of Roanoke Island (Figure 9-5).

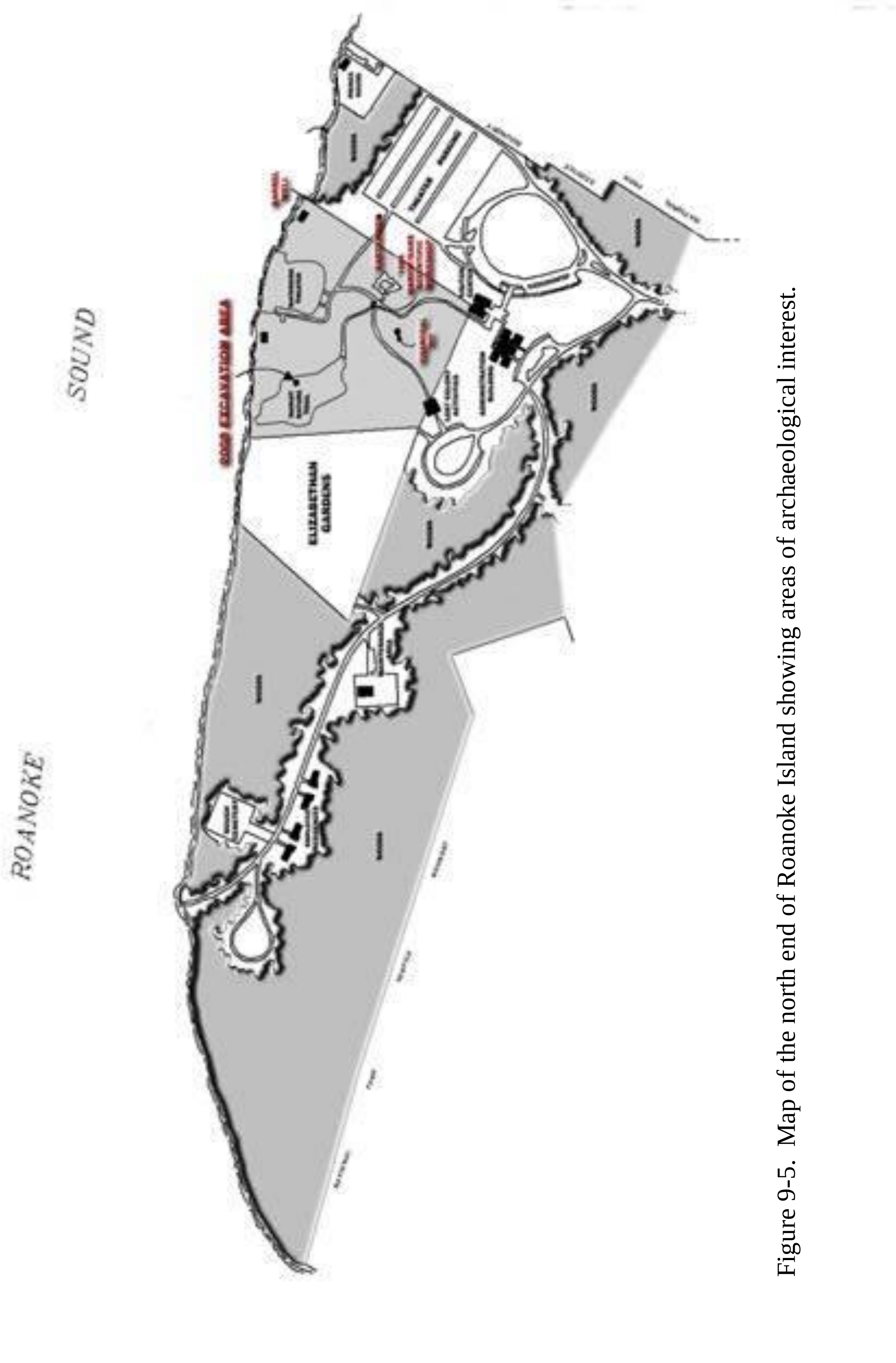


Figure 9-5. Map of the north end of Roanoke Island showing areas of archaeological interest.

REFERENCES CITED

Binckley, Cameron and Steven Davis
2003 *Preserving the Mystery An Administrative History of Fort Raleigh National Historic Site*. Cultural Resources Southeast Region National Park Service, Atlanta, GA.

Bolling, Rob
2008 Personal communication.

Dolan, Robert and Kenton Bosserman
1972 "Shoreline Erosion and the Lost Colony." *Annals of the Association of American Geographers*, vol,62, no.3, pp.424-426.

Ehrenhard, John E., William P. Athens, and Gregory L. Komara
1983 Remote Sensing Investigations at Fort Raleigh National Historic Site, North Carolina. Manuscript on file, Southeast Archaeological Center, National Park Service, Tallahassee, Fl.

Ehrenhard, John E. And Gregory L. Komara
1984 Archaeological Investigations at Fort Raleigh National Historic Site, Season 2, 1983. Manuscript on file, Southeast Archaeological Center, National Park Service, Tallahassee, Fl.

Harrington, Jean Carl
1962 *Search for the Cittie of Ralegh, Archaeological Excavations at Fort Raleigh National Historic Site, North Carolina*. Archaeological Research Series Number Six, National Park Service, U.S. Department of the Interior, Washington, D.C.

1966 *An Outwork at Fort Raleigh*. Eastern National Park and Monument Association.

Klingelhofer, Eric
2008 Personal communication.

Luccketti, Nicholas M.
1996 Fort Raleigh Archaeological Project 1994/95 Survey Report. Virginia Company Foundation and the Association for the Preservation of Virginia Antiquities. Manuscript report on file, Southeast Archaeological Center, Tallahassee, FL.

2007 Archaeological Survey of the Prince House Woods, Fort Raleigh National Historic Site, Roanoke Island, NC. Manuscript report on file, Southeast Archaeological Center, Tallahassee, FL., and First Colony Foundation, Durham, NC.

Noel Hume, Ivor
1982 *Martin's Hundred*. Alfred A. Knopf, New York.

1994a "Roanoke Island: America's First Science Center." *The Journal of the Colonial Williamsburg Foundation*, Spring, vol. XVI, no.3.

1994b *The Virginia Adventure, Roanoke to James Towne: An Archaeological and Historical Odyssey*. Alfred A. Knopf, New York.

1995 First and Lost: In Search of America's First English Settlement, Archaeological Excavations at Fort Raleigh National Historic Site, Roanoke Island, North Carolina. Manuscript on file, Fort Raleigh National Historic Site, Manteo, NC,

Noel Hume, Ivor and Audrey Noel Hume
1991 *The Archaeology of Martin's Hundred*. University of Pennsylvania Museum of Archaeology and Anthropology, Philadelphia, PA, and The Colonial Williamsburg Foundation, Williamsburg, VA.

Phelps, David S.
1984 Archaeology of the Native Americans: The Carolina Algonkians. Manuscript on file, Institute for Historical and Cultural Research, East Carolina University, Greenville, NC.

Powell, William S.
1965 *Paradise Preserved*. University of North Carolina Press, Chapel Hill.

Quinn, David B. (editor)
1991 *The Roanoke Voyages*. Dover Publications, Inc., New York

Smith, Geoff
2008 Personal communication.

Watts, Gordon P., Jr.
2006 Raleigh Colony Investigation: Magnetic Anomaly Identification and Assessment, Roanoke Island, NC. Manuscript report on file, First Colony Foundation, Durham, NC.

COASTAL PLAIN IROQUOIANS BEFORE AND AFTER EUROPEAN CONTACT: AN INTERPRETIVE STUDY OF CASHIE PHASE ARCHAEOLOGICAL RESEARCH IN NORTHEASTERN NORTH CAROLINA

Charles L. Heath

E. Clay Swindell

Numerous ethnological and ethnohistorical studies of eastern North Carolina's Contact and early Postcontact period American Indian societies were undertaken in the nineteenth and twentieth centuries.[1] Until the early 1970s, however, professional archaeological interest in the early Native inhabitants of the Coastal Plain region was modest.[2] With notable exceptions, such as pioneering research conducted by William G. Haag (1958), Lewis R. Binford (1964) and Robert G. H. Crawford (1966), little in the way of regionally systematic fieldwork, other than now obscure surface collecting forays (see e.g., Coe 1952; Evans 1955; Holmes 1903; Lewis 1952), or limited site testing (e.g., Mattson 1968; South 1962), was undertaken:

1) To address material life aspects and settlement distributions of historically recognized Carolina
   Algonkian or Coastal Plain Iroquoian peoples;
2) To study the diachronic development of their respective societies regionally;
3) To materially assess diachronic cultural transformations before, during and after the sustained European colonization of their Late Woodland through early Postcontact period homelands.

Despite limited professional interest through the 1960s, relics collectors were (and remain) especially active in the region (see e.g., Haag 1958; Phelps 1982b, 1983; Rights 1957; Rose 1960) and little is known of their activities; some collectors occasionally reported their dig finds (see e.g., Painter 1990). After passage of federal and state environmental compliance legislation in the 1960s and 1970s, cultural resource management (CRM) activities encouraged regional research and the partial preservation (site testing, data recovery) of a rapidly diminishing archaeological record. With the near contemporaneous establishment of academic archaeology programs at several state universities (Phelps 1983:11–13; Ward and Davis 1999:18–21), archaeologists initiated increasingly systematic and intensive investigations across the northern Coastal Plain—the sub-Fall Line region south of the North Carolina-Virginia state boundary and north of middle-lower Neuse River basin (Figure 10-1).[3]

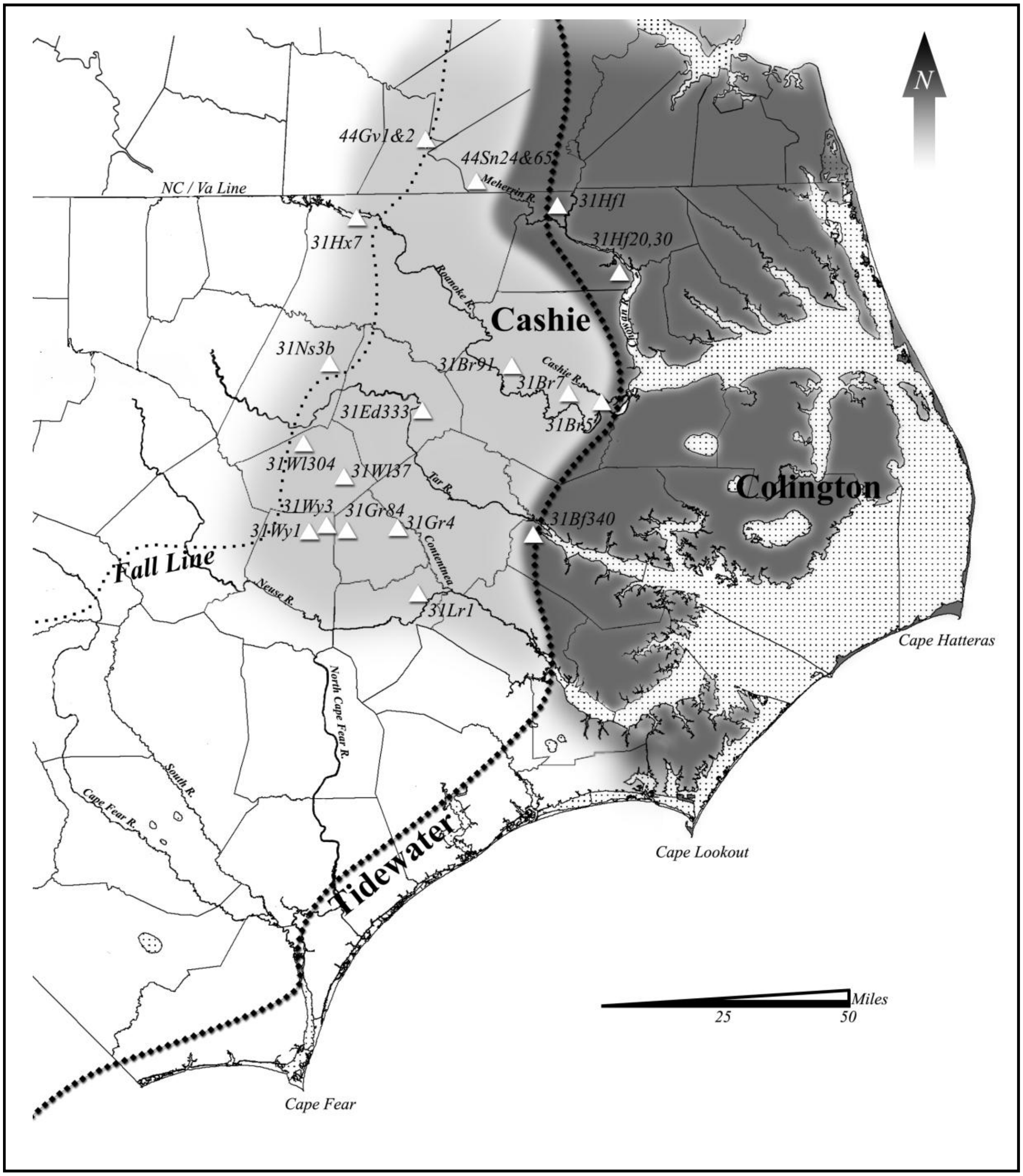


Figure 10-1. Map of eastern North Carolina and southeastern Virginia region showing approximate locations of key sites mentioned in the text. Major Coastal Plain province rivers and the Fall Line are indicated.

THE CASHIE PHASE (PHELPS 1983)

Based on the aggregated results of regional watershed survey and methodical site excavation projects launched in the early 1970s, David S. Phelps came to recognize and define the Cashie and Colington phases, the analytical correlates of two Late Woodland–Contact period archaeological cultures found in northeastern North Carolina (Phelps 1977, 1980a, 1980b, 1982a, 1982b, 1982c, 1983, 1984a, 1984b). Phelps (1983) summarized adaptive behavioral and material aspects of these phases in his seminal contribution to *The Prehistory of North Carolina* (Mathis and Crow 1983:1–51).[4] Assessing regional intersite and intrasite evidence, as well as radiocarbon assays of Jordan's Landing (31BR7) and Thorpe (31NS3b) sites botanical remains (see Eastman 1994b:33, 36–37), Phelps (1977, 1980a, 1980b, 1983) proposed that Cashie phase expressions represented the *principal* Late Woodland period archaeological culture of the northern Inner Coastal Plain, circa (ca.) A.D. 800–1650. Regional archaeological research results since the early 1980s, however, call for substantive refinements in the Cashie phase construct, while simultaneously supporting several essential assumptions regarding the phase model postulated by Phelps (1983).

Phelps (1980b:2–3, 1983:43–47), considered the Cashie phase as a temporally and spatially interrelated constellation of environmentally and culturally influenced adaptations and social behaviors, which include secondary inhumation mortuary practices, palisaded residential villages, seasonal hunting or fishing-shellfishing camps, loamy soil site settings, maize-bean-cucurbit focused horticulture and Cashie series ceramics. He (Phelps 1983:43) further hypothesized that the American Indian people most likely associated with the regional florescence of the Cashie phase were the late Precontact period ancestors of historically documented Tuscarora, Meherrin and Nottoway peoples.[5] In the late seventeenth and early eighteenth centuries, the Tuscarora, Meherrin and Nottoway societies were predominantly composed of peoples who spoke Northern Iroquoian languages and originally inhabited easterly sections of Virginia and North Carolina (Binford 1991; Boyce 1978; Dawdy 1995; Rudes 1999a).

Many, but certainly not all, presently living descendants of the peoples who formed these societies as they existed in the early 1700s are now acknowledged as members of the Tuscarora Nation of New York (Lewiston, New York), and the Meherrin Indian Tribe (Ahoskie, North Carolina), respectively a federally recognized nation and a state recognized tribe. The Tuscarora Nation is the sixth nation of the *Haudenosaunee* (People of the Longhouse) or the Iroquois Confederacy, a status held since 1722 (Landy 1978:519). Tuscaroras who fought with British forces against rebel armies in the American Revolution resettled with Iroquois Loyalists in Canada in 1784–1785 (Weaver 1978:525). Their descendants are among the members of the Six Nations of the Grand River Territory (Ontario, Canada). Several state recognized American Indian descent groups in North Carolina or Virginia, as well as multiple non-state and non-federally recognized groups in the same region, claim Tuscarora, Meherrin or Nottoway ancestry (Heath 2007; North Carolina Commission of Indian Affairs [NCCIA] 1998; Oakley 2005; Stephenson 2003).

Building on earlier research by Haag (1958) and Binford (1964), Phelps discerned that the distribution of archaeological sites with Cashie phase occupations approximated the maximal distribution of Tuscarora and Meherrin settlements described in historical sources (see Boyce 1978:Figure 1; Phelps 1983:Figure 1.8). However, no known early Postcontact period, ca. 1650–1725, Tuscarora or Meherrin town sites in North Carolina had been systematically investigated by the early 1980s.[6] While we concur with Phelps's (1983) assumption of a substantive material relationship between the Cashie phase and the residual material life of Coastal Plain Iroquoian peoples in northeastern North Carolina (see also Byrd 1991, 1997, 1998, 2001), both before and after European contact, the connections are not wholly seamless. Material evidence of a connection between the Cashie phase and the Nottoway people of the protohistoric era is more ambiguous.[7] Although attempting to associate archaeological cultures with historically documented societies can be problematic, and sometimes impossible (see e.g., Willey and Phillips 1958:48–51; Terrell 2001a, 2001b), the interpretive challenge is not always insurmountable when employing *multiple* lines of evidence.[8]

Numerous historical and anthropological studies of North Carolina's indigenous populations partially illuminate the histories and daily lives of Tuscarora and Meherrin peoples who lived in eastern North Carolina between ca. 1650 and 1803 (e.g. Binford 1964, 1967, 1991; Boyce 1973, 1975, 1978, 1987; Crane 2006; Dawdy 1994, 1995; Edwards 1999; Feeley 2007; Gallay 2002; Lee 1963; LeMaster 2006; McIlvenna 2009; Nixon 2000; Oakley 1996, 2005; Parramore 1982, 1987; Paschal 1953; Rountree 2002; Seamans 2001; Styrna 1990). Nevertheless, many facets of their respective lifeways and social histories, especially over the long span of archaeological time, can best be discerned through the lens of archaeology and its interrelated subfields. Aspects of colonial era Tuscarora and Meherrin life partially described or retrospectively inferred through the interpretation of historical documents (texts, maps, images) are ambiguous, contradictory, incomplete or colored by ethnocentric biases—the archaeological record and archaeological interpretations are undoubtedly and similarly hampered! Several exceptional studies (see above citations) have advanced contemporary knowledge of regional Tuscarora and Meherrin histories to an extent. Historically informed archaeological research, however, is needed to inform and explicate any retrospective understanding of past environmental adaptations, historical events or cultural and historical processes associated with the deep histories of these particular American Indian groups through time.

In this chapter, we examine the status of Cashie phase research, reassessing and summarizing what has been gleaned through regional archaeological investigations since the early 1980s. While strides have been made, diachronically comprehensive data on Precontact–Contact (A.D. 1200–1650) and early Postcontact (A.D. 1650–1725) period Tuscarora and Meherrin societies are largely deficient. Most research findings associated with Cashie phase research are found in numerous separate studies, but no comprehensive diachronic synthesis integrating multiple lines of evidence (archaeology, linguistics, ethnohistory, oral history) has been compiled since Phelps's (1983) initial phase summary and Byrd's (1991, 1995, 1996, 1997, 1998, 1999, 2001) later especially noteworthy contributions. For this study, we have attempted to integrate information culled from published sources, CRM reports, master's theses, doctoral dissertations, conference papers and other unpublished data made available to us by various colleagues. Where of utility, we further incorporate previously unpublished data from our individual or collective research endeavors. In some instances we critique and amend our past interpretations and working assumptions, recognizing that archaeological phase models, pottery series definitions or other heuristic devices employed for the organization and interpretation of archaeological data simply provide testable models of past human activities that will be supported, refined or discarded.[9] While we cannot critically evaluate, uphold, refute or address every aspect of potential research interest found in the sources cited, our chapter references serve as a comprehensive foundation for future studies. Moreover, important collections recovered from archaeological sites with Cashie phase occupations, or regionally coeval components, remain unanalyzed, unreported or underreported. As such, analytically useful comparative datasets remain untapped. In light of these issues, we incorporate within our thematically organized presentation observations on interpretive incongruities and critical data gaps.

Before delving deeply into the archaeological aspects of the discussion, we offer a cultural context overview for our region of concern, ca. 1520–1720. Given the geographic focus of this volume, as well as limitations inherent in the available archaeological datasets, we generally focus our overall presentation on Tuscaroras of the late Precontact–early Postcontact periods through the early 1710s. We also take an opportunity to integrate some particularly informative aspects of Tuscarora oral history and recent linguistic research results in our interpretations. For more detailed treatments of the Contact–early Postcontact period Meherrin people, refer to Binford (1967, 1991) or Dawdy (1994, 1995), and for the Nottoway people, Binford (1967, 1991), Rountree (1979, 1987) and Smith (1971).

NATIVE PEOPLES OF NORTHEASTERN NORTH CAROLINA, CIRCA 1520–1720

Sparsely documented contacts between Western Europeans and American Indians in present-day coastal North Carolina commenced in the mid-1520s (Cumming 1966, 1998; Lefler 1956; Rudes 2002b). Sailors and explorers from passing European ships made intermittent landfalls along the region's outer coast to explore, to trade with Native peoples for provisions and other commodities, or to take on fresh water stores. Few details are known of these ephemeral cultural exchanges, or of the social and biological effects of such erratic contacts on coastal indigenous peoples. Although Spanish explorers led expeditions through the Piedmont and Blue Ridge provinces in the sixteenth century (Beck 1997; Beck et al. 2006; Hudson and Tesser 1994), the earliest direct Spanish interactions with Coastal Plain Natives were limited to a few coastal landings and elusively documented forays into the Carolina sounds and estuaries (Cumming 1966, 1998; Lefler and Powell 1973; Rudes 2002b). In the 1580s, however, interactions between Natives and newcomers intensified when seafarers, soldiers, explorers and colonizers from the British Isles undertook the so-called Roanoke Voyages (1584–1602), endeavoring to establish military garrisons, trade relationships and English colonies in the Carolina-Virginia Tidewater (Quinn 1955, 1970, 1985; Shields and Ewen 2003). While little is known of their activities, both Spanish traders operating from La Florida and English traders from the Virginia colony were active among Coastal Plain Native peoples by 1640–1645 (Cumming 1939; Bland 1966:3, 15 [1651]; Butler 1971; Rountree 2002; Yeardley 1911:27 [1654]).[10]

During the regional protohistoric era, ca. 1520–1670, northeastern North Carolina was *principally* inhabited by two American Indian macro-ethnic groups whose peoples respectively spoke languages and dialects related to the Northern Iroquoian and Eastern Algonquian language families (Goddard 1978; Lounsbury 1978).[11] Regional ethnohistorical studies retrospectively reveal that Northern Iroquoian language speakers inhabited the brown-water, black-water and flatwoods environments of the northern Inner (Upper) Coastal Plain in the protohistoric era (Binford 1991; Boyce 1978) (Figure 10-1). Eastern Algonquian language speakers inhabited the lowland estuarine and marine environments of the northern Outer (Lower) Coastal Plain (Binford 1991; Feest 1978a, 1978b) (Figure 10-1). Siouan-Catawba language groups were presumably settled across the south and south-central Coastal Plain, in both the lowland coastal (but see Loftfield 1990; Loftfield and Jones 1995) and upland interior regions south of, and within segments of, the lower Neuse and Cape Fear river basins (Irwin and Heath 2008; Martin 2004; Rudes 2002b, 2004; Rudes et al. 2004).

The peoples of these ethnolinguistically defined social entities differentially adapted, over the course of the Late Woodland period, to ecologically varied upland, riverine, estuarine or marine environmental niches (see e.g., Griffith and Omernik 2009; Bennet and Patton 2008). Nevertheless, some social, material and physical aspects of their respective societies were comparable historically (see e.g., Binford 1991; Boyce 1978; Feest 1978a, 1978b; Driver and Massey 1957). Recent bioarchaeological studies point to specific phenotypical similarities shared between Precontact–Contact period human skeletal elements recovered from burials distributed across Coastal Plain province, hence biological evidence for gene-flow between regional subpopulations as well (Hutchinson 2002; Kakaliouras 2002, 2003; Killgrove 2002, 2009). Using the same study sample of human skeletal remains, Kakaliouras (2002, 2003) assessed non-metric dental features and Killgrove (2002, 2009) compared non-metric cranial features. Both analysts concluded that there is no statistically significant biological distance (phenotypically expressed genetic differences) between peoples who once inhabited the ethnolinguistic subregions defined historically (Binford 1991; Boyce 1978; Feest 1978a) and generally substantiated archaeologically (Binford 1964; Byrd 1997; Dawdy 1994; Phelps 1983; Swindell 2010; Ward and Davis 1999).

The results of recent molecular studies, however, suggest that some ancient Algonkian, Iroquoian and Siouan proto-populations shared a remote common ancestry, the result of intermarriages several thousand years ago, sometime after ancestral Cherokees diverged from Proto-Iroquoian peoples, but before Proto-Algonkian peoples diverged and some groups colonized southward (Lawrence et al. 2010). As such, later Algonkian and Iroquoian descendant groups, such as those reported historically in eastern North Carolina, very likely shared some phenotypically expressed skeletal features. The seemingly limited biodistance between regional archaeological subpopulations, as reported by Kakaliouras (2003) and Killgrove (2002, 2009), imply that there were, as would be expected however (see e.g., Cameron 2008), long term social interactions (gene-flow) between peoples who spoke different languages historically and produced persistently contrastable elements of material culture within the context of the northern Coastal Plain.

The Precontact–Contact period Carolina Algonkian, Coastal Plain Iroquoian and Coastal Plain Siouan societies of eastern North Carolina nonetheless developed certain regionally distinctive social and material traditions. Perhaps as DeBoer (2008:251) asserted, in some cultural contexts, "…the more permeable cultural boundaries are to body flows [(i.e., gene-flow)], the sharper and more salient those cultural boundaries become in terms of material signs" (see also Fiedel and Anthony 2003). Moreover, bioarchaeological evidence of regionalized gene-flow between culturally discrete societies is not wholly surprising given precontact indigenous captive taking practices in eastern North America. Cameron (2008:5) has observed, "…wife capture was common in North America and may have been universal" among most Native societies before and long after European contact. In the Eastern Woodlands, female captives were habitually adopted as fictive kin members within their captors' societies. Such women, in terms of material culture and language, either introduced change or stylistic innovation as "active agents of cultural change," or in other social contexts, became meticulous replicators of a captor society's material culture and customs, hence "helping to fix the social boundaries they…crossed" (Cameron 2008:2, 12–16).

Although condensing non-state cultures, or by extension population level or individual social identities, to pottery types or material-behavioral trait lists is not especially fashionable in contemporary anthropological circles, culturally meaningful, non-random patterns corresponding to past social boundaries or ethnic identities undoubtedly exist in the regional archaeological and ethnohistorical records. In this regard, John Lawson's (1967 [1709]) ca. 1701–1709 observations on regional American Indian societies are revealing. While certain individuals within these societies were undoubtedly multilingual, language served as a social boundary marker. Although his conclusions are indeed oversimplified, Lawson (1967:239) recognized a distinct relationship between ethnicity and language within his particular historical context, remarking, "It is wonderful, what has occasion'd so many different Speeches as the Savages have [,but]…this difference of Speech causes Jealousies and Fears amongst them, which brings Wars." Of Tuscaroras in particular, Lawson (1967:233) reported, "the *Tuskeruro's* are most numerous in *North-Carolina*, therefore their Tongue is understood by some in every Town of all Indians near us…[and as] the most powerful Nation…scorns to treat or trade with any others (of fewer Number and less Power) in any other Tongue but their own, which serves for the *Lingua* of the Country."[12] On the materialization of ethnicity, Lawson (1967:201) further observed, "The Dresses of these People are so different, according to the Nation that they belong to." Regarding intersocietal variation in mortuary customs, he (Lawson 1967:189), noted, each nation "differ[s] some small matter in their Burials; some burying right upwards, and otherwise [(charnel houses, ossuaries, mounds, cairns)], as you are acquainted withal in my journal"—see e.g., Lawson (1967:28–29). In other instances, Lawson briefly remarked on intersocietal differences in architectural patterns and other cultural practices, but unfortunately glossed much of the variation he observed in his, "An Account of the Indians of North Carolina" chapter (1967:172–246).

Tuscaroras and Meherrins at and after European Contact

As witnessed and intriguingly represented in texts or wonderfully vibrant imagery by Thomas Hariot, John White and other colonial observers in the sixteenth century (see e.g., Hulton 1984), Carolina Algonkian societies differentially developed emergent or simple chiefdom level polities in the Tidewater by the 1580s (Binford 1991; Feest 1978a).[13] To the west-northwest of the Tidewater (Figure 10-1), Iroquoian peoples inhabiting the Upper Coastal Plain and a similar geographic zone in southeastern Virginia established culturally, linguistically and biologically interrelated social entities (see Byrd 1998), which Binford (1964) characterized as ethnic groups, rather than tribes or chiefdoms. Analytically classifying protohistoric era or later Tuscarora or Meherrin sociopolitical systems at any point, ca. 1520–1720, is problematic and the exercise has challenged ethnologists (Hewitt 1910b), historians (Boyce 1973, 1975, 1978; Feeley 2007) and anthropologists (Binford 1967, 1991; Byrd 1997; Nixon 2000).[14] The few ethnohistorical sources that include any fragmented descriptions of Tuscarora and Meherrin leaders, or their powers and societal roles, ca. 1650–1717, present conflicting information. In part, the inconsistencies relate to the fact that the various leaders or polities portrayed at points in time were experiencing continuous transformation in response to destabilizing aspects of regional and extra-regional European contact and colonization processes (e.g., trade, disease epidemics, Indian slave trade, land encroachment, warfare, incorporation)—see e.g., Ethridge and Hudson 2002; Ethridge and Shuck-Hall 2009; Gallay 2002; Pluckhahn and Ethridge 2006).

Boyce (1987:152) concluded that Tuscaroras, at least during the early eighteenth century, were part of an egalitarian society, loosely organized in a regional network of autonomous, but sometimes mutually cooperating village-centric communities, which never approached the political organization of a league or a confederacy (*contra* Cusick 1848 [1828]; Hewitt 1910b).

Byrd (1997:2–5), however, suggested that by the late seventeenth century "…at least some Tuscarora communities were experiencing political centralization that led to the more integrated sociopolitical elements ascribed to early [(i.e., nascent)] chiefdoms…[whereby] the leadership in a single village is able to achieve a degree of control over others." Such internal political developments were undoubtedly manipulated or influenced by colonial officials (Feeley 2007), shaped by the regional escalation of the deerskin-peltry (Byrd 1997) or Indian slave trades (Gallay 2002), and wrought by the diplomatic roles key leaders came to play in negotiations with colonial administrators (*sensu* Lapham 2005). While Boyce (1975, 1987) and Feeley (2007) submitted carefully considered arguments against the notion of any centralized decision making systems among Tuscarora polities during the early Postcontact period, their analyses largely focused on the actions of leaders during the Tuscarora War (1711–1715). It may be, however, that population losses due to sporadic disease epidemics and warfare in the late sixteenth and seventeenth centuries had already led to profound transformations in prewar Tuscarora sociopolitical systems by 1710–1711 (see e.g., Ethridge 2003, 2006, 2009; Kelton 2002, 2007, 2009).

Even though Contact–early Postcontact period Tuscarora, Meherrin and Nottoway societies, were essentially tribal polities in the sense of Haas's (1990) conception (see note no. 14), the Tuscaroras had developed a complex "intermediate society" (Arnold 1996; Byrd 1997:2–5) socially structured within the analytically blurry realm between egalitarian tribes and non-egalitarian chiefdoms (see Lewellen 2003).[15] Based on documentary and ethnographic evidence, as well as Tuscarora oral histories, it appears that Contact–early Postcontact period Tuscarora society was further organized along matrilineal, clan-based kinship lines. Clan mothers and clan chiefs held hereditary, ascribed status positions (Nixon 2000:56–61; Wallace 1952). Given consistent mid-seventeenth and early eighteenth century reports of hereditary Tuscarora "emperors," living at "chief towns" with their "queens," exercising now nebulously understood levels of authority over hereditary "kings" (village headmen or clan chiefs) or lesser "queens," some form of a stratified social structure existed among the Tuscaroras by the mid-1600s (see Bland 1966:13 [1651], Fox 1975:169 [1698]; Lederer 1966:19 [1672]; Yeardley 1911:27 [1654]).[16] Of interest here is John Lawson's (1967:233–239 [1709]) list of Tuscarora words and their English equivalents, where he recorded *Teetha* (Tuscarora) as the approximate equivalent of "A King" (English). Rudes (2002a:Table 3) noted that the literal translation of *Teetha*—in modern Tuscarora, *ratirher*—into English is "man exempt from work." It is difficult to envision the formal cultural recognition and acceptance of such an evocative title, ascribed or achieved, in a supposedly egalitarian society (*sensu* Boyce 1987:152). Landy's (1958) position on these matters merits careful consideration. He suggested that Lower Tuscaroras were in fact well-organized as a politically cohesive polity in the early 1700s:

> …else it is doubtful that their northern kinsmen would have been willing to go to the *extraordinary length* of granting them status, however minor, as a new member [of the Iroquois Confederacy in 1722.]…Had they not possessed some modicum of political unity the Confederacy, or one or more of its member nations, would have absorbed the migrants as individuals or family groups, as they had for other groups previously (Landy 1958:264; emphasis added).

The Meherrin, Nottoway and Tuscarora languages are interrelated Northern Iroquoian languages, but they were not identical historically (Rudes 1981a, 1981b, 1999a, 2000, 2002b).

In the case of the Tuscarora language before ca. 1760–1800, at least two regionally distinct dialects were spoken by the end of the seventeenth century (Rudes 2000, 2002b).[17] Moreover, the Tuscarora and Nottoway languages were probably "not mutually intelligible" historically (Rudes 1981a:45). Since few presumed Meherrin words survive in the historical record, little is known of the now extinct language, but Rudes' (1981b, 1999a) analysis of surviving terms indicate that the Meherrin and Tuscarora languages likely shared more similarities than Nottoway and Tuscarora. The present linguistic evidence is suggestive of at least four discrete Coastal Plain Iroquoian social entities (see below), at least at a macro-level, geographically situated in the northeastern North Carolina-southeastern Virginia region during the protohistoric era.

European explorers, traders and officials undoubtedly discerned coarse-grained linguistic, cultural and sociopolitical differences between the Coastal Plain Iroquoian polities before ca. 1701–1711. Given early Western European perspectives on what constituted a nation, it is not curious that European colonizers simply reported, as "nations," what anthropologists might variously recognize as tribes, chiefdoms, polities, societies or ethnic groups (see Hudson 2002:xix–xx)—see also Crane (2006). Tuscaroras of the late seventeenth–early eighteenth century were habitually considered as people of a single nation by outside observers (see Bland 1966:3 [1651]; Lawson (1967:242 [1709]; Lederer 1966:4 [1672]; Graffenried 1920:276 [1714]; Yeardley 1911:27 [1654]), but jointly, Tuscarora oral histories and linguistic evidence hint at something more nuanced. Tuscarora oral histories (e.g., Cusick 1848; Hewitt 1910b; Johnson 1881) first recorded in the nineteenth century may be problematic because of major mid-to-late eighteenth century social restructurings after Tuscaroras were adopted as the sixth nation of the *Haudenosaunee* Confederacy (Boyce 1978:283; Rudes 1998:2–3). Nonetheless, implications in these histories lead us to suggest that "Tuscarora" is an exonym (external appellation) derived by English speaking colonists to identify what were at least two distinct sociopolitical entities under a collective anglicized designator. David Cusick (1848:33), Tuscarora author, artist and soldier, and J. N. B. Hewitt (1910b:842), Tuscarora ethnologist and linguist, similarly stated that the Tuscarora Nation, when in North Carolina, was a league or confederacy composed of three "tribal constituents." The peoples and polities of this league, perhaps individual tribes in a broad sense (see Haas 1990), likely occupied different sub-regional territories of northeastern North Carolina, loosely circumscribed by the river basin segments they inhabited before and after the regional Contact period.

The exonym, Tuscarora, is closely related to a modern Tuscarora word, *skarure*, likely meaning "hemp [(*Apocynum* sp.)] gatherers" in English (Hewitt 1910b:842; Rudes 1999a:417–418), but alternative translations exist (e.g., Greene 1969). Based on our etic interpretation of the linguistic, oral history and documentary evidence, it is probable that *Skarure* was the endonym (self-appellation) of the Coastal Plain Iroquoians who inhabited the lower Roanoke River basin during the protohistoric era. The *Skarure* were encountered in that specific locality and identified as the "Tuskarood" in 1650 (Bland 1966:3), the "Tuskarorawes" in 1653 (Yeardley 1911:27) or the "Toskiroro's" in 1670 (Lederer 1966:19). The Tuscarora people of the middle Neuse River basin were later reported in Tuscarora oral histories as the *Kau-ta-noh/Kautanohakau* (Cusick 1848:21, 33) or *Katenuaka* (Hewitt 1910b:842). These appellations are all variations of a modern Tuscarora word, *kahtehnu* ("submerged loblolly pine" [Rudes 2000:6]), which was anglicized by eighteenth century observers to identify specifically both the people and the place of Catechna (Hancock's Town) originally situated several miles above the mouth of Contentnea Creek (see Byrd and Heath 2004:Table 5.1). Contentnea Creek is a major tributary, essentially a small river, within the Neuse River basin.[18] The place name Contentnea Creek was also derived by colonial surveyors and cartographers from *kahtehnu*, or a linguistically similar variant; some colonial documents refer to Catechna (Caticee, Conneghta, Cotechney) Creek (e.g., Barnwell 1908:35; Saunders 1968:I–II; Rudes 2000:1, 6) and the Tuscaroras in this locality were sometimes referred to as the "Cotechneys" in documents related to the Tuscarora War period (e.g., Saunders 1968:I–II).[19]

A third Tuscarora "tribe" reported by Hewitt (1910b:842) as the *Akawentcaka*, or more correctly *Akawecaka* (Rudes 1981b:33), was previously listed by Cusick (1848:33) as the *Kauwetseka*; *Akawecaka* apparently defies translation into English (Rudes 1981b:32). Although we initially considered *Akawecaka* as a possible endonym for the Tuscarora people who were settled in the middle Tar-Pamlico River basin in the protohistoric era, this does not seem to be the case. Relying on exonyms provided by Virginia Algonkian guides and interpreters, early English observers apparently failed to report or routinely use the respective endonyms of the Meherrin and Nottoway societies, but Rudes' (1981b:33) subsequent linguistic analysis suggests (*contra* Boyce 1978:283), that *Akawecaka* was probably the protohistoric era endonym of the Meherrins. A modern subjective translation of "Meherrin" into English is, "people of the muddy water" (North Carolina Commission of Indian Affairs 1998; Stephenson 2003). In the case of the Nottoways, James Tresevant later recorded that their endonym was *Cherohakah* (Mithun 1979:140); the translation into English has not been objectively confirmed (Rudes 1981a:27). Virginia colonists, however, ostensibly applied a Coastal Algonkian exonym, *Natowewa* (Nottoway), loosely translating into English as "speaker[s] of a foreign language" or "people of an alien tribe" (Parks and DeMallie 1992:234; citing Goddard 1984).[20]

In the mid-to-late seventeenth century, Meherrin and Nottoway Indian settlements were principally found within the two upper Chowan river basin watersheds that respectively bear their historical tribal names in southeastern Virginia (Binford 1967; Dawdy 1995). At times during the early Postcontact period, both Meherrin and Nottoway settlements extended at least as far north as the upper Blackwater River. By the end of the seventeenth century, however, that portion of the Meherrin population which remained a cohesive independent polity came to occupy sections of the lower Chowan River basin in North Carolina. Successively establishing and abandoning at least three villages in Virginia (upper Meherrin River drainage) between ca. 1660 and 1692, most Meherrins removed to the Parker's Ferry-Potecasi Creek locality (31HF1)—"Meherrin Neck"—east of Murfreesboro, North Carolina (Binford 1964; Dawdy 1994; Stanard 1900a, 1900b). The travails and often wholesale population movements of Meherrin and Nottoway peoples during and after the mid-1600s are discussed and summarized in varying degrees of detail in several sources (Binford 1967, 1991; Boyce 1978; Dawdy 1994, 1995; Rountree 1979, 1987, 2002; Smith 1971), but comprehensive historical anthropological treatments of these Coastal Plain Iroquoian groups are needed.

As noted, there were at least two regionally distinct dialects of the Tuscarora language historically (Rudes 2000, 2002b), and the peoples who spoke these dialects operated within more-or-less independent polities during the Tuscarora War. Assessments of historically reported political differences (see Graffenried 1968 [1714], 1920 [1714]; Parramore 1982; Saunders 1968:I–II), and the more recent unequivocal linguistic analysis (Rudes 2000, 2002b), supports the hypothesis that Tuscaroras of the early eighteenth century were essentially divided along sociopolitical and linguistic lines into two macro-polities of a sort, the Upper Tuscaroras and the Lower Tuscaroras. By 1711–1712, King Tom Blunt and King Hancock respectively attempted to forge, or perhaps reforge, these communities into nascent chiefdoms (Byrd 1997:2–

5), with King Blunt asserting some degree of leadership over several Tar-Pamlico and Roanoke river towns of the Upper Tuscaroras, the *Skarure*.[21] To some extent, King Hancock exercised influence over the Contentnea Creek towns of the Lower Tuscaroras, the *Kahtehnu*, but his apparent efforts to rise above a hereditary status as the chiefly leader of Catechna ended with his capture and abrupt execution as a principal of the anti-colonial faction in November–December 1712 (Saunders 1968:I:890–891).

In the first months of the Tuscarora War, King Hancock ostensibly directed warriors of an anti-colonial alliance—Lower Tuscaroras and warriors from several Carolina Algonkian and Coastal Plain Siouan polities—in concerted attacks on colonial plantations and villages in the lower Tar-Pamlico and lower Neuse river basins (Feeley 2007; Lee 1963; Parramore 1982; Paschal 1953).[22] It is important to note, however, that most Lower Tuscarora communities, save for Catechna, eventually broke away from the multiethnic alliance to seek a diplomatic end to hostilities. After decisively delivering what was likely considered a disciplinary or corrective action (*sensu* Gleach 1997) to the impertinent and sometimes abusive colonists in the Tuscarora borderlands, most warring Lower Tuscaroras entered into diplomatic negotiations to end the war (see also Feeley 2007). The notion of a corrective action follows Parramore's (1980:11; emphasis in original) observation, "It was the English who remained at the pleasure of the Tuscaroras, and not *vice versa*," at least until 1713. While Catechna and some allied non-Tuscarora communities remained at war, the breakaway Lower Tuscarora communities, despite three treaties (Barnwell 1908; McIlwaine 1925; John Devereux Papers 1712–1892) superficially brokered by colonial officials, were attacked, re-attacked and dispersed by colonial forces between 1711 and 1715.

Largely due to the leadership, or perhaps overt political coercion of King Blunt and his supporters, the Upper Tuscarora communities remained at times ambivalently neutral, or at other times allied in nebulous fashion with the Carolina and Virginia colonies. The ambivalence exhibited by Blunt and the Upper Tuscaroras during the war, at least in terms of willingly and persistently attacking Lower Tuscaroras, possibly relates to a social fact that like other Northern Iroquoian groups, clan memberships among Tuscarora peoples often cut across different regional communities (Nixon 2000:56–59). Rewarded for efforts directed at keeping Upper Tuscarora warriors from campaigning *en masse* against the colonials, administrators of the North Carolina and Virginia colonies officially recognized Blunt as "King of the Tuscaroras" (Saunders 1968:II:37–38) shortly after the crushing Lower Tuscarora defeat at the Neoheroka Fort (March 23, 1713 [Barnwell 1909]). Upper and Lower Tuscarora peoples who refused to recognize Blunt's authority were deemed enemies of the English colonies and henceforth, legitimate targets for slavers or scalp bounty hunters (Boyce 1987; Feeley 2007; Paschal 1953).

Compounding the complexities of any retrospective understanding of early Postcontact period Tuscarora social identities or sociopolitical organization is the issue of coalescence (*sensu* Kowalewski 2006). By the mid-1670s, the Upper and Lower Tuscaroras had strategically positioned themselves as trade middlemen and predatory slavers within the colonial world system (Barnwell 1908:35; Ethridge 2009:34–35; Gallay 2002; Lawson 1967:64, 225, 232–233 [1709]; Parramore 1982).[23] The negative impacts of Old World disease epidemics on the greater Tuscarora population increased with the permanent settlement of the Carolina Tidewater in the mid-seventeenth century (Parramore 1982; Thornton 2004; Wood 1989), but the full extent of such impacts is poorly understood (see e.g., Kelton 2007, 2009). With the rapid fluorescence of the Indian slave trade after the founding of Charles Town, South Carolina in 1670 (Gallay 2002), regional Indian population losses gradually mounted, irrespective of community or nation. By the early 1700s, the Carolina Algonkian population in the Tidewater region was dramatically reduced from disease, slaving and warfare (Feest 1978a; Gallay 2002; Lawson 1967:232; Thornton 2004; Wood 1989). Assessments of ethnohistorical and archaeological data, however, suggest that the total Upper and Lower Tuscarora population was still regionally formidable in the early 1700s, probably on the order of 6,000–8,000 persons, but market slaving and intertribal captive raiding losses increased throughout this perilous period.[24]

The societal breakdowns experienced by multiple Carolina-Virginia Indian polities during the Third Anglo-Powhatan (1644–1646), Bacon's Rebellion (1675–1676), Chowanoke (1675–1677), and Coree (Coree-Nynee [Coranine]) (1706–1708) wars (see e.g., Lee 1963; Saunders 1968) led the remnants of some shattered or intensively pressured groups to seek protection among Upper or Lower Tuscaroras, Meherrins and Nottoways. Some groups sought mutual alliances, but others may have been indirectly coerced, coalescing to avoid population predation at the hands of wide ranging Tuscarora slavers. Responding to life within a shatter zone (*sensu* Ethridge 2009), Upper and Lower Tuscaroras, albeit with their own historically contingent distinctions on the pattern, followed the respective and strategic paths of the Westos, Occaneechis, Yamasees and Catawbas, groups which waxed and waned as militaristic slaving societies, ca. 1650–1725 (Ethridge 2003, 2006, 2009; Gallay 2002; Heath 2004). Meherrin and Weyanoke splinter bands or town units, originally occupying sections of present-day southeastern Virginia in the Contact period, variously relocated near Upper Tuscarora settlements (Binford 1967; Stanard 1897), while Coree (Core, Coranine, Waccon, Woccon) and Sissipahaw (Saxapahaw) splinter groups resettled near Lower Tuscarora communities (Barnwell 1908; Graffenried 1920 [1714]; Lawson 1967:xxxviii; 1708 Lawson map) at different times. Pressured by colonial encroachment, we suspect that the people of some Coree communities fled their Tidewater towns in the aftermath of the scantily documented Coree War to their ca. 1708–1713 settlement locations reported or mapped by several observers (Barnwell 1908; Graffenried 1920 [1714]; Lawson 1967 [1709]; Parramore 1987:119; ca. 1716 Graffenried map). These ethnolinguistically diverse groups were primarily seeking protection from hostile colonists, *Haudenosaunee* Confederacy raiders, marauding English and Indian slavers, or from the Tuscaroras themselves. With the exception of the Meherrins and presumably the Corees, it seems that the Upper and Lower Tuscaroras eventually turned on their hapless allies, in due course driving the Weyanokes back into southern Virginia (Binford 1967) and the Sissipahaws, first to Waccamaw towns near Cape Fear (Barnwell 1908), and later to Catawba towns in South Carolina (Merrell 1989). In 1711, Francis Le Jau, an Anglican missionary, understood the Tuscaroras to be composed of multiple "nations" (Klingberg 1956:161), perhaps recognizing a Tuscarora League structure (*sensu* Cusick 1848; Hewitt 1910b), but Le Jau's observation may refer to a Postcontact period coalescence process that is not well understood historically.

CORROBORATION, REINTERPRETATION AND REDIRECTION

Since the early 1980s, regional archaeological survey and site investigation results, extant collections analyses and ethnohistorical studies collectively contribute to an expansion of historical and anthropological knowledge relevant to Cashie phase culture history.[25] We note, however, that relatively few sites with notable Contact–Postcontact period Cashie phase occupations have been intensively investigated to date. Research results associated with excavations at the 1712–1713 Neoheroka Fort (31GR4) (Byrd et al. 2009; Heath and Phelps 1998), Mabrey Bridge (31ED333) (Bamann 2006), Contentnea Creek (31WL37) (Millis 2001, 2003, 2009), Maple Branch (31BF340) (Tippett et al. 2009) and 31GR118/31GR206 (Webb and Olson 2010) sites are, however, especially significant (Figure 10-1).[26] Salvage investigations at other sites (31BR91, 44SN65) with relevant Cashie phase occupations (Mathis 1990; Phelps 2008; Phelps and Jones 1996), and research specific, county or multi-county watershed surveys (Beaman 2008; Byrd 1996; Byrd and Heath 1997; Swindell 1999) contribute as well. Original analyses or reassessments of datasets from earlier Coastal Plain survey and site excavation projects, ca. 1950–1985 (e.g., Binford 1964; Byrd 1995, 1996, 1997; Crawford 1966; Heath 2003; Hutchinson 2002; Phelps 1980a), further supplement our discussion. Our geographic focus is North Carolina's northern Inner Coastal Plain, but ancient social boundaries, ephemeral as they are archaeologically, rarely coincide with modern political boundaries. As such, we briefly touch on Virginia sites data as they might relate to Precontact or early Postcontact period Meherrin site occupations in the Upper Chowan River basin. In some instances, recent excavation results or data reassessments, answer old questions (e.g., Phelps (1983:43–47, 50–51), but in other instances, recent investigations raise questions and interpretive conundrums well beyond the scope of this chapter.

Tuscarora and Meherrin Archaeological Connections

Demonstrating relationships between ancient or protohistoric era, ethnolinguistically defined groups and material or behavioral patterns in the archaeological record are admittedly problematic, and in many cases impossible. Terrell (2001a:7; emphasis added) noted, "Language, culture and biology *always* vary independently of one another *except* under specific circumstances." Numerous ethnographic and archaeological studies consider or demonstrate the futility of analysts' attempts at making social identity–material life connections in many contexts (e.g., Deitler and Herbich 1994; Derks and Roymans 2009; Shennan 1994; Stark 1998; Terrell 2001a). There are, however, notable ethnographic and archaeological studies which ably validate the potential for identifying social identity–material life interrelationships in some historically informed contexts, particularly in the case of non-state societies (e.g., Bowser 2000; Derks and Roymans 2009; Foster 2004; Gosselain 1998, 2000; Johnson et al. 2008; Stark 1998).[27] As Evison (2001:175) pointed out, "…there is no fundamental reason why a fixed set of gene frequencies, language and cultural traits must be transmitted together from one generation to the next in any community. Equally, however, there is no reason why they should not. It depends on history."

In retrospect, Phelps's (1977, 1980b, 1983) proposed relationship between historically documented Coastal Plain Iroquoians in eastern North Carolina, or southeastern Virginia, and the archaeological culture represented by the Cashie phase was not well rooted in a rigorous application of the Direct Historical Approach (Steward 1942).[28] Prior to Phelps's investigations, however, Binford (1964, 1965) attempted to tackle the problem of identifying archaeologically, among other regional indigenous settlements, historically known Meherrin and Nottoway towns in the Meherrin and Nottoway river watersheds (Chowan River basin, North Carolina and Virginia), and within the Ahoskie Swamp locale in Hertford County (North Carolina).[29] Binford (1964) specifically approached his fieldwork from the perspective of the Direct Historical Approach, but interpretations of the resulting archaeological dataset were constrained by a lack of both chronological and systematic excavation data associated with the recovered ceramics and other contextually associated artifacts. Deriving from his ceramic seriation results, which he compared against existing regional typologies (Coe 1952, Evans 1955, Haag 1958, Schmitt

1952), Binford (1964) proposed that the producers of his Branchville series ceramics were protohistoric era Meherrin and Nottoway Indians.[30] He further noted that Branchville simple-stamped ceramics from early Postcontact period Meherrin settlement sites were essentially synonymous with a collection of simple-stamped sherds, presumed early eighteenth century Lower Tuscarora pottery, previously collected by John W. Witthoft and Margaret C. Blaker from the Neoheroka Fort site locality (31GR1, 31GR4) in 1951 (Binford 1964:416).[31] In retrospect, the Branchville series simple-stamped, plain and fabric-impressed types, as originally described by Binford (1964), are essentially synonymous with Phelps's (1983) equivalent Cashie series types, and we analytically subsume these specific Branchville types within the Cashie series.[32]

Research by Haag (1958), Binford (1964) and Coe (1964), as well as Crawford (1966) to some extent, collectively provided the initial foundation for the northern Coastal Plain cultural sequence later proposed by Phelps (1983:Figure 1.2). Phelps's subsequent watershed surveys (e.g., 1978, 1981, 1982a, 1982b) and site excavations (e.g., 1977, 1980a, 1982c, 1984a, 1984b), however, yielded more archaeologically comprehensive datasets crucial to the construction of his hypothesized regional and subregional phase models (Phelps 1980b, 1983). Based on the results of Binford's (1964) and Phelps's (1983) independent investigations, a provisional link between Cashie phase material manifestations and Tuscarora or Meherrin peoples historically documented in the early Postcontact period remained a viable working assumption through the 1980s. Integrating earlier archaeological datasets with more recent site excavation and watershed survey or analysis results (Byrd 1996; Byrd and Heath 1997; Byrd et al. 2009; Dawdy 1994; Heath 2002; MacCord 1993; Millis 2001; Swindell 1999), a relationship between the material life and adaptive strategies of the protohistoric era Tuscarora and Meherrin peoples with the Cashie phase archaeological culture is reasonably established.[33]

Interpretations of archaeological datasets from the middle James River basin in Virginia, however, suggest the possibility, at least in terms of ceramic series but not well defined phases per se, that some Virginia Algonkian groups within the Powhatan chiefdom were also producing "Cashie-like" ceramics during the protohistoric era (e.g., Mouer 1985; Turner 1992, 1993, 2004). Recognizing two shared attributes (i.e., lithic tempering and simple-stamping) between the Branchville (Binford 1964), Cashie (Phelps 1977, 1983) and Gaston (Coe 1964; South 1959) series, several investigators subsumed such ceramics—largely in the absence of systematic comparative study (see e.g., Mouer 1985:6, 8)—as "Gaston-Cashie" or "Gaston" wares. Gaston wares, so-defined, retroactively subsume simple-stamped Branchville, Cashie, Gaston and Sturgeon Head, as well as Albemarle and Stony Creek (*sensu* Evans 1955), ceramics under a collective typological construct (see Virginia Department of Historic Resources [VDHR] 2009). We hesitate to explore this problem, not having conducted a hands-on comparative study, but discussions on the purported relationship between Cashie and Gaston ceramics figure prominently in the Virginia literature.

While Phelps (1983:44) considered the Gaston simple-stamped type as "equivalent" to the Cashie simple-stamped type (but see Phelps and Heath 1998:1–2), notable stylistic differences between the two series may be more culturally significant than the congruence of certain shared attributes. Nevertheless, some Gaston phase traits, at least based on South's (1959, 2005) work, are similar to those of the coeval Cashie phase (palisaded villages, primary and secondary burial practices), and the Gaston site locality is on the extreme western edge of the known Cashie phase sites distribution (Figure 10-1). Although Gaston series ceramics from sites 31HX7 (Gaston site) and 31HX8 (Thelma site), painstakingly described and gratifyingly illustrated by South (2005:28–35), share some attributes with Cashie series ceramics from Coastal Plain contexts, marked differences between the series are sufficient to support their continued typological segregation. In North Carolina, the spatial distribution of Gaston series ceramics seems to be limited to the Fall Line zone of the Roanoke River basin (Bamann et al. 2008; Coe 1964; R. P. Stephen Davis, personal communication 2009; South 1959, 2005). Phelps (1983:44) originally stated, "The Gaston Simple Stamped type (Coe 1964:105–106) is equivalent to Cashie Simple Stamped, but the latter's late temporal position and existence as the sole type in the Gaston series raises many questions." This assertion, with Phelps' nebulous caveat, presumably contributed to the rationale behind the "Gaston-Cashie ware" construct (Turner 1992, 1993, 2004), more recently redesignated as "Gaston ware" (VDHR 2009).

Gaston series attributes, as originally described by South (1959, 2005), and Cashie I and II series attributes (see below) overlap in the sense that most vessels analytically included within both series are often carved-paddle simple-stamped on their exterior surfaces, and folded rims with long flap folds are common. Some basic decorative treatments overlap as well, but multiple decorative treatments and incising motifs found on Gaston series ceramics recovered from the Gaston and Thelma sites (South 1959, 2005), are not reported for Cashie series ceramics (see e.g., Bamann 2006; Millis 2001; Heath 2002; Phelps and Heath 1998; Phelps 1983; Tippett et al. 2009). Shared decorative treatments include solid or hollow tool punctations and simple line incising, but the fingernail punctated lips, notched lips or rim edges and the more elaborate incised designs reported for the Gaston series (South 2005:31–35) have not been similarly encountered in Cashie series assemblages we have evaluated. Some Gaston series incising motifs are similar to those found on Cashie series vessels, but several designs illustrated by South (2005:Plate 6 and Figures 3–4) have not been observed in Cashie series assemblages from eastern North Carolina sites. South's (2005:30) observation that Gaston series ceramics share numerous stylistic treatments with Dan River series ceramics is highly significant since most of the above referenced decorative treatments, as well as crushed quartz-tempering (South 2005:28), are not shared with Cashie series ceramics. Given these observations, the "Gaston-Cashie"/"Gaston ware" typological umbrella is of nebulous analytical value; "similarities" between Cashie and Gaston series ceramics do not constitute "sameness." Future systematic analyses will be required to address the relationships (or non-relationships) between Cashie, Gaston and other similarly described ceramic series (e.g., Santee [Anderson et al. 1982; Cable 2002], Sturgeon Head [Smith 1984]), their respective archaeological contexts, associated phases, and possibly the social identities of their producers.

Cashie Phase Chronology and Subphases

In a broadly conceived cultural chronology, the temporal position of the Cashie phase falls within the regional Late Woodland–Contact (A.D. 800–1650) and early Postcontact (A.D. 1650–1725) periods, but the genesis of the phase was likely some four centuries later than the ca. A.D. 800 inception date proposed by Phelps (1983:17, 43). The regional emergence of Cashie phase archaeological manifestations varied over space and time across the Inner Coastal Plain regions of northeastern North Carolina and southeastern Virginia, but currently available radiometric data allow for no more than rough generalization at this time. Assessing archaeologically and historically recognized cultural changes, we presently subdivide the Cashie phase into three subphases (Table 10-1): Cashie I (A.D.1200–1650); Cashie II (A.D.1650–1717); Cashie III (A.D. 1717–1803). This scheme is a modified version of that first proposed by Phelps and Heath (1998) and future research will certainly lead to further refinements, particularly with the provisional Cashie III subphase, which presently covers the entire post-Tuscarora War, Tuscarora and Meherrin reservation periods.

In the decades after the Tuscarora War, most remaining North Carolina Tuscaroras ceded their prewar lands and lived within the limits of the Bertie County reservation known as "Indian Woods." Portions of this tract were leased or sold over the course of several decades and the regional Tuscarora population gradually diminished as some groups diverged and resettled among the *Haudenosaunee* or in other colonies. The last cohesive group of Tuscaroras living at Indian Woods abandoned the reservation and immigrated to New York in June 1803 (Boyce 1978, 1987; Feeley 2007; Landy 1978; Paschal 1953).[34] Although Meherrins were initially assigned a reservation by Virginia's colonial authorities in 1705, a reservation tract at the confluence of the Blackwater, Meherrin and Nottoway rivers was located in what is now North Carolina. After the decades-long boundary dispute between the two colonies was resolved (see Boyd 1929), North Carolina's colonial administrators first reduced the Meherrin Reservation area in 1726, but shortly thereafter, shifted and expanded its boundaries in 1729 (Dawdy 1995:411; 1705–1729 reservations map). Despite the "official" reserve bounds at Meherrin Neck, Meherrins struggled to hold their lands against inexorable colonial encroachment, eventually abandoning their town and resettling in dispersed communities in-and-around the Meherrin Neck and Ahoskie Swamp localities. During the American Revolution, local rebels illegally seized reservation lands, but officials with the State of North Carolina later refused to recognize the Meherrin Nation or the reservation as legal entities after the war (Boyce 1978; Dawdy 1994, 1995).

A modest array of radiocarbon dates associated with Cashie phase occupation features at archaeological sites distributed southward from the upper Chowan River basin in southeastern Virginia to the middle Neuse River basin in northeastern North Carolina have been sporadically accumulated since the 1970s (Table 10-2 and Figure 10-2). Contrary to past Cashie phase chronologies (see e.g., Byrd and Heath 2004; Phelps 1983:Figure 1.2; Phelps and Heath 1998; Ward and Davis 1999:Figure 1.5), the radiocarbon dates we believe best associated with Cashie I subphase occupations, namely assays of carbonized botanical matter recovered from reasonably firm contexts (Table 10-2), range from cal intercept A.D. 1240 to cal intercept A.D. 1640. Cashie II–III subphase calendric dates (post-1650) for historically reported Upper and Lower Tuscarora or Meherrin settlements vary between and within the major river basins, and are contingent upon socially transformative processes initiated after the sustained European colonization of eastern North America (see Binford 1991; Boyce 1987; Dawdy 1995; Edwards 1999; Feeley 2007; Paschal 1953; Parramore 1982; Rountree 1987).

At present, we consider the radiocarbon data included in Table 10-2 as contextually valid for Cashie phase occupations at the sites indicated. We have eliminated other previously published dates where we, after a judicious review of the respective proveniences, retrospectively consider the carbon sample contexts too problematic, and the associated radiocarbon assay dates invalid for the Cashie phase.[35] While the calibrated intercept dates included in Table 10-2 are not precise measures of time, radiometric data from acceptable contexts suggest to us that Cashie I subphase occupations in eastern North Carolina do not predate ca. 1200.[36] Phelps (1983, 1995) considered the 1000 ± 70 B.P. date—cal intercept A.D. 1022—for Thorpe site Feature 137 as the earliest valid Cashie phase radiometric date (Eastman 1994b:36). We note, however, that Feature 137 contained no Cashie series ceramics. The only temporally diagnostic artifacts recovered from Feature 137 were Small Roanoke type projectile points and Middle-to-early Late Woodland period, Clements series pottery sherds (Phelps 1980a:72). Occurrences of Small Roanoke type points are also well associated with both late Middle Woodland and early Late Woodland period Clements and Mount Pleasant phase

Table 10-1. Ceramic types.

Date	Period	Phase	Sub-phase	Ceramic Types	Comments
AD 1803 AD 1717	Late Postcontact	Cashie	Cashie III	Cashie Simple-Stamped Cashie Plain Courtland plain Euro-American ceramics	Continued social transformations and dramatic reduction of former territories. Gradual, but dramatic reduction of North Carolina Tuscarora population with repeated out-migrations through 1803. Some social coalescence with remaining Tidewater and northeastern Piedmont Indian bands. Cashie series ceramics continue to be produced early in the sub-phase (terminal date unknown). Pre-1750 Meherrin associated artifact assemblages also include Courtland ceramics. Most North Carolina Tuscaroras consolidate at the Indian Woods Reservation in 1717; Tuscarora Reservation period ends in 1803. Meherrin Reservation at Meherrin Neck reduced in area (1726) and later expanded (1729); Meherrin Reservation period ends ca. 1770. Key sites: Indian Woods Reservation (Bertie County), Parker's Ferry (31HF1).
AD 1650	Early Postcontact		Cashie II	Cashie Simple Stamped Cashie Fabric Impressed Cashie Plain Courtland plain (Meherrin)	Period of initial modern world-system incorporation. Population decrease and significant social transformations. Intensification of Indian-European deerskin-peltry trade and Indian slave trade. Tuscarora War (1711–1715) and loss of Lower Tuscarora lands, ca. 1713. Meherrins gradually move southward, resettling abandoned Chowanoke lands, ca. 1677–1692. Generalized regional use of European-origin trade goods. Settlement patterns similar to previous subphase, but with addition of fortifications near dispersed settlements for communal defense during Tuscarora War. Primary inhumation mortuary practices (no known ossuaries). Simple-stamping becomes dominant Cashie series type, while fabric-impressing declines and disappears in some localities. Reduction in vessel form diversity; incised or punctated vessels rare. Meherrin sites assemblages include some Courtland ceramics. Key sites: Neoheroka Fort (31GR4), Contentnea Creek (31WL37), Mount Pleasant (31HF20B), Parker's Ferry (31HF1), John Green (44GV1).
AD 1200	Contact Late Woodland		Cashie I	Cashie Fabric Impressed Cashie Simple Stamped Cashie Plain Devil's Gut (Roanoke Basin)	Precontact–Contact period regional development of Tuscarora and Meherrin societies. Palisaded villages (Roanoke Basin), dispersed communities (Neuse Basin), fall-winter hunting-nut processing camps, seasonal fishing-shellfishing camps. Secondary inhumation mortuary practices (bundle burial ossuaries) common, but some primary inhumations. Cashie series ceramic assemblages with fabric-impressed (rarely decorated), simple-stamped and plain (often decorated with punctations around rim/neck) types. Simple incised line designs, generally on rim/neck, infrequent on all types and fully incised vessels very rare. Full range of vessel forms (beakers, bowls, handled dippers, restricted jars, unrestricted pots, pouring vessels ("gravy bowls"). Devil's Gut series ceramics, ca. 1400–1500, in Roanoke Basin assemblages (temperless/fine-sand tempered pastes) with plain or burnished bowl and unrestricted pot forms. Key sites: Jordan's Landing (31BR7), San Souci East (31BR5), Thorpe (31NS3b), Ellis A/B (44SN24/65).

Table 10-2. Radiocarbon Dates associated with Cashie I and Cashie II subphase features or burials.[a]

Lab Number	Site Name	Site Number	Provenience (Material)	River Basin (Drainage)	Conventional C14 Age B.P.	Intercept Cal A.D.	2 Sigma Cal A.D.	Reference(s)
Beta-76688	Ellis B Site	44SN65	Burial 1 (human bone)[b]	Meherrin	500±50	1425	1319–1351 (16%) 1390–1455 (84%)	Phelps 2008; Phelps and Heath 1998
Beta-73742	Jordan's Landing	31BR7	Feature 41 (wood charcoal)	Roanoke	720±60	1280	1214–1321 (80%) 1349–1391 (20%)	Phelps and Heath 1998
UGa-1086	Jordan's Landing	31BR7	Feature 21 (wood charcoal)	Roanoke	525±70	1420	1292–1468 (100%)	Phelps 1983; Eastman 1994a, 1994b
UGa-3143	Thorpe	31NS3b	Feature 135 (hickory nutshell)	Tar	800±65	1240	1047–1088 (8%) 1122–1139 (2%) 1149–1292 (90%)	Phelps 1980a, 1983; Eastman 1994a, 1994b
Beta-178119	Mabry Bridge	31ED333	Feature 32B Zone IB (hickory nutshell)	Tar (Fishing Cr.)	510±30	1420	1399–1443 (100%)	Bamann et al. 2006
Beta-178118	Mabry Bridge	31ED333	Feature 32A Zone IA (hickory nutshell)	Tar (Fishing Cr.)	290±60	1640	1450–1679 (92%) 1764–1773 (1%) 1776–1800 (5%)	Bamann et al. 2006
UGa-R03432[c]	Nooherooka Road	31GR206	Feature 6 (wood charcoal)	Neuse (Contentnea Cr.)	424±36	1450	1426–1512 (93%) 1601–1616 (7%)	Webb and Olson 2010
Beta-132253	Contentnea Creek	31WL37	Feature 1715 Zone B (wood charcoal)	Neuse (Contentnea Cr.)	300±50	1640	1453–1667 (97%) 1782–1797 (3%)	Millis 2001, 2003
Beta-136679	Contentnea Creek	31WL37	Feature 324 (wood charcoal)	Neuse (Contentnea Cr.)	210±70	1665	1494–1509 (1%) 1511–1601 (11%) 1615–1953 (88%)	Millis 2001, 2003

[a]Recalibration of carbon sample assays was performed using the program Oxcal, v4.1 (Bronk Ramsey 2009), against the IntCal04 atmospheric curve (Reimer et al. 2004), using the maximum intercept method (Stuiver and Reimer 1986), with a resolution of two and then rounded. Date ranges depicted diagrammatically in Figure 2 are more accurate representations in that they represent a samples probability distribution along the calibration curve.
[b]"Permission to use human bone for analysis was unanimously granted by the Meherrin Tribal Council in 1993" (Phelps 2008:2).
[c]This "recent" (2008) assay was recalibrated to maintain resolution and curve consistency within this specific dataset.

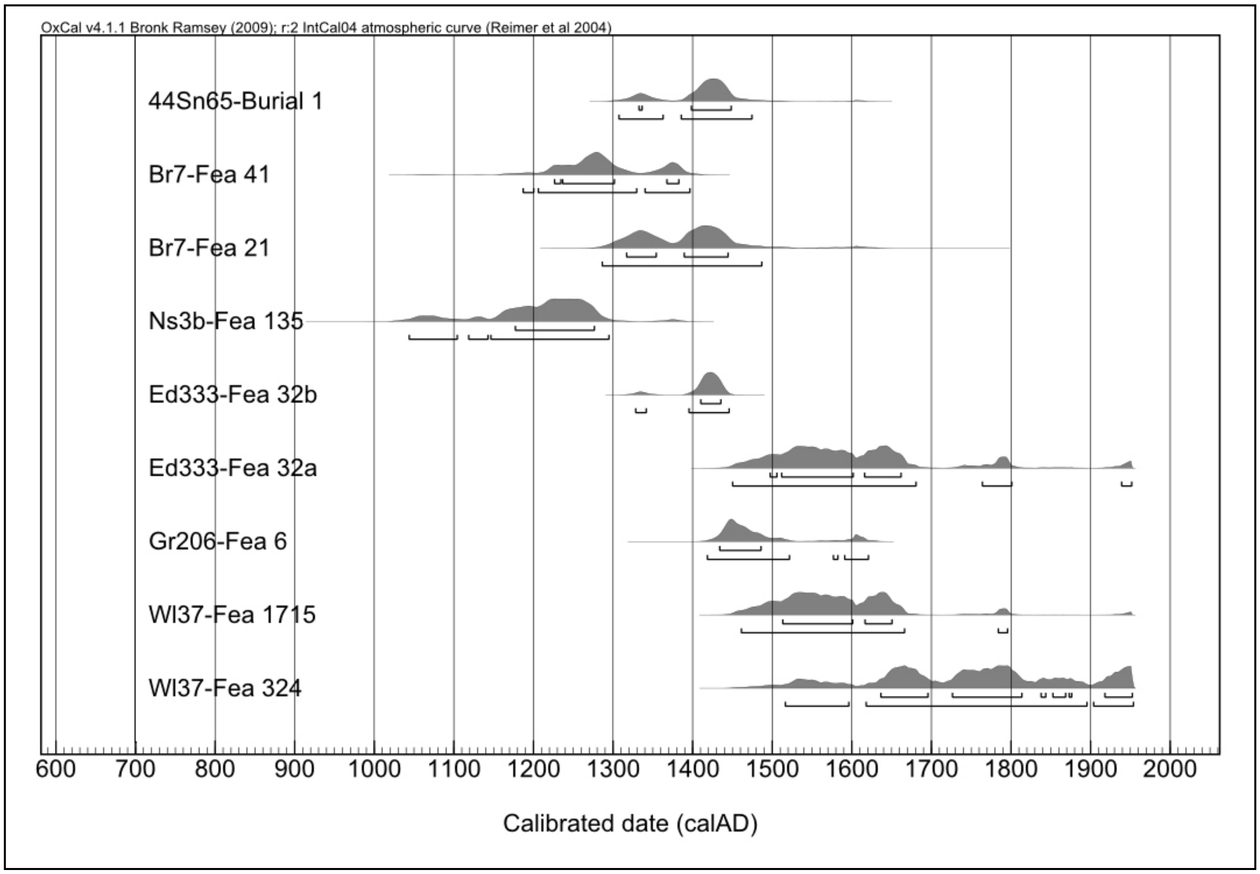


Figure 10-2. Radiocarbon probability curves for recalibrated Cashie phase dates included in Table 2. Samples are grouped in relation to their respective river basin contexts.

artifact assemblages and burials (see Bamann 2006; Heath 2003; Millis 2003, 2009; Phelps 1983; South 1959, 2005). As such, we believe that the small triangular points recovered from Feature 137 were not contextually or temporally related to Cashie I occupations at site 31NS3b.[37]

The earliest calibrated intercept dates associated with Cashie I subphase occupations in the lower Roanoke and middle Tar-Pamlico river basins are roughly contemporaneous, respectively cal intercept A.D. 1280 and 1240 (Table 10-2). The Table 10-2 data suggest to us that Cashie I occupations initially occurred around and after ca. A.D. 1200 in the Roanoke and Tar-Pamlico river basins. Cashie I occupations potentially occurred much later, around and after ca. 1450, in the middle Neuse River basin.[38] Radiocarbon data associated with a Cashie phase ossuary in southeastern Virginia are limited to a human bone assay from the Ellis B site (44SN65), which is located on the Meherrin River (Phelps 2008; Phelps and Heath 1998) (Figure 10-1). It is difficult to address when ancestral Meherrins first settled in the upper Chowan River basin, but it was presumably as early as ca. 1400–1450, assuming that the single absolute date for Burial 1 at site 44SN65 is a reasonable measure.[39] Calibrated intercept date ranges for Cashie I–II subphase features spatially distributed by state and river basin from north-to-south are:

Virginia—Chowan River basin:	cal intercept A.D. 1425
North Carolina—Roanoke River basin:	cal intercept A.D. 1280–1420

North Carolina—Tar-Pamlico River basin:	cal intercept A.D. 1240–1640
North Carolina—Neuse River basin:	cal intercept A.D. 1450–1665

Since the Lower Tuscarora dialect distinctly differed from the Upper Tuscarora dialect (Rudes 2000, 2002b), there may have been multiple proto- or ancestral Tuscarora migration events. This is a reasonable processual expectation given highly varied migration or colonization processes reported cross-culturally in Rockman and Steele (2003), but dialect differentiation may or may not signal population migration breaks (Potter 1994:3).[40] Perhaps the earliest ancestral Tuscaroras first settled in the lower Roanoke and middle Tar-Pamlico River basins, ca. 1200, and much later expanded *permanent* settlements into the Contentnea Creek watershed or middle Neuse River basin locality in the mid-to-late fifteenth century. Of interest here is Rudes' (2002b:11) conclusion that the Upper Tuscarora dialect is the older of the two seventeenth–eighteenth century Tuscarora language dialects; the Lower Tuscarora dialect being relatively more recent. Similarities between Cashie I subphase lifeways, both material culture and behavioral adaptations, in the historically known Upper and Lower Tuscarora localities do suggest robust social connections through time, ca. 1200–1650. Some material culture variation (see below), as well as known political differences between the two localities, ca. 1650–1715, however, may be indicative of sociocultural differences further manifested by the historically known linguistic variance (see below).

The hypothesized later arrival of ancestral Lower Tuscaroras in the middle Neuse River basin is further supported by archaeological data from the Contentnea Creek site (31WL37) where Millis (2003, 2009) reported on pre-Cashie phase site occupations, ca. 1300–1400, materially associated with her Untyped Series 1 and Untyped Series 2 ceramics. Millis's (2003, 2009) Untyped Series 1 and Untyped Series 2 ceramics share more stylistic characteristics with the site's earlier dated, Mount Pleasant phase ceramic assemblage than with contemporaneous extra-local (i.e., Roanoke River basin, Tar-Pamlico River basin) Cashie I subphase ceramics, or protohistoric era Cashie I–II subphase ceramics from the Contentnea Creek watershed. Ceramics reportedly similar to Millis's (2003, 2009) two untyped series were also recovered through burial salvage excavations at the Kearney site (31GR84) in 1992, which is also located in the upper Contentnea Creek watershed. Phelps (David S. Phelps, personal communication 2008) recognized sand-tempered ceramics, an engraved shell gorget, a tubular stone pipe and burial patterns at the Kearney site that were not within the range of variation expected for either northern Coastal Plain, Mount Pleasant or Cashie phase mortuary patterns. Based on his preliminary data assessment, Phelps suggested the possibility of a Precontact period, Coastal Plain "Siouan site with a later Tuscarora overlay" (Faris 1992:14). Since no formal comparative analyses have been undertaken, systematically comparing and contrasting the site 31GR84 and site 31WL37 datasets against protohistoric era Carolina Siouan sites data from the neighboring Piedmont province (e.g., Dickens et al. 1987; Ward and Davis 1993, 1999), or the lower Cape Fear River basin (e.g., Wetmore 1978), Phelps's hypothesis regarding the patterns observed at site 31GR84 remains testable.

In our estimation, the constellation of Cashie I subphase cultural traits (e.g., bundle burial ossuaries, palisaded villages, Cashie series simple-stamped pottery) that emerged in the lower Roanoke River basin by A.D. 1200 appear to be a temporally and culturally related aggregation of regionally intrusive practices. Similarities in ceramic temper material and interior finishing treatments shared between Cashie series ceramics and some early Late Woodland Mount Pleasant phase assemblages—Green's (1986) provisional Liberty Hill series—have been submitted as evidence for an in situ, "Proto-Cashie" phase development (Bamann 2006; Green 1986; Millis 2001). Such interpretations, however, ignore other significant stylistic attributes that Cashie series ceramics do not generally share with earlier or later coeval regional ceramic types.[41] Concomitant behavioral patterns associated with the Cashie I subphase, further include regionally distinctive settlement (Byrd 1995, 1996; Byrd and Heath 2004) and mortuary (Heath 2003; Hutchinson 2002; Phelps 1983) pattern differences, which are collectively indicative of culturally differential subsistence or settlement systems and ritual practices that did not simply develop out of the *more geographically broader* Mount Pleasant phase tradition.[42]

Coastal Plain Iroquoian Origins

Given the probable relationship between the Cashie phase archaeological culture and Tuscarora and Meherrin peoples portrayed in historical documents, one has to consider ancient connections between the Coastal Plain Iroquoians and other Iroquoian language groups once disjointedly distributed across the Eastern Woodlands from present-day southeastern Canada to northwestern Georgia (see e.g., Byrd 1998; Fogelson 2004; Trigger 1978; Whyte 2007). Although other long term social processes might account for these Contact-to-early Postcontact period ethnolinguistic distributions, Byrd (1998:2) astutely observed, "The quilt-like appearance of the language map indicates that migrations have been an important part of the histories of many eastern tribes."[43] It is probable that the genesis of the Cashie phase in northeastern North Carolina corresponded with presumed core population splinterings and chronologically punctuated out-migrations of ancient, Proto-Iroquoian speaking peoples from a Proto-Iroquois core region somewhere in the Eastern Woodlands (see e.g. Kerber 2007; Martin 2008; Whyte 2007).[44]

Snow (1995a, 1995b, 1996) proposed an initial radiation of Iroquoian speaking peoples out of south-central Appalachia, possibly western Pennsylvania, by A.D. 600, but the validity of his most current Iroquoian expansion model is either contested (see Martin 2008) or supported with caveats (see Whyte 2007).[45] Following Byrd (1997, 1998), we have suggested elsewhere (e.g., Heath 2007; Heath and Phelps 1998) that Phelps's (1983) proposed inception date for the Cashie phase at ca. A.D. 800 compares more agreeably with Snow's (1995a, 1995b, 1996) "intrusion hypothesis," rather than more amenably with competing "modified in situ" development hypotheses (see e.g., Martin 2008). Despite noted problematic issues with Snow's Iroquois origins hypothesis (Martin 2008:450–453), and arguments against *any* corresponding relationships between language, culture and genes (e.g., Terrell 2001a, 2001b), Whyte (2007) recently pointed to several archaeogenetic studies of particular interest, including Bolnick and Smith (2003) and Malhi et al. (2001). Genetic studies results support the hypothesis that Iroquoian and Algonkian languages speaking populations, among others, historically and respectively *differed* genetically (Malhi et al. 2001). Moreover, the "Genetic evidence is consistent with archaeological evidence of a cultural intrusion [(*sensu* Snow 1996)] into the Northeast by ancient Iroquoians" (Malhi et al. 2001:42). In this regard, Byrd's (1998) earlier quantitative analyses of anthropometric and linguistic data, are worthy of note. He concluded, "The Tuscarora and Seneca are both linguistically and anthropometrically close, suggesting a [population] split in the relatively recent past…This interpretation is supported by Tuscarora [and other Iroquois] traditions which claim recent common ancestry with the Northern Iroquois" (Byrd 1998:25). These study results potentially relate to a sociobiological pattern, whereby "…phylogenetically related tribes can be recognized by similar languages, cultural systemic patterns, and biological attributes because they are descended from a small proto-group with a proto-culture at some point in the past" (Byrd 1998:9).

In consideration of the modified Cashie phase chronology we propose, however, it appears that ancestral Tuscaroras either out-migrated from a Proto-Iroquois core region much later than A.D.

600, or initially resettled and occupied some other region(s) of the Eastern Woodlands, ca. A.D. 600–1200. When and where ancestral Tuscaroras, as well as ancestral Meherrin and Nottoway peoples, first lived and later migrated in an implicit series of chronologically intermittent population movements, which eventually led them into northeastern North Carolina or southeastern Virginia, is unknown. Previous archaeological and linguistic studies, however, provide clues. In the case of Proto-Iroquois population fissions and migratory resettlements, ca. A.D. 600–900, Snow (2001:22; emphasis added) surmised, "Initial community movements occurred in leaps of *up to* 200 kilometers." If this was indeed the case, ancient Tuscarora peoples initially, and presumably temporarily, resettled in other regions of northeastern or southeastern North America long before ultimately resettling in the lower Roanoke River basin around A.D. 1200–1250. Cashie I subphase material culture elements share relatively few stylistic similarities with Middle (A.D. 1300–1400) or Late (A.D. 1400–1650) Iroquoian period material culture elements (see e.g., Engelbrecht 2003; Hayes 1980; Kerber 2007; Pratt 1976; Trigger 1987).[46] As such, the geographic distance between the Proto-Iroquois subpopulations, as their societies differentially developed into the historically recognizable ethnolinguistic entities known at and after European contact, must have been significant. Historical studies are revealing as well. When Lower Tuscarora refugees were initially taken in by the Five Nations peoples in the mid-1710s and early 1720s, their hosts reportedly observed that their distantly related brethren were "…'poor relations' and 'somewhat queer' in speech and custom as judged by usual Iroquoian standards" (Wallace 1952:6; emphases in original).

Most linguists accept that ancestral Cherokees diverged from a core Proto-Iroquois population long before ancestral Tuscaroras, because the Cherokee language is significantly more divergent or innovative, hence of greater antiquity relative to Proto-Iroquoian (PI), than Tuscarora (Lounsbury 1978; Mithun 1984). Linguists originally held that the Tuscarora-Meherrin-Nottoway language group represented the second oldest departure from PI (Lounsbury 1961), but Chafe and Foster's (1981) comparative studies revealed a closer relationship between Tuscarora and Cayuga, as well as Huron, than between Tuscarora and other Proto-Northern Iroquoian (PNI) languages (Cayuga, Huron, Mohawk, Oneida, Onondaga, Seneca, Susquehannock, Wyandot).[47] This relationship is suggestive of a "…migration away from the homeland area of a single group of people who later themselves divided to become the ancestors of both the Tuscarora and the Cayuga" (Chafe and Foster 1981:47).[48] Little is known of the Meherrin language, other than that it was a Northern Iroquoian language related to Tuscarora (Rudes 1981a, 1981b, 1999a), and likely more similar to the Tuscarora dialects than Nottoway (Rudes 1981b; Rudes, personal communication 2003); analyses provide no specific clues as to the timing of its origins. Nottoway, however, is less divergent or more conservative than Tuscarora when compared against other relatively more recent Northern Iroquoian languages (Lounsbury 1978), potentially indicating a slightly later split than Tuscarora from the PNI language base.

These linguistic patterns suggest that initial ancestral Nottoway, and perhaps ancestral Meherrin, occupations in the upper Chowan River basin were potentially later than the earliest Tuscarora occupations in the lower Roanoke River basin. The current suite of Cashie I subphase radiocarbon dates from acceptable contexts (Table 10-2) lend some credence to these admittedly tenuous interpretations, but more absolute dates from suitable contexts are needed to support or discount these hypotheses. The motivations or instigators behind the movements of ancient Iroquoian peoples into the Middle Atlantic subarea are unknown. Nevertheless, push-pull factors (see Rockman and Steele 2003)—population pressure, warfare or climate change in the Northeast, or conducive social connections and resettlement opportunities in the Middle

Atlantic—apparently stimulated a core Proto-Iroquoian population radiation and territorial expansion during the Middle Woodland period. Some archaeological evidence, however, suggests a much earlier Proto-Iroquoian divergence some 3,500–4,000 years ago (see Whyte 2007).[49]

Iroquois oral histories may shed light on these ancient population dynamics. Long held traditions state that ancestral Tuscaroras departed from Northern Iroquois peoples settled south of Lake Ontario—those who later formed the *Haudenosaunee* Confederacy—many centuries before European contact. In relative terms, this population divergence occurred sometime before the formation of the *Haudenosaunee* Confederacy in or around A.D. 1142 (Mann and Fields 1997), shortly after ancestral Wyandots (Hurons) and related groups migrated northward, but long after ancestral Cherokees migrated further south and west (George-Kanentiio 2007:394). Of note in this discussion is information provided in Tuscarora oral histories.[50] When ancestral Tuscaroras first branched out from the ancestors of the *Haudenosaunee* Confederacy:

> Ta-ren-ya-wa-go (Holder of the Heavens), who was the patron of the five home bands, did not fail…to direct them their way also…he guided their footsteps in their journeys, south and east, until they had crossed the Alleghany Mountains, and with some wanderings they finally reached the shores of the sea, on the coast which is now called the Carolinas. By this time their language was changed. They were directed to fix their residence on the banks of the Gow-ta-no [(Contentnea)]…now Neuse River, in North Carolina [Johnson 1881:45].[51]

When Lower Tuscarora refugees initially sought sanctuary among the *Haudenosaunee*, fleeing ethnocide or enslavement during and after the Tuscarora War, an Onondaga diplomat deftly countered protests lodged by Governor Robert Hunter of the New York colony. The diplomat stated, "These Indians [(i.e., Lower Tuscaroras)] went out heretofore from us, and have settled themselves there [(North Carolina)]; now they have got into war, and are dispersed…They have abandoned their Castles [(forts)] and are scattered hither and thither; let that suffice" (O'Callaghan 1855:376 [1713]).

That the earliest Tuscaroras in North Carolina initially resettled in the Neuse River basin (Johnson 1881:45) is obviously contrary to our hypothesis that ancestral Tuscaroras first colonized the lower Roanoke River basin. Nevertheless, Rudes' (2000, 2002b) crucial linguistic analysis corresponds with the archaeological evidence. Since the Upper Tuscarora dialect was relatively more ancient than the Lower Tuscarora dialect, the earliest Tuscaroras in North Carolina probably settled first in the Roanoke River valley, the *Skarure* or Upper Tuscarora locality in the seventeenth and eighteenth centuries. It may be that our interpretations, based on our understanding of the Cashie phase, the extant radiocarbon data and the linguistics, are wholly incorrect. However, we believe that the oral histories reported by Cusick (1848) and Johnson (1881) were indelibly shaped by the first North Carolina Tuscarora refugees to reach the *Haudenosaunee* during and immediately after the Tuscarora War, ca. 1713–1723. Most, if not all, of these people were from the *Kahtehnu* (Contentnea) communities in the middle Neuse River basin. The majority of the Upper Tuscaroras remained, along with some Lower Tuscarora bands, in eastern North Carolina for several decades before the first substantial bands, perhaps clans, migrated northward to Pennsylvania and New York (Boyce 1978, 1987; Feeley 2007; Landy 1978; Paschal 1953).[52]

These historical and social facts lead us to believe that some intentional obfuscation occurred as different dislocated groups attempted to integrate into a new set of social circumstances and forge a new or modified sense of ethnic identity in the wake of a disastrous wartime defeat, subsequent decades of oppression and traumatic social transformations. Later tensions between Upper and Lower Tuscarora descendants among the *Haudenosaunee* were especially amplified by Elias Johnson (1881:61–62) who asserted that Lower Tuscaroras previously settled in the Contentnea Creek locality in 1700–1715, were not, in fact, "the real Tuscaroras." The alleged "real Tuscaroras," at least according to Johnson, were those who remained neutral during the Tuscarora War, ostensibly the *Skarure* or Upper Tuscarora people of the Tar-Pamlico and Roanoke rivers communities. The *Haudenosaunee*, however, adopted both Lower and Upper Tuscaroras as a single nation, the sixth nation of the league, not discriminating between the two social entities in 1722 (Landy 1958, 1978).

Cashie Phase Landscapes and Settlement Patterns

There is geographic and diachronic variation in Cashie phase land use and settlement patterns, but substantially more research will be required to illuminate ecologically adaptive or historically contingent variations through time. Following Trigger's (1968) settlement pattern analysis scheme (see also Byrd and Heath 2004:104–108), we now reexamine the distribution of settlements and resource exploitation sites across a regional landscape, the spatial arrangement of habitation and defensive structures, and structural architecture. In northeastern North Carolina, Precontact–early Postcontact period Tuscarora settlement distributions fluctuated over time and space. As such, the Cashie phase site distributions discussed here in some detail should be considered approximations at any given point between ca. 1200 and 1717. As their community populations waned, the cumulative result of intensified Postcontact era warfare, slaving and disease impacts (see e.g., Ethridge 2009; Feeley 2007; Gallay 2002; Thornton 2004; Wood 1989), the geographic distributions of Upper and Lower Tuscarora settlements, as well as the independent distributions of Meherrin settlements, shrank significantly before, during and after the Tuscarora War.

As noted, the Cashie III subphase is associated with Tuscaroras and Meherrins who remained in eastern North Carolina after the Tuscarora War, most of whom relocated to circumscribed reservation lands designated for their respective nations by North Carolina's colonial administrators (Binford 1967, 1991; Boyce 1978, 1987; Dawdy 1994, 1995; Davis 2002; Feeley 2007). Cashie III subphase settlement patterns potentially differ from earlier norms, but landform-specific site distributional data do not presently exist for the latter subphase. Cashie phase settlement patterns, at least through 1711–1717, are indicative of subsistence regimes associated with natural resources exploitation in multiple microenvironments (see Byrd 1995, 1996, 1997; Phelps 1983). Regional site locational data, however, indicate that Cashie I–II subphase habitation sites were selectively chosen to exploit localized soils most naturally suitable for intensive horticultural practices, while simultaneously providing reasonably efficient access to canoe-navigable streams and a diversity of consumable aquatic resources. In contrast, habitation site microenvironments associated with occupations by Late Archaic, Early Woodland and Middle Woodland period peoples across northeastern North Carolina generally exhibit a much greater degree of locational diversity (Byrd 1995, 1996).

By 1700, if not well before, the Upper and Lower Tuscaroras held some concept of a collective "national" territory (Wallace 1949).[53] For this reason, among other vital issues, many

Lower Tuscaroras were willing to go to war, along with their Native allies, against the Carolina colonists in September 1711. Lower Tuscarora statements recorded during the war (e.g., Graffenried 1920 [1714], 1969 [1714]), as well as later Tuscarora oral histories (Johnson 1881; Wallace 1952), are revealing. Tuscarora perspectives collectively suggest that European settlement encroachment of Lower Tuscarora "hunting lands" was one of several factors shaping their decision to form military alliances with displaced coastal Indian groups and attack colonial farmsteads, plantations and villages in the Tidewater. The necessity of acquiring substantial quantities of deerskins and other pelts for exchange with European traders in return for muskets, ammunition, iron tools and other manufactured products, especially after about 1660–1665, required extensive hunting territories (see e.g., Haan 1981; Lapham 2005). Since many imperial or colonial officials, as well as local colonizers, readily believed they could simply claim, resettle and fence off what were often long inhabited or perpetually utilized Indian hunting, fishing and foraging tracts, one can readily comprehend the problem.[54]

Region. To reevaluate the approximate maximal distribution of sites with Cashie I or II subphase occupations, and the distribution of regional sites with limited occurrences of Cashie series ceramics, we conducted a systematic, county-by-county review of archaeological survey and site testing reports, as well as unreported site data. We consulted source materials readily available at the North Carolina Office of State Archaeology (NCOSA), the David S. Phelps Archaeology Laboratory, East Carolina University (ECU) and the Fort Bragg Cultural Resources Management Program (FBCRMP) as of October 1, 2008. For southeastern Virginia, we relied on previously published data (e.g., Binford 1964; Dawdy 1994; Egloff and Potter 1983; Hodges 1993; MacCord 1993; Smith 1984; Turner 1992, 1993; VDHR 2009). For North Carolina, our assessment of reported investigation results, ca. 1970–2008, over a 50 county region encompassing all Coastal Plain and eastern Piedmont counties, reinforces Phelps's (1983) earlier reported distribution of sites with Cashie phase occupations. The spatial distribution is robust, with no Cashie phase occupations or incidental Cashie series pottery occurrences reported, or otherwise discerned through our careful study of state site files, south of the middle-lower Neuse River basin or west of the Fall Line zone (Figure 10-1). Figure 10-1 depicts the approximate maximal distribution of regional sites with known Cashie I–III subphase occupations, a presence-absence model that does not reflect either historically known or expected diachronic change (e.g., expansions, contractions, fragmentation).

In North Carolina, Cashie phase habitation (semi-permanent, permanent) and seasonal resource exploitation (temporary, ephemeral) sites are situated from the Fall Line zone along the westerly edge of the Coastal Plain province to the upper estuary zones of the great Albemarle-Pamlico drainage system.[55] The southerly, easterly and westerly distributions of sites with archaeologically discernable Cashie phase occupations are reasonably well delineated. Although Cashie series ceramic sherds, and occasionally reconstructable vessels, do occur in Colington phase artifact assemblages recovered from Outer Coastal Plain contexts, sites with definitive Cashie I subphase occupations rarely occur east of the Chowan River. Along the Tar-Pamlico and Neuse rivers, there are no documented Cashie I or Cashie II subphase settlement sites respectively east of the present-day towns of Bath or New Bern. The presence of Cashie series vessels found in otherwise Carolina Algonkian contexts (and vice-versa) have been interpreted as evidence of routine trade activities (e.g., Phelps 1983, 1982b, 1984b), but other factors (e.g., seasonal hunting or shellfishing camps, intermarriage, fluctuating territorial bounds) must be considered. Pierce (2010), for example, recently suggested that incidental occurrences of Cashie series pottery at sites 31WH12 and

31WH13, the Phelps Lake sites, are likely associated with past seasonal fish or shellfish harvesting activities pursued by Cashie phase peoples at the lake.

Tuscarora warriors were reportedly involved in frequent armed conflicts with Carolina and Virginia Algonkian groups in the sixteenth and seventeenth centuries (Bland 1966 [1651]; Binford 1967; Hariot 1972 [1590]; Parramore 1982). Even so, low frequency occurrences of Cashie series pottery found in association with Carolina Algonkian (Colington phase) site occupations in the Tidewater (and vice-versa) generally reflect an overtly coastal focused trade and social interaction sphere (Phelps 1983:37–39). This interaction sphere undoubtedly existed well before and long after European contact, a cultural pattern further substantiated by the results of recent bioarchaeological studies (e.g., Killgrove 2009). The Tuscaroras' historically known position as middlemen in the mountains-to-the-coast, macro-regional trade network (Lawson 1967 [1709]; Lederer 1966 [1672]; Yeardley 1911 [1654]) was a later manifestation of an ancient pattern. Moreover, the material evidence for such a long term coastal interaction sphere informs any retrospective understanding of the processes behind wartime alliance formations between Lower Tuscarora, Carolina Algonkian and Coastal Plain Siouan polities during the Tuscarora War. Nevertheless, other cultural processes, not necessarily intra-regional or inter-regional trade, might account for some aspects of the regional ceramics distribution patterns.

Parramore (1982) suggested that Upper and Lower Tuscarora communities sought to expand their political influence and hunting territories eastward as Carolina Algonkian groups waned in population and martial strength over the course of the seventeenth century. As Carolina Algonkian populations diminished in number, as early as the 1580s (see Hariot 1973 [1590]) and throughout the 1600s (Feest 1978a; Lawson 1967 [1709]; Wood 1989), Tuscarora land use for hunting or other seasonal resource exploitation purposes, edged eastward. In the mid-1600s, this territorial expansion led to clashes with European colonizers, who retaliated by unleashing drafted militia troops on Tuscarora settlements bordering the Tidewater in a ca. 1665–1667 war that was negligibly documented (Stanard 1900a:345–348). Similarly, Meherrin groups displaced from southeastern Virginia in the wake of Bacon's Rebellion moved south and east in the late 1670s or early 1680s to reoccupy lower Chowan River habitation areas abandoned by the Chowanokes after the Chowanoke War (1675–1677). Sites with early Postcontact period Meherrin occupations are found in some Gates and Chowan county areas east of the Chowan River (Binford 1964, 1967, 1991; Dawdy 1994, 1995; Phelps 1982a, 1982b, 1984; Swindell 1999). Given these historically contingent settlement dynamics, sites with Cashie II subphase occupations, including Meherrin occupation sites and Upper or Lower Tuscarora hunting quarters or fishing-shellfishing sites, while minimally known archaeologically, further account for low frequency occurrences of Cashie series pottery in some contexts well east of the Chowan River.

From north-to-south, Cashie phase sites most generally fall between the upper Cashie and middle Neuse rivers in northeastern North Carolina, and between the Nottoway and Meherrin rivers in southeastern Virginia.[56] In their quest for deerskins, Indian slaves and lucrative trade outlets, especially with the expansion of Carolina colony settlements in the Tidewater, ca. 1650–1710, Upper and Lower Tuscarora hunters and traders ranged as far north as the Rappahannock River in Virginia (Boyce 1987:152), and at least as far south as the Cape Fear River in North Carolina (see Barnwell 1908). A few archaeological sites with presumably Precontact–Contact period Cashie I subphase occupations are documented along the north and south banks of the Neuse River, roughly falling between (west-to-east) the modern towns of Goldsboro and Cove City (see Crawford 1966).[57] Although macro-scale regional survey data are limited between the middle Neuse and the lower Cape Fear river basins, a continuing problematic issue noted by Phelps (1983) and Ward and Davis (1999), there is no present indication that Cashie phase settlements ever existed any significant distance south of the middle Neuse River basin in the Precontact or early Postcontact periods. To date, compliance-driven archaeological surveys and other studies have not revealed the presence of sites with Cashie phase occupations in southern Craven, Duplin, Jones, Onslow, Sampson or southern Pamlico counties. Similarly, locality intensive archaeological surveys in the Carolina Sandhills have yielded absolutely no material evidence associated with land use (e.g., hunting quarters) by Precontact–Contact or early Postcontact period Tuscarora groups, or material evidence of other social interactions (e.g., diplomatic relations, trade), in Cumberland, Harnett, Hoke, Lee, Moore, Richmond or Scotland counties. By the early 1700s, however, routine Lower Tuscarora land use apparently extended southward into the Cape Fear River basin, well south of their Contentnea Creek towns, at least for slave raiding or seasonal hunting purposes during the heyday of the colonial deerskin-peltry and Indian slave trades in the Carolinas (see Barnwell 1908).[58] As such, seasonally occupied, Cashie II subphase sites, well south of the Neuse River, may yet be discovered.

For the lower Roanoke, middle Tar-Pamlico and middle Neuse river basins, current archaeological data indicate that land use by Cashie phase peoples within or adjacent to the Fall Line zone was generally seasonal. This cyclical land use pattern, related to a farming-foraging-fishing-hunting, seasonal round regimen (Byrd 1997; Heath 1997), was primarily for late fall-winter season deer hunting and nut collecting-processing forays, and spring anadromous fishing or floral resources collecting activities (see e.g., Bamann 2006; Bland 1966 [1651]; Byrd 1997; Lawson 1967 [1709]; Millis 2001; Phelps 1980a, 1983). In 1701, John Lawson (1967:35 [1709]) observed that Tuscarora towns were situated east of the Fall Line, in the ecoregion where "long Moss" (Spanish Moss [*Tillandsia usneoides*]) was found. The Fall Line zone seems to have been, at times, both a social buffer zone and a seasonal resource exploitation niche collectively utilized by many upper Coastal Plain and eastern Piedmont peoples in North Carolina and Virginia before and after European contact. At other times, this zone appears to have been hotly contested, with different polities clashing and vying for control of either natural resources or trading paths following or radiating out from the Fall Line (see e.g., Bland 1966 [1651]); Mook 1944; Robinson 1959). In the 1650s, Upper Tuscaroras were apparently fighting with Piedmont Siouan groups to control the Roanoke River falls zone and the important northeast-to-southwest trading path found there (see Cumming 1998:Plate 50A; 1733 Moseley map) in the seventeenth century (Yeardley 1911 [1654]).

Cashie I subphase occupations at the Mabry Bridge site on Fishing Creek in Edgecombe County appear to have been seasonal, a late fall-winter land use area off the eastern fringe of the Fall Line zone (Bamann 2006). This site is contextually similar to the Thorpe and Contentnea Creek sites where combined faunal and floral datasets suggest that these three sites served as cool season deer hunting and nut collecting-processing camps repetitively used by Cashie phase peoples over several centuries (Byrd 1997; Bamann 2006; Millis 2003, 2009; Phelps 1980a, 1983). While the number of well-documented, seasonal resource exploitation sites is limited, the perpetual reuse of such sites appears to span the Cashie I–II subphase continuum, ca. 1200–1717. Byrd's (1997:64–65) interpretation, however, suggests that wholesale village population movements to historically documented winter hunting quarters (Dawdy 1995; Lawson 1967 [1709]) may have been the end result of significant ecosystem impacts related to the regional zenith of the deerskin-peltry trade, ca. 1675–1725.

The maximal northern distribution of Cashie phase settlement sites is presently more difficult to ascertain. Phelps (1983) originally considered the Nottoway-Blackwater rivers locality as the approximate northern limit, roughly coinciding with the geographic distribution of Contact–early

Postcontact period Nottoway Indian towns (see Boyce 1978:Figure 1). Sites with presumed Precontact–Contact and early Postcontact period Cashie phase occupations—sites with occupations contextually associated with Branchville, Cashie or Gaston series ceramic assemblages—reportedly occur in Greensville, Prince George, Southampton and Sussex counties, Virginia (see e.g., Binford 1964; Egloff 1985; Egloff and Potter 1982; Gallivan 2003; Hodges 1993; Mouer 1985; MacCord 1970; Phelps 2008; Smith 1984; VDHR 2009). The Fall Line zone roughly coincides with the westerly limits of the Cashie phase sites distribution in both northeastern North Carolina and southeastern Virginia. Since the relationships (or non-relationships) between Cashie series ceramics and "Gaston wares," *as well as the associated phase characteristics and chronologies*, are poorly compared-contrasted and synthesized (see above), we cannot argue for or against the inclusion of James River basin sites where purported Gaston wares have been recovered in Virginia (see e.g., Mouer 1985; Turner 1992, 1993, VDHR 2009).

Communities. Moving from a broad regional scale to a drainage specific scale, Byrd and Heath (1997, 2004) reported the results of survey efforts to relocate sites associated with the Lower Tuscarora towns and forts sacked and destroyed during the Tuscarora War (Barnwell 1908, 1909). Earlier archaeological survey efforts to this particular end are also summarized in several sources (Beaman 2008; Gardner 1991; Lautzenheiser and Eastman 1992; Paschal 1953; Rose 1960). The later and more comprehensive regional survey, which relied on Byrd's (1996) systematically field tested, site predictive model, resulted in the relocation of sites with Cashie I and II subphase occupations likely associated with six of eight historically documented Lower Tuscarora towns. From west-to-east, the rediscovered communities are Torhunta, Kenta, Neoheroka, Innenitts, Caunookehoe and Catechna (Byrd and Heath 2004:Figure 5.8). Several sites thought to be associated with Toisnot (Tosneoc), the westernmost Lower Tuscarora town mentioned by Lawson (1967 [1709]) and mapped ca. 1711–1716 (Parramore 1987:119; ca. 1716 Graffenried map), have been documented in Wilson County (Beaman 2008; Gardner 1991; Millis 1998, 2001). Data recovery excavations directed by Heather Millis (2001, 2003, 2009) at the Contentnea Creek site (31WL37) documented a probable Lower Tuscarora fall-winter hunting quarter, ca. 1640–1665 (Table 10-2) possibly associated with either Toisnot or Kenta. Other Toisnot locality sites, including site 31WL304, have been recently tested by Beaman (2008) with promising results. Although relatively little is known of another historically reported community, the southernmost documented Lower Tuscarora settlement was the town of Haruta (Lawson 1967 [1709]), which was situated along the north bank of the Neuse River (Parramore 1987:119; 1711 Graffenried map).[59] Even though no Contact–early Postcontact period trade goods were recovered by Crawford (1966) at the Tower Hill site (31LR1), it may be archaeologically associated with Haruta.

One significant result of the Contentnea Creek watershed surveys (Beaman 2008; Byrd 1996, 2001; Byrd and Heath 2004; Gardner 1991; Millis 1998) is the plausible confirmation that Lower Tuscarora towns through time were not nucleated entities. Nucleated settlements are somewhat implied by the designation of Lower Tuscarora communities as "towns" by Lawson (1967 [1709]), or "villages" by other colonial observers (Graffenried (1920 [1714]). Moreover, there is no current evidence from block (e.g., 31GR84, 31LR1, 31WL37) or test unit (e.g., 31WL304; 31WY1, 31WY3) excavations that either Precontact–Contact or early Postcontact period palisaded villages were constructed in the Lower Tuscarora locality (see Beaman 2008; Crawford 1966; Millis 2003, 2009; David S. Phelps, personal communication 2008; South 1962). It remains possible that palisaded villages, similar to the Jordan's Landing village, were constructed by ancestral Lower Tuscaroras in precontact times. Nevertheless, the present data, as well as ethnohistorical studies results (e.g., Binford 1964; Boyce 1978; Paschal 1953; Lee 2004), support the conclusion that Lower Tuscarora towns over time were loosely arranged clusters of multi-family hamlets, or extended family farmstead compounds, situated on elevated loamy soil landforms along second and third order tributaries of Contentnea Creek. In some cases, sites spatially associated with the proposed community clusters of Toisnot, Neoheroka and Catechna are also located on the terraces above Contentnea Creek (Beaman 2008; Byrd and Heath 1997, 2004; Millis 1998).

Dispersed settlements are more difficult to defend from sustained attacks by concentrated and mobile military forces. As such, the Lower Tuscaroras' settlement pattern directly influenced their strategic decision to erect a watershed-wide chain of palisaded forts and blockhouses near primary habitation areas for communal defensive needs during the Tuscarora War (Byrd 2001; Byrd and Heath 1997, 2004; Heath and Phelps 1998; Lee 2004). The dispersed community pattern further suggests to us that Lower Tuscaroras may not have been as perpetually plagued by regional intertribal raids, as were many neighboring Piedmont Siouan groups sadly described as living huddled in fortified villages (Lawson 1967 [1709]; Merrell 1987, 1989) during the early eighteenth century. One possible explanation for the Lower Tuscarora settlement posture is that minimally populated, intertribal buffer zones (*sensu* Milner et al. 2001:14 –15) existed south of the middle Neuse River basin and west of the upper reaches of Contentnea Creek, at least during the ca. 1600–1700 period and perhaps much earlier.[60]

A potentially problematic issue with the Contentnea Creek survey studies (e.g., Beaman 2008; Byrd 1996; Byrd and Heath 1997, 2004) is that all archaeological sites yielding Cashie series ceramics were analytically aggregated under the working assumption that the individual sites in each proposed community cluster were individually part of the historically known early eighteenth century Lower Tuscarora towns. Since the people associated with the Cashie I subphase, presumably ancestral Lower Tuscaroras, first permanently settled in the Contentnea Creek drainage around 1450–1500, some individual sites reported by Byrd (1996), Byrd and Heath (1997) or Beaman (2008) potentially date to the Precontact period; this issue was initially noted by Millis (2001). Some ten middle Neuse River basin sites with probable Cashie I or Cashie II subphase occupations, including the Tower Hill site (31LR1), are situated either along the main trunk of the Neuse River or at the confluences of Neuse River tributaries other than Contentnea Creek (Bear, Falling, Southwest creeks)—see Crawford (1966). These sites are both outside and just south of the Contentnea Creek watershed and do not spatially fit within the rediscovered Contentnea Creek town clusters (see Beaman 2008; Byrd and Heath 2004).

The Cashie I–II subphase settlement patterns within the Contentnea Creek drainage are nonetheless robust, with only a few sites, presumably late Precontact or early Postcontact era farmsteads, or seasonal extraction sites (e.g., deer hunting, anadromous fishing, shellfish collecting sites), falling outside the historic town site clusters proposed by Byrd and Heath (1997, 2004). The site location and radiometric data suggest that the habitation area abandonments and resettlements within the same historically known community locales essentially occurred along the same tributary streams over the course of several centuries, ca. 1450–1711. The site density within the Torhunta and Kenta community localities is much higher than the site densities within the other five Contentnea Creek community clusters (Beaman 2008:Figures 1 and 3; Byrd and Heath 2004:Figure 5.8). Although the early Postcontact period populations of Torhunta and Kenta may have been greater than the other town populations, hence the higher site densities, the pattern may reflect a greater time depth of Lower Tuscarora land use in the Nahunta Swamp section of the watershed (Byrd and Heath 2004:122); an alternate explanation, however, is survey bias. Not all landowners allowed access to their properties for survey purposes (Byrd and Heath 1997:37).

The middle Tar-Pamlico and lower Roanoke river basins have not been specifically surveyed to relocate protohistoric era Upper Tuscarora town sites, but cultural resource management surveys, along with some site-specific investigations, provide uneven settlement pattern data for some segments of these basins. Given current archaeological data, combined with inferences from historical sources, it appears that some Precontact–Contact and early Postcontact period Upper Tuscarora communities in the lower Roanoke River basin were nucleated and palisaded, a community level settlement pattern unlike that determined archaeologically for the middle Neuse River basin. Examples of such fortified settlements include the precontact Jordan's Landing site, occupied ca. 1250–1450 (Byrd 1997; Phelps 1983), and the early eighteenth century town of Tasky (Pasqui, Tasqui) reported by Graffenried (1920 [1714]); Tasky has not been relocated archaeologically (Byrd and Heath 2004). In the absence of more definitive Upper Tuscarora locality data, these fortified village examples, if generally representative of ca. 1450–1717, Cashie I–II subphase community arrangements in the Roanoke River basin, suggest that historically documented conflicts between the Upper Tuscaroras and neighboring polities had deep precontact roots (see e.g., Bland 1966 [1651]; Parramore 1982; Yeardley 1911 [1654]).

Limited details known from historical documents (Barnwell 1908; Lawson 1967 [1709]) seem to indicate that Upper Tuscarora communities in the middle Tar-Pamlico River basin may have been dispersed settlements as well, at least in the early 1700s. William Gale (Clark 1907:734), however, reported that the Indians he traded with in 1702–1703, including the "Tuscaroorays," inhabited "…small Townes and barke Cabbins, pallisado'd in w'th 2 Or 3 Rows of Stakes [pales]." Since Gale lived on the Perquimans River, his observations may more generally relate to settlements occupied by Carolina Algonkian groups living in the Tidewater. Nevertheless, Gale's letter specifies that he ranged well beyond the Carolina Sounds in his trading forays, traveling by shallop up the Cape Fear River and overland to the Appalachian Mountains (Clark 1907:732–735). Immediately after the Tuscarora War, the Upper Tuscaroras, as well as the remaining Lower Tuscaroras who did not flee eastern North Carolina, eventually resettled in either dispersed communities or nucleated, but not initially fortified, villages in the lower Roanoke River basin (Boyce 1987; Feeley 2007; Saunders 1968:I–II). In time, most of the North Carolina Tuscaroras ceded their remaining lands and lived within the limits of the Indian Woods Reservation through 1803 (Boyce 1978, 1987; Feeley 2007; Landy 1978).

By the late 1600s, both Upper and Lower Tuscarora communities incorporated lands held in common by members of each community, such as ceremonial plazas (Graffenried 1920 [1714]) and foraging areas where diverse raw materials (e.g., firewood, river cane for mats, fibrous plants for mats or baskets, wood for house frames or carving) could be gleaned from the land (Byrd and Heath 1997, 2004). Such lands were probably divided into tracts used by particular clans or extended family units—usufruct land ownership. This pattern was the case among several Iroquoian nations in the Northeast subarea (see Driver and Massey 1957). Beyond community controlled lands were peripheral hinterland, hunting, fishing, shellfishing and gathering territories likely considered more-or-less as exclusive "national" use lands (Wallace 1952). Like Northern Iroquoian peoples, it is likely that fish or shellfish harvesting sites were restricted access areas, seasonally used by particular clans or by the separate town communities.

Alternately, parcels of horticultural lands were probably managed and used exclusively by interrelated extended family households (see Driver and Massey 1957; Nixon 2000).

Structures. We know relatively little of Cashie I subphase habitation structures from an archaeological perspective and largely rely on ethnohistorical sources for retrospective interpretations of Precontact–Contact period household architecture (see e.g., Byrd and Heath 2004), which is problematic for obvious reasons. Phelps (personal communication 2008) recognized partial rectilinear house wall patterns at the Jordan's Landing site, but due to postmold "noise" from repetitive site re-occupations or individual structure rebuilding episodes, could discern no complete structure patterns at the site.[61] In the early 1700s, Lower Tuscarora houses were built with rectilinear floor plans (Byrd and Heath 2004), similar in size and form to Carolina Algonkian "longhouses" reported or illustrated in the late sixteenth (Hariot 1973 [1590]; Hulton 1984) and early seventeenth centuries (Hinke 1916). Lower Tuscarora hunting quarter houses were built in a distinctly different fashion (Lawson 1967 [1709]), presumably due to their temporary, seasonal use nature, and likely resembled, except with enclosed walls, temperate season hunting camp structures illustrated by Von Reck in the 1730s (see Hvidt 1980). For the Meherrin River locality in southeastern Virginia, Meherrin house plans may have been circular in the seventeenth century, but it is not readily apparent that the circular postmold patterns (i.e., Features 25 and 28 arc segments) mapped at the multi-component John Green site (44GV1) were temporally associated with the site's ca. 1680–1710 Meherrin occupation (see MacCord 1970:121–122).

It is presently assumed, given these tenuous observations, that rectilinear habitation structures were the norm for both Upper and Lower Tuscarora nucleated villages and dispersed farmsteads, both in the Precontact–Contact and early Postcontact periods. Such structures were probably similar in plan to the precontact, coastal longhouses reported by Heather Millis (this volume). Franz Louis Michel sketched the only known depiction of Lower Tuscarora habitation and storage (possible granaries) structures, which are illustrated in an intriguing drawing depicting the John Lawson-Christoph von Graffenried trial at Catechna in 1711 (see Parramore 1982:322). The house-bunkers documented inside the palisade trace of the Neoheroka Fort (Figure 10-6) were semi-subterranean defensive structures specifically engineered by Lower Tuscaroras to protect their people from artillery delivered ordnance, exploding grenadoe shrapnel and small arms fire (Heath and Phelps 1998). Hard tactical lessons learned from Barnwell's (1908) 1712 siege of the neighboring Catechna Fort were innovatively applied in the design, construction and defense of the Neoheroka Fort in 1712–1713. Architectural features of the Neoheroka Fort are variously described in several sources (Byrd 2001; Byrd et al. 2009; Barnwell 1909; Heath and Phelps 1998).

We have discovered little specific historical information on post-1717, Cashie III subphase architectural patterns, but fully expect that Upper Tuscaroras and Meherrins eventually shifted from Coastal Plain longhouses (*sensu* Gardner 1990; Loftfield and Jones 1995; Millis, this volume) to log construction dwellings sometime in the late eighteenth century. By the mid-1730s, Brickell (1969:291 [1737]) observed that the coastal region's "civilized Kings" and their families, specifically alluding to the leaders of the tributary Tuscarora, Chowanoke and Yeopim reservation communities, lived in houses built similar to those of Carolina colonists, presumably post-in-ground frame or stacked log construction (see Lounsbury (1994:216–218, 288–289) buildings. The "commoners," on the other hand, apparently continued to dwell in "wigwams" according to Brickell (1969:290)—presumably coastal longhouse style structures. Among Upper and Lower Tuscaroras who resettled in New York, or their descendants, Wallace (1952:18) indicated that log construction houses were "…favored after 1800, following the decline of the bark house" (i.e., longhouse).

Cashie Phase Mortuary Customs

During the Late Woodland period, mortuary practices across the northern Inner Coastal Plain, and by inference funerary rituals, underwent a significant and temporally rapid transformation concomitant with the florescence of the Cashie phase. At present, there is no evidence to suggest that Middle or early Late Woodland period, Mount Pleasant phase peoples practiced the protracted processes and interment rights associated with ossuary burial customs (see e.g., Hutchinson and Aragon 2002). Their burial practices included primary burial and cremation inhumations, typically the mortal remains of single individuals (Heath 2003; Phelps 1983). Ancestral Tuscarora peoples, as early as ca. 1200 and at least as late as ca. 1550, typically interred the carefully processed and curated skeletal remains of their dead in small ossuaries located inside dwellings or adjacent to their primary habitation areas (Heath 2003). Cashie I subphase single bundle and individual primary interments, typically extended or slightly flexed supine burials, have been described as well (Byrd 1997; Heath 2003; Hutchinson 2002; Mathis 1990; Phelps 1977, 1983, 2008). A number of such primary inhumations, however, were subadult burials (Heath 2003). Cross-culturally, however, infants and children often receive differential mortuary treatments (Hutchinson and Aragon 2002). Middle Woodland and early Late Woodland period mortuary patterns associated with Mount Pleasant phase peoples likely reflect individualistic or immediate household focused rituals (see e.g., Cannon 2002). Late Woodland period mortuary patterns associated with Cashie phase peoples, however, represent more ritually complex, extended family, kin group (clan) or community focused rituals (see e.g., Cannon 2002), which were more similar to those practiced by neighboring Carolina Algonkian peoples in the Tidewater (Heath 2003; Hutchinson and Aragon 2002; Phelps 1983, 1984a).

Cashie I subphase mortuary patterns. The few definitive, Cashie I subphase burials documented in northeastern North Carolina or southeastern Virginia since the early 1980s were salvage excavated after human skeletal remains were exposed in agricultural fields during seasonal plowing episodes (Phelps 2008), or uncovered through mechanized grading operations in advance of sand mining projects (Hutchinson 2002; Mathis 1990). Overall, most reported Cashie I subphase burials, including those excavated at the Jordan's Landing and San Souci East (31BR5) sites before the early 1980s, have been found in the lower Roanoke or upper Chowan river basins. Nothing is known archaeologically of Precontact–Contact period, Cashie I subphase burial patterns in the middle Tar-Pamlico or middle Neuse river basins.[62] There are, however, both similarities and peculiar variations between Cashie I subphase ossuaries at the Dickerson (31BR91), Ellis B, Jordan's Landing and San Souci East sites (Heath 2003; Mathis 1990; Phelps 1977, 1983, 2008). Although we do not synthesize their findings, bioarchaeological studies completed since the early 1980s report on osteological or bone chemistry data for skeletal remains associated with Cashie phase or regionally coeval burial features (e.g., Bogden and Weaver 1992; Byrd 1999; Farnum 2001; Higginbotham 1999; Hutchinson 1993, 2002; Jones 1989; Kakaliouras 2002, 2003; Killgrove 2002, 2009; Norr 2001, 2002; Reichs 1986; Weaver 2001).[63]

The differential Cashie phase mortuary patterns potentially represent subtle shifts in funerary rituals over a span of time greater than that represented by the three Cashie phase radiocarbon dates from the Jordan's Landing and Ellis B sites (Table 10-2). Alternately, the mortuary pattern variations may simply represent idiosyncratic customs between different loosely associated communities. Moreover, the Cashie I subphase primary burials at site 31BR7, and an unusual primary inhumation at site 31BR5, suggest that differing mortuary rituals were observed for different people in the two communities (Heath 2003; Phelps 1983). With the exception of the Ellis B site ossuary, Cashie I subphase ossuaries generally incorporated the disarticulated, cleaned and bundled skeletal remains of two-to-ten individuals in each secondary burial pit; the Ellis B site ossuary pit held the remains of 31–39 individuals (Heath 2003; Hutchinson 1993, 2002; Jones 1989; Jones and Hutchinson 1995; Mathis 1990; Phelps 1977, 1983, 2008; Reichs 1986).

Cashie phase ossuary pits are typically ovoid or sub-rounded in plan, with cardinal orientations (long axes) tending toward a northwest-to-southeast direction. The processed skeletal remains secondarily reinterred in ossuary pits at the Jordan's Landing and San Souci East sites were typically arranged in discrete bundles, representing two or more individuals, with the crania placed immediately adjacent to the associated post-cranial bone bundles (Heath 2003; Phelps 1983:Figure 1.13). At the Ellis B site, however, seven discrete bone clusters composed of the crania and post-cranial skeletal remains of two-to-six individuals in each cluster were salvaged from the plow disturbed ossuary (Phelps 2008). This Cashie I subphase burial, while dating to the mid-fifteenth century (Table 10-2), was regionally located where Meherrin peoples were first historically documented in the mid-seventeenth century (Bland 1966 [1651]). In the case of the Dickerson site ossuary, a different ossuary interment pattern was observed. The post-cranial skeletal remains were found in the central section of a large pit with the individual crania intentionally placed around the outer perimeter of the feature (Hutchinson 2002:Figure 2.17; Mathis 1990). Unfortunately, the Dickerson and Ellis B sites ossuaries were all significantly plow or grader damaged, and the recovered skeletal remains were found fragmented and in poor states of preservation (Mathis 1990; Phelps 2008).

Fourteen of the seventeen Cashie phase ossuary interments at the four sites considered here included funerary objects, primarily perforated *Marginella* shell beads, but some individual bone bundles within the ossuaries appeared to have no specifically associated burial goods. Where encountered, the frequency of *Marginella* beads varies between burials, from a minimum of two recovered beads, to a maximum of some 2,000 recovered beads, per individual bone bundle or grouped skeletal element bundles (Heath 2003; Phelps 1977, 1983). The Dickerson and Ellis B site ossuaries, as well as one individual bundle burial at the Jordan's Landing site, contained no *Marginella* beads or other obvious funerary goods (Heath 2003; Mathis 1990; Phelps 2008). At the Jordan's Landing site, fabric-impressed bowls were found in three ossuaries, contextually associated with adult female skeletal remains (Heath 2003). In some cases, funerary objects such as polished or incised bone pins, antler or bone awls and bone needles were found in contextual relation to particular individuals, most often, but not exclusively, females at the Jordan's Landing and San Souci East sites (Heath 2003). Some variation observed between Cashie I subphase burials relate to temporal trends over several centuries, but other differences may indicate ascribed or achieved social statuses of either the deceased (Heath 2003; Phelps 1983) or the familial survivors responsible for interring the dead (see e.g., Hutchinson and Aragon 2002).

Given a possible nascent relationship between historically described "Feast of the Dead" rituals and early secondary burial customs of some Proto-Iroquois societies, ca. A.D. 1000–1100 (Trigger 1987:128, 138), ancestral Tuscarora peoples may have continued similar customs once resettled in eastern North Carolina. Since ossuary burial traditions developed in the Southeast subarea around the same time frame (Hutchinson and Aragon 2002:44), however, the practice among Cashie phase peoples may represent the adoption and modification of interment rituals performed by neighboring peoples in the Tidewater. Carolina Algonkian mortuary customs are well documented, both archaeologically and ethnohistorically (Curry 1999; Hutchinson 2002; Hutchinson and Aragon 2002; Phelps 1983, 1984a). These hypotheses may be interrelated, but perhaps future excavation findings, finer grained chronological data and further mortuary pattern studies will eventually inform these ponderings.

Even though Cashie I subphase ossuaries were located in the "residential area" at the Jordan's Landing site, no ossuaries were significantly disturbed by other Cashie phase features or postholes, despite ample evidence for multiple rebuilding episodes around the burial pits (Heath 2003). Postholes/post molds and other Cashie I subphase occupation features, however, disturbed chronologically earlier, non-Cashie phase burials at both the Jordan's Landing and Kearney sites. In the case of one Mount Pleasant phase burial at Jordan's Landing, a large post was driven through the cranium of the interred by the site's later inhabitants (Heath 2003). The intrasite patterns at the Jordan's Landing and San Souci East sites suggest that Cashie I subphase ossuaries were carefully preserved and were a material manifestation of communal social memory. Since the ossuaries were found spatially associated with household living areas, the perpetual presence of ancestral remains and burials was a daily facet of life for the people who lived in the villages. The close association between living areas and mortuary areas effectively integrated the places and spaces of death with those of the living community (see e.g., Cannon 2002). As such, the communities of the living and the dead were perpetually intertwined in a manner somewhat alien to our own postmodern society, where we typically impose sharp spatial boundaries between the living and the dead. The ossuary burials in Cashie I subphase villages may represent the blending of familial and communal desires to maintain both personal and abstract knowledge of the dead. The spatial placement of the dead inside or adjacent to a house likely served the function of family level social memory maintenance for the immediate kin group, while community rituals associated with secondary burial practices, served the function of abstract social memory maintenance for the greater community (Heath 2003)—see also Cannon (2002) and Hutchinson and Aragon (2002).

Cashie II subphase mortuary patterns. At present, there are no mortuary pattern data from the Lower Tuscarora locality for the Cashie I subphase. By ca. 1600–1650, however, it appears that Lower Tuscaroras interred their deceased in spatially segregated cemetery areas generally composed of individual primary inhumations, such as those reported by Millis (2003, 2009) at the Contentnea Creek site. Based on her assessment of intrasite feature relationships, Millis (2001:429) suggested that the late Cashie I–early Cashie II subphase burials were located in a "designated cemetery," adjacent to, or perhaps some distance away from, contemporaneous habitation areas. To date, no Cashie II subphase burials have been professionally documented in the lower Roanoke or middle Tar-Pamlico river basins, hence no reliable archaeological data are known to exist for the Upper Tuscarora locality in the protohistoric era.[64] MacCord (1970), however, reported on the primary burial (Burial 3) of a possible Meherrin child (1–2 years old) interred at the John Green site in Virginia.[65] European and Native made funerary items associated with this burial included a woolen blanket, a superbly woven textile belt, a brass kettle with gourd cup and brass spoon, glass and shell beads, a fragmented pewter smoking pipe, a white clay pipe bowl, several copper or copper alloy objects (button, finger ring, "tinkler" cones, straight pins, perforated disc), a bone handled iron knife and iron scissors (MacCord 1970:111–

112). If MacCord's (1970:121–122 and Figure 2) interpretations are correct, this burial, probably dating to ca. 1680–1710, was positioned adjacent to a circular house structure presumably inhabited at the time of the interment.[66]

There are striking differences between the modal burial patterns observed at the Contentnea Creek site (primary inhumations) and the modal burial patterns associated with Precontact period, Cashie I subphase occupations at the Dickerson, Jordan's Landing and San Souci East sites, which were mostly secondary inhumations. The Contentnea Creek site's protohistoric era burial patterns, presumably terminal Cashie I–early Cashie II subphase, are more reminiscent of roughly contemporaneous Carolina Siouan burial patterns in the neighboring Piedmont province (see e.g., Davis et al. 1998; Dickens et al. 1987; Eastman 1999; Ward and Davis 1993, 1999). The conclusion that the mid-seventeenth century burials at site 31WL37 are associated with repeated Lower Tuscarora site occupations, however, is well supported by the spatially and temporally associated presence of Cashie II subphase ceramics in site features (but not burials) with carbonized plant remains radiocarbon dated to cal intercept A.D. 1640 and cal intercept A.D. 1665 (Table 10-2). These radiocarbon data are comparable to the combined popular use date ranges, ca. 1625–1675, of the glass trade beads found in several site 31WL37 burials—see Millis (2001:Appendix 7).

While it is remotely possible that the Contentnea Creek site burials held the mortal remains of non-Tuscarora peoples who lived in a historically undocumented Coastal Plain Siouan community, temporally rapid and materially radical shifts in mortuary practices have been documented elsewhere regionally (e.g., Phelps 1984a:3–4, 17–18). Pronounced shifts in mortuary practices sometimes quickly evolved as a societal response to profound socioeconomic and demographic changes after the founding of European settlements in northeastern North America, concurrent with the inexorable spread of deadly disease epidemics and the escalation of the animal peltry trades in the seventeenth century (see e.g., Ethridge and Shuck-Hall 2009; Ethridge and Hudson 2002; Pluckhahn and Ethridge 2006). Native societal transformations occurred earlier in some regions of the Southeast subarea where Native peoples were negatively impacted by early Spanish *Entradas* and the colonization of La Florida (Ethridge and Hudson 2002). In terms of non-Lower Tuscarora communities in the Contentnea Creek locality, Barnwell (1908) reported the presence of an abandoned Sissipahaw settlement west-southwest of the Lower Tuscarora town of Torhunta. He noted that Lower Tuscaroras had driven the Sissipahaw group out of the region in 1711, sometime after they refused to ally themselves with the Lower Tuscaroras in the Tuscarora War. This possibility acknowledged, there is no material evidence of a non-Lower Tuscarora site occupation during the time frame most of the deceased were interred at site 31WL37, ca. 1640–1665 (Millis 2003, 2009).

With the exception of the few primary inhumation burials documented at the Jordan's Landing site (Byrd 1997; Heath 2003; Phelps 1977, 1983), Precontact period, Cashie I subphase mortuary practices most generally involved complex skeletal preparations and extended ritual processes associated with ossuary or secondary burial customs. Ossuary interment customs appear to have been commonly practiced into the early protohistoric era, but there is no present evidence to suggest that the tradition continued into the seventeenth century. The majority of the Lower Tuscarora burials removed from the Contentnea Creek site in advance of highway construction were primary single inhumations, many of which included varying quantities of associated Native and European produced funerary goods (Millis 2003, 2009). Although there were some specific cases outside the modal pattern, the 38 individuals most likely associated with the site's Cashie II subphase occupations were found interred in semi-flexed or fully flexed burial positions with their heads oriented to the west. Sixteen of these deceased persons were interred with varying types and quantities of mortuary goods. The site's burial goods assemblage includes straight-stemmed smoking pipes, cut shell beads, copper ornaments and drawn glass beads dating to the early-to-mid seventeenth century (Millis 2003, 2009).

Neoheroka Fort site—the exigencies of war. Despite the substantial number of people reportedly killed-in-action defending the Neoheroka Fort in February–March, 1713—558 people by Colonel James Moore's count (Barnwell 1909:39)—relatively few formal or informal burials have been encountered archaeologically inside the trace of the palisade (Figure 10-6). In his after-action-report Moore (Barnwell 1909:39) pithily conveyed to his superiors, "Prisoners 392, Scolps 192, out of ye sd: fort—& att Least 200 Kill'd & Burnt In ye fort—& 166 Kill'd & taken out on ye Fort on ye Scout." Some combat casualties were expediently buried by family members or friends under house-bunker floors during the siege, but others were apparently buried by survivors or enemy forces after the final battle. In a few cases, some individuals were not intentionally buried. Their bodies were either left inside destroyed house-bunkers or inadvertently covered by above-ground structural debris when the fort was razed and burned (Byrd 1999, 2001). Burials encountered during the intensive investigation of the Neoheroka Fort site were all found as single interments, but the specific patterns varied for both formally and informally buried battle casualties (Byrd et al. 2009; Byrd 1999, 2001; Heath and Phelps 1998). Since the fort context is unique, our only archaeological knowledge of Contact–early Postcontact period Upper or Lower Tuscarora burial practices comes from site 31WL37 (Millis 2003, 2009). Some additional evidence can be gleaned from the patchy and generally confusing eyewitness accounts reported by the few colonial observers (Graffenried 1920 [1714]; Lawson 1967 [1709]) who bothered to document what they saw as culturally alien and bizarre funerary practices.

Cashie Phase Subsistence Practices

Both before and after European Contact, Cashie phase peoples perpetually utilized some of the most ecologically diverse land areas in North Carolina. Coastal Plain resources exploitable for a mixed subsistence economy during the Late Woodland and early Postcontact periods include nut bearing deciduous trees, a variety of fruit bearing species, and other edible plant resources. The qualitative assessments of botanical and faunal remains from Cashie phase contexts point to the exploitation of a broad range of plant and animal species, as well as plant husbandry, namely the cultivation of maize and several varieties of beans and cucurbits (gourds, melons, squashes). Moreover, the northeastern Coastal Plain's watershed systems provide varied aquatic habitats suitable for a range of readily harvestable freshwater flora and fauna (Binford 1964, 1991; Heath 1997; Byrd 1997; Phelps 1983; Whyte 2008).

Cashie I and II subphase settlement patterns provide further clues to the subsistence strategies employed by ancestral Upper and Lower Tuscarora communities. The locations of Cashie phase habitation sites (nucleated villages, dispersed village hamlets, farmsteads) were selected as a component of an adaptive strategy focused on the localized exploitation of aquatic resources while perpetually occupying and tilling landforms that remain among the naturally richest agricultural lands in North Carolina. These landforms are often situated adjacent locally navigable tributary streams, or along the main channels of several major rivers, and are typically bordered by extensive tracts of swampy wetlands (Byrd 1996, 1997; Byrd and Heath 1997, 2004; Phelps 1983). Cashie phase peoples intensively exploited the biomass associated with riverine and peripheral wetland settings, routinely harvesting fish, turtles and mussels. Large fauna, such as white-tailed deer and black bear, were typically hunted during the fall and winter months when such efforts did not interfere with horticultural, fishing or gathering efforts in milder seasons (Byrd 1997). At present, the available floral and faunal data are not sufficient to address specific subphase variation or diachronic change during the Cashie I or Cashie II subphases, ca. 1200–1717.

Hunting, fishing and shellfishing. Expanding on the sketches of Cashie I subphase subsistence patterns originally reported by Phelps (1980a, 1980b, 1983), Byrd (1991, 1997) combined ethnohistorical information (e.g., Lawson 1967 [1709]) and faunal data from the Jordan's Landing site in his synthesis of Cashie phase subsistence patterns. Recent, compliance driven data recovery projects have provided additional datasets of interest (e.g., Bamann 2006; Millis 2003, 2009). In addition to deer, black bear and small-to-medium mammals (opossum, raccoon, squirrel), freshwater mussels, turtles (box turtle, snapper), anadromous fish (river herrings, shads, striped bass) and a variety of freshwater fish species (bowfin, gar, bullhead, sturgeon, white perch) contributed to the mix of protein rich resources targeted as food sources (Byrd 1997:Tables 2.1 and 2.2; Phelps 1980a, 1983). Where seasonal anadromous fish runs were abundant, fresh and smoke cured river herrings and shads provided reliable sources of storable protein and fats throughout the year (Byrd 1997; Heath 1997). Wild turkey remains are well represented in the Jordan's Landing faunal assemblage, but the remains of other expected avian species, especially waterfowl, are surprisingly minimal (Byrd 1997:65–66).

Several zooarchaeological studies (Andrews 2003; Byrd 1991, 1997; Lapham 2001; Phelps 1980a) indicate that deer hunting, as one intuitively expects, was an important component of Cashie phase subsistence practices. The year-round and seasonally specific exploitation of aquatic species, however, may have been equally as significant as deer, in terms of overall protein contribution to individual diets, before European colonization and the escalation of the deerskin trade (Byrd 1997). Human bone chemistry studies complement the results of floral and faunal remains analyses. Based partially on the stable carbon and nitrogen isotope analysis (Norr 2002) of Cashie I subphase skeletal remains recovered from the Dickerson site (Mathis 1990), Hutchinson (2002:152) concluded, "The diet of Late Woodland inner coastal populations was focused on freshwater fish and a C_4 plant, presumably maize." In terms of exploiting predictable protein rich resources, domesticated animal husbandry was not practiced before European colonization, but Tuscarora and Meherrin hunters later raided colonial farmsteads for pigs and other livestock. These groups later raised some domesticated animals within their settlements, primarily during their respective reservation periods (Boyce 1978; Dawdy 1994, 1995; Feeley 2007).[67]

Farming and gathering. Absolute dates associated with ethnobotanical remains indicate that maize horticulture was already practiced across the Inner Coastal Plain before the beginning of the Cashie phase, but human bone stable isotope data suggest that reliance on maize as a principal element of regional subsistence regimes was probably modest until the sixteenth or seventeenth centuries (Hutchinson 2002; Millis 2003, 2009; Norr 2002). Maize no doubt contributed to the mix of wild and domesticated seeds consumed by Coastal Plain Iroquoians over the course of the Late Woodland and early Postcontact periods, but the volume of maize remains recovered from Precontact period occupational features (e.g., 31BR7) is substantially lower than volumes recovered from Contact–early Postcontact period sites with Cashie phase occupations (e.g., 31ED333, 31GR4, 31WL37). While these generalized patterns are certainly influenced by differential preservation and excavation sampling biases, one has a sense that maize, and perhaps other domesticated crops as well, gradually became more important in the dietary mix after about A.D. 1500 (see also Hutchinson 2002). Although small quantities of maize fragments (cobs, cupules, kernels) were recovered from the Jordan's Landing (Byrd 1997; Phelps 1983) and Contentnea Creek (Millis 2003, 2009) sites, more substantial quantities of maize cupules and kernels were recovered from the Mabry Bridge site (Bamann 2006). The quantities of shelled maize kernels, as well as beans and cucurbit seeds, recovered through the flotation or fine screening of feature fill from the Neoheroka Fort house-bunkers are simply stunning (Byrd 1997; Byrd et al. 2009), but the systematic analysis of the botanicals from the site has not yet been completed. Most of the botanical remains from site 31GR4 are carbonized, but some specimens were preserved in situ because of their close contextual proximity to copper alloy and lead objects (Figure 10-7). Other recovered Cashie phase cultigens, or suspected cultigens, are typical of those described from roughly contemporaneous sites across the Coastal Plain and Piedmont provinces (see Scarry and Scarry 1997), including, maize, common beans, squashes and seed bearing species such as sunflower, goosefoot, amaranth and sumpweed (Bamann 2006; Byrd 1997; Millis 2003, 2009; Phelps 1980a, 1983; Ward and Davis 1999).

Domesticated fruit orchards ("apple," "peach," "quince") were described in the Lower Tuscarora locality by John Barnwell (1908) in 1712, and an abundance of dried peaches and peach pits were recovered from the Neoheroka Fort site (Byrd et al. 2009; Byrd 1997). It is possible that Spanish traders reported by Yeardley (Yeardley 1911 [1654]) introduced peaches, and potentially other domesticated fruit species, to the region sometime in the mid-1600s, but such domesticates may have been introduced from La Florida, via the indigenous trade network, in the sixteenth century. Gathered wild plant remains (carbonized seeds, nutshell, cupules) recovered from Cashie phase occupation features at various sites include whole or fragmented acorns, hickory nuts and black walnuts, as well as persimmon and grape seeds (Bamann 2006; Byrd 1997; Millis 2003, 2009; Phelps 1980a, 1983). Unfortunately, there are no archaeological data on any number of the routinely consumed leafy greens or herbs described by John Lawson (1967 [1709]). Based on historical accounts and the cursory inspection of botanical remains from the Neoheroka Fort site, it is evident that the regular exploitation of at least some wild plant resources (acorns, hickory nuts) continued well into the early Postcontact period. The general subsistence focus on farming and fishing in a Coastal Plain environment rich in faunal and floral food resources certainly enhanced and sustained the development of a nearly sedentary society with a ranked social structure well before the Upper or Lower Tuscarora were visited by Virginia colony explorers and traders in the early-to-mid seventeenth century. Despite the presently broad understanding of Cashie phase subsistence economies, we know little about spatial and temporal variation within and between the subphases; based on his research, Byrd (1997) proposed a number of related hypotheses that remain to be tested. More detailed floral and faunal analyses associated with Cashie I or II subphase occupations are reported in Bamann (2006), Byrd (1997), Millis (2003, 2009) and Hutchison et al., this volume.

Cashie Phase Material Culture

The overview of Cashie phase material culture summarized by Phelps (1983:43–45) remains generally valid, particularly for the Cashie I subphase. Studies of extant collections since the 1980s, and analyses of materials more recently recovered from sites with Cashie I or II subphase occupations, nonetheless provide a greater degree of detail for some artifact classes, particularly ceramics. For a general overview of Upper and Lower Tuscarora material life in the Postcontact period, see Boyce (1978). Lawson (1967 [1709]), despite his ethnocentric biases and "melting pot" summary, remains the best single primary source for the ca. 1700–1710 period.

Ceramic Technologies. Cashie series ceramics were initially defined under the specific series name and described in varying degrees of detail by Phelps (1977, 1980a, 1980b, 1983) and Green (1986). Binford's (1964) Branchville series, Crawford's (1966) Tower Hill series and Smith's (1984) Sturgeon Head series, at least in terms of their respective simple-stamped, fabric-impressed and plain types, are probable equivalents despite some incongruities between their respective type descriptions as reported in various sources. Studies completed since the early 1990s collectively and substantively contribute to more refined, yet incomplete, perspectives on the Cashie series in general, its expected range of variation and aspects of temporal change (see e.g., Bamann 2006; Heath 2002; Millis 2003, 2009; Phelps and Heath 1998; Tippett et al. 2009).

While there is diachronic variation in site assemblages, particularly with ceramics assemblages produced after ca. 1650, and possible geospatially related variation (paste clays, temper characteristics) between ceramic assemblages recovered in different river basins, Cashie series ceramics are recognized by a core suite of attributes that remained generally consistent over space and time, ca. 1200–1717. The observations presented in this section are gleaned and synthesized from artifact descriptions found in several relevant studies, as well as from the authors' analyses of sherd or reconstructed vessel samples from sites with Cashie I or Cashie II subphase occupations. There are undoubted outlier variations in ceramic attributes over the 400 or so years represented by the Cashie I subphase, but the observed attributes exhibit modal ranges, and we generally base our series and type descriptions on vessels and sherds that exhibit attributes within these modal ranges. Since substantial quantities of Cashie series ceramics, especially from the Jordan's Landing and Neoheroka Fort sites among others, remain unanalyzed, future studies will lead to further refinement of the necessarily broad synthesis presented here. Moreover, we do not believe that the present sample of Cashie phase site assemblages is sufficient to adequately parse either geospatially related variation or diachronic stylistic change within the series.

Phelps (1983:43; emphasis added) originally reported, "Cashie ware is *primarily* tempered with small pebble-sized particles…[and] sand tempering is *often* used in thin wall vessels." This statement remains justifiable in a generalizing sense, but we have found that finer sand tempering is not necessarily restricted to thin wall vessels. In the broader scheme of geologic terminologies, Cashie series vessels are gravel-tempered wares (see Udden 1914). More specifically, following Wentworth (1922), Cashie series paste tempering clasts range from coarse-to-very coarse sands *and/or* granules *and/or* fine pebbles. A few Cashie series specimens might be considered very fine sand-tempered, or even temperless, hence solely focusing on temper as a crucial diagnostic attribute for sorting purposes is especially problematic.[68] This is a typological issue routinely encountered in the analysis of what can be broadly classified as sand, grit or sand-and-grit-tempered wares.[69] Although further subdividing sand and grit-tempered ceramics by series and types based on the assessment of exterior surface treatments typically provides a degree of chronological refinement, assuming such attributes are in fact temporally sensitive, there are still significant problems with this binomial taxonomic system when dealing with essentially a macro-regional, sand-tempered ceramics tradition that exhibits great temporal depth (see e.g., Herbert 2009:28–29; Herbert, this volume). The identification of Cashie series ceramics is, therefore, best accomplished through the recognition of four, preferably more, congruent attributes that exhibit a limited range of variation when compared against other regional ceramic series.[70]

After comparing samples of early Postcontact period Lower Tuscarora pottery from the Neoheroka Fort site with Precontact period Cashie series ceramic assemblages from a suite of North Carolina sites, Phelps and Heath (1998) subdivided the series, proposing the recognition of Cashie I (A.D. 800–1650) and Cashie II (A.D. 1650–1715) series ceramics. In light of more recent comparative study results, these series, vis-à-vis Phelps and Heath (1998), require modification. Some differences initially recognized in the ca. 1712–1713 Neoheroka Fort assemblage, such as temper clast size ranges and paste clay characteristics, most likely reflect geospatially related variation in the series. These characteristics are due to localized differences in geologic deposits (e.g., clays, fluvial sands or gravels) available to Lower Tuscarora potters, rather than overarching temporal trends, or event-specific (i.e., Tuscarora War) variation influences. On the other hand, some qualitative differences in the fort's ceramic assemblage (e.g., sloppy finishing, poor firing control, no decorative treatments) seem to be the materialized result of intensified regional conflicts due to chronic slave raiding and warfare, ca. 1700–1713.

Assessments of mid-seventeenth century Cashie series ceramics from the Contentnea Creek site, however, more concretely reveal what appear to be chronologically related changes within the series, such as minimal decorative treatments (e.g., punctations, incising) and higher proportions of simple-stamp finished vessels, when compared against mid-fifteenth century assemblages recovered from the Jordan's Landing and Mabry Bridge sites. Such stylistic change over time is similar to diachronic patterns observed in Carolina Algonkian (Swindell 2010) and Piedmont Siouan (Dickens et al. 1987; Ward and Davis 1993, 1999) ceramic assemblages concurrently produced in neighboring regions of North Carolina. To some extent, this trend is evident in protohistoric era ceramic assemblages recovered in eastern Virginia as well (see e.g., Hodges 1993). It is important to note that surface treatments, vessel forms and vessel forming techniques did not radically change during the Cashie II subphase. It appears that new vessel forms and surface treatments, however, were not integrated within the tradition, and certain surface treatments and vessel forms were no longer produced after ca. 1650 (Figures 10-3 and 10-4). Limited innovation or adoption occurred in the form of simple loop handles on small Cashie II series vessels (Phelps and Heath 1998).

While observed attribute continuities lead us to consider early Postcontact period Tuscarora ceramics as part-and-parcel of the Cashie series typological construct, one question is, how to best capture, and perhaps parse out, patterned variations of potential cultural significance? Smith (1984) attempted to deal with this problem by subdividing Binford's (1964) Branchville series into two chronologically distinct series, Branchville and Sturgeon Head. He (Smith 1984) then further subdivided these two series into three geospatially related varieties (Upper Chowan River, Meherrin River, Nottoway River), leaving future analysts to deal with essentially six ceramic series, which further included three or four types within each series. This taxonomic scheme is attractive in some respects—principally capturing temper variation—but it proves most unwieldy in practice.[71] At present, we continue to follow the Cashie I–III subphases and ceramic series subdivisions proposed by Phelps and Heath (1998), with some minor adjustments, but also recognize that there is material overlap between these arbitrary analytical subdivisions, as well as some potential variation that will be lost in the exercise.

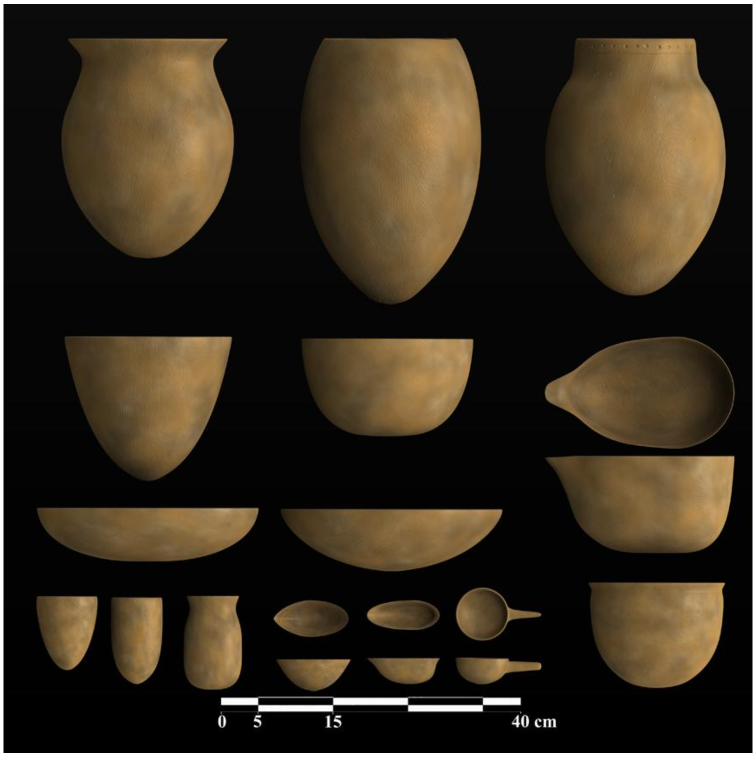


Figure 10-3. Digital rendering of presently known Cashie I series vessel forms represented in Cashie I subphase ceramic assemblages recovered from regional sites.

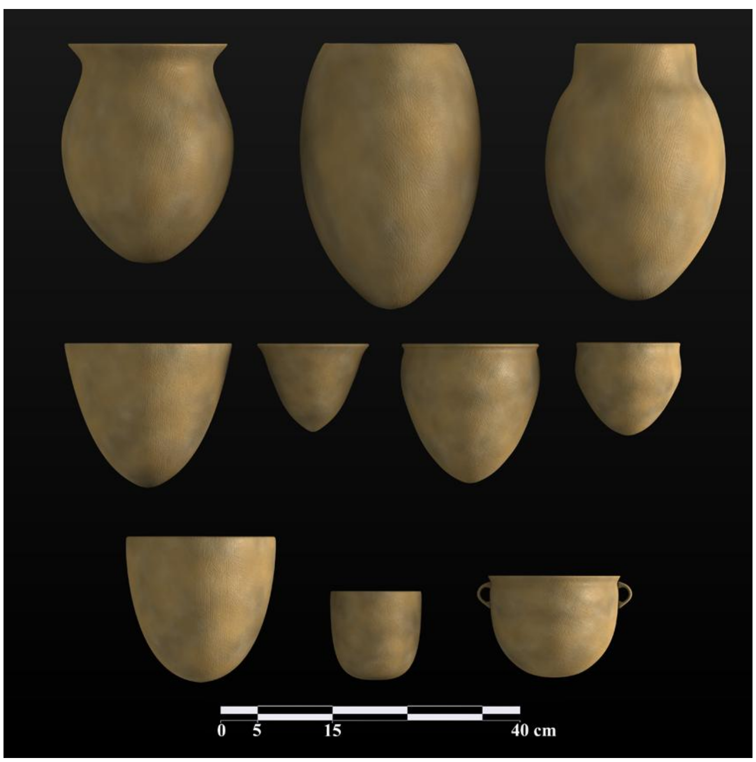


Figure 10-4. Digital rendering of presently known Cashie II series vessel forms represented in Cashie II subphase ceramic assemblages recovered from regional sites.

Figure 10-5. Cashie I series rim sherds and reconstructed vessel sections from the Jordan's Landing site. Fabric-impressed unrestricted pot section with straight rim and rounded lip (A); simple-stamped restricted jar section with everted rim and flat lip (B); simple-stamped folded rims from restricted orifice jars (C–D); simple-stamped straight rim with single-line "zig-zag" incising and flat lip (E); simple-stamped folded rims with solid tool punctations (F–H); simple-stamped and folded rim with fold edge notches (I); temperless paste ladle fragment with plain finish (j); simple-stamped unrestricted pot section with slightly everted rim and flat lip (K); plain finished bowl section with zoned punctate design and flat lip (L).

Following the proposed subphase breakdown, the currently suggested ceramic series divisions are as follows: Cashie I (A.D.1200–1650); Cashie II (A.D.1650–1717); Cashie III (1717–1803). The Cashie III series represents ceramics associated with the post-1717 Tuscarora and Meherrin reservation periods of which little is known archaeologically. Swindell (1999) conducted a survey of ca. 1680–1750 Meherrin settlement locales in the lower Chowan River basin. Survey recovered Cashie I–III series sherds exhibit attributes most similar to Precontact period Cashie I series materials, suggestive of a somewhat greater degree of continuity than that observed in the case of the stylistically "debased" Neoheroka Fort assemblage.[72] Cashie series ceramics associated with a late seventeenth-to-early eighteenth century Meherrin occupation at site 31HF20B are also more similar to Cashie I examples from the lower Roanoke River basin. By way of contrast, however, Binford (1964, 1965) reported and defined Courtland series ceramics, ca. 1660–1760, recovered from late seventeenth through mid-eighteenth century Meherrin, Nottoway and Weyanoke occupation sites in southeastern Virginia. These finer paste, plain and burnished exterior, “Colono-Indian wares” (Binford 1964, 1965; Hodges 1993; VDHR 2009), are quite unlike Cashie I–II series ceramics from either northeastern North Carolina or southeastern Virginia.

In Virginia, Courtland series ceramics tend to co-occur contextually in late seventeenth and early eighteenth century assemblages which reportedly include coeval simple-stamped Cashie series ceramics (Binford 1964, 1965; MacCord 1970; Virginia Historic Landmarks Commission [VHLC] 1983). Binford (1967:167) suggested that Nottoway potters, in particular, initiated production of Courtland series vessels with English made pottery attributes as trade wares when their communities became marginalized participants in the Indian-European deerskin-peltry trade, ca. 1670s. The Upper and Lower Tuscaroras were not so marginalized until well after the Tuscarora War, but Courtland series ceramics have been recovered in spatial context with Cashie II series materials associated with a ca. 1680s–1690s Meherrin occupation area at site 31HF20B (Green 1986). About 1705, most of the Meherrins resettled in the lower Chowan basin moved several miles north to the Meherrin Neck area where the Virginia colony originally established the first Meherrin reservation (1705–1726) in a borderlands area disputed over by North Carolina and Virginia governors during a protracted boundary squabble (Dawdy 1994, 1995). Contrary to Binford’s (1964) reporting, MacCord’s (1993) resurvey of probable, ca. 1650–1680 Meherrin sites in the upper Chowan river basin resulted in the recovery of the expected Cashie I–II series sherds from surface contexts, but not Courtland series materials. Interestingly, some Courtland series vessel fragments are comparable, at least in terms of general paste and surface treatment characteristics, to Devil’s Gut series specimens dating to the circa A.D. 1250–1450 era in the lower Roanoke River basin.[73] A systematic restudy of Courtland series samples from reasonably well-dated contexts is needed, but most such recovered wares are from surface collections at multi-component sites.

Cashie I–II series vessels vary in shape, volume and function, but conoidal and sub-conoidal base cooking and storage containers in the form of either everted rim restricted jars or straight (self) rim unrestricted pots are most frequently documented (Bamann 2006; Heath 2002; Millis 2003, 2009; Phelps 1980a, 1983; Phelps and Heath 1998) (Figures 10-3–10-5). Some beaker and bowl forms have flat or nearly flat bases, while jar and pot forms exhibit a limited range of basal shapes (conoidal, sub-conoidal, globular, rounded). Several bowl forms (hemispherical, simple, spouted with ovate or trianguloid orifices), along with beaker, ladle and dipper forms, are commonly encountered, particularly in pre-1600 contexts, but are less prevalent in their respective frequencies than restricted jars and unrestricted pot forms. This overall ceramics production pattern may reflect John Lawson’s (1967 [1709]) observation that by the early eighteenth century, both Upper and Lower Tuscaroras were regionally renowned carvers of wood spoons, ladles and bowls. Since wood containers and implements are rarely recovered from archaeological sites in northeastern North Carolina, it is difficult to assess the importance of their place within the suite of containers and implements used by Cashie phase peoples, but the low frequency of bowl forms in Cashie I–II series ceramic assemblages, especially those post-dating ca. 1600–1650, is suggestive.

Most Cashie series jar (restricted orifice), pot (unrestricted orifice), beaker and bowl forms were coil-built. Paddle-and-anvil finishing techniques were typically used to maleate coils and thin vessel walls. Cashie I series dippers and some smaller Cashie I–II series vessel forms (e.g., simple bowls) appear to have been hand-modeled (Heath 2002; Phelps and Heath 1998).[74] While vessels with direct rims (without folds) are prevalent within the two series, folded rims (long and short fold) are common in Precontact period assemblages, as well as those dating through the later 1600s (Bamann 2006; Millis 2003, 2009; Phelps 1983; Phelps and Heath 1998) (Figures 10-2 and

10-5). Folded rims appear to be limited to larger jar and pot forms, and folded rims are noticeably absent in the ca. 1712–1713 Neoheroka Fort assemblage (Heath 2002; Phelps and Heath 1998).[75] Among other regionally recognized ceramic series recovered at sites across the North Carolina Coastal Plain, folded rim vessels with long folds do not occur in assemblages we have studied. Folded rims with long folds, however, are commonly observed in Gaston series assemblages from the Fall Line zone of the Roanoke River (South 1959, 2005).

Despite our obvious hesitancy to focus overtly on temper characteristics within the Cashie I–II series, we offer these observations. The majority, but certainly not all, ceramic sherds or reconstructed vessels we have typed as Cashie I–II series pottery in our analyses, tend to exhibit temper grain size modal ranges reflecting either temporally or geospatially related trends within the series. Cashie I–II series pastes are most often tempered with coarser sands and gravels variously composed of angular, sub-angular and sub-rounded quartz grains. Usually random, but sometimes frequent, very angular, rounded or well-rounded quartz grains or other lithic materials may occur in any given vessel fragment. Moreover, the sands, granules, gravels and pebbles collected and used by Cashie I–II subphase potters range from well-sorted to very poorly-sorted, but poorly-to-moderately sorted grains are most commonly observed, typically fluvial origin materials originally extracted from stream channel deposits (see Prothero and Schwab 2003). Although some sherds exhibit varying quantities of very angular grains (low sphericity) intermixed with angular or sub-angular clasts, there is little evidence to suggest that most Cashie I–II series vessels were intentionally tempered with crushed quartz, or other purposefully crushed or ground lithic materials. In the main, the more jagged tempering elements appear to be angular (low-to-high sphericity) or sub-angular (low-to-high sphericity) grains, but nonetheless fluvial in origin (Burrus 1996; Phelps and Heath 1998).[76]

Temper grains observed in Cashie I–II series vessel pastes are usually semi-translucent or crystal quartz materials with varying frequencies of smoky, rosy (reds, pinks) or milky (opaque white) quartz grains. Binford (1964) and Green (1986) respectively reported the presence of chert or feldspar and hornblende granule or pebble size temper grains, but monocrystalline common quartz grains are by far the most routinely observed tempering materials.[77] Temper grain sizes in any given vessel fragment most generally *range* from about .50–5.5 mm (coarse sand-to-pebble), but the *modal range* is about 1.0–4.0 mm (very coarse sand-to-pebble).[78] Larger, fine pebbles (4.0–8.0 mm) may be randomly distributed in the pastes of coarser tempered examples and the modal ranges observed tend vary contextually between river basin segments (Table 10-3). Temper grain density widely varies as well, ranging from 5 percent or less to in excess of 50 percent, but 10–40 percent is the more typically reported range (see e.g., Bamann 2006; Binford 1964; Green 1986; Millis 2001; Tippett et al. 2009). There appear to be no obvious temper density variations potentially indicative of either geospatially or temporally related patterns and interobserver bias makes site-by-site comparisons difficult.

In a generalizing sense, temper clast size ranges, as well as modal ranges, are more-or-less similar for Cashie I–II series materials recovered within the four river basin segments (lower Chowan, lower Roanoke, middle Tar-Pamlico, middle Neuse) where sites with Cashie phase occupations occur. Based on our assessment of sherd grab samples culled from multiple site assemblages recovered within these basin sections, temper grain size ranges and modal ranges, however, exhibit a tendency to decrease slightly as one moves geospatially from north-to-south (Table 10-3). We have also qualitatively observed that temper clasts tend to be more angular in sherds or reconstructed vessel sections recovered from some middle Neuse River basin sites (e.g., 31WY1, 31WY3, 31GR84). In such cases, certain pastes appear, at least to the unaided

Table 10-3. Paste temper grain size ranges and modal ranges by river basin segment (north-to-south) for Cashie I–II series ceramics sample.

River Basin Segment	Grain Size Range (mm)[a]	Grain Size Modal Range (mm)
Lower Chowan	0.50–7.0	1.5–4.0
Lower Roanoke	0.50–8.0	1.5–4.0
Middle Tar-Pamlico	0.25–6.0	1.5–3.0
Middle Neuse	0.25–5.5	1.0–3.0

[a]Random, presumably incidental, pebbles in the 8.0–9.5 mm range occur in some Cashie series pottery sherds and reconstructed vessels.

eye, to contain crushed quartz, but low-power microscopic inspections of individual temper grains carefully extracted from sample sherds typically exhibit a water worn surface opposite the fractured facet. The fractured grains, if observed in a given sherd, are invariably intermingled with intact water tumbled clasts. This pattern suggests that Tuscarora potters in some localities were extracting fluvial sands and gravels from bar deposits originally subjected to high-energy stream tumbling (Christopher R. Moore, personal communication 2009). On the other hand, several analysts report recoveries of ostensibly Cashie I or II series materials with crushed quartz tempering (Binford 1964; Millis 2001, 2009; Smith 1984). This issue requires comparative studies that would likely be resolved through the petrographic study of sherd thin sections from a range of contexts.[79]

Depending on the type of clay(s) originally selected for a particular Cashie series vessel, other paste inclusions (e.g., mica, silt, black hematite, brown hematite, fine sands, ferruginous clay nodules), presumably naturally occurring minerals in the clay deposits, may be evident as well.[80] Pastes made with moderately to highly micaceous clays are common, especially in the cases of vessels or sherds recovered from Roanoke River basin sites.[81] Although the mica particles observed in the pastes of many Cashie I–II series vessels are not purposefully added tempering agents, naturally occurring mica can act as a temper additive.[82] Less micaceous clays were used as well, particularly in the Neuse River basin. Some vessel bodies are composed of fine clays, with finer silts, but others are slightly coarser with presumably naturally occurring coarser silts or very fine–fine sands, resulting in surface textures that range from very smooth to lightly sandy to the touch (see also Green 1986; Millis 2003, 2009).[83]

Based on ceramic analysis data from site excavations with a high degree of contextual integrity, it is evident that Cashie I–II series ceramics were predominately produced with three types of exterior surface treatments, plain, fabric-impressed and simple-stamped. Phelps (1983) recognized an incised type, but punctated or incised decorative zones can be found on Precontact period Cashie series vessels in combination with any of the three abovementioned exterior surface treatments. The decorative treatments that do occur on Cashie I–II series vessels are rather basic and artistically conservative in nature, especially when compared against more elaborately incised specimens found within contemporaneous Colington I–II series assemblages from the Tidewater (Swindell 2010). Incising, though present as a decorative element in Cashie I–II rim sherd assemblages, is not necessarily rare, but the occurrence frequency in any given assemblage is generally low (< one percent). Punctate decorated rims and necks are far more common on jar forms made before about 1600 or so, but this form of decorative treatment, along with incising, was utilized to a lesser extent into the mid-to-late 1600s (Bamann 2006; Millis 2003, 2009; Phelps 1983; Phelps and Heath 1998).

Punctations, usually over the primary surface treatment, were made using a variety of punches with hollow (river cane, reed) or solid tips of various shapes and sizes. While there are a few examples of zoned punctate designs on the bodies of plain finished bowls, most punctations, like incised lines, generally occur around the exterior rim area below the lip, or on rim folds. In some cases, deeply driven, folded rim punctations were both decorative and functional, serving as a method to tack down folded rim flaps.

Some analysts (Bamann 2006; Millis 2001, 2009) report the incidental occurrence of—or specifically define (Binford 1964; Eastman et al. 1997; Smith 1984)—a cord-marked type within the Cashie series, but the contextual and material evidence required for the formal inclusion of a cord-marked type within the Cashie I–II series definitions remains debatable. The same can be said for earlier reported incidences of cob-marked examples (Phelps 1980a).[84] We have also observed reconstructed, fabric-impressed vessel sections that occasionally exhibit patches of what appear to be cord-marking impressions, but such impressions were made by poorly woven, loose or unraveled fabrics.[85] While it is possible that definitive Cashie series vessels with cord-marked exteriors will be recovered in the future, unequivocal evidence is presently negligible. In the past, we have aggregated a variety of surface finishes (e.g., well-smoothed, lightly burnished, burnished, smeared over simple-stamped, simple-stamped and smoothed) under the type designation, "plain" (e.g., Phelps and Heath 1998; Phelps 1983), but there may be some utility in recognizing the variation potentially masked within this broad classification.[86] Such variations may exhibit temporal patterning useful to understanding site occupation date ranges derived from analyses of surface collected or excavated ceramic assemblages recovered in the absence of radiocarbon dates or other temporally diagnostic artifacts.

In terms of Cashie I–II series surface treatments it is evident that simple-stamping, while distinctively present at the inception of the phase (e.g., 31BR7, Feature 41; 31NS3B, Feature 135A [see Table 10-2]), increased in frequency as the preferred surface treatment over time. Alternately, the frequency of fabric-impressed vessels proportionately decreased over time. Plain finished vessels were produced in far lower proportions, generally accounting for less than one percent of a given site assemblage, until the early 1700s, by which time, fabric-impressing virtually disappeared and was superseded by much higher frequencies of plain finished vessels. At the Precontact period Jordan's Landing site for example, fabric-impressed sherds account for approximately 65 percent of the Cashie I series sherds recovered from the deepest levels (Levels 5–6) of site excavation units inside the village palisade trace. Inversely, simple-stamped sherds account for approximately 80 percent of the sherds recovered from the upper levels (Levels 1–2) of the same units; mid-levels (Levels 3–4) simple-stamped and fabric-impressed percentages are roughly equal, with plain finished sherds accounting for one percent or less of the sherd totals in all levels.[87]

Only two radiocarbon dates--cal intercept A.D.1280 and cal intercept A.D.1420—are associated with Cashie I subphase occupations at the Jordan's Landing site, and both radiometric dates are for pit features (Feature 21 and 41) (Table 10-2). Since these features incorporated a mix of simple-stamped and fabric-impressed sherds, little can be said regarding the timing (i.e., absolute dates) of the stratigraphically recognized shifts in surface treatment popularity.[88] Given the present suite of radiocarbon dates associated with Late Woodland period simple-stamped ceramics from the North Carolina Coastal Plain and Piedmont provinces (e.g., Bamann 2006; Boudreaux 2007; Dickens et al. 1987; Eastman 1994a, 1994b, 1999; Herbert 2003, 2009; Swindell 2010; Millis 2003, 2009; Ward and Davis 1993, 1999), it presently appears that narrow land-and-groove, carved-paddle simple-stamping may have been first regionally introduced, by Cashie I phase potters around A.D. 1200. Absolute dates associated with carved-paddle simple-stamped types within other *regional* ceramic series are at least a century or more later in time.[89] Since a wide variety of surface finishing methods were available to American Indian potters, it seems that the specific surface treatment styles selected by a community of potters relate to a limited suite of culturally acceptable styles that sometimes reflect group identity, ideology or aesthetics (Holmes 1903:51–52), concurrent with underlying notions of appropriate functionality. As Braun (1983:113), in reference to ceramic vessel styles, stated, "…their decoration and details of shape carry communicative effect, and are constrained by the social and symbolic environment of the potter."

Given the present material evidence, namely Cashie phase radiocarbon dates and ceramic assemblages from the Jordan's Landing, Mabry Bridge, Contentnea Creek and Neoheroka Fort sites, it seems that fabric-impressing as a surface treatment technique used by Tuscarora potters was well on the wane by about 1500. In the Contentnea Creek site ceramic assemblage, ca. 1640–1665, approximately 79 percent of the recovered Cashie series sherds are simple-stamped and 17 percent are fabric-impressed, while the remainder are plain finished (Millis 2001:271). These percentages are similar to those determined for upper unit level ceramic assemblages from the Jordan's Landing site, suggesting a relative degree of stability in the choice of surface treatments selected by both Upper and Lower Tuscarora potters over the course of about two centuries, ca. 1450–1650. In contrast, all Cashie series sherds or reconstructed vessels in the ca. 1712–1713 Neoheroka Fort site ceramic assemblage are either plain finished or simple-stamped. No fabric-impressed sherds or vessels have been observed in fort occupation period assemblages from multiple contemporaneous features. Since both sites 31GR4 and 31WL37 are situated in the same watershed, the Contentnea Creek drainage, the patterns may represent localized preferences, but there seems to be a temporal trend.[90] Since fabric-impressed Cashie series sherds are found in surface collections recovered from early Postcontact period Meherrin occupation sites (Binford 1964; Swindell 1999), the terminal date for the type remains uncertain.[91] Nonetheless, a somewhat similar pattern is also noted for Coastal Algonkian sites (e.g., 31DR1, 31HY43) in the Tidewater, where simple-stamped sherds typically account for 55–75 percent of the ceramic assemblages from post-1650 contexts (Colington II subphase); plain, fabric-impressed and incised types combine for the minority (see e.g., Gardner 1990). Inversely, fabric-impressed sherds from Precontact–Contact period, Colington I subphase sites typically account for 65–90 percent of site assemblage totals (see e.g., Swindell 2010).

Interior vessel finishing techniques used by Cashie I–II phase potters varied, but vessels produced from ca. 1200–1700 often exhibit characteristics associated with wiped, wiped-and-rubbed or floated interior surfaces. Shepard (1995:186–193 [1957]) described the various techniques and processes required to produce such interior finishes.[92] These three interior finishing techniques were purposefully employed by potters to subdue evidence of the larger temper particles that protrude from vessel interior surfaces, and the three finishes often obscure or nearly obscure coarser temper clasts with a film or thin layer (.25–1.0 mm) of finer clays.[93] Since paste temper clasts are often less visible on *exterior* vessel surfaces, considerably greater finishing effort must have been expended in wiping, rubbing, floating or self-slipping exterior surfaces before the paddle-and-anvil finishing process was undertaken. Temper clasts are often observed well-worked down into the paste on vessel exteriors, and further obscured by the various exterior surface treatments discussed above.

Where vessel interiors were carefully wiped smooth by hand or with a soft tool while the pastes remained in a plastic state, but were not subsequently rubbed or floated, the temper clasts are not pressed level with the interior surface. In such cases, the temper clasts protrude accordingly, despite the presence of a complete or partial clay film coating. These interiors are usually lumpy in appearance, as well as to the touch, and often exhibit fine wiping striations or faint groove patterns, usually in an annular or horizontal pattern relative to the vessel rim. Shepard (1995:188–189 [1957]) associated this pattern with soft tool wiping or finger stroking. Leveling of the larger temper clasts was apparently achieved in many Cashie I–II series vessel interiors by first wiping the surfaces while in a plastic state, and by subsequently rubbing the wiped surfaces with a hard tool when the vessels were somewhat drier, but in a yielding state before drying to a leather-hard state. Interiors finished in this multi-step manner are less lumpy in appearance and feel, but the process exposed some leveled grains (see Shepard 1995:186–193 [1957]). As such, floating, or possibly slipping with a self-slip, would have been required to achieve the well-smoothed interior finishing observed on some Cashie I–II vessels.

Some Cashie I–II series specimens, particularly examples from the lower Chowan and lower Roanoke river basins, exhibit characteristics associated with the interior floating process, which involves the working and reworking of rewetted interior vessel surfaces to redistribute coarser paste particles deeper into the body, while simultaneously coercing fines to the surface (Shepard 1995:191 [1957]). The floated or well-wiped interior finishes, if originally present on archaeological sherds, may not be immediately evident if the interior surfaces were worn away through vessel use alteration (e.g., abrasion, pitting, chemical corrosion) or by post-depositional weathering processes.[94] Larger temper clasts, which often protrude from vessel interiors that were wiped-and-rubbed or floated, are often surrounded by fine paste cracks because of clay shrinkage during the air drying or firing processes. In some cases, the thin clay layers over the larger protruding clasts spalled away during the firing stage, but in other cases, the finished layers appear worn away from use-wear abrasion. Both wiped and floated interiors on Cashie I–II series sherds often feel very smooth, slick or waxy to the touch, but other examples feel slightly sandy where paste clays naturally include coarser silts or very fine sand. Some well-wiped or floated interiors appear polished as well. Other vessel interiors, those not wiped or floated, may exhibit evidence of scraping and smoothing with hard tools, but deep scraping lines, such as those produced with serrated bivalve shells, are rare. Temper particles are usually exposed in vessels with scraped or poorly smoothed interiors and the clasts may slightly project from interior surfaces, giving such interior vessel surfaces the texture of very coarse sand paper.

Table 10-4. Vessel interior surface treatment percentages by river basin segment (north-to-south) for Cashie I–II series ceramics sample.

River Basin Segment	Well-Wiped or Floated	Exposed Grains (Leveled or Proud)
Lower Chowan	65%	35%
Lower Roanoke	63%	37%
Middle Tar-Pamlico	45%	55%
Middle Neuse	18%	82%

Based on our examination of Cashie I–II series, sherd grab samples selected from site assemblages recovered within four regional river basin segments, we observed a north-to-south geospatial trend in the frequencies of the interior finishing techniques described above (Table 10-4). Higher frequencies of wiped or floated examples occur in the lower Chowan river and lower Roanoke river basin assemblages, but examples with exposed and leveled temper grains more frequently occur in the middle Tar-Pamlico river and middle Neuse River basin assemblages.

Studying this aspect of Cashie I–II series ceramics is problematic. Different analysts use different terminologies in their analyses and interobserver bias makes site-by-site comparisons difficult. Although there are no radiometric dates associated with most of the sherd samples assessed, there may be a temporal aspect to these patterns, a hypothesis originally proffered by Phelps and Heath (1998).

Numerous examples of punctated rim sherds, along with a few incised specimens, were recovered from the Jordan's Landing site (Phelps 1983; Phelps and Heath 1998) (Figure 10-5). Other similarly decorated specimens were found at the Mabry Bridge site (Bamann 2006); including two examples from a feature (Feature 35A) with an associated radiocarbon date of cal intercept A.D. 1640 (Table 10-2). Although portions of a ca. 1640–1665 punctate decorated jar were recovered from the Contentnea Creek site, ca. 1712–1713 reconstructed vessels and rim sherds from the Neoheroka Fort site exhibit no decorative treatments (punctations, incising). Although incised vessel fragments occur in Cashie I subphase contexts, incised vessels, much like punctated vessels, rarely occur in Cashie II subphase assemblages. When observed, incised lines over the primary surface treatments (plain, fabric-impressed, simple-stamped) occur in the form of single-line, horizontally repeating chevrons (open hanging triangles) around the rim just below the lip, or as single-line and multi-line annular bands just below the lip. In other instances the lines are simply incised on rim exteriors or rim folds as a series of dash-like lines incised perpendicular, or slightly diagonal, to rim lips. Incision lines may be paralleled with corresponding lines of punctations as well. Vessel bodies are very rarely decorated with incised motifs as they are usually simple-stamped or fabric-impressed. A fine, but unusual example of a plain-finished and lavishly incised Cashie I series beaker was recovered at the Precontact period Shipyard Landing site (31BR1). This fine paste specimen has complex geometric designs and it is quite atypical. These data collectively suggest that vessel decorative treatments in the form of punctations or incising were well on the wane by the early-to-mid-1600s.

While our observations on Cashie II subphase ceramics are not entirely based on the attributes exhibited in the Neoheroka Fort site assemblage, the fort site's pottery collection is, at present, one key period assemblage. The fort site's pottery assemblage, nevertheless, appears "debased" when compared against other late seventeenth or early eighteenth century Cashie II series vessel and sherd samples. As such, the site 31GR4 pottery assemblage likely represents an event-specific collection that is not wholly representative of Upper and Lower Tuscarora, or Meherrin, pottery produced regionally during the early 1700s. As noted, the small samples of pottery recovered from ca. 1705–1750 Meherrin reservation sites (Swindell 1999) are more comparable to both Contentnea Creek site and earlier Cashie I subphase materials. Shatterzone processes (see e.g., Heath 2010) potentially account for some variation observed in the Neoheroka Fort vessel assemblage. Among Tuscaroras, repercussions of the Tuscarora War were most acutely felt in the Lower Tuscarora communities found in the Contentnea Creek drainage. In 1712, Colonel John Barnwell (Barnwell 1908) led forces that systematically destroyed the community infrastructure in every Lower Tuscarora town his expeditionary army passed through. His troops attempted to kill or enslave for market resale every Lower Tuscarora man, woman and child they encountered. The combined effects of disease, slaving and warfare in the early 1700s reduced not only the adult population of the Contentnea Creek communities, but also eliminated a vast pool of cultural knowledge. Given this grim situation, and the indisputable historical knowledge that Barnwell's men systematically destroyed every Lower Tuscarora house they found in 1712, Heath (2002, 2005) proposed that many of the vessels in the Cashie series ceramic assemblage from the Neoheroka Fort represent a wartime replacement assemblage. With the loss of many adult women, typically the most experienced American Indian potters in the Carolinas historically (see Herbert 2009:xiii–xiv), and the concurrent loss of cultural knowledge during this crucial period of Tuscarora history, Heath (2002) further suggested that such losses are directly reflected in the fit and finish of most Cashie vessels in the Neoheroka Fort assemblage. This hypothesis cannot be definitively rejected or supported until other prewar and postwar, Lower Tuscarora sites occupied during the early 1700s are investigated. Such period sites have been tentatively identified (Beaman 2008; Byrd 1996; Byrd and Heath 1997, 2004), but none have yet been systematically excavated.

In the realm of ceramic technologies, Magoon (1998, 1999) undertook a comparative study of smoking pipes and pipe fragments from the Jordan's' Landing, Neoheroka Fort and Cape Creek sites. His analysis results indicate that "small, obtuse-angle pipes with plain [exterior], basket-shaped bowls" were the most common form of Precontact–Contact period Cashie phase pipes (Magoon 1999:111), a stylistic pattern more generally noted by Phelps (1983). Magoon (1998, 1999) found that the majority of the presumed Tuscarora made pipes recovered from house-bunkers inside the Neoheroka Fort were essentially the same basic form (Figure 10-7). Fragments of a few straight-stemmed or monitor-base clay pipes were observed in the Jordan's Landing assemblage, but the forms are considered minority styles. These minority forms also occur in low frequencies in the Neoheroka Fort assemblage. Most pipe bowls (90 percent) from Jordan's Landing are undecorated, but a few examples (10 percent) are decorated (dentate-stamped, incised), and approximately half of the pipe stems (46 percent) are decorated (dentate-stamped, incised, punctated). Pipe bowl decoration is observed more frequently (46 percent) on the Neoheroka Fort pipes, some of which further integrate "European belly bowls" and flat-heel features common to mid-to-late seventeenth century European made pipes (see e.g., Hume 1991). Magoon (1998, 1999) found no evidence of mold seams on the stems and bowls of the Native crafted pipes from the Neoheroka Fort collection, indicating that the specimens were all hand made in a manner similar to all Precontact–Contact period Tuscarora made pipes. In terms of their basic form, Magoon (1999:117) noted: "…the differences in overall pipe form between the two periods (i.e., from Precontact period forms to later European-influenced forms) are essentially minimal."

We also note that evidence of Lower Tuscarora prewar trade or wartime alliance relationships are possibly materialized in the Neoheroka Fort artifact assemblage as well. Although the material evidence is sparse, at least two house-bunkers inside the fort contained a few Colington I–II series shell-tempered vessels from the Carolina Algonkian sub-region of the Coastal Plain, the northern Tidewater. The fort's smoking pipe assemblage further includes two examples "reminiscent of [Northern] Iroquoian forms from the northeastern United States" (Magoon 1999:113). While Magoon (1998, 1999) suggested that the Neoheroka Fort pipes with straight-stems and onion bowls might be indicative of trade or other social relationships with Piedmont Siouan groups, four such pipes were found in the Contact–early Postcontact period (ca. 1640–1665) burials at the Contentnea Creek site. Similarly, straight-stemmed tubular pipes were found in association with either Weyanoke (ca. 1660–1670) or Meherrin (ca. 1670–1685) Indian burials at the John Green site in southeastern Virginia (MacCord 1970:102 and Figure 4). Straight-stemmed onion bowl pipes are found from the Piedmont to the Outer Banks of North Carolina, in both Precontact–Contact and early Postcontact period contexts (see e.g., Coe 1964; Dickens et al. 1987; Magoon 1998, 1999; Phelps 1983; David S. Phelps, personal communication 2008; Ward and Davis 1993, 1999). As such, some pan-regional pipe forms are chronologically diagnostic in a broad sense, but not necessarily attributable to a specific archaeological culture or historically identifiable ethnolinguistic group.

Lithic Technologies. Cashie phase lithic artifact assemblages are generally similar, in terms of common tool types, to Middle and Late Woodland period toolkit arrays recovered from the neighboring Piedmont and Tidewater regions. Stone tool assemblages from Cashie I and II subphase contexts include a range of formal, informal and expedient tools produced from locally available stone, principally different varieties of quartz and quartzite. Quartz and quartzite tools or debitage usually account for the greatest proportion (≈50-to-90 percent) of most Cashie phase lithic assemblages that have been quantified, but other less frequently utilized lithic materials variously include, rhyolite, greenstone, siltstone, argillite, chert, mudstone, chlorite schist and jasper (e.g., Bamann 2006; Millis 2003, 2009; Phelps 1980a, 1983). Even though some vein quartz was certainly utilized, water-worn pebbles and cobbles were most often employed for stone tool production, an observation supported by the common occurrence of corticated primary reduction flakes, tested pebbles/cobbles and pebble/cobble caches in period lithic assemblages associated with Cashie I–II subphase contexts.

At a macro-regional level, this generalized material use pattern has been recognized across the entirety of the North Carolina Coastal Plain, throughout the Middle and Late Woodland periods (see e.g., McReynolds 2005). We tend to see, however, higher proportions of locally available jasper pebble tools and debitage in Late Woodland and Contact–early Postcontact period assemblages from contemporaneous Colington phase sites in the Tidewater (e.g., Gardner 1990; Green 1986; Phelps 1981, 1984a). No specific studies have been undertaken to determine if Carolina Slate Belt materials, “rhyolites” (see Steponaitis et al. 2006), were traded by Piedmont groups in the form of blanks or performs to Coastal Plain peoples, or if such materials were locally collected wash redeposit pebbles-cobbles from stream or river channels, beaches and banks. Although quartz and quartzite tools are most prevalent, metavolcanic projectile points and debitage are routinely observed in Cashie I and II subphase lithic assemblages.

Small bifacial blades and bifacial triangular form projectile points and drills are commonly recovered along with expedient projectile points and other cutting or scraping tools made from unifacially or bifacially retouched decortication and core reduction flakes. Other tools encountered include small ground stone axe heads and adze bits (“celts”), hammerstones, abraders and other formally modified or expediently modified food and raw material processing tools (e.g., manos, metates, cobble choppers, anvil stones, mortar stones, pestles) (Bamann 2006; Millis 2003, 2009; Phelps 1980a, 1983). There is no material evidence for polished stone smoking pipe production. Small-to-medium sized triangular projectile points—Roanoke Large-Roanoke Small-Clarksville type continuum (Coe 1964; Phelps 1983; Oliver 1998; South 1959, 2005)—in the form of either isosceles or equilateral triangles are variously associated with reported Cashie phase lithic assemblages. While most Precontact–Contact and early Postcontact period points are well made, some examples were expediently worked from core reduction flakes and either unifacially or bifacially retouched. Point basal configurations vary from straight, to slightly concave, to markedly concave, and most point bases are thinned to some extent. Point blade edges tend to be straight and non-serrated, but some forms have either concave or convex sides, while other examples are finely serrated. As in the neighboring Piedmont (Coe 1964) and Tidewater (Phelps 1983, 1984a) regions, projectile point sizes tend to decrease over time, with smaller varieties gradually superseding larger varieties by the end of the Cashie I subphase (Bamann 2006; Millis 2003, 2009; Phelps 1980a, 1983). Since large and small triangular point varieties were concurrently produced over much of the Middle-to-Late Woodland period, there may have been functional differences between the two varieties.

With the regional introduction of European glass containers in the seventeenth century, Tuscarora and Meherrin toolmakers began producing some projectile points and expedient tools, such as bifacially and unifacially worked scrapers and small blades from bottle glass shards. Several examples are represented in the Neoheroka Fort site artifact assemblage, but stone was by no means replaced by glass as the preferred material for projectile points. One house-bunker (Feature 51) inside the Neoheroka Fort appears to have served as a field expedient, weapons production workshop. In addition to ceramic vessels and other materials, artifacts recovered from the floor of this structure include, cobble hammerstones, quartz biface cores, quartz triangular points, one glass triangular point and over 200 pieces of quartz and dark green glass debitage (glass shards, glass and quartz reduction flakes, quartz core shatter) (Heath 2002).

A few Meherrin Indian allies and profit-driven Virginia traders interested in eliminating the Carolina completion illicitly provided ammunition to the Lower Tuscaroras in return for deerskins in 1711–1712 (Barnwell 1908; Dawdy 1995), but the defenders of the Neoheroka Fort may have exhausted their gunpowder stocks in the last days of the three week siege. During the first phase of the Tuscarora War, John Barnwell (1908:30–32) reported that part of his force was composed of "bowmen," rather than gunmen, and that the cohort of Lower Tuscarora women defending the Torhunta blockhouses shot arrows at his attacking forces until the unfortunates were "put to the sword." Even though Indian men came to prefer the trade musket as the weapon of choice for deer hunting and warfare, defensive or offensive, bows and arrows were regularly used for taking small and medium size mammal hunting, and as a back-up weapons system in warfare well into the early 1700s (Lawson 1967 [1709]). The well-crafted triangular projectile points and associated knapping debris from the Neoheroka Fort site provide ample evidence that the craft of stone (or glass) tool-production was not eclipsed because of the wide-spread use of firearms among various Native peoples after the mid-1600s.

Organic Materials Technologies. A variety of implements, ornaments and other personal use objects made from processed organic materials are associated with Cashie phase artifact assemblages. For the early Postcontact period, additional information on such material culture can be gleaned from ethnohistorical sources, sometimes in significant detail (e.g., Brickell 1968 [1737]; Lawson 1967 [1709]; Graffenried 1920 [1714]). As is common across North Carolina (see e.g., Dickens et al. 1987; Eastman 1999; Mathis and Crow 1983; Ward and Davis 1993, 1999), bone and shell artifacts more commonly survive archaeologically than objects made of wood, plant fiber, leather or other organic materials, but localized acidic soils can accelerate the decay of such objects. This is the case at the Neoheroka Fort site, where organic ecofact and artifact preservation is especially poor (Byrd, et al. 2009). Nevertheless, bits of perishable organic materials found in specific microenvironments conducive to preservation, such as fragments immediately adjacent to, or surrounded by, copper, copper alloy or lead objects, have been recovered from the Contentnea Creek and Neoheroka Fort sites. Some such materials likely originated from Europe (trade fabrics), but others are of local origin.

Kuttruff (2001) analyzed textile fragments recovered from early Cashie II subphase burials at the Contentnea Creek site (see also Millis 2003, 2009). Twines associated with shell or copper bead necklaces were all 2-ply, medium final Z-twist cordage fragments in the .7–2.5 mm diameter—some yarn components are composed of S-spun, "highly processed bast fiber" (Kuttruff 2001:3). Most of the fabric fragments from site 31WL37 are plain weave (1/1 interlacing), weft faced fabrics (2-ply, medium Z-twist warp yarns and unspun single weft yarns). Warp yarn components are presumably plant bast (stem) fibers, while weft components are generally minimally twisted or untwisted, flat fibrous strips, possibly bark, river cane or leaves. One weft faced fabric sample, however, is composed of 2-strand twining with an S-twining twist (2-ply, medium Z-twist warp and weft yarns) (Kuttruff 2001:2–4). These types of textile structures were commonly produced by Native peoples across eastern North America during the late Precontact–Contact period (Kuttruff 2001:4). It is interesting to note, however, that modern Tuscarora tradition suggests that the exonym, "Tuscarora," alludes to the Contact period Tuscarora peoples' propensity for wearing long fabric tunics (Nixon 2000; Printup and Patterson 2007), perhaps made from the silky Indian hemp/Dogbane (*Apocynum* sp.) bast fibers (Anderson 2006).

An array of split bone and worked antler tools (awls, needles, perforators) and personal ornaments (clothing pins or hair pins) were recovered in association with Cashie I subphase burials and other habitation area features at the Jordan's Landing and San Souci East village sites (Heath 2003; Hutchinson 2002; Phelps 1983). Antler pressure flakers, bone fishhooks and other bone tools associated with burial and non-burial features at these two sites were recovered as well (Phelps 1983), but similar objects were not found at what were likely repetitive use, seasonally occupied, fall-winter hunting and nut processing sites (see e.g., Bamann 2006; Millis 2003, 2009; Phelps 1980a). Although bone "beamers," modified deer bone hide scrapers, are not reported in the archaeological literature, relic collectors anecdotally report their recovery of such objects from probable Cashie I subphase sites. Lawson (1967 [1709]), however, noted the widespread use of steel draw knives for the removal of excess tissue and hair from deerskins and other hides, perhaps an indication that bone beamers were regionally replaced by readily obtained and potentially more efficient, iron hide processing tools by the late 1600s.

Cut or modified shell objects, particularly cut marine shell and modified *Marginella* shell beads, are most often recovered from Cashie phase human burial contexts. Commonly reported bead types include large and medium columella segment, flat discoidal, short or long barrel (cylindrical) and long columella tube beads (Heath 2003; Hutchinson 2002; Millis 2003, 2009; Phelps 1983). A few small, flat (square) or convex face (round) pendants or pendant fragments have been recovered in association with Cashie I subphase contexts (Heath 2003; Phelps 1983). *Ronoak*, *Peak* (*Wampum*) and *Runtee* type beads (Lawson 1967:203–204 [1709]) are represented in the Neoheroka Fort site collections (Figure 10-7).[95] *Peak* beads, Lawson (1967:203) noted, were the regional equivalent of the small, tubular *Wampum* beads from the Northeast subarea, while *Ronoak* beads were smaller disc beads or shorter tubular beads (1967:204). The *Runtees*, which generally date to ca. 1650–1700 in the Northeast subarea (Esarey 2007:9; Sempowski 1989:88), were probably acquired through interactions with traders or diplomats from *Haudenosaunee* Confederacy nations, such as the Seneca representatives encountered by John Barnwell (1908:35) in 1712. Even though Precontact–early Postcontact period Tuscarora artisans undoubtedly cut and worked several types of marine and freshwater shells to produce ornaments and tools, only minimal evidence of the expected production residues associated with such work have been discerned archaeologically.[96] A whole lightning whelk (*Busycon sinistrum*) shell blank (rough cut) and a fragmented whelk shell blank were recovered from the Neoheroka Fort site. Such items were most likely acquired by Lower Tuscarora traders for localized cutting and finishing as gorgets or disc beads.

Many marine shell objects recovered in association with Cashie phase occupation deposits may have been partially or completely finished by Coastal Algonkian artisans and exchanged inland in return for Tuscarora acquired or Tuscarora produced items (see below). Although the popular use of *Marginella* shell beads, especially after the widespread introduction of European glass beads in the mid-to-late seventeenth century, diminished among Indian peoples in the neighboring Piedmont province (Hammett and Sizemore 1989), several artifact collections recovered from the Neoheroka Fort site contain numerous modified *Marginella* shell beads, presumably the remains of necklaces or clothing ornamentation. Phelps (personal communication 2003) noted that one Cashie I subphase ossuary at the Jordan's Landing site included a worked shell (*Busycon*) dipper. Unmodified freshwater mussel shells (*Elliptio* sp.) were found, carefully arranged around the deceased in one Precontact period Cashie phase burial at the San Souci East site, but among Cashie phase peoples, unmodified shells were not typically used as funerary objects (Heath 2003).

In the early 1700s, John Lawson (1967 [1709]) observed that Upper and Lower Tuscarora woodcarvers traded their wares (bowls, platters, ladles, spoons) for deerskins and other goods from the Piedmont, and perhaps shell blanks, shell beads and yaupon leaves from the Tidewater. Worked wood, unless carbonized or perpetually waterlogged, rarely survives archaeologically in eastern North Carolina, so we know very little about Cashie phase woodworking traditions beyond what is specifically mentioned in ethnohistorical sources. A carbonized and fragmented wood spatula, *sans* handle, was recovered from the Neoheroka Fort site, but no known examples of bowls or other implements are known to have survived archaeologically. The dugout canoe was certainly a significant component of the Cashie phase, material culture suite. Despite their prevalence in the ethnohistorical record (e.g., Barnwell 1908; Lawson 1967 [1709]), as well as in the regional Precontact period archaeological record (Phelps 1989; Ward and Davis 1999), no known examples of such Tuscarora or Meherrin made boats have been documented. Regionally recovered or documented dugout canoes predate ca. A.D.1450 and the extant Late Woodland period examples were probably hewn by Carolina Algonkians (Phelps 1989).

European Trade Goods. If the European trade goods recovered from the Contentnea Creek site (Millis 2003, 2009) are generally representative of the Lower Tuscaroras' adoption and integration of European produced tools as replacements for implements locally made from wood, bone, shell or stone, then iron tools were of minor importance at least as late as ca. 1665. By the early 1700s, however, iron tools appear to have made obvious inroads on the regular production and use of locally made implements such as stone axes, adzes, drills, blades and scrapers. Iron hoes, axes and knives, as well as wrought nails and spikes for architectural purposes, or reuse as drills, awls and punches, are well represented in the Neoheroka Fort site collections. Carolina Algonkian and Piedmont Siouan groups made a similar transition, adopting an array of European produced iron tools or modifying nails and spikes into punches, awls, etc., by the late seventeenth century (see e.g., Dickens et al. 1987; Heath 2008; Ward and Davis 1993). Although firearms were potentially introduced to Upper and Lower Tuscaroras by European traders before ca. 1650, no trade gun parts, gunspalls, gunflints, lead projectiles or obvious firearms parts were recovered at the Contentnea Creek site, which appears to have been used by Lower Tuscaroras as a fall-winter hunting quarter through ca. 1665 (Millis 2003, 2009)—see Table 10-2. The only definitive European trade goods from the site are drawn glass beads, but most, if not all of the copper-copper alloy beads associated with the site's Cashie II subphase burials were either made in Europe or produced locally from European source metals (Millis 2003:346–347 and Figure 130). The site's limited assemblage of European trade goods is comparable to similar assemblages recovered from other pre-1665–1670 Indian occupation sites in North Carolina and Virginia (see e.g., Boyd 2004:Table 7.2; Eastman 1999; Ward and Davis 1999).

Small quantities of European trade goods have been recovered at other sites with Cashie II subphase occupations in North Carolina (e.g., Binford 1964; Byrd and Heath 1997) and Virginia (e.g., MacCord 1970), but the only substantial collections of trade goods recovered from a post-1660s era, Cashie phase site are those from the Neoheroka Fort site (Byrd 2001; Byrd et al. 2009; Heath and Phelps 1998) (Figures 10-6 and 10-7). The fort's artifact assemblage includes: glass beads and buttons, green glass bottles, iron implements (axes, hoes) and hardware (nails, spikes), white clay smoking pipes or fragments, and copper or copper alloy bells, buckles and buttons (Figure 10-5). One complete copper or copper alloy kettle, as well as cut or recycled pieces from several other kettles, was also recovered. It is of interest to note that the Lower Tuscaroras, at least as late as 1713, continued to rely on their own ceramic or wood vessels, rather than European produced metal kettles and pottery vessels. Throughout the Cashie II subphase, copper or brass kettles were apparently more valued as a source for raw material than as containers cooking or food processing and storage. Weapons and weapons related artifacts from the Neoheroka Fort site include lead musket balls and shot, English gunspalls, trade muskets, musket parts and edged weapons fragments (Byrd 2001; Byrd et al. 2009; Heath and Phelps 1998). Other objects, including two Rhenish stoneware jugs and several lead-glazed earthenware vessels were probably taken by Lower Tuscarora raiders from European plantations and farmsteads around Bath and New Bern during the Tuscarora War raids of 1711–1713. In terms of trade goods types and overall assemblage diversity, the Neoheroka Fort site assemblage is comparable to the Fredricks site assemblage, a ca. 1670–1710 Occaneechi village site (see e.g., Carnes 1987; Davis et al. 1998; Ward and Davis 1999).

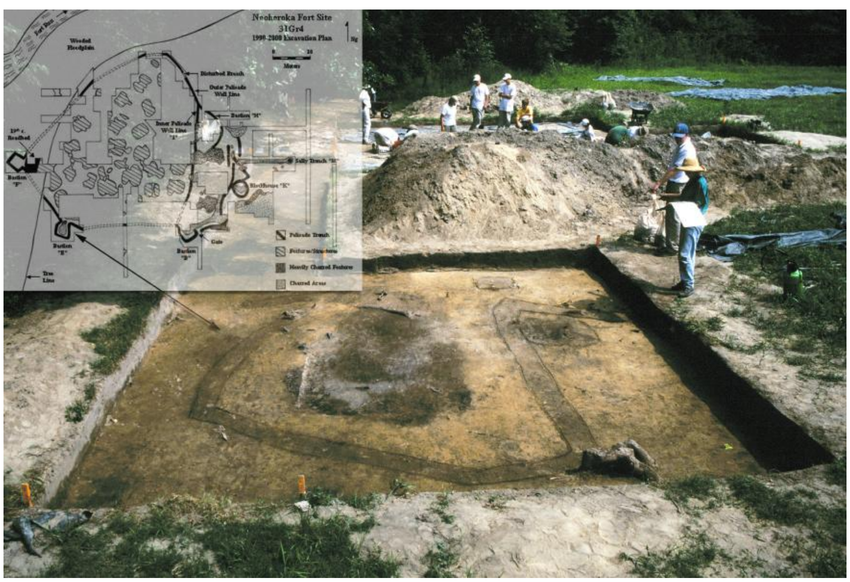


Figure 10-6. The Neoheroka Fort site (31GR4). Photograph shows top of Feature 4E, the archaeological remains of the Bastion E wall trench, exposed at the base of the plow zone. The inset map is a plan view of excavation areas and plotted fort features showing the palisade wall and bastion wall traces, and the semi-subterranean house-bunker inside the palisade line (Photograph by John E. Byrd; photograph and map adapted from Byrd et al. 2009).

Figure 10-7. Pre-conservation treatment artifact sample from a cache of personal items recovered from a wall niche inside Feature 16 (semi-subterranean house-bunker) at the Neoheroka Fort site. The array includes: red drawn glass beads (restrung); molded lead musket shot; preserved cucurbit seeds; copper alloy bracelets and perforated discs; brass buttons, bell, buckles, spoon and nested weight; Tuscarora-made smoking pipes; *Runtee*, *Peak* and *Ronoak* beads; retooled English gunspall (Courtesy of David S. Phelps).

European produced cloth, like firearms, expendable ammunition and rum, was a significant component of the deerskin-peltry and Indian slave trade exchange system of the late seventeenth and early eighteenth centuries (see e.g., Ethridge 2006, 2009). Like other organic materials, cloth rarely survives archaeologically in terrestrial site deposits except in unique micro-environments. Small remnants of cloth were found adhered to the backs of copper alloy buttons and other objects at the Neoheroka Fort site, but the fabrics have not been analyzed by a textiles specialist. Similarly, some copper alloy buckles from the site appear to retain bits of preserved leather. Lead bale seals, more stable artifacts associated with the cloth trade, were often used to mark bales of cloth or other market goods inspected and taxed for export from England and other European countries (Hume 1991 [1969]). Such seals have been recovered at some period sites regionally (e.g., Heath 2008), but not at the Contentnea Creek (Millis 2003, 2009) or Neoheroka Fort sites.[97] European origin trade goods from sites with colonial era Meherrin occupations are comparatively few, at least in terms of what has been reported to date; MacCord (1970) reported an interesting array of items from the John Green site in southeastern Virginia and a few period objects were reported by Binford (1964).

SUMMARY

In view of regional archaeological research undertaken since the early 1980s, we have re-examined the Cashie phase archaeological culture and its plausible relationship with Coastal Plain Iroquoian peoples of the Precontact–early Postcontact periods in eastern North Carolina, ca. A.D. 1200–1803. Through this exercise, we have summarized the history of Cashie phase research and discussed phase related chronologies, landscapes, mortuary customs, subsistence patterns and material culture. We have assessed evidence for both continuity and change within the phase, and based on that assessment, proposed a new subphase model. While recognizing and stressing a number of research problems and hypotheses needing further study, we integrated facets of archaeological, ethnohistorical, linguistic and oral history evidence to illuminate the interrelated histories of Tuscarora and Meherrin peoples who lived in North Carolina through the early 1800s. Regarding the Tuscarora and Meherrin peoples of the Contact and early Postcontact periods, several important studies have been published over the past decade or more (e.g., Dawdy 1994, 1995; Edwards 1999; Feeley 2007; Gallay 2002; Lee 2004; McIlvenna 2009; Nixon 2000). These document-based studies have proven and will yet prove useful in the reanalysis of existing archaeological data associated with the Cashie phase. In the future, the thoughtful and systematic integration of documentary and material based studies should ultimately lead to a more complete, social and processual history of past, and possibly present, Coastal Plain Iroquoian peoples in northeastern North Carolina and southeastern Virginia through time.

Acknowledgements. This chapter is offered as a tribute to the Tuscarora and Meherrin nations. We consider it a distinct privilege to study their respective histories. We respectfully submit this contribution in memory of our teacher, mentor and friend, David S. Phelps (1929–2009). Nearly all archaeological investigations undertaken across the North Carolina Coastal Plain since the early 1980s have relied on the substantial research foundation he prepared for those who followed him in the study of the region's Precontact–Contact period American Indian peoples. Without his thirty years of research effort, combined with the endeavors of his student and colleague, John E. Byrd, much of the data on which this chapter is partially based would not exist. As former students of both Drs. Phelps and Byrd during their tenures at East Carolina University, we continue to benefit from their instruction, shared knowledge and encouragement. Some of their collective insights regarding the archaeological record and colonial era history of eastern North Carolina, while not necessarily published, are inextricably woven into this chapter—the result of many conversations enjoyed over a cold beverage or a piquant platter of eastern North Carolina BBQ. Thank you, David. You are sorely missed. Thank you, John. We hope you will return to North Carolina and spur new research efforts in the realm of "Tuscarora Archaeology." We sincerely express our thanks to the many individuals who kindly supported aspects of the research conducted for the preparation of the original symposium contribution and this chapter. We greatly appreciate the support and assistance of Charlie Ewen for opening the doors of the David S. Phelps Archaeology Laboratory (East Carolina University) to us and allowing liberal access to the laboratory's library, archives, collections and facilities on numerous occasions. His service as a symposium co-organizer and his long suffering patience as the principal editor of this volume are very much appreciated. We further acknowledge Steve Claggett, Dolores Hall and John Mintz for facilitating access to the North Carolina Office of State Archaeology's (OSA) library holdings and site files, as well as for their hospitality and interest in our research. Dolores, in particular, generously guided us to key cultural resource management studies and shared her encyclopedic knowledge of OSA holdings (and "secret" parking places near the OSA). Several regionally active archaeologists shared conference papers, technical reports, radiocarbon assay data and other pertinent unpublished datasets, as well as their own time and knowledge. In particular, we offer our thanks to Susan Bamann, Tom

Beaman, Dorothy Block, Matthew Bradley, John Byrd, John Cable, Linda Carnes-McNaughton, Steve Davis, Jane Eastman, Joe Herbert, Dale Hutchinson, Jeff Irwin, Dane Magoon, Heather Millis, John Mintz, Chris Moore, David Phelps, Brett Riggs, Kim Schaefer and Paul Webb. Joe Herbert (Fort Bragg, Cultural Resources Management Program [CRMP]) shared his insights regarding coil-built pottery production and other aspects of pottery analysis. Jaime Grant (CRMP) provided thoughtful comments on a draft chapter. Chris Espenshade (New South Associates) reviewed and commented on the final draft. Although Blair Rudes (1951–2008) died just months before the 2008 symposium, we recognize the many ways his past considerations benefit our studies. Over time, Blair provided copies of published and unpublished papers related to his linguistic research, and patiently assisted with translations and other questions regarding the Tuscarora and Meherrin languages. Thank you, Blair. You are missed. The same can be said of Mark Mathis (OSA) who was always willing to share his knowledge of Coastal Plain archaeology with humor and candor. Thank you, Mark. You are missed, as well. I (Charles Heath) especially thank Ruth, Noah and Ella for their love and support through the process of completing the research and writing represented in this chapter, especially in the evenings and on weekends when they missed my companionship or engagement in daily routines. They give up the most in life when I engage in esoteric pursuits. My colleagues at the Fort Bragg CRMP, as well as several professors and fellow graduate students (past and present) at the University of North Carolina at Chapel Hill, all contributed directly or indirectly to some of the ideas and interpretations integrated into this chapter. For their many kindnesses, I am exceedingly grateful. In this regard, I recognize and thank Brian Billman, Tony Boudreaux, Steve Davis, Dale Hutchinson, John Marcoux, Theda Purdue, Brett Riggs, Margie Scarry, Michelle Schohn, Kim Schaefer, and Vin Steponaitis. As in all things great and small, and despite my many obvious shortcomings, I thank God for His love, mercy, grace and providence in my life. I have always received far more in this life than I merit. Despite the extensive knowledge and best efforts of the many individuals who assisted us with our research over the years, we fully acknowledge our individual cultural and theoretical biases, and are ultimately responsible for any FUBAR interpretations, or the unintended errors that no doubt exist in this chapter.

REFERENCES CITED

Anderson, David G., Charles E. Cantley, and A. Lee Novick
1982 *The Mattassee Lake Sites: Archeological Investigations along the Lower Santee River in the Coastal Plain of South Carolina*. Commonwealth Associates, Jackson, Michigan. Submitted to Interagency Archeological Services, National Park Service, U.S. Department of the Interior, Atlanta. Copies available from South Carolina State Historic Preservation Office.

Anderson, M. Kat
2006 *Tending the Wild: Native American Knowledge and the Management of California's Natural Resources*. University of California Press, Berkley.

Andrews, Susan T.
2003 Appendix E: Analysis of Faunal Remains. In *Archaeological Data Recovery at the Mabry Bridge Site (31ED333), Bridge 53 over Fishing Creek, Edgecombe County, North Carolina*, Vol. I–II, by Susan E. Bamann. Coastal Carolina Research, Tarboro, North Carolina.

Arber, Edward (editor)
1895 *Capt. John Smith: Works, 1608–1631*, Vol. II. Archibald Constable, Westminster.

Arnold, Jeanne E.
1996 Understanding the Evolution of Intermediate Societies. In *Emergent Complexity: The Evolution of Intermediate Societies*, edited by Jeanne E. Arnold, pp. 1–12. Archaeological Series No. 9. International Monographs in Prehistory, Ann Arbor.

Bamann, Susan E.
2006 *Archaeological Data Recovery at the Mabry Bridge Site (31ED333), Bridge 53 over Fishing Creek, Edgecombe County, North Carolina*, Vol. I–II. Coastal Carolina Research, Tarboro, North Carolina. Submitted to North Carolina Department of Transportation, Raleigh, TIP No. B-3170. Copies available from North Carolina Office of State Archaeology.

Bamann, Susan E., Dawn Bradley and Bill Hall
2008 *Preliminary Report: Archaeological Testing of 31HX250 (The Mush Island Site), Halifax County, North Carolina*. Coastal Carolina Research, Tarboro, North Carolina. Copies available from North Carolina Office of State Archaeology.

Barnwell, John W. (editor)
1908 The Tuscarora Expedition: Letters of Colonel John Barnwell. *South Carolina Historical and Genealogical Magazine* 9:28–54.

1909 The Second Tuscarora Expedition. *South Carolina Historical and Genealogical Magazine* 10:33–48.

Beaman, Thomas E.
2008 "Next to Two Rivers:" A Brief and True Report of the Wilson County Sesquicentennial Survey to Locate the Late Woodland and Protohistoric Tuscarora Community of Tosneoc. *North Carolina Archaeological Society Newsletter* 18(1):3–7.

Beck, Robin A.
1997 From Joara to Chiaha: Spanish Exploration of the Appalachian Summit Area, 1540–1568. *Southeastern Archaeology* 16:162–169.

Beck, Robin, David G. Moore, and Christopher B. Rodning
2006 Identifying Fort San Juan: A Sixteenth-Century Spanish Occupation at the Berry Site, North Carolina. *Southeastern Archaeology* 25:65–77.

Bennett, D. Gordon, and Jeffrey C. Patton (editors)
2008 *A Geography of the Carolinas*. Parkway, Boone, North Carolina.

Binford, Lewis R.
1964 *Archaeological and Ethnohistorical Investigation of Cultural Diversity and Progressive Development among Aboriginal Cultures of Coastal Virginia and North Carolina*. Ph.D. dissertation, University of Michigan, Ann Arbor. University Microfilms International, Ann Arbor.

1965 Colonial Period Ceramics of the Nottoway and Weanock Indians of Southeastern Virginia. *Quarterly Bulletin of the Archeological Society of Virginia* 19(4):78–87.

1967 An Ethnohistory of the Nottoway, Meherrin and Weanock Indians of Southeastern Virginia. *Ethnohistory* 14(3–4):103–218.

1991 *Cultural Diversity among Aboriginal Cultures of Coastal Virginia and North Carolina*. The Evolution of North American Indians, David H. Thomas, series editor. Garland, New York.

Blaker, Margaret C.
1952 Further Comments on Simple-Stamped Shell-Tempered Pottery. *American Antiquity* 17:257–258.

Bland, Edward
1966 [1651] *The Discovery of New Brittaine*. Thomas Harper, London. 1966 facsimile ed. Great Americana Series, Readex Microprint, New York.

Bogdan, Georgieann, and David S. Weaver
1992 Pre-Columbian Treponematosis in Coastal North Carolina. In *Disease and Demography in the Americas: Before and After 1492*, edited by John W. Verano and Douglas H. Ublaker, pp. 155–163. Smithsonian Institution Press, Washington, D.C.

Bolnick, Deborah A. (Weiss) and David G. Smith
2003 Unexpected Patterns of Mitochondrial DNA Variation Among Native Americans From the Southeastern United States. *American Journal of Physical Anthropology* 122:336–354.

Boudreaux, Edmond A.
2007 A Mississippian Ceramic Chronology for the Town Creek Region. *North Carolina Archaeology* 56:1–57.

Bowser, Brenda J.
2000 From Pottery to Politics: An Ethnoarchaeological Study of Political Factionalism, Ethnicity, and Domestic Pottery Style in the Ecuadorian Amazon. *Journal of Archaeological Method and Theory* 7:219 –248.

Boyce, Douglas W.
1971 Notes on Tuscarora Political Organization, 1650–1713. Unpublished Master's thesis, Department of History, University of North Carolina, Chapel Hill.

1973 *Tuscarora Political Organization, Ethnic Identity, and Sociohistorical Demography, 1711–1825*. Ph.D. dissertation, University of North Carolina, Chapel Hill. ProQuest-UMI Dissertation Publishing, Ann Arbor.

1975 Did a Tuscarora Confederacy Exist? In *Four Centuries of Southern Indians*, edited by Charles M. Hudson, pp. 28–45. University of Georgia Press, Athens.

1978 Iroquoian Tribes of the Virginia-North Carolina Coastal Plain. In *Northeast*, edited by Bruce G. Trigger, pp. 282–289. Handbook of North American Indians, Vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

1987 "As the Wind Scatters Smoke": The Tuscaroras in the Eighteenth Century. In *Beyond the Covenant Chain: The Iroquois and Their Neighbors in Indian North America, 1600–1800*, edited by Daniel J. Richter and James H. Merrell, pp. 151–164. Syracuse University Press, Syracuse.

Boyd, Clifford
2004 Evolutionary Archaeology and the Contact Period: A Case Study from Virginia and North Carolina. In *Indian and European Contact in Context: The Mid-Atlantic Region*, edited by Dennis B. Blanton and Julia A. King, pp. 149–171. University Press of Florida, Gainesville.

Boyd, William K. (editor)
1929 *William Byrd's Histories of the Dividing Line Betwixt Virginia and North Carolina*. North Carolina Historical Commission, Raleigh.

Braun, David P.
1983 Pots as Tools. In *Archaeological Hammers and Theories*, edited by James A. Moore and Arthur S. Keene, pp. 107–134. Studies in Archaeology Series. Academic Press, New York.

Brickell, John
1969 [1731] *The Natural History of North-Carolina*. James Carson, Dublin. 1969 transcribed ed., edited by Carol Urness. Johnson Reprint, New York.

Bright, William (editor)
2004 *Native American Placenames of the United States*. University of Oklahoma Press, Norman.

Bronk Ramsey, Christopher
2009 Bayesian Analysis of Radiocarbon Dates. *Radiocarbon* 51:337–360.

Burrus, Rachele D.
1996 Potential Clay Sources for Cashie Ceramics at Two Archaeological Sites in Bertie County, North Carolina (Draft). Manuscript on file, Davis S. Phelps Archaeology Laboratory, East Carolina
University, Greenville.

Butler, Lindley S.
1971 The Early Settlement of Carolina: Virginia's Southern Frontier. *Virginia Magazine of History and Biography* 79:20–28.

Byrd, John E.
1991 Taphonomy, Diversity, and Seasonality of Cashie Phase Faunal Assemblages from the Jordan's Landing Site, 31Br7, North Carolina. Unpublished Master's thesis, Department of Anthropology, University of Tennessee, Knoxville.

1995 *An Archaeological Inventory of Sites within the City of Greenville ETJ with Site Descriptions and Predictive Model*. Archaeology Laboratory, East Carolina University, Greenville. Submitted to City of Greenville (North Carolina). Copies available from North Carolina Office of State Archaeology.

1996 *Preliminary Report of the Archaeological Survey of the Contentnea Creek Drainage*. David S. Phelps Archaeology Laboratory, East Carolina University, Greenville. Submitted to National Park Service, U.S. Department of the Interior. Copies available from North Carolina Office of State Archaeology

1997 *Tuscarora Subsistence Practices in the Late Woodland Period: The Zooarchaeology of the Jordan's Landing Site*. Publication No. 27. North Carolina Archaeological Council, Raleigh.

1998 Disentangling the Present Condition: Iroquois History as Revealed through Interpretations of Anthropometric, Linguistic, and Archaeological Data (Revised). Paper presented at the 1996 Conference on Integrating Appalachian Archaeology, New York Museum, Albany.

1999 The Final Tragedy of the Tuscarora War: Human Remains in the Neoheroka Fort Site. Paper presented at the 51st Meeting of the American Academy of Forensic Sciences, Orlando, Florida.

2001 The Search for Forts of the Tuscarora War Era. Paper presented at the 66th Annual Meeting of the Society for American Archaeology, New Orleans, Louisiana.

Byrd, John E., and Charles L. Heath
1997 *The Rediscovery of the Tuscarora Homeland: A Final report of the Archaeological Survey of the Contentnea Creek Drainage, 1995–1997*. David S. Phelps Archaeology Laboratory, East Carolina University, Greenville. Submitted to National Park Service, U.S. Department of the Interior. Copies available from North Carolina Office of State Archaeology.

2004 "The Country here is very thick of Indian Towns and Plantations…": Tuscarora Settlement Patterns as Revealed by the Contentnea Creek Survey. In *Indian and European Contact in Context: The Mid-Atlantic Region*, edited by Dennis B. Blanton and Julia A. King, pp. 98–125. University Press of Florida, Gainesville.

Byrd, John E., Charles L. Heath, and David S. Phelps
2009 National Register of Historic Places—Registration Form (Section 7): Neoheroka Fort site (31GR4), Greene County, North Carolina. Copies available from North Carolina Office of State Archaeology.

Cable, John S.
2002 *Intensive Cultural Resource Survey, Santee Timber Thinning Unit, Berkley and Charleston Counties, Francis Marion National Forest, South Carolina*. Palmetto Research Institute, Irmo. Submitted to USDA Forest Service, Francis Marion and Sumter National Forests. Copies available from South Carolina State Historic Preservation Office.

Cameron, Catherine M.
2008 Introduction: Captives in Prehistory as Agents of Social Change. In *Invisible Citizens: Captives and Their Consequences*, edited by Catherine M. Cameron, pp. 1–24. Foundations of
Archaeological Inquiry, James M. Skibo, series editor. University Press of Utah, Salt Lake City.

Cannon, Aubrey
2002 Spatial Narratives of Death, Memory and Transcendence. In *The Space and Place of Death*, edited by Helaine Silverman and David B. Small, pp. 191–200. Archaeological Papers of the American Anthropological Association No. 11, Jay K. Johnson, general series editor. Arlington, Virginia

Carnes, Linda F.
1987 Euroamerican Artifacts from the Fredricks, Wall, and Mitchum sites. In *The Siouan Project: Seasons I and II*, edited by Roy S. Dickens, H. Trawick Ward, and R. P. Stephen Davis, pp. 141–166. Monograph No. 1. Research Laboratories of Anthropology, University of North Carolina, Chapel Hill.

Carnes-McNaughton, Linda
2008 Ceramic Assemblage Analysis from Shipwreck 31CR314, *Queen Anne's Revenge* Site. *Queen Anne's Revenge* Shipwreck Project, Research Report and Bulletin Series QAR-R-08-03. Underwater Archaeology Branch, Office of State Archaeology, North Carolina Department of
Cultural Resources, Kure Beach.

Carnes-McNaughton, Linda, and Thomas Beaman
2005 Enigmatic Earthenwares: Colonowares from Non-Plantation Sites in North Carolina. Paper presented at the 62nd Annual Meeting of the Southeastern Archaeological Conference, Columbia, South Carolina.

Chafe, Wallace L., and Michael K. Foster
1981 Prehistoric Divergences and Recontacts between Cayuga, Seneca, and the Other Northern Iroquoian Languages. *International Journal of American Linguistics* 47:121–142.

Clark, Walter S. (editor)
1907 *The State Records of North Carolina*, Vol. XXII. Nash Brothers, Goldsboro, North Carolina.

Clark, William B., Benjamin L. Miller, L. W. Stephenson, B. L. Johnson, and Horatio N. Parker
1912 *The Coastal Plain of North Carolina*. North Carolina Geological and Economic Survey Vol. 3. Raleigh.

Claassen, Cheryl
1980 The Search for Secotan. Manuscript on file, Office of State Archaeology, State Historic Preservation Office, North Carolina Department of Cultural Resources, Raleigh.

Coe, Joffre L.
1952 The Cultural Sequence of the Carolina Piedmont. In *Archaeology of the Eastern United States*, edited by James B. Griffin, pp. 310–311. University of Chicago Press, Chicago.

1964 *The Formative Cultures of the Carolina Piedmont.* Transactions of the American Philosophical Society Vol. 54 (New Series), Part 5. Philadelphia.

Crane, David L.
2006 Colonial Identifications for Native Americans in the Carolinas, 1540–1790. Unpublished Master's thesis, Department of History, University of North Carolina, Wilmington.

Crawford, Robert G. H.
1966 An Archaeological Survey of Lenoir County, North Carolina. Unpublished Master's thesis, Department of Anthropology, University of Florida, Gainesville.

Cumming, William P.
1939 The Earliest Permanent Settlement in Carolina. *The American Historical Review* 45:82–89.

1966 *North Carolina in Maps*. Historical Publications Section, North Carolina Department of Archives and History, Raleigh.

1998 *The Southeast in Early Maps*. 3rd ed. Fred W. Morrison Series in Southern Studies. University of North Carolina Press, Chapel Hill.

Curry, Dennis C.
1999 *Feast of the Dead: Aboriginal Ossuaries in Maryland.* Archaeological Society of Maryland and Historic Trust Press, Crownsville, Maryland.

Cusick, David
1848 [1828] *David Cusick's Sketches of Ancient History of the Six Nations*. Turner and McCollum, Lockport, New York. Reprint ed., Cooley and Lathrop, Lockport.

Davis, R. P. Stephen
2002 The Cultural Landscape of the Carolina Piedmont at Contact. In *The Transformation of the Southeastern Indians, 1540–1760*, edited by Robbie Ethridge and Charles Hudson, pp. 135–154. University Press of Mississippi, Jackson.

2005 Foreword. In *Archaeology on the Roanoke*, by Stanley South, pp. xiv–xvii. Monograph No. 4. Research Laboratories of Archaeology, University of North Carolina, Chapel Hill.

Davis, R. P. Stephen, Patrick C. Livingood, H. Trawick Ward, and Vincas P. Steponaitis (editors)
1998 *Excavating Occaneechi Town: Archaeology of an Eighteenth-Century Indian Village in North Carolina* (CD-ROM). University of North Carolina Press, Chapel Hill.

Dawdy, Shannon L.
1994 The Secret History of the Meherrin. Unpublished Master's thesis, Department of History, College of William and Mary, Williamsburg.

1995 The Meherrin's Secret History of the Dividing Line. *North Carolina Historical Review* 72:387– 415.

DeBoer, Warren R.
2008 Wrenched Bodies. In *Invisible Citizens: Captives and Their Consequences*, edited by Catherine M. Cameron, pp. 233–262. Foundations of Archaeological Inquiry, James M. Skibo, series editor. University Press of Utah, Salt Lake City.

Deitler, Michael, and Ingrid Herbich
1994 Ceramics and Ethnic Identity: Ethnoarchaeological Observations on the Distribution of Pottery Styles and the Relationship between the Social Contexts of Production and Consumption. In *Terre cuite et société: la céramique, document technique, economique, culturel*, edited by D. Binder and F. Audouze, pp. 459–472. Editions APDCA, Juan les Pins, Antibes.

Derks, Ton, and Nico Roymans (editors)
2009 *Ethnic Constructs in Antiquity: The Role of Power and Tradition*. Amsterdam University Press, Amsterdam.

Devereux Papers (John Devereux)
1712–1898 Tuscarora Treaty, 1712 (Pollock-Devereux Papers, Box PC.34.1). North Carolina State Archives, Raleigh.

Dickens, Roy S., H. Trawick Ward, and R. P. Stephen Davis (editors)
1987 *The Siouan Project: Seasons I and II*. Monograph No. 1. Research Laboratories of Anthropology, University of North Carolina, Chapel Hill.

Driver, Harold E., and William C. Massey
1957 *Comparative Studies of North American Indians*. Transactions of the American Philosophical Society Vol. 47 (New Series), Part 2. Philadelphia.

Earle, Timothy K.
1987 Chiefdoms in an Archaeological and Ethnohistorical Perspective. *Annual Reviews of Anthropology* 16:279-308.

Eastman, Jane M.
1994a The North Carolina Radiocarbon Date Study (Part 1). *Southern Indian Studies* 42:1–63.

1994b The North Carolina Radiocarbon Date Study (Part 1). *Southern Indian Studies* 43:1–117.

1999 *Sara and Dan River Peoples: Siouan Communities in North Carolina's Interior Piedmont from A.D. 1000 to A.D. 1700*. Ph.D. dissertation, University of North Carolina, Chapel Hill. ProQuest-UMI Dissertation Publishing, Ann Arbor.

Eastman, Jane M., Loretta Lautzenheiser, and Mary Ann Holm
1997 A Re-evaluation of Ceramics from the Tower Hill site (31LR1), Lenoir County, North Carolina. *North Carolina Archaeology* 46:109–120.

Edwards, William
1999 Recovering the Place of the Tuscarora. Unpublished Master's thesis, Department of Geography, East Carolina University, Greenville.

Egloff, Keith T.
1985 Spheres of Cultural Interaction across the Coastal Plain of Virginia in the Woodland Period. In *Structure and Process in Southeastern Archaeology*, edited by Roy S. Dickens and H. Trawick Ward, pp. 229–242. University of Alabama Press, Tuscaloosa.

Egloff, Keith T., and Stephen R. Potter
1982 Indian Ceramics from Coastal Plain Virginia. *Archaeology of Eastern North America* 10:95–117.

Eiselt, B. Sunday
2005 *Sangre de Cristo Micaceous Clays and Picurís Pueblo Ceramics: Geochemical Evidence for a Picurís Pueblo Clay Source District and use of the Molo nan na Source Area*. Museum of Anthropology, University of Michigan, Ann Arbor.

Engelbrecht, William
2003 *Iroquoia: The Development of a Native World*. Syracuse University Press, Syracuse.

Esarey, Duane
2007 Disk Runtees: 17th Century Horizon Markers of Contact and Colonialism. Paper presented at the 64th Annual Meeting of the Southeastern Archaeology Conference, Knoxville, Tennessee.

Ethridge, Robbie
2003 Shatterzone: The Early Colonial Slave Trade and its Consequences for the Natives of the Eastern Woodlands. Paper presented at the Annual Meeting of the American Society for Ethnohistory, Riverside, California.

2006 Creating the Shatter Zone: Indian Slave Traders and the Collapse of the Southeastern Chiefdoms. In *Light on the Path: The Anthropology and History of the Southeastern Indians*, edited by Thomas J. Pluckhahn and Robbie Ethridge, pp. 207–218. University of Alabama Press, Tuscaloosa.

2009 Introduction: Mapping the Mississippian Shatter Zone. In *Mapping the Mississippian Shatter Zone: The Colonial Indian Slave Trade and Regional Instability in the American South*, edited by Robbie Ethridge and Sheri M. Shuck-Hall, pp. 1–62. University of Nebraska Press, Lincoln.

Ethridge, Robbie, and Charles Hudson (editors)
2002 *The Transformation of the Southeastern Indians, 1540–1760*. University Press of Mississippi, Jackson.

Ethridge, Robbie, and Sheri M. Shuck-Hall (editors)
2009 *Mapping the Mississippian Shatter Zone: The Colonial Indian Slave Trade and Regional Instability in the American South*. University of Nebraska Press, Lincoln.

Evans, Clifford
1955 *A Ceramic Study of Virginia Archeology*. Bulletin 160. Smithsonian Institution, Bureau of American Ethnology, Washington, D.C.

Evison, Martin P.
2001 Contexts of Change in Holocene Britain: Genes, Language and Archaeology. In *Archaeology, Language, and History: Essays on Culture and Ethnicity*, edited by John E. Terrell, pp. 173–198. Bergin and Garvey, Westport, Connecticut.

Faris, Jeannie
1992 Excavating the Coast. *Coastwatch* September/October:13–14.

Farnum, Julie
2001 Appendix 6 (Section C): Trace Element Analyses. In *Data Recovery Excavations at 31WL37 on Upper Contentnea Creek, Wilson County, North Carolina* (Draft), by Heather Millis. TRC Garrow Associates, Durham.

Feeley, Stephen D.
2007 *Tuscarora Trails: Indian Migrations, War, and Constructions of Colonial Frontiers*. Ph.D. dissertation, College of William and Mary, Williamsburg. ProQuest-UMI Dissertation Publishing, Ann Arbor.

Feest, Christian
1978a North Carolina Algonquians. In *Northeast*, edited by Bruce G. Trigger, pp. 271–281. Handbook of North American Indians, Vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

1978b Virginia Algonquians. In *Northeast*, edited by Bruce G. Trigger, pp. 253–270. Handbook of North American Indians, Vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Fenton, William

1940 Problems Arising from the Historic Northeast Position of the Iroquois. In *Essays in Historical Anthropology of North America: Published in Honor of John R. Swanton*. Edited by C. G. Abbot, John R. Swanton, and Julian H. Steward, pp. 159–251. Smithsonian Miscellaneous Collections 100. Smithsonian Institution, Washington, D.C.

Fiedel, Stuart J., and David W. Anthony

2003 Deerslayers, Pathfinders and Icemen: Origins of the European Neolithic as Seen from the Frontier. In *Colonization of Unfamiliar Landscapes: The Archaeology of Adaptation*, edited by Marcy Rockman and James Steele, pp. 144–168. Routledge, London.

Fogelson, Raymond D. (editor)

2004 *Southeast*. Handbook of North American Indians, Vol. 14, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Foster, H. Thomas

2004 Evidence of Historic Creek Indian Migration from a Regional and Direct Historic Analysis of Ceramic Types. *Southeastern Archaeology* 65–84.

Fox, George

1975 [1831] *The Works of George Fox: A Collection of Many Select and Christian Epistles, Letters and Testimonies Written on Sundry Occasions*, Vol. 1–2. M. T. C. Gould, Philadelphia. 1975 facsimile ed., AMS Press, New York.

Galloway, Patricia

1992 Unexamined Habitus: Direct Historic Analogy and the Archaeology of the Text. In *Representations in Archaeology*, edited by Jean-Claude Gardin and Christopher Peebles, pp. 178–195. Indiana University Press, Bloomington.

Gallay, Alan

2002 *The Indian Slave Trade: The Rise of the English Empire in the American South, 1670–1717*. Yale University Press, New Haven.

Gallivan, Martin

2003 *James River Chiefdoms: The Rise of Social Inequality in the Chesapeake*. University of Nebraska Press, Lincoln.

Gardner, Paul S.

1990 *Excavations at the Amity Site: Final Report of the Pomeiooc Project, 1984–1989*. Archaeological Research Report No. 7. Archaeology Laboratory, East Carolina University, Greenville.

1991 The Search for Toisnot Town: The Wilson County Archaeological Project. Manuscript on file, Office of State Archaeology, State Historic Preservation Office, North Carolina Department of Cultural Resources, Raleigh.

George-Kanentiio, Douglas

2007 Iroquois Roots. In *Archaeology of the Iroquois: Selected Readings and Research Sources*, edited by Jordan E. Kerber, pp. 391–402. Syracuse University Press, Syracuse

Gleach, Frederic W.

1997 *Powhatan's World and Colonial Virginia: A Conflict of Cultures*. Studies in the Anthropology of North American Indians. University of Nebraska Press, Lincoln.

Goddard, Ives

1978 Eastern Algonquian Languages. In *Northeast*, edited by Bruce G. Trigger, pp. 70–77. Handbook of North American Indians, Vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

1984 The Study of North American Ethnonymy. In *Naming Systems*, edited by Elisabth Tooker, pp.95–107. 1980 Proceedings of the American Ethnological Society. Washington, D.C.

Gosselain, Olivier P.

1998 Social and Technical Identity in a Clay Crystal Ball. In *The Archaeology of Social Boundaries*, edited by Miriam T. Stark, pp. 78–106. Smithsonian Institution Press, Washington, D.C.

2000 Materializing Identities: An African Perspective. *Journal of Archeological Method and Theory* 7:187–217.

Graffenried, Christoph von

1920 [ca. 1714] Relation of My American Project. In *Christoph von Graffenried's Account of the Founding of New* Bern, edited and translated by Vincent H. Todd and Julius Goebel, pp. 219–282. Edwards and Broughton, Raleigh, North Carolina.

1968 [ca. 1714] Account of a Voyage to America in the Year 1710. In *Colonial Records of North Carolina*, Vol. I, edited by William L. Saunders, pp. 905–985. Reprinted, facsimile ed. AMS Press, New York. Originally published 1886, P. M. Hale, Raleigh, North Carolina.

Green, Paul R.

1986 *The Archaeology of "Chowanoke:" Results of the 1983–1984 Investigations at Mount Pleasant and Liberty Hill, Hertford County, North Carolina*. America's Four Hundredth Anniversary Committee, Division of Archives and History, North Carolina Department of Cultural Resources, Raleigh.

Greene, Elton

1969 *The Tuscarora Language*. Johnson Publishing, Murfreesboro, North Carolina.

Griffith, Glenn E. and James M. Omernik
2009 Ecoregions of North Carolina and South Carolina. In *Encyclopedia of Earth*, Editor-in-Chief, Cutler J. Cleveland. Environmental Information Coalition, National Council for Science and the Environment, Washington D.C. Electronic document, http://www.eoearth.org/article/Ecoregions_of_North_Carolina_and_South_Carolina_(EPA), accessed December 2009.

Haag, William G.
1958 *The Archaeology of Coastal North Carolina*. Coastal Studies Series No. 2. Louisiana State University, Baton Rouge.

Haan, Richard L.
1981 The "Trade Do's Not Flourish as Formerly": The Ecological Origins of the Yamassee War of 1715. *Ethnohistory* 28:341–358.

Haas, Jonathan
1990 Warfare and the Evolution of Tribal Polities in the Prehistoric Southwest. In *The Anthropology of War,* edited by Jonathan Haas, pp. 171–189. Cambridge University Press, New York.

Hally, David J.
1983 Use Alterations of Pottery Vessel Surfaces: An Important Source of Evidence for the Identification of Vessel Function. *North American Archaeologist* 4:3–26.

1986 The Identification of Vessel Function: A Case Study from Northwest Georgia. *American Antiquity* 51:267–295.

Hariot, Thomas
1972 [1590] *A Brief and True Report of the New Found Land of Virginia.* Theodore DeBry, London. 1972 facsimile ed. Dover, New York.

Harrington, Jean C.
1948 Plain Stamped, Shell Tempered Pottery from North Carolina. *American Antiquity* 13:251–252.

1949 Archeological Explorations at Fort Raleigh National Historic Site. *North Carolina Historical Review* 26:127–149.

1962 *Search for the Cittie of Ralegh: Archeological Excavations at Fort Raleigh National Historic Site, North Carolina.* Archeological Research Series No. 6. National Park Service, United States Department of the Interior, Washington, D.C.

1966 *An Outwork at Fort Raleigh: Further Archaeological Excavations at Fort Raleigh National*
Historic Site, North Carolina. Eastern National Park and Monument Association, Philadelphia.

1984 *Archaeology and the Enigma of Fort Raleigh*. America's Four Hundredth Anniversary Committee, Division of Archives and History, North Carolina Department of Cultural Resources, Raleigh.

Hayes, Charles F. (general editor)
1980 *Proceedings of the 1979 Iroquois Pottery Conference*. Research Records No. 13. Research Division, Rochester Museum and Science Center, Rochester, New York.

Heath, Charles L.
1997 A Cultural History of River Herring and Shad Fisheries in Eastern North Carolina: The Prehistoric Period through the Twentieth Century. Unpublished Master's thesis, Department of Anthropology, East Carolina University, Greenville.

2002 Pots at War: A Comparative Study of Ceramics from Two Bunker Features Inside the Neoheroka Fort (31GR4), ca. 1713. Unpublished 4th Semester Paper, Department of Anthropology, University of North Carolina, Chapel Hill.

2003 Woodland Period Mortuary Variability in the Lower Roanoke River Valley: Perspectives from the Jordan's Landing and Sans Souci Sites. Paper presented at the 60th Annual Meeting of the Southeastern Archaeological Conference, Charlotte, North Carolina.

2004 Catawba Militarism: An Ethnohistorical and Archaeological Overview. *North Carolina Archaeology* 53:80–120.

2007 Tuscarora. In *Ethnicity*, edited by Celeste Ray, pp. 242–244. The New Encyclopedia of Southern Culture, Vol. 6, Charles R. Wilson, general editor. University of North Carolina Press, Chapel Hill.

2008 Postcontact Period European Trade Goods and Native Modified Objects from the Cape Creek Site (31DR1): Nine Artifact Group Studies (Draft). Manuscript on file, Olde Albemarle Research, Elizabeth City, North Carolina.

2010 Material Life in a Shatterzone: An Intersite Study of Shatterzone Processes in the Carolinas, circa 1665–1715 (Draft). Unpublished Ph.D. dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.

Heath, Charles L., and David S. Phelps
1998 Architecture of a Tuscarora Fortress: Neoheroka Fort and the Tuscarora War. Paper presented at the 63rd Annual Meeting of the Society for American Archaeology, Seattle, Washington.

Heath, Charles L., E. Clay Swindell, and David S. Phelps
2008 Material snapshots of Tuscarora Life: the Present State of Cashie Phase Research in Eastern North Carolina. Research paper presented at the North Carolina Coastal Plain Archaeology Symposium, East Carolina University, Greenville.

Herbert, Joseph M.
2003 Woodland Ceramics and Social Boundaries of Coastal North Carolina. Unpublished Ph.D. dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.

2009 *Woodland Potters and Archaeological Ceramics of the North Carolina Coast*. University of Alabama Press, Tuscaloosa.

Hewitt, John N. B.
1910a Nadowa. In *Handbook of American Indians North of Mexico* (Part 2), edited by Frederick W. Hodge, pp. 8–9. Bulletin 30. Smithsonian Institution, Bureau of American Ethnology, Washington, D.C.

1910b Tuscarora. In *Handbook of American Indians North of Mexico* (Part 2), edited by Frederick W. Hodge, pp. 842–853. Bulletin 30. Smithsonian Institution, Bureau of American Ethnology, Washington, D.C.

Higginbotham, Lori C.
1999 Gender-Specific Dental Health Patterns in Late Prehistoric Populations from the Southeastern Coast. Unpublished Master's thesis, Department of Anthropology, East Carolina University, Greenville.

Hinke, William J.
1916 Report of the Journey of Francis Louis Michel from Berne, Switzerland, to Virginia, October 2, 1701–December 1, 1702 (Part II). *Virginia Magazine of History and Biography* 24:113–141.

Hodges, Mary E. N.
1993 The Archaeology of Native American Life in Virginia in the Context of European Contact. In *The Archaeology of 17th-Century Virginia*, edited by Theodore R. Reinhart and Dennis J. Pogue, pp. 1–66. Special Publication No. 30. Archeological Society of Virginia, Richmond.

2004 Late Woodland Period Research in Virginia: Recent Trends and Contributions. *Quarterly Bulletin of the Archeological Society of Virginia* 59:1–13.

Holmes, William H.
1903 Aboriginal Pottery of the Eastern United States. *Twentieth Annual Report of the Bureau of American Ethnology, 1898–1899,* edited by J. W. Powell, pp. 1–237. Smithsonian Institution, Washington, D.C.

Hudson, Charles

2002 Introduction. In *The Transformation of the Southeastern Indians, 1540–1760*, edited by Robbie Ethridge and Charles Hudson, pp. xi–xxxix. University Press of Mississippi, Jackson.

Hudson, Charles and Carmen C. Tesser (editors)

1994 *The Forgotten Centuries: Indians and Europeans in the American South, 1521–1704*. University of Georgia Press, Athens.

Hulton, Paul (editor)

1984 *America 1585: The Complete Drawings of John White*. University of North Carolina Press, Chapel Hill.

Hume, Ivor Noel

1991 *A Guide to Colonial Artifacts of North America*. Vintage Books, New York. Reprinted, facsimile ed. Originally published 1969, Knopf, New York.

Hutchinson, Dale L.

1993 Osteological Analysis of Human Skeletal Remains from the Ellis Ossuary Site (44SN65), Southampton County, Virginia: Supplementary Skeletal Analysis. Manuscript on file, David S. Phelps Archaeology Laboratory, East Carolina University, Greenville.

2002 *Foraging, Farming, and Coastal Biocultural Adaptation in Late Prehistoric North Carolina*. University Press of Florida, Gainesville.

Hutchinson, Dale L., and Lorraine V. Aragon

2002 Collective Burials and Community Memories: Interpreting the Placement of the Dead in the Southeastern and Mid-Atlantic United States with Reference to Ethnographic Cases from Indonesia. In *The Space and Place of Death*, edited by Helaine Silverman and David B. Small, pp. 27–54. Archaeological Papers of the American Anthropological Association No. 11, Jay K. Johnson, general series editor. Arlington, Virginia

Hvidt, Kristian (editor)

1980 *Von Reck's Voyage: Drawings and Journal of Philip Georg Von Reck*. Beehive Press, Savannah, Georgia.

Irwin, Jeffrey D., Wayne C. J. Boyko, Joseph M. Herbert, and Chad O. Braley

1999 Woodland Period Burial Mounds in the North Carolina Sandhills. *North Carolina Archaeology* 48:59–86.

Irwin, Jeffrey D., and Charles L. Heath

2007a *A Report on the Cultural Affiliation of Ancient Human Remains from Archaeological Site 31HT435, Fort Bragg North Carolina*. Fort Bragg Cultural Resources Management Program, Fort Bragg.

Jacobsen, Karisa, E. Clay Swindell, Charles L. Heath, Garret Fesler, and Matthew Laird
2008 *Phase I & II Cultural Resources Surveys of the Bal-Gra Property, Bertie, North Carolina*. James River Institute for Archaeology, Williamsburg. Submitted to ALG FCLG Bal Gra Harbor LLC, Philadelphia. Copies available from North Carolina Office of State Archaeology.

Johnson, Elias
1881 *Legends, Traditions and Laws of the Iroquois, or Six Nations and History of the Tuscarora Indians.* Union Printing, Lockport, New York.

Johnson, Jay K., John W. O'Hear, Robbie Ethridge, Brad R. Lieb, Susan L. Scott, and H. Edwin Jackson
2007 Measuring Chickasaw Adaptation on the Western Frontier of the Colonial South: A Correlation of Documentary and Archaeological Data. *Southeastern Archaeology* 27:1–30.

Jones, David C.
1989 Osteological Analysis of Human Skeletal Remains from the Ellis Ossuary Site (44SN65), Southampton County, Virginia. East Carolina University, Greenville. Submitted to Virginia Division of Historic Landmarks, Richmond.

Jones, David C., and Dale L. Hutchinson
1995 Skeletal Analysis: Site 44SN65 (Draft). Manuscript on file, David S. Phelps Archaeology Laboratory, East Carolina University, Greenville.

Jorgenson, Matthew W.
2001 Mount Pleasant phase Pottery in the North Carolina Coastal Plain: Vessel Form, Function, and Foodways at the Wilson Bypass Site. Unpublished Master's thesis, Department of Anthropology, East Carolina University, Greenville.

Kakaliouras, Ann M.
2002 Appendix G: Dental Measurements. In *Foraging, Farming, and Coastal Biocultural Adaptation in Late Prehistoric North Carolina*, by Dale L. Hutchinson, pp. 215–226. University Press of Florida, Gainesville.

2003 *Biological Distance and the Ethnolinguistic Classification of Late Woodland (AD 800–1650) Native Americans on the Coast of North Carolina*. Ph.D. dissertation, University of North Carolina, Chapel Hill. ProQuest-UMI Dissertation Publishing, Ann Arbor.

Kelton, Paul
2002 The Great Southeastern Smallpox Epidemic, 1696–1700: First Major Epidemic? In *The Transformation of the Southeastern Indians, 1540–1760,* edited by Robbie Ethridge and Charles Hudson, pp. 21–38. University Press of Mississippi, Jackson.

2007 *Epidemics and Enslavement: Biological Catastrophe in the Native Southeast, 1492–1715*. University of Nebraska Press, Lincoln.

2009 Shattered and Infected: Epidemics and the Origins of the Yamasee War, 1696–1715. In *Mapping the Mississippian Shatter Zone: The Colonial Indian Slave Trade and Regional Instability in the American South*, edited by Robbie Ethridge and Sheri M. Shuck-Hall, pp. 312–332. University of Nebraska Press, Lincoln.

Kerber, Jordan E. (editor)
2007 *Archaeology of the Iroquois: Selected Readings and Research Sources*. Syracuse University Press, Syracuse.

Killgrove, Kristina
2002 Defining Relationships Between Native American Groups: A Biodistance Study of the North Carolina Coastal Plain. Unpublished Master's thesis, Department of Anthropology, East Carolina University, Greenville.

2009 Rethinking Taxonomies: Skeletal Variation on the North Carolina Coastal Plain. *Southeastern Archaeology* 28:87–100.

Klein, Michael J.
1994 Results of a Recent Radiocarbon Dating Project. *Quarterly Bulletin of the Archeological Society of Virginia* 49(1):17–24.

Klingburg, Frank J. (editor)
1956 *The Carolina Chronicle of Dr. Francis LeJau, 1706–1717*. University of California Press, Berkley.

Kowalewski, Stephen A.
2006 Coalescent Societies. In *Light on the Path: The Anthropology and History of the Southeastern Indians*, edited by Thomas Pluckhahn and Robbie Ethridge, pp. 94–122. University of Alabama Press, Tuscaloosa.

Kuttruff, Jenna T
2001 Appendix 8: Textiles Report. In *Data Recovery Excavations at 31WL37 on Upper Contentnea Creek, Wilson County, North Carolina* (Draft), by Heather Millis. TRC Garrow Associates, Durham.

Landy, David
1958 Tuscarora Tribalism and National Identity. *Ethnohistory* 5:250–284.

1978 Tuscarora among the Iroquois. In *Northeast*, edited by Bruce G. Trigger, pp. 518–524. Handbook of North American Indians, Vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Lapham, Heather A.
2001 Appendix 3: Faunal Report. In *Data Recovery Excavations at 31WL37 on Upper Contentnea Creek, Wilson County, North Carolina* (Draft), by Heather Millis. TRC Garrow Associates, Durham.

2005 *Hunting for Hides: Deerskins, Status, and Cultural Change in the Protohistoric Appalachians*. University of Alabama Press, Tuscaloosa.

Lautzenheiser, Loretta, and Jane M. Eastman
1992 *Archaeological Resources Overview of the Nahunta Swamp Watershed*. Coastal Carolina Research, Tarboro. Submitted to U.S. Department of Agriculture and the U.S. Soil Conservation Service. Copies available from North Carolina Office of State Archaeology.

Lawrence, Diana M., Brian M. Kemp, Jason Eshleman, Richard L. Jantz, Meradeth Snow, Debra Geoerg, and David G. Smith
2010 Mitochondrial DNA of Protohistoric Remains of an Arikara Population from South Dakota: Implications for the Macro-Siouan Language Hypothesis. *Human Biology* 82:157–178.

Lawson, John
1967 [1709] *A New Voyage to Carolina*. London. 1967 transcribed ed., edited by Hugh T. Lefler. University of North Carolina Press, Chapel Hill.

Lederer, John
1966 [1672] *The Discoveries of John Lederer, In three several Marches from Virginia, to the West of Carolina*. Translated by Sir William Talbot. Samuel Heyrick, London. 1966 facsimile ed. Great Americana Series, Readex Microprint, New York.

Lee, E. Lawrence
1963 *The Indian Wars in North Carolina, 1663–1763*. Carolina Charter Tercentenary Commission, Raleigh.

Lee, Wayne E.
2004 Fortify, Fight, or Flee: Tuscarora and Cherokee Defensive Warfare and Military Culture Adaptation. *Journal of Military History* 68:713–770.

Lefler, Hugh T.
1956 *History of North Carolina*, Vol. I. Lewis Historical Publishing, New York.

Lefler, Hugh T., and William S. Powell
1973 *Colonial North Carolina: A History*. Scribner, New York.

LeMaster, Michelle
2006 In the “Scolding Houses”: Indians and the Law in Eastern North Carolina, 1684–1760. *North Carolina Historical Review* 83:193–232.

Lewellen, Ted C.
2003 *Political Anthropology*. Praeger, Westport.

Lewis, Ernest
1952 Archaeological Exploration. *Newsletter of the Archaeological Society of North Carolina* 25:3–4.

Loftfield, Thomas C.
1990 Ossuary Interments and Algonquian Expansion on the North Carolina Coast. *Southeastern Archaeology* 9:116–123.

Loftfield, Thomas C., and David C. Jones
1995 Late Woodland Architecture on the Coast of North Carolina: Structural Meaning and Environmental Adaptation. *Southeastern Archaeology* 14:120–135.

Lounsbury, Carl R.
1994 *An Illustrated Glossary of Early Southern Architecture and Landscape*. Oxford University Press, Oxford.

Lounsbury, Floyd G.
1961 Iroquois-Cherokee Linguistic Relations. In *Symposium on Cherokee and Iroquois Culture*, edited by William N. Fenton and John Gulick, pp. 9–17. Bulletin 180. Bureau of American Ethnology, Smithsonian Institution, Washington, D.C.

1978 Iroquoian Languages. In *Northeast*, edited by Bruce G. Trigger, pp. 334–343. Handbook of North American Indians, Vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

MacCord, Howard A.
1966 The McLean Mound, Cumberland County, North Carolina. *Southern Indian Studies* 18:3–45.

1970 The John Green Site. *Quarterly Bulletin of the Archeological Society of Virginia* 25:98–140.

1993 Meherrin River Surveys, 1983–1993. Manuscript on file, Virginia Department of Historic Resources, Richmond.

McIlvenna, Noeleen
2009 *A Very Mutinous People: The Struggle for North Carolina, 1660 –1713*. University of North Carolina Press, Chapel Hill.

McIlwaine, Henry R. (editor)
1925 *Executive Journals of the Council of Colonial Virginia*, Vol. 3. Virginia State Library, Richmond.

McReynolds, Theresa E.
2005 Spatial and Temporal Patterning in the Distribution of North Carolina Projectile Points. *North Carolina Archaeology* 54:1–33.

Magoon, Dane T.
1998 Native American and European Tobacco Pipes from Jordan's Landing (31BR7), Neoheroka Fort (31GR4), and Croatan (31DR1). Paper presented at the 63rd Annual Meeting of the Society for
American Archaeology, Seattle, Washington. 1999 "Chesapeake" Pipes and Uncritical Assumptions: A View from Northeastern North Carolina. *North Carolina Archaeology* 48:107–126.

Malhi, Ripan S., Beth A. Schultz, and David G. Smith
2001 Distribution of Mitochondrial DNA Lineages Among Native American Tribes of Northeastern North America. *Human Biology* 73:17–55.

Mann, Barbara A., and Jerry L. Fields
1997 A Sign in the Sky: Dating the League of the Iroquois. *American Indian and Culture Research Journal* 21:105–163.

Martin, Jack B.
2004 Languages. In *Southeast*, edited by Raymond D. Fogelson, pp. 68–86. Handbook of North American Indians, Vol. 14, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Martin, Scott, W. J.
2008 Languages Past and Present: Archaeological Approaches to the Appearance of Northern Iroquoian Speakers in the Lower Great Lakes Region of North America. *American Antiquity* 73:441–463.

Mathis, Mark A.
1979 *North Carolina Statewide Archaeological Survey: An Introduction and Application to Three Highway Projects in Hertford, Wilkes and Ashe Counties.* Publication 11. North Carolina Archaeological Council, Raleigh.

1990 Field Report: Ossuary Recovery at the Dickerson Site (31BR91), Bertie County, North Carolina. Manuscript on file, Office of State Archaeology, State Historic Preservation Office, North Carolina Department of Cultural Resources, Raleigh.

Mathis, Mark A., and Jeffrey J. Crow (editors)
1983 *The Prehistory of North Carolina: An Archaeological Symposium*. Division of Archives and History, North Carolina Department of Cultural Resources, Raleigh.

Mattson, John L.
1968 Archaeological Tests of 31Bf^{v}23. Manuscript on file, Research Laboratories of Archaeology, University of North Carolina, Chapel Hill.

Merrell, James H.
1987 "This Western World": The Evolution of the Piedmont, 1525–1725. In *The Siouan Project: Seasons I and II*, edited by Roy S. Dickens, H. Trawick Ward, and R. P. Stephen Davis, pp. 19–28. Monograph No. 1. Research Laboratories of Anthropology, University of North Carolina, Chapel Hill.

1989 *The Indians' New World: Catawbas and Their Neighbors from European Contact through the Era of Removal*. University of North Carolina Press, Chapel Hill.

Milling, Chapman
1940 *Red Carolinians*. University of North Carolina Press, Chapel Hill.

Millis, Heather
1998 *Archaeological Reevaluation of Site 31WL37, Wilson County, North Carolina*. TRC Garrow Associates, Durham. Submitted to North Carolina Department of Transportation, Raleigh, TIP No. R-1023. Copies available from North Carolina Office of State Archaeology.

2001 *Data Recovery Excavations at 31WL37 on Upper Contentnea Creek, Wilson County, North Carolina* (Draft). TRC Garrow Associates, Durham. Submitted to North Carolina Department of Transportation, Raleigh, TIP No. R-1023, Federal Aid Project No. F-38-1(54). Copies available from North Carolina Office of State Archaeology.

2003 Data Recovery Investigations at a Late Woodland and Tuscarora Site in Eastern North Carolina. Paper presented at the 60th Annual Meeting of the Southeastern Archaeological Conference, Charlotte, North Carolina.

2009 *Archaeological Report: Data Recovery Excavations at the Contentnea Creek Site (31WL37), Wilson County*. TRC Environmental Corporation, Chapel Hill. Submitted to North Carolina Department of Transportation, Raleigh, TIP No. R-1023, Federal Aid Project No. F-38-1 (54). Copies available from North Carolina Office of State Archaeology.

Milner, George R., David G. Anderson, and Marvin T. Smith
2001 The Distribution of Eastern Woodlands Peoples at the Prehistoric and Historic Interface. In *Societies in Eclipse: Archaeology of the Eastern Woodlands Indians, A. D. 1400–1700*, edited by David S. Brose, C. Wesley Cowan, and Robert C. Mainfort, pp. 9–18. Smithsonian Institution Press, Washington, D.C.

Mithun, Marianne
1979 Iroquoian. In *The Languages of Native America: Historical and Comparative Assessment*,
edited by Lyle Campbell and Marianne Mithun, pp. 133–212. University of Texas Press, Austin.

1984 The Proto-Iroquoians: Cultural Reconstruction from Lexical Materials. In *Extending the Rafters: Interdisciplinary Approaches to Iroquoian Studies*, edited by Michael K. Foster, Jack Campisi, and Marianne Mithun, pp. 259–282. State University of New York Press, Albany.

Mook, Maurice A.

1944 Algonkian Ethnohistory of the Carolina Sound. *Journal of the Washington Academy of Sciences* 34(6–7).

Mooney, James

1910 Nottoway. In *Handbook of American Indians North of Mexico* (Part 2), edited by Frederick W. Hodge, pp. 87. Bulletin 30. Smithsonian Institution, Bureau of American Ethnology, Washington, D.C.

Mouer, L. Daniel

1985 The Occaneechee Connection: Social Networks and Ceramics at the Fall Line in the 16th and 17th Centuries. Paper presented at the Middle Atlantic Archaeology Conference, Rehobeth Beach,
Delaware.

Nixon, Jennifer C.

2000 Change and Continuity among the Tuscaroras. Unpublished Master's thesis, Department of Anthropology, East Carolina University, Greenville.

Norr, Lynette

2001 Appendix6 (Section B): The Chemical Isotope Analyses. In *Data Recovery Excavations at 31WL37 on Upper Contentnea Creek, Wilson County, North Carolina* (Draft), by Heather Millis. TRC Garrow Associates, Durham.

2002 Appendix B. Stable Isotope Analysis and Dietary Inference. In *Foraging, Farming, and Coastal Biocultural Adaptation in Late Prehistoric North Carolina*, by Dale L. Hutchinson, pp. 178–205. University Press of Florida, Gainesville.

North Carolina Commission of Indian Affairs (NCCIA)

1998 *North Carolina Indians*. Printed pamphlet. North Carolina Commission of Indian Affairs, Raleigh.

Oakley, Christopher A.

1996 The Indian Slave Trade in Coastal North Carolina and Virginia. Unpublished Master's thesis, Department of History, University of North Carolina, Wilmington.

2005 *Keeping the Circle: American Indian Identity in Eastern North Carolina, 1885–2004*. University of Nebraska Press, Lincoln.

O'Callaghan, Edmund B. (editor)
1855 Documents *Relative to the Colonial History of the State of New York, Procured in Holland, England and France by John Romeyn Brodhead*, Vol. 5. Weed, Parsons and Company, Albany.

Oliver, Billy L.
1998 Uwharrie Lithic Conference Projectile Point Chronology Workbook. Manuscript on file, Office of State Archaeology, State Historic Preservation Office, North Carolina Department of Cultural Resources, Raleigh.

Ortega, Felipe V.
2007 *The Art and Practice of Jicarilla Apache Micaceous Pottery Manufacturing*. Electronic document, http://www.felipeortega.com/pdf/Felipe%20Art%20and%20Practice.pdf, accessed December 2009.

Owens, D. Dean
1993 A Report on Cashie Ceramics from 44SN24 in Southampton County, Virginia (Draft). Manuscript on file, David S. Phelps Archaeology Laboratory, East Carolina University, Greenville.

Painter, Floyd
1963 The Triangle Site: An Early Historic Occaneechi Culture Site. *The Chesopiean* 1(5):46–50.

1964a The Triangle Site, Part II, A Culture in Transition. *The Chesopiean* 2(1):89–90.

1964b Historic Occaneechi Habit Pipes, Triangle Site, Part Three. *The Chesopiean* 2(5):189–190.

1990 Author Index. *The Chesopiean* 28(4).

Parks, Douglas R., and Raymond J. DeMallie
1992 Siouan, Assiniboine, and Stoney Dialects: A Classification. *Anthropological Linguistics* 34:233–255.

Parramore, Thomas
1980 So Long as the Sun and Moon Endure (Draft). Manuscript on file, Olde Albemarle Research, Elizabeth City, North Carolina.

1982 The Tuscarora Ascendancy. *North Carolina Historical Review* 59:307–326.

1987 With Tuscarora Jack on the Back Path to Bath. *North Carolina Historical Review* 64:115–138.

Paschall, Herbert R.
1953 The Tuscarora Indians in North Carolina. Unpublished Master's thesis. Department of History, University of North Carolina, Chapel Hill.

Phelps, David S.
1977 Recent Archaeological Research in Eastern North Carolina. *Eastern States Archaeological Federation Bulletin* 35–36:19–20.

1978 *Archaeological Studies in the Coastal Zone of North Carolina*. Publication No. 6. North Carolina Archaeological Council, Raleigh.

1980a Archaeological *Salvage of the Thorpe Site and other Investigations along the U.S. 64 Bypass, Rocky Mount, North Carolina*. Archaeological Research Report, No. 1. Archaeology Laboratory, Department of Sociology and Anthropology, East Carolina University, Greenville.

1980b Late Woodland Phases in the North Coastal Region. *Newsletter of the University of North Carolina Archaeological Consortium* 1(2):2–3.

1980c Problems in the Coastal Zone. *Newsletter of the University of North Carolina Archaeological Consortium* 1(2):6–7.

1981 *Archaeological Surveys of Four Watersheds in the North Carolina Coastal Plain.* Publication No. 16. North Carolina Archaeological Council, Raleigh.

1982a *A Summary of Colington Phase Sites in the Tidewater Zone of North Carolina*. Archaeology Laboratory, Department of Sociology and Anthropology, East Carolina University, Greenville. Submitted to Archaeology Branch, Division of Archives and History, North Carolina Departmentof Cultural Resources, Raleigh. Copies available from North Carolina Office of State Archaeology.

1982b *Archaeology of the Chowan Basin: A Preliminary Study*. Archaeological Research Report, No. 4. Archaeology Laboratory, Department of Sociology and Anthropology, East Carolina University, Greenville.

1982c *The Archaeology of Colington Island*. Archaeological Research Report, No. 3. Archaeology Laboratory, Department of Sociology and Anthropology, East Carolina University, Greenville.

1983 Archaeology of the North Carolina Coast and Coastal Plain: Problems and Hypotheses. In *The Prehistory of North Carolina: An Archaeological Symposium*, edited by Mark A Mathis and Jeffrey J. Crow, pp. 1–52. Division of Archives and History, North Carolina Department of Cultural Resources, Raleigh.

1984a *Archaeology of the Native Americans: The Carolina Algonkians*. America's Four Hundredth Anniversary Committee, Division of Archives and History, North Carolina Department of Cultural Resources, Raleigh.

1984b *Archaeology of the Tillett Site: The First Fishing Community at Wanchese, Roanoke Island*. Archaeological Research Report, No. 6. Archaeology Laboratory, Department of Sociology, Anthropology and Economics, East Carolina University, Greenville.

1989 *Ancient Pots and Dugout Canoes: Indian Life as Revealed by Archaeology at Lake Phelps*. North Carolina Division of Parks and Recreation, Raleigh.

1995 Ceramic Type Data: North Coastal Region of North Carolina (Draft). Manuscript on file,
David S. Phelps Archaeology Laboratory, East Carolina University, Greenville.

2008 The Ellis Site (44SN65) Ossuary: Research Summary. Manuscript on file, Olde Albemarle Research, Elizabeth City, North Carolina.

Phelps, David S., and Charles L. Heath
1998 Cashie Series Ceramics from the Interior Coastal Plain of North Carolina. Paper presented at the 55th Annual Meeting of the Southeastern Archaeological Conference, Greenville, South Carolina.

Phelps, David S., and David C. Jones
1996 *Archaeological Salvage of an Ossuary at the Ellis Site (44SN65), Southampton County, Virginia* (Draft). Archaeology Laboratory, Department of Sociology and Anthropology, East Carolina University, Greenville. Submitted to Virginia Division of Historic Landmarks, Richmond.

Pierce, Greg
2010 A Synthesis of the Prehistoric Archaeological Investigations of Lake Phelps, Washington County, North Carolina. Unpublished Master's thesis, Department of Anthropology, East Carolina University, Greenville.

Pluckhahn, Thomas J., and Robbie Ethridge (editors)
2006 *Light on the Path: The Anthropology and History of the Southeastern Indians*. University of Alabama Press, Tuscaloosa.

Potter, Stephen R.
1993 *Commoners, Tribute and Chiefs: The Development of Algonquian Culture in the Potomac Valley*. University of Virginia Press, Charlottesville.

Pratt, Peter P.
1976 *Archaeology of the Oneida Iroquois*, Vol. 1. Occasional Publications in Northeast Anthropology No. 1. Rindge, New Hampshire.

Prescott, W. Douglas
1974 Preliminary Excavations at Sans Souci East (31BR5). Manuscript on file, David S. Phelps Archaeology Laboratory, East Carolina University, Greenville.

Printup, Bryan, and Neil Patterson
2007 *Tuscarora Nation*. Images of America Series. Arcadia Press, Charleston, South Carolina.

Prothero, Donald R., and Frederic L. Schwab
2003 *Sedimentary Geology: An Introduction to Sedimentary Rocks and Stratigraphy*. 2nd ed. W. H. Freeman, New York.

Quinn, David B.
1955 *The Roanoke Voyages, 1584–1590*, Vol. I –II. Hakluyt Society, London.

1970 Thomas Hariot and the Virginia Voyages of 1602. *William and Mary Quarterly* 27:268–281.

1985 *Set Fair for Roanoke: Voyages and Colonies, 1584–1606*. University of North Carolina Press, Chapel Hill.

Reichs, Kathleen J.
1986 The Dickerson Skeletal Series. In *Skeletal Analysis in Southeastern Archaeology*, edited by Janet E. Levy, pp. 63 –73. Publication No. 24. North Carolina Archaeological Council, Raleigh.

Reimer, Paula J. (and others)
2004 IntCal04 Terrestrial Radiocarbon Age Calibration, 0-26 CAL KYR BP. *Radiocarbon* 46:1029–1058.

Ries, Heinrich
1897 *Clay Deposits and Clay Industry in North Carolina: A Preliminary Report*. Bulletin No. 13. North Carolina Geological Survey, Raleigh.

Rights, Douglas
1957 *The American Indian in North Carolina*. Reprinted, facsimile ed. John F. Blair, Winston-Salem. Originally published 1947, University of North Carolina, Chapel Hill.

Robinson, W. Stitt
1959 Indians in Colonial Virginia. *Virginia Magazine of History and Biography* 67:49–64.

Rockman, Marcy
2003 Knowledge and Learning in the Archaeology of Colonization. In *Colonization of Unfamiliar Landscapes: The Archaeology of Adaptation*, edited by Marcy Rockman and James Steele, pp. 3–25. Routledge, London.

Rockman, Marcy, and James Steele (editors)
2003 *Colonization of Unfamiliar Landscapes: The Archaeology of Adaptation*. Routledge, London.

Rose, Conway J.
1960 Tuscarora "Torhunta." *Newsletter of the Archaeological Society of North Carolina* 40:2–3.

Rountree, Helen C.
1979 The Indians of Virginia: A Third Race in a Biracial State. In *Southeastern Indians Since the Removal Era*, edited by Walter L. Williams, pp. 27–48. University of Georgia Press, Athens.

1987 The Termination and Dispersal of the Nottoway Indians of Virginia. *Virginia Magazine of History and Biography* 95:193–214.

2002 Trouble Coming Southward: Emanations through Virginia. In *The Transformation of the Southeastern Indians, 1540–1760*, edited by Robbie Ethridge and Charles Hudson, pp. 65–78. University Press of Mississippi, Jackson.

Rudes, Blair A.
1981a A Sketch of the Nottoway Language from a Historical-Comparative Perspective. *International Journal of American Linguistics* 47:27–49.

1981b Cowinchahawkon/Akawęčʔ á·ka·ʔ : The Meherrin in the Nineteenth Century. *Algonquian and Iroquoian Linguistics* 6(3):32–34.

1998 The Language of Tuscarora Adaptation to the Iroquois. Paper presented at the 1998 Conference on Iroquois Research, Rensselaerville, New York.

1999a *Tuscarora-English / English-Tuscarora Dictionary*. University of Toronto Press, Toronto.

1999b Why Collect Texts? The Native, Evangelical, and Americanist Traditions among the Tuscaroras. In *Theorizing the Americanist Tradition*, edited by Lisa P. Valentine and Regna Darnell, pp. 209–226. University of Toronto Press, Toronto.

2000 Analysis of Place Names in Table 1 of Byrd and Heath 1997. Paper presented at the 2000 Conference on Iroquois Research, Rensselaerville, New York.

2002a Early Vocabularies and Dictionary Development: A Cautionary Note. In *Indigenous Languages Across the Community*, edited by Barbara Burnaby and Jon Reyhner, pp. 189–195. Northern Arizona University, Flagstaff.

2002b The First Description of an Iroquoian People: The Spanish among the Tuscarora Before 1521. Paper presented at the 2002 Conference on Iroquois Research, Rensselaerville, New York.

2004 Multilingualism in the South: A Carolinas Case Study. In *Linguistic Diversity in the South: Changing Codes, Practices, and Ideologies*, edited by M. Bender, pp. 37–49. University of Georgia Press, Athens.

Rudes, Blair A., Thomas J. Blumer, and J. Alan May
2004 Catawba and Neighboring Groups. In *Southeast*, edited by Raymond D. Fogelson, pp. 301–318. Handbook of North American Indians, Vol. 14, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Saunders, William L. (editor)
1968 *Colonial Records of North Carolina*, Vol. I (1662–1712) and Vol. II (1713–1728). Reprinted, facsimile ed. AMS Press, New York. Originally published 1886, P. M. Hale, Raleigh.

Scarry, John F., and Margaret C.
1997 *Subsistence Remains from Prehistoric North Carolina Archaeological Sites.* Research Laboratories of Archaeology, University of North Carolina, Chapel Hill. Electronic document, http://www.archaeology.ncdcr.gov/subsist/subsis.htm, accessed December 2009.

Schmitt, Karl
1952 Archaeological Chronology of the Middle Atlantic States. In *Archaeology of the Eastern United States*, edited by James B. Griffin, pp. 59–70. University of Chicago Press, Chicago.

Seamans, Rebecca M.
2001 *Native American Enslavement in Proprietary Carolina: A Causality Study*. Ph.D. dissertation, Auburn University, Auburn. ProQuest-UMI Dissertation Publishing, Ann Arbor.

Sempowski, Martha
1989 Fluctuations through Time in the Use of Marine Shell at Seneca Iroquois Sites. In *Proceedings of the 1986 Shell Bead Conference*, edited by Charles F. Hayes and Lynn Ceci, pp. 81–96. Research Records 20. Rochester Museum and Science Center, Rochester, New York. Service, Elman R.

` 1962 *Primitive Social Organization: An Evolutionary Perspective.* Random House, New York.

Shennan, Stephen J. (editor)
1994 *Archaeological Approaches to Cultural Identity*. One World Archaeology 10. 2nd ed. Routledge, London.

Shepard, Anna O.
1995 *Ceramics for the Archaeologist.* Publication 609. Carnegie Institution of Washington. Reprinted, facsimile ed. Originally published 1956, Carnegie Institution, Washington, D.C.

Shields, E. Thomson, and Charles R. Ewen (editors)
2003 *Searching for the Roanoke Colonies: An Interdisciplinary Collection*. Office of Archives and History, North Carolina Department of Cultural Resources, Raleigh.

Simpkins, Dan
1992 Aboriginal *Intersite Settlement System Change in the Northeastern North Carolina Piedmont during the Contact Period*. Ph.D. dissertation, University of North Carolina, Chapel Hill. ProQuest-UMI Dissertation Publishing, Ann Arbor.

Smith, Gerald P.
1971 *Protohistoric Sociopolitical Organization of the Nottoway in the Chesapeake Bay-Carolina Sounds Region*. Ph.D. dissertation, University of Missouri, Columbia. ProQuest-UMI Dissertation Publishing, Ann Arbor.

1984 *The Hand Site, Southampton County, Virginia*. Serial Publication No. 11. Archeological Society of Virginia, Richmond.

Snow Dean R.
1995a Migration in Prehistory: The Northern Iroquoian Case. *American Antiquity* 60:59–79.

1995b Population Movements During the Woodland Period: The Intrusion of Iroquoian Peoples. In *Origins of the People of the Longhouse: Proceedings of the 21st Annual Symposium of the Ontario Archaeological Society*, edited by Andre Bekerman and Gary Warrick, pp. 5–8. Ontario Archaeological Society, Toronto.

1996 More on Migration in Prehistory: Accommodating New Evidence in the Northern Iroquoian Case. *American Antiquity* 61:791–796.

2001 Evolution of the Mohawk Iroquois. In *Societies in Eclipse: Archaeology of the Eastern Woodlands Indians, A. D. 1400–1700,* edited by David S. Brose, C. Wesley Cowan, and Robert C. Mainfort, pp. 19–26. Smithsonian Institution Press, Washington, D.C.

South, Stanley A.
1959 A Study of the Prehistory of the Roanoke Rapids Basin. Unpublished Master's thesis, Department of Sociology and Anthropology, University of North Carolina, Chapel Hill.

1962 Excavation of test squares at $WY^{v}1$ and $WY^{v}3$, Wayne County, North Carolina (Draft). Manuscript on file, Office of State Archaeology, State Historic Preservation Office, North Carolina Department of Cultural Resources, Raleigh.

1976 An Archaeological Survey of Southeastern North Carolina. *Institute of Archaeology and Anthropology Notebook* 8. University of South Carolina, Columbia.

2005 *Archaeology on the Roanoke*. Monograph No. 4. Research Laboratories of Archaeology, University of North Carolina, Chapel Hill.

Stanard, William G. (editor)
1897 Colonial Letters, &c. *Virginia Magazine of History and Biography* 5:42–53.

1900a The Indians of Southern Virginia, 1650–1711: Depositions in the Virginia and North Carolina Boundary Case. *Virginia Magazine of History and Biography* 7:337–358.

1900b The Indians of Southern Virginia, 1650–1711: Depositions in the Virginia and North Carolina Boundary Case (Concluded). *Virginia Magazine of History and Biography* 8:1–11.

Stark, Miriam T. (editor)
1998 *The Archaeology of Social Boundaries*. Smithsonian Institution Press, Washington, D.C.

Stephenson, Frank R.
2003 *Hertford County*. Images of America Series. Arcadia Press, Charleston, South Carolina.

Steponaitis, Vincas P., Jeffrey D. Irwin, Theresa E. McReynolds, and Christopher R. Moore (editors)
2006 *Stone Quarries and Sourcing in the Carolina Slate Belt.* Research Report No. 25. Research Laboratories of Archaeology, University of North Carolina, Chapel Hill.

Steward, Julian
1942 The Direct Historical Approach to Archaeology. *American Antiquity* 7:337–343.

Stuiver, Minze, and Paula J. Reimer
1986 A Computer Program for Radiocarbon Age Calibration. *Radiocarbon* 28:1022–1030.

Styrna, Christine A.
1990 *The Winds of War and Change: The Impact of the Tuscarora War on Proprietary North Carolina, 1690–1729*. Ph.D. dissertation, College of William and Mary, Williamsburg. ProQuest-UMI Dissertation Publishing, Ann Arbor.

Swindell, E. Clay
1999 East Potecasi Creek Survey, Hertford County, North Carolina. David S. Phelps Archaeology Laboratory, East Carolina University, Greenville. Copies available from North Carolina Office of State Archaeology.

2010 Archaeology of the Carolina Algonkians: Colington phase Summary and Research Framework. Unpublished Master's thesis, School of Archaeology and Ancient History, University of Leicester.

Swindell, E. Clay, Garrett Fesler and Matthew Laird
2009 *Phase II Evaluations of Three Sites (31PQ199, 31PQ201, 31PQ206) at Harvey Point Defense Training Activity, Perquimans County, Harvey Point, North Carolina*. James River Institute for Archaeology, Williamsburg. Submitted to Michael Baker Corporation. Copies available from North Carolina Office of State Archaeology.

Terrell, John E.
2001a *Archaeology, Language, and History: Essays on Culture and Ethnicity*. Scientific Archaeology for the Third Millennium. Bergin and Garvey, Westport, Connecticut.

2001b Ethnolinguistic Groups, Language Boundaries, and Culture History: A Sociolinguistic Model. In *Archaeology, Language, and History: Essays on Culture and Ethnicity*, edited by John E. Terrell, pp.199–221. Scientific Archaeology for the Third Millennium Bergin and Garvey, Westport.

Thornton, Russell
2004 Demographic History. In *Southeast*, edited by Raymond D. Fogelson, pp. 48–52. Handbook of North American Indians, Vol. 14, William C. Sturtevant, general editor. Smithsonian Institution, Washington.

Tippett, Lee, Stuart Fiedel, Eric Voigt, and Danny Gregory
2009 *Archaeological Data Recovery at the Maple Branch Site (31BF340), U.S. 17 Washington Bypass, Beaufort County*, North Carolina. Louis Berger Group, Raleigh. Submitted to North Carolina Department of Transportation, Raleigh, TIP No. R-2510, Federal Aid Project No. MAF-75-3(26). Copies available from North Carolina Office of State Archaeology.

Trigger, Bruce G.
1968 The Determinants of Settlement Patterns. In *Settlement Archaeology*, edited by Kwang-chih Chang, pp. 53–78. National Press Books, Palo Alto, California.

1987 *The Children of Aataentsic: A History of the Huron People to 1660*. 2nd ed. McGill-Queen's University Press, Montreal.

Trigger, Bruce G. (editor)
1978 *Northeast*. Handbook of North American Indians, Vol. 15, William C. Sturtevant, general Editor. Smithsonian Institution, Washington.

Turner, E. Randolph
1992 The Virginia Coastal Plain during the Late Woodland Period. In *Middle and Late Woodland Research in Virginia: A Synthesis*, edited by Theodore R. Reinhart and Mary Ellen N. Hodges, pp. 97–136. Special Publication No. 29. Archeological Society of Virginia, Richmond.

1993 Native American Protohistoric Interactions in the Powhatan Core Area. In *Powhatan Foreign Relations, 1500–1722*, edited by Helen C. Rountree, pp. 76–93. University Press of Virginia, Charlottesville.

2004 Virginia Native Americans During the Contact Period: A Summary of Archaeological Research Over the Past Decade. *Quarterly Bulletin of the Archeological Society of Virginia* 59:14–25.

Ublaker, Douglas
1988 North American Indian Population Size, A.D. 1500–1985. *American Journal of Physical Anthropology* 77:289–294.

Udden, Johan A.
1914 Mechanical Composition of Clastic Sediments. *Bulletin of the Geological Society of America* 25:655–744.

Virginia Department of Historic Resources (VDHR)
2009 Virginia Indian Ceramic Descriptions (Draft Files). Manuscript on file, Virginia Department of Historic Resources, Richmond.

Virginia Historic Landmarks Commission (VHLC)
1983 National Register of Historic Places Inventory—Nomination Form: John Green Archaeological Sites (44GV1 and 44GV2), Greensville County, Virginia. Virginia Historic Landmarks Commission, Richmond. Copies available from Virginia Department of Historic Resources.

Wallace, Anthony F. C.
1949 The Tuscaroras: Sixth Nation of the Iroquois. *Proceedings of the American Philosophical Society* 93:159–165.

1952 *The Modal Personality Structure of the Tuscarora Indians*. Bulletin No. 150. Bureau of American Ethnology, Smithsonian Institution, Washington, D.C.

Ward, H. Trawick, and R. P. Stephen Davis
1993 *Indian Communities on the North Carolina Piedmont, A.D. 1000 to 1700*. Monograph No. 2. Research Laboratories of Anthropology, University of North Carolina, Chapel Hill

1999 *Time Before History: The Archaeology of North Carolina*. University of North Carolina Press, Chapel Hill.

Weaver, David

2001 Appendix 6 (Section A): Human Osteology Analyses. In *Data Recovery Excavations at 31WL37 on Upper Contentnea Creek, Wilson County, North Carolina* (Draft), by Heather Millis. TRC Garrow Associates, Durham.

Weaver, Sally M.

1978 Six Nations of the Grand River. In *Northeast*, edited by Bruce G. Trigger, pp. 525–536. Handbook of North American Indians, Vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Webb, Paul A., and Heather L. Olson

2010 *Intensive Archaeological Survey and Evaluation for Improvements to SR1219 (Nooherooka Road) and SR 1221 (Jones Farm Road) Greene County, North Carolina* (Final Report). TRC Environmental Corporation, Chapel Hill. Submitted to North Carolina Department of Transportation, Raleigh, NCDOT Division 2, WBS Nos. 2C.040030 and 2C.040029. Copies available from North Carolina Office of State Archaeology.

Wentworth, Chester K.

1922 A Scale of Grade and Class Terms for Clastic Sediments. *Journal of Geology* 30:377–392.

Wetmore, Ruth

1978 Report on Excavations at the Buie Mound, Robeson County, North Carolina. *Institute of Archaeology and Anthropology Notebook* 10:30–71. University of South Carolina, Columbia.

Whyte, Thomas R.

2007 Proto-Iroquoian Divergence in the Late Archaic-Early Woodland Period Transition of the Appalachian Highlands. *Southeastern Archaeology* 26:134–144.

2008 Reanalysis of Ichthyofaunal Specimens from Prehistoric Archaeological Sites on the Roanoke River in North Carolina and Virginia. *North Carolina Archaeology* 57:97–107.

Willey, Gordon R., and Philip Phillips

1958 *Method and Theory in American Archaeology*. University of Chicago Press, Chicago.

Wilson, Jack H.

1977 *A Summary of Archaeological Sites Surveyed Along the Chowan River, 1977*. Research Laboratories of Anthropology, Chapel Hill. Copies available from North Carolina Office of State Archaeology.

Wood, Peter H.

1989 The Changing Population of the Colonial South: An Overview by Race and Region, 1685–1790. In *Powhatan's Mantle: Indians in the Colonial Southeast*, edited by Peter H. Wood, Gregory A. Waselkov, and M. Thomas Hatley, pp. 35–103. University of Nebraska Press, Lincoln.

Yeardley, Francis

1911[1654] Narrative of Excursions into Carolina, 1654. In *Narratives of Early Carolina, 1650–1708,* edited by Alexander S. Salley, pp. 25–29. Charles Scribner's Sons, New York.

NOTES

1. The greater part of this chapter was excerpted directly from Heath (2010), which further draws from data and analyses summarized by Heath et al. (2008).

"Eastern North Carolina" refers to the greater North Carolina Coastal Plain province, including the Inner (Upper) Coastal Plain and Outer (Lower) Coastal Plain subprovinces. The Inner Coastal Plain projects eastward from the Fall Line to the estuaries of the greater Albemarle-Pamlico sounds system. The term "Tidewater" refers to the Outer Coastal Plain subprovince (Figure 1). By "northern Coastal Plain," "northeastern North Carolina" or "North Coastal region," we mean the region encompassing the lower Roanoke, middle-lower Tar-Pamlico, middle-lower Neuse, Pasquotank and lower Chowan river basins from the Fall Line to the Outer Banks. "Southeastern Coastal Plain," "southeastern North Carolina" or "South Coastal region" are all general references to the lowlands landmass south of Cape Lookout, including the Sandhills sub-province and the White Oak, middle-lower Cape Fear and Lumber river basins from the Fall Line to Cape Fear. "Southeastern Virginia" is a general reference for the southern Coastal Plain region of Virginia within the upper Chowan River basin.

While there is documentary evidence of contacts between Europeans and the indigenous peoples of the North Carolina Coastal Plain from the 1520s through the early 1580s, we use the term "Precontact period" to designate the time before the 1584–1602 Roanoke Voyages. We use the term "Contact period" in reference to the 1584-to-1650 period. Although European traders were operating across the northeastern Coastal Plain at least as early as 1640–1645 (see e.g., Bland 1966 [1651]); Yeardley 1911 [1654]), we select 1650 as the beginning of the regional Postcontact period since there is only ephemeral documentary information on Tuscarora or Meherrin Indian interactions with Virginia or North Carolina colonizers before that year. This is in keeping with Phelps's (1983:Figure 1.2) proposed cultural sequence model for the North Carolina Coastal Plain. Our use of the phrase "early Postcontact period" refers to the first period of sustained interaction between indigenous Coastal Plain peoples and invading colonists, circa 1650–1725. In the context of this chapter, "protohistoric era" refers to a broader and more nebulously defined period between circa 1520 and 1670.

2. J. C. "Pinky" Harrington (1948, 1962, 1966, 1984) reported on artifacts and features associated with Precontact-Contact period Indian occupations at the Fort Raleigh National Historic site and was among the first to describe Late Woodland period shell-tempered ceramics from sites in the Tidewater (Blaker 1952; Harrington 1949). Joffre Coe, among others, surface collected several coastal sites and conducted limited test excavations on the Outer Banks (Coe 1952; Haag 1958). Relic collectors liberally dug several sites in North Coastal region, but published information on these excursions is difficult to integrate analytically, and most collected artifact and human skeletal remains, with a few exceptions (e.g., Prescott 1974), cannot be located for reanalysis or repatriation (see e.g., Painter 1990; Rights 1957). Before about 1970, much of the reported professional archaeological survey and excavation work was conducted in the Carolina Sandhills—see summaries in Phelps (1983) and Irwin et al. (1999).

3. In addition to academic research or cultural resources compliance investigations undertaken or directed by Phelps (Phelps 1983; Archaeological Site Files, David S. Phelps Archaeology Laboratory, East Carolina University), several projects were completed by other investigators (e.g., Claassen 1980; Mathis 1979; Wilson 1977).

4. Before Phelps implemented his region-specific research on the systematic study of the Precontact–Contact period history of the North Coast region, other researchers, largely based on ceramic seriation results, recognized both geographically and in relative chronological terms, what Phelps later defined as Cashie series ceramics contextually associated with the Cashie phase. Binford (1964) and Crawford (1966) respectively identified Branchville and Tower Hill series ceramics as associated with terminal Late Woodland period archaeological cultures. For the Outer Coastal Plain, Harrington (1948) first reported the recovery of simple-stamped sherds with "crushed-stone" tempering on Roanoke Island. He later reported excavating two simple-stamped, "grit-tempered" vessels from the "fort moat," noting that the vessels post-dated the fort's supposed sixteenth century occupation by English colonists (Harrington 1962). Haag (1958) also recognized simple-stamped and grit-tempered ceramics at several coastal sites, particularly concentrated in the Tar-Pamlico River locality of Bath, North Carolina, but like Harrington (1948, 1962), considered the materials to be associated with Coastal Algonkian occupations. South (1959), followed by Coe (1964), defined the Gaston phase and the associated Gaston series ceramics as representative of post-A.D.1700 Native occupations, probably "Siouan," along the Fall Line in the middle Roanoke River basin. Subsequent reanalyses and comparative studies suggest that the Gaston site was occupied no later than the mid-to-late sixteenth century (i.e., no European trade goods) and that the ethnic identity of producers of Gaston pottery is ambiguous, possibly Coastal Plain Iroquoian, possibly Piedmont Siouan (Davis 2005; Ward and Davis 1999).

5. The phase name, Cashie, is associated with the Cashie River (Phelps 1983:43), a southeasterly flowing tributary of the lower Roanoke River, which roughly approximates the northeastern geographic range of seventeenth century Tuscarora communities (see Binford 1964:Figure 7; Boyce 1978:Figure 1).

6. In the late 1950s, Binford (1964) opened a single test unit to excavate a plow exposed feature at the Parker's Ferry site (31HF1), the location of Meherrin "Old Town," ca. 1691–1727. The feature yielded "…kaolin pipe fragments and nine sherds which have been called 'Branchville simple-stamped'" (Binford 1964:258–261, 411). MacCord (1970) later reported on a probable Meherrin burial (Burial 3) and protohistoric era Meherrin pottery (Branchville series) at the John Green site (44GV1) in Virginia.

7. Unfortunately, little in the way of substantive archaeological field research has been conducted in the historically documented Meherrin or Nottoway settlements localities in southeastern Virginia areas since the late 1960s (see e.g., Hodges 1993, 2004; Turner 1992, 2004)—(Wayne C. J. Boyko, Fort Pickett Cultural Resources Program, personal communication 2008; Dane T. Magoon, Cultural Resources, Inc. [CRI], personal communication 2008). See note no. 29.

8. In the absence of mass-media and written language, cultural knowledge and ethnic identities, the essential ways of living on a day-to-day basis, are most readily transmitted through the interrelated vehicles of language and personal imitation, not human genes. In non-state societies, more often than not, however, genes are shared and biologically transmitted to the next generation, in a given community, by numerous couples who respectively share the same language, ethnic identity and cultural knowledge. There are most assuredly exceptions to this exceedingly simplified pattern and process, but macro-level norms or modalities are what we most often discern archaeologically, or even historically. As materialized lifeways, archaeological cultures represent, in an incomplete and poorly nuanced manner, the lived modalities of the past. Yes, we certainly observe idiosyncratic variations that contradict normative behaviors in a given cultural context, but in the main, societal norms most often eclipse comparatively minor behavioral variations of life lived by any one idiosyncratic individual, or even small groups of individuals, in a given society. For a far more nuanced discussion, see e.g., Herbert (2009:14–21).

9. For issues with regional pottery taxonomies, see e.g., Herbert (2009:5–6, 21–23).

10. Spanish traders were possibly operating among the Tuscarora communities situated in the Roanoke River basin as early as 1610–1611 (see Arber 1895:508).

11. At and after European Contact, peoples of the Coastal Algonkian societies in the Tidewater spoke "Carolina Algonquian," which is related to, but distinctive from, other Proto-Eastern Algonquian languages (Goddard 1978).

12. This observation suggests the possibility a regional trade language or contact jargon (Martin 2004:80–81), similar to the Mobilian Jargon of the lower Mississippi River valley, but based on the Tuscarora language.

13. If the earliest Colington I subphase occupations in the Tidewater represent initial Coastal Algonkian colonization events, then ancestral Carolina Algonkians colonized the region in the early Late Woodland period. In northeastern North Carolina, Colington phase occupations (A.D. 800–1750) are primarily found in the Tidewater region north of Cape Lookout (Phelps 1983, 1984a, 1984b; Swindell 2010).

14. Despite long-standing arguments that social type classifications (bands, tribes, chiefdoms, states [*sensu* Service 1962]), should not be used by anthropologists eschewing notions of cultural evolution or classifiable social types, the analytical alternatives offered are equally problematic. As Ethridge (2009:43–44; n.5) recently concluded, such models "serve as a useful shorthand" for cross-cultural comparative purposes. Haas (1990:172) defined a tribe as "a bounded network of communities united by social and political ties and generally [, but not necessarily,] sharing the same language, ideology and material culture." On the other hand, chiefdoms have been described as a "regionally organized societies with a centralized decision-making hierarchy coordinating activities among several village communities" (Earle 1987:288). It is critical to recognize, however, that sociopolitical types, such as those defined by Service (1962), represent reference points along an analytical continuum (Byrd 1997:3).

15. Hudson (2002:xi) described polities as "clusters of communities of people who were politically aligned with each other, and who might, in turn, have been aligned against other such clusters."

16. Tuscarora emperors, kings and queens of the seventeenth century were variously documented as personally owning lands with the right to transfer parcels to individuals or polities (see e.g., Stanard 1900a, 1900b).

17. In the late nineteenth century, two Tuscarora dialects emerged, eastern and western Tuscarora, but these later dialects resulted from lingual influences of other Northern Iroquoian languages speakers on Tuscaroras who migrated northward during and after the Tuscarora War (Rudes 1999b, 2002a).

18. Graffenried (1968:923 [1714]) referred to Contentnea Creek as the "Upper [Neuse] River."

19. Although Blair Rudes reported that Contentnea was derived from *keeji nye*, a Tuscarora word meaning "fish going by" (Bright 2004:120), we suggest that "Contentnea" was actually derived by English speakers from "Contah-

nah," one of the alternate town names for Catechna (Byrd and Heath 2004:Table 5.1; Rudes 2000), which was first reported by Lawson (1967:242 [1709]). On his 1733 map, Edward Moseley (Cumming 1998:Plate 50A) incorrectly indicated "Conneghta Fort" as the place name for a Lower Tuscarora town and fort more correctly identified as Kenta or Kentanuska—see Byrd and Heath (2004:Table 5.1; Rudes 2000). Conneghta is more closely associated linguistically with Contah-nah or Cauteghnah (Rudes 2000), both anglicized appellations for Catechna (Byrd and Heath 2004:Table 5.1), which Moseley indicated as "Handcocks Town" (Cumming 1998:Plate 50A). The modern-day town of Conetoe, North Carolina is named for the Conneghta Fort, but the original Lower Tuscarora town (and fort) was located some 35–40 kilometers from its namesake (Byrd and Heath 2004:Figure 5.8).

20. These more recently offered translations (see Parks and DeMallie 1992:234) are contrary to earlier interpretations, which suggested that *natowewa* translates into English as "adder," "rattlesnake," "snake" or similar terms (see e.g., Hewitt 1910a; Mooney 1910; Rudes 1981a). Depending upon the context, however, *natowewa* may have been used by various Algonkian groups as a derogatory exonym for "the other."

21. Graffenried (1920:276 [1714]) reported that Blunt exercised some degree of influence over the people of seven towns as early as September 1711—"Yes, when it was argued with regard to me, [King Blunt] spoke as best he could for my rescue."

22. Some Upper Tuscaroras and Meherrins militarily assisted the Lower Tuscaroras (Dawdy 1995; Feeley 2007).

23. It is reasonably well-documented that the Indian slave trade affected both the Upper and Lower Tuscarora polities by the 1690s. Lawson (1967:174, 187, 209, 210, 225 [1709]) cited the routine taking and selling of Indian captives by Upper or Lower Tuscaroras, as well as other coastal Indian peoples, ca. 1701–1709. Although Indian men were sometimes taken, women and children were the primary targets of opportunity (Gallay 2002). Lawson (1967:209 [1709]) described the taking and selling of Coree captives by Machapunga (Mattamuskeet) warriors before either group had acquired firearms; the captives were sold to English traders sometime between 1645 and 1665. In 1712, Barnwell (1908:35) mentioned that "Seneca" (Iroquois Confederacy) representatives chided Lower Tuscaroras for slaving in return for trade goods and other provisions. Although Tuscarora warriors were actively conducting their own slave raids (Ethridge 2009; Gallay 2002), Tuscarora communities were subject to retaliatory raids conducted by other Indian groups, as well as by European colonists settled in the Tidewater (Graffenried 1920 [1714]; Lawson 1967 [1709]). Feeley (2007) also discusses "Mourning War" captive losses in the early 1700s.

24. This population range estimate for ca. 1709–1711 is based on the historically reported number of "bowmen" or "gunmen" (i.e., males fit for combat) multiplied by a total population factor of 4.0 (see Wood 1989:41). In 1709, Lawson (1969:242 [1709]) reported the total number of Upper and Lower Tuscarora "fighting men" at 1,200, while Virginia Governor Alexander Spotswood's intelligence sources estimated the total number of Upper and Lower Tuscarora warriors at 2,000 in 1711 (Boyce 1978:Table 3). In 1712, Barnwell (1908:34) estimated the Lower Tuscarora fighting strength alone at no less than 1,200–1,400, which did not include Upper Tuscaroras. If the 1709–1711 population range estimates are reasonably accurate, then the Precontact period Tuscarora population in ca. 1500 would have been approximately 10,000–16,000 people. Given that approximation, the Contact period Tuscarora population in ca. 1600 would have been 7,700–12,300 people. These population estimates are based on a population decline model for the Southeast subarea proposed by Ubelaker (1988:Table 2)—see Thornton (2004:51).

25. Phelps informally instituted the "Tuscarora Project" and the "Algonkian Project." Goals for the Algonkian Project were outlined by Phelps (1980c:6–7; 1982a:47, 1984a:1). Although never formally stated, broadly conceived goals for the Tuscarora Project were outlined by Phelps (1980c:6–7, 1983:50–51) as well.

26. While we use the more generally known site name, Neoheroka Fort site, the Tuscarora word is more correctly, *Neyuheruke* ("forked field") (Rudes 1998:2).

27. While there are caveats and contextual complexities that we cannot cover here, we note the findings of two ceramics studies by Bowser (2000) and Gosselain (2000). Bowser (2000:238) found among Achuar and Quichua peoples—small-scale segmental societies—"The test of ability to distinguish chichi bowls as Quichua or Achuar indicates that women accurately perceive cues to political group membership in other women's pottery…On average, women were correct in 68 percent of their judgments, and their accuracy is significantly greater than that predicted by chance…[However,] If each bowl is coded by according to the ethnicity of the potter, then the average accuracy of judgment drops to 62 percent…On average, these scores are significantly greater than that predicted by chance." Gosselain (2000:208; emphasis added) reported on hand-built pottery from sub-Saharan Africa, noting, "…the striking correspondence between pottery fashioning techniques *and* some of the most pervasive and enduring forms of social groups…patterns in the distribution of the fashioning step in the chaîne opératoire do broadly match social boundaries such as language divisions…and even gender…all categories of social group membership that usually constitute the core of people's identity, that part…most difficult to mask or erase." Interestingly, Gosselain

(2000:198, 200) found that *decorative treatments*, specifically rouletting tools and the associated designs, occur "independent of cultural variations such as language, social organization, and economy, corresponding to no other boundaries than natural ones…Thus, the distribution of rouletting tools may be generalized to a corridor of geographically contiguous…communities through which diverse cultural traits may have diffused."

28. Galloway (1992) offered a generalized critique of the Direct Historical Approach within the context of Southeastern archaeology.

29. Binford's (1964, 1965) 1950s research was later followed by a similar regional survey project conducted by Gerald P. Smith in the 1960s (Smith 1971, 1984).

30. Binford (1964) relied on extra-local typologies for his initial ceramics seriation, but also described previously unrecognized types.

31. Witthoft's reconnaissance of the Neoheroka Fort site locality is discussed in Byrd et al. (2009).

32. Our systematic comparison of Branchville simple-stamped sherds (site revisit collections) from sites 31HF1, 31HF12 and 44SN24—sites originally sampled by Binford (1964)—against Cashie series simple-stamped sherds from sites 31HF20B, 31BR7 and 31GR4 confirm this conclusion. All specimens fall within the expected range of variation for the Cashie series—see also Owens (1993). In terms of precedence, one could argue for renaming the Cashie series and the Cashie phase, "Branchville," but the redesignation would lead to more confusion given the preponderance of existing literature citing, contesting or otherwise embracing Phelps's (1983) regional sequence.

33. Our review of Smith's (1984) investigation results, despite problematic issues with his data and interpretations, generally support Binford's (1964) conclusion that Nottoway potters likely produced Branchville series ceramics in the late sixteenth and early seventeenth centuries. Although Smith's (1984) ceramic typologies are convoluted and appear to inconsistently mix, typologically and chronologically, different series within his Sturgeon Head series definition, the Sturgeon Head simple-stamped, plain and fabric-impressed type descriptions are more-or-less synonymous with Branchville (Binford 1964) and Cashie (Phelps1983) type equivalents.

34. The Indian Woods reservation lands, composed of subdivided parcels leased both before and after June 1803, were sold after a series of complex legal negotiations in November 1831 (see Paschal 1953:137–148).

35. Absolute dates that we do not consider contextually valid for the Cashie I–II subphase occupation features they purportedly date are for the following sites and proveniences: 31NS3b, Feature 137 (Eastman 1994a, 1994b; Phelps 1980a); 31LR1, Feature 20 (Eastman 1994a, 1994b; Eastman et al. 1997); 31WL37, Feature 2294 (Millis 2003, 2009); 31ED333, Feature 34 (Bamann 2006); 31WL304, Feature 4B (Thomas Beaman, personal communication 2008).

36. In the recent past, individually or collectively, we have variously followed Phelps's (1983) proposed A.D. 800–1650 date range for the Cashie phase (see e.g., Byrd and Heath 2004; Heath 2007; Phelps and Heath 1998).

37. The cal intercept A.D. 1022 date for Feature 137, which we suggest is an early Late Woodland period Clements phase feature, is in keeping with the Clements phase chronology of A.D. 300–1000 proposed by Ward and Davis (1999:Figure 1.5). More recently, Bamann et al. (2008:20) reported a cal intercept A.D. 1290 date for a feature (Feature 27) with Clements series pottery at the Mush Island site (31HX250).

38. Radiocarbon dates associated with any archaeological deposit simply reflect what is known at a moment in time, not necessarily the entire time range for whatever phenomena they date.

39. A "Gaston ware" simple-stamped vessel section was recovered from the upper level of a human burial pit feature at site 44PG302, which is located on the James River in Virginia (Prince George County). Wood charcoal from the lower pit fill dates to the mid-thirteenth century. Given the intrasite patterns at site 44PG302, however, Doug C. McLearen (principal investigator) considered the assay date "200–300 years early" (Klein 1994:22).

40. For the Middle Atlantic Coastal Plain, Potter (1993:3) discussed linguistic evidence for "population "cells" of Algonquian speaking peoples migrating into the subarea in successive waves.

41. Simple-stamping, the exterior surface treatment most commonly observed on Cashie series vessels, may have been regionally reintroduced, after a long hiatus following the Deep Creek phase (Phelps 1983), by Cashie phase potters around A.D.1200—see note no. 89. Simple-stamping patterns on Cashie series vessels differ from preceding periods in that most appear to have been executed using carved paddles with narrow, evenly spaced lands and grooves. While this surface treatment was subsequently adopted by potters from other ethnolinguistic groups in the neighboring Piedmont and Outer Coastal Plain provinces during the Late Woodland period, simple-stamping is not found on Mount Pleasant series, or Mount Pleasant varieties (Classic, Liberty Hill, Middletown) and other synonymous "series" (Lenoir), specimens pre-dating or post-dating ca. A.D. 1200. Other ceramic attributes commonly associated with Precontact period Cashie series ceramics that are wholly absent or less common before the regional emergence of the Cashie phase are wiped-and-rubbed or floated vessel interiors and folded rims with

long folds. Green (1986) suggested that his provisionally defined Liberty Hill series ceramics might represent a direct precursor to Cashie series ceramics, possibly indicative of an in situ development of the Cashie phase. We note, however, that Liberty Hill variety ceramics share far more functional and stylistic attributes with other coeval Mount Pleasant varieties than with roughly contemporaneous (ca. A.D. 1200–1300) or later (A.D. 1300–1650) Cashie series materials—see e.g., Millis (2001:262–279). Moreover, ceramics consistent with Green's (1986) Liberty Hill description, like the Mount Pleasant series itself, are not exclusive to the northern Inner Coastal Plain. Their presence and typical contextual co-occurrence with Mount Pleasant series ceramics, but not Cashie ceramics, have been noted throughout the North Coastal Region (e.g., Jacobsen et al. 2008; Swindell et al. 2009). Importantly, and in contrast against Cashie series examples, Mount Pleasant series vessels, including the Liberty Hill variety, do not exhibit long-fold folded rims or simple-stamped exteriors. Moreover, there is minimal overlap in vessel forms and decorative treatments between the two series (see e.g., Green 1986; Jorgenson 2001; Millis 2009; Phelps 1983). The interior rim stamping treatments (fabric-impressed, cord-marked), commonly observed on Mount Pleasant series ceramics, including Liberty Hill examples, do not occur within the Cashie series (see e.g., Millis 2001:262). Forming techniques also differed in some fashion as did firing techniques between the two series. Cashie series vessels *tend* to exhibit greater hardness (fired at higher temperatures) with *generally* less frequent clean coil breaks, except where everted rims were applied to jar or beaker bodies. Many Cashie series vessels we have reassembled exhibit sherds with irregular breakage patterns, whereas clean coil breaks are more commonly observed on Mount Pleasant series sherds, a pattern that suggests subtle differences in the body forming or finishing techniques respectively employed by Cashie and Mount Pleasant potters. Liberty Hill variety ceramics, perhaps influenced by Cashie potters in the lower Roanoke River basin sub-region, likely represent the end of the Mount Pleasant series continuum, dating to ca. A.D. 800–1300. The present data on the two phases suggest to us that Mount Pleasant phase peoples were gradually pushed south and west as ancestral Cashie phase peoples took up residence in the lower Roanoke River basin and expanded their territory over the course of several centuries. We note that Late Woodland period dates, ca. A.D. 800–1300 associated with Mount Pleasant phase occupations (e.g., Herbert 2009; Herbert, this volume; Millis 2003, 2009) are found well south of the Roanoke River basin and along the western fringes of the middle Tar-Pamlico and middle Neuse river basins, an expected temporal pattern, given the Cashie phase expansion model we propose.

42. Mount Pleasant phase burials found on the Inner and Outer Coastal Plain are most often encountered as primary interments, most typically fully flexed or semi-flexed single inhumations, or secondary burial cremations (Heath 2003; Phelps 1983). Although primary inhumation customs were practiced under some circumstances by Cashie phase peoples before European contact, the more general practice of ossuary burial customs, at least through ca. 1500–1550, suggests quite different belief systems than those practiced by peoples associated with the Mount Pleasant phase (Heath 2003 [*sensu* Hutchinson and Aragon 2002]). While Cashie phase settlement patterns include a range of site types, from seasonal resource exploitation camps, to dispersed farmstead hamlets, to nucleated palisaded villages, Mount Pleasant phase settlement patterns were fundamentally different. There is no present evidence for late Mount Pleasant phase nucleated villages, or habitation site clusters indicative of populous dispersed village communities. Beyond such differences in the arrangement of settlements across the landscape, Cashie phase habitation sites are more commonly found on locally higher elevation landforms with sandy loam or loamy sand soils. While Mount Pleasant phase occupations are often found in spatial, but not temporal, conjunction with Cashie phase occupations at many sites, single component Mount Pleasant phase sites, including those with Liberty Hill variety ceramics (see note no. 41), are found more randomly distributed, in relation to various geographical variables, across the regional landscape (Byrd 1995, 1996; Byrd and Heath 1997, 2004).

43. Byrd (1998) summarizes complex issues between genes, language and culture, as well as how different languages might come to be spoken in a particular region, the nuances of which are beyond the scope of this chapter.

44. We use the term Proto-Iroquoians in the sense of Mithun (1984:259), "the common ancestors of all modern Iroquoian peoples."

45. Glottochronologies for Northern and Southern Iroquoian languages are seemingly at odds with the archaeological evidence (but see Whyte 2007), suggesting an initial Proto-Iroquoian population divergence around 4,000–3,500 years ago (Lounsbury 1961, 1978; Rudes 1999a). Rudes' (1999a:xv) lexicostatistical studies suggest that Tuscarora and Nottoway developed from a shared dialect that diverged from a parent Proto-Northern Iroquoian language about 100 B.C. Historical linguistics can provide highly relative information on interrelated languages, such as which languages in a given family are earlier or later in time, but glottochronology, a now discounted method for estimating calendric dates associated with divergences of more recent languages from a protolanguage are not reliable (see Potter 1993:2–3).

46. Fenton (1940) drew a similar conclusion based on his assessment of ethnohistorical evidence.

47. See also Mithun (1984:Figure 15.2).

48. While ancestral Tuscaroras apparently moved south and well away from the habitual linguistic influences of other Iroquoian groups on their slowly diverging language, ancestral Cayugas remained in, or returned to, the Great Lakes region. Over time the Tuscarora language continued to diverge from the PNI language base, but the Cayuga language assumed more characteristics shared between languages of the Five Nations (Chafe and Foster 1981).

49. Rockman (2003:9) defined push-pull factors as follows: "Push factors are those conditions experienced by a given population that make occupation of a different area more attractive than staying as part of the originating population" (e.g., resource depletion, social constraints, negative environmental change, warfare). "Pull factors are the conditions that make particular migration and colonization destinations viable options" (e.g., knowledge of destination environment or resources, costs of transport, preexisting social connections) (Rockman 2003:9).

50. Analyses of American Indian oral histories suggest that "origin myths can maintain memories of place over potentially several thousand years and thousands of miles…This evidence is important for the archaeology of colonization as it highlights the point that in order to arrive at a new point, a colonizer must have come from somewhere else" (Rockman 2003:18)—see also George-Kanentiio (2007).

51. "Gow-ta-no" is a variant of *kahtehnu* ("submerged loblolly pine" [Rudes 2000:6]), which was generally anglicized both as Catechna or Contentnea. Johnson (1881) restated the Tuscarora origins story originally included in Cusick (1848:21, 33); Cusick (1848:21) referred to *kahtehnu* as, "Cau-tan-oh, i.e., pine in water."

52. During the Yamasee War (1715–1717), a contingent of Tuscarora warriors resettled at Port Royal, South Carolina. They later relocated their families to the same area where they lived through 1730s (see Milling 1940)—see Feeley (2007) for discussions of Tuscarora societal fragmentation and population dispersals after 1713–1715.

53. Landy (1958:251) preferred the term "tribalism" over "nationalism," with tribalism meaning "…the self-identification of a group or society with a common territory, common traditions, and common values and interests…Nationalism, however, tends to be more dynamic, to be directed toward enhancement of a society's power and prestige vis-vis other societies with which it feels itself in competition or otherwise at a disadvantage." Given Parramore's (1982) thesis of a "Tuscarora Ascendency" in the seventeenth century, however, the tandem concepts of "national" or "nationalism" in the case of early Postcontact period Tuscaroras are viable analogs.

54. There were some exceptions to this insidious invasion pattern. Graffenried entered into painstaking land purchase negotiations with the King of Chatooka, a Neuse Indian town, when he found the lands previously sold to him by John Lawson for the New Bern colony were still occupied by Neuse in 1710 (Graffenried 1920 [1714]).

55. Cashie I and II subphase sites are found within four North Carolina ecoregions: 63e, 63n, 65m and 65p, which are environmental zones within the Middle Atlantic Coastal Plain ecoregion (Griffith and Omernik 2009). Griffith and Omernik (2009) categorize these as: 63e, Mid-Atlantic Flatwoods; 63n, Mid-Atlantic Floodplains and Low Terraces; 65m, Dissected Rolling Coastal Plain; 65p, Southeastern Floodplains and Low Terraces.

56. For the Meherrin and Nottoway river drainages, distributions of presumed protohistoric era Meherrin or Nottoway occupation sites are variously reported in Binford (1964), Dawdy (1994), MacCord (1993), Phelps (1982b) and Smith (1984).

57. In his Lenoir County survey, Robert G. H. Crawford (1966) surface collected over 60 sites in the middle Neuse River basin, roughly between present-day Cove City to the east and Seven Springs to the west. Based on a pottery seriation derived through excavations conducted at the Tower Hill (31LR1) and Hardy (31LR11) sites, Crawford proposed four ceramic series, Lenoir, Grifton, Tower Hill and Type I. Given Crawford's original series definitions, as well as descriptions later reported in Eastman et al. (1997), it is evident that his Tower Hill simple-stamped type is equivalent to the Cashie simple-stamped type; this conclusion was recognized by Eastman et al. (1997). It is also apparent, however, that Crawford's Tower Hill fabric-impressed type description was based on a mixed assemblage of Mount Pleasant fabric-impressed and Cashie fabric-impressed materials. Unfortunately, Eastman et al. (1997) further confused the issue by concluding that Crawford's Lenoir and Tower Hill series should be subsumed within the Cashie series. Moreover, it is doubtful that the cal intercept A.D. 786 date obtained by Eastman et al. (1997)—carbonized hickory nutshell recovered from 31LR1, Feature 20—is valid for the Cashie series or the Cashie phase. There are several contextual problems with the Feature 20 carbon sample assayed in 1991. First, careful study of Crawford's field report (1966:102–12) strongly suggests that Feature 20 was a Mount Pleasant phase (Lenoir series period) feature, a probable cooking or nut roasting pit, dug through and disturbed sometime later in the Cashie phase (Tower Hill series period) to create a storage cache. The large pit (Feature 20) included nine triangular projectile points, ten bone awls, a conch shell blank and 177 sherds, primarily Tower Hill fabric-impressed sherds (n=152). Other Feature 20 sherds include Lenoir (n=5) and Grifton series (n=4) types, as well as five shell-tempered and six "plain" sherds not assigned to a particular series (Crawford 1966:Table 4). It is

likely that the shell-tempered sherds are Late Woodland period Colington series (A.D. 800–1750) materials from a vessel, obtained along with the conch shell blank, through trade with Algonkian groups in the Tidewater. Secondly, it is evident on Crawford's (1966:Figure 19) plan view drawings of features at 31LR1 that Feature 20 intruded into an earlier feature, which was truncated along the west wall of Feature 20. Additionally, the east side of Feature 20 overlapped with Feature 19, and possibly with Feature 21 on the northeast. This evidence suggest that Feature 20 was disturbed and potentially contaminated, at least in the prehistoric past, with fill materials from multiple adjacent features. Moreover, it appears that the cooking or nut roasting activity associated with the carbonized nutshell submitted for assay likely occurred before the pit was reused as a cache to store tools (projectile points) and valued commodities (marine shell). The cal intercept A.D. 786 date is four centuries earlier than any other absolute date associated with Cashie series ceramics where there are no such questionable contextual issues.

58. During the 1712 armistice treaty negotiations between John Barnwell and Lower Tuscarora leaders at Catechna, Barnwell (1908) specified that Tuscarora hunting parties could no longer venture south of the Cape Fear River. We believe this requirement was inserted to protect Indians allied with South Carolina's colonial regime, some of whom were frequent targets of Tuscarora slave raiding parties before and after the Tuscarora War (Gallay 2002; Heath 2004).

59. Byrd and Heath (2004) considered Haruta to be a Coree town, but Haruta consistently appears, under slightly different appellations, in treaty negotiations and other documents as one of the Lower Tuscarora communities.

60. South of the middle Neuse River basin, regional survey and site testing data from western Cumberland, Harnett, Hoke, Lee, Moore and Scotland counties suggest that no village size sites existed in most areas of the Carolina Sandhills (ECU site files; Fort Bragg CRMP site files; Herbert 2009:3–4; NCOSA site files). Although village size communities existed along the middle Cape Fear (e.g., MacCord 1966) and Deep (Boudreaux 2007) rivers in the late Precontact period, there is no present archaeological evidence for such populous communities in the Sandhills sub-province after ca. A.D. 1600–1650. Similarly, there are no current data (ECU site files; NCOSA site files; Simpkins 1992; Ward and Davis 1999) to suggest that there were non-Lower Tuscarora, village size communities between the westerly Tuscarora towns of Toisnot and Torhunta and the documented eastern Piedmont Siouan settlements associated with Caraway, Fredricks, Hillsboro, Jenrette or Mitchum phase occupations (see e.g., Davis 2002; Dickens et al. 1987; Simpkins 1992; Ward and Davis 1993, 1999).

61. Crawford (1966:Figure 19) illustrated what may be the corner of a rectilinear plan structure at the Tower Hill site, which may be associated with a Cashie I subphase (Tower Hill period) occupation at the site.

62. David Phelps and John Byrd directed the salvage recovery of three plow damaged ossuaries at the Kearney site (31GR84), located in the Nahunta Swamp section of the Contentnea Creek drainage (Farris 1992; 31GR84 site files, East Carolina University). These burials were unusual in that one ossuary (Burial 1) contained both cremation burials and disarticulated skeletal remains of multiple individuals in the upper level of the burial pit, and at least three primary inhumations in the lower level of the same pit. Two other ossuaries at the site were positioned directly above flexed primary burials in the same pits (Burial 2 and 3). A fourth burial (Burial 4) held the remains of a flexed primary burial with two intrusive postholes that disturbed the older skeletal remains. Dislodged human bone fragments from the primary burial were recovered from intrusive postmold fill deposits associated with the site's later Cashie phase occupation. One individual (flexed primary burial) in Burial 1 was interred with a steatite tubular pipe (incised), and one individual (secondary bundle burial) in Burial 3 was interred with an engraved shell gorget and some unidentified shell objects (highly fragmented-decayed). No obvious funerary artifacts were recovered in association with any other individuals in Burials 1–4 (31GR84 site files, East Carolina University). Since these mortuary patterns were not within the range of expected variation for Cashie I subphase interments, and due to the regionally anomalous presence of the pipe and gorget, Phelps (personal communication 2008) considered the site 31GR84 burials to be something other than Cashie phase inhumations, possibly late Precontact period, Coastal Plain Siouan burials. The presence of a partial house pattern (Feature 1), originally constructed with a subsurface floor area, at the site, along with the recovery of burial fill pottery sherds, similar to Millis's (2003, 2009) Untyped Series I and Untyped Series II wares (ca. A.D. 1300–1400), lend some credence to Phelps's tentative interpretation.

63. The authors of several studies aggregated both Middle and Late Woodland period skeletal remains and bone samples for their analyses. Due to such contextual problems, their study results and conclusions are problematic.

64. On bluffs along the lower Chowan River, several primary inhumation burials were reportedly plowed out in the 1970s. The burials were located in a late seventeenth century Meherrin occupation area at site 31HF20B, but the reports were not professionally verified (David S. Phelps, personal communication 2008).

65. Relic collectors dug many areas of the John Green site, removing at least 35 burials and their associated funerary objects, sometime before 1968. Some of their dig finds are described in MacCord (1970) and Painter (1963, 1964a, 1964b).

66. It is possible that the house patterns described by MacCord (1970:121) were not associated with the site's late seventeenth–early eighteenth century Meherrin occupation. Only one (Feature 12) of the 23 non-burial features and one (Burial 3) of the six burials reported by MacCord (1970:103–112) contained European-made artifacts.

67. Before the Tuscarora War, Chowanokes living on the Bennett's Creek Reservation tended fruit orchards and raised both pigs and horses (Saunders 1968:II:140–141), while the Pasquotanks notably raised Cattle and made butter (Lawson 1967:200 [1709]).

68. Millis (2009) elaborates on this point in her discussion of Cashie series ceramics from the Contentnea Creek site. South (1959) reported the same issue with Gaston series ceramics recovered from the Gaston and Thelma sites.

69. As Phelps (personal communication 2007) informally observed, "Somehow, archaeologists always want to describe temper types as being mutually exclusive, and except for things like fiber, [added] clay lumps [or grog], and [crushed] shell, it is nearly impossible to accurately classify each sherd."

70. Although it is subjective to some extent, and not especially appetizing, it sometimes helps to further sort sherds into their respective series by employing the individually subjective "sticks to the tongue – does not stick to the tongue" test to tactilely assess the relative firing hardness and interior surface treatment of a given sherd (see e.g., Carnes-McNaughton 2008). This somewhat arcane method, liberally borrowed from historical archaeologists who apparently do not fear tongue testing whiteware sherds from privies and such, can prove useful—e.g., Cashie I series sherds less frequently "stick," while Mount Pleasant series sherds more frequently "stick"). Our efforts to determine relative hardness using the Moh's scale method have not proven especially useful, perhaps due to the abundance of lithic tempering clasts in the pastes of tested sherds.

71. See note no. 33.

72. Presumably late seventeenth-to-early eighteenth century Meherrin pottery sherds (n=1480) recovered from the John Green site (44GV1) were typed by MacCord (1970:116) as Branchville ware. MacCord (1970:116–117) described these ceramics as "sand-tempered…well-made, [and] hard-fired," with multiple surface treatments (cord-marked, fabric-impressed, plain, simple-stamped). A partially reconstructed, Branchville fabric-impressed vessel from the site (MacCord 1970:Figure 3) exhibits a form and rim treatment (long-fold folded rim) similar to known Cashie I and Cashie II series examples from North Carolina contexts

73. We provisionally define the Devil's Gut series based on an assemblage of vessel fragments recovered from excavation units and Late Woodland period features at the Jordan's Landing site. Devil's Gut swamp is located across the Roanoke River from site 31BR7. These vessels (MNI=10) were made with very fine-to-slightly silty micaceous clays, similar to many Cashie I series vessels and sherds recovered from lower Roanoke River basin sites. Although some vessel pastes include very fine sand (sub-rounded and sub-angular quartz grains), the pastes are essentially temperless and the vessels were hard-fired at relatively high temperatures; several sherds exhibit random grains of coarse sand (.50–1.0 mm). Very fine or fine sand grains in the few sandier paste examples are exposed and the finished surfaces are slightly sandy to the touch, but most specimens feel very smooth or slick to the touch. Body sherd thicknesses range from 2.7 mm-to-6.6 mm, but the average body sherd thickness is only 4.5 mm. Devil's Gut series vessel exteriors are plain finished, either well-smoothed or burnished, but the finishes are not especially lustrous on most examples. A well-executed vessel section from site Feature 41was originally burnished, smudged and polished; a similarly finished sherd was recovered from Feature 1, the village palisade ditch. The Feature 41 specimen has a lustrous sheen on both the interior and exterior surfaces. A few sherds exhibit ephemeral fabric or simple-stamping impressions not completely smoothed out, a characteristic of paddle-and-anvil formed vessels. Rim lips are generally flat, but one specimen has a rounded lip. Vessel forms, based on assessments of basal and rim sherds, suggest that Devil's Gut vessels were small-to-medium size forms, generally unrestricted orifice pots and simple bowl forms with straight (self) rims. The simple bowl forms have flattened bases, similar to Cashie I series simple bowl forms recovered at the Jordan's Landing site (Figure 3).

The Devil's Gut series sherds and vessel sections were all recovered in association with Cashie I series materials. Based on the intrasite contexts, the series appears coeval with the Cashie I series, as well as made with locally available micaceous clays. Feature 41 is dated at cal intercept A.D. 1280 (Table 2). Since specimens associated with the series were also recovered in stratigraphic association with Cashie I series materials in upper excavation unit levels, anthropogenic deposits related to Cashie I subphase occupations, we assume that the Devil's Gut series dates to the ca. A.D. 1250–1450 period. Phelps (1983:39) briefly mentioned the occurrence of these ceramics as "trade" wares sometimes found in Colington phase contexts. He later considered such "temperless smooth wares" as a variety of the Cashie series (David S. Phelps, personal communication 2008; Phelps 1995). The Devil's Gut series may be coeval with the Swansboro series, a shell-tempered pottery with plain and burnished exteriors typically found in low-frequencies along the outer coastal margins (Herbert 2009:184–187). The fine, hard-fired pastes and well-smoothed or burnished surface treatments are somewhat reminiscent of so-called Colono-wares, such as the Courtland (Binford 1964, 1965) and Brunswick (South 1976) series ceramics dating to the post-1650s era. The Devil's Gut examples, however, exhibit no features mimicking European forms or decorative motifs, patterns typical of most Colono-ware assemblages (Carnes-McNaughton and Beaman 2005; Herbert 2009; Linda Carnes-McNaughton, personal communication 2010). Although the Jordan Plantation was established in the locality of site 31BR7 in the mid-eighteenth century, the present contextual evidence strongly suggests that the Devil's Gut ceramics are not associated with any post-1700 site area occupations.

74. Although Phelps and Heath (1998) suggested the possibility that such vessels may have been shaped over forms—manually molded—Christopher T. Espenshade (New South Associates, personal communication 2011) considers this method unlikely, at least based on his study of ethnographic sources on hand-built ceramics production.

75. Green (1986) reported no long-fold folded rims in the Cashie series assemblages recovered from the Chowanoke sites complex (31HF20A–B, 31HF30A–G). Most Cashie series ceramics from the Chowanoke sites are likely associated with a late seventeenth–early eighteenth century Meherrin occupation (Cashie II subphase) at site 31HF20B.

76. Millis (2001:381) suggested that the angular temper clasts observed in Cashie series sherds from the Contentnea Creek site potentially indicate some degree of temper preparation (e.g., partial crushing), a possibility initially broached by Phelps and Heath (1998).

77. Chert, feldspar and hornblende clasts are most likely incidental, naturally occurring particles, naturally co-occurring in either the clay or temper sources selected by Cashie potters. Particles of such rocks and minerals, along with quartz sands or gravels and other materials (e.g., silts, hematite), commonly occur in varying densities in most North Carolina Coastal Plain clays (Clark et al. 1912).

78. Modal range in this instant is the most frequent temper grain size *range* observed on a sherd-by-sherd basis in a given sample of sherds.

79. Herbert (2009:28) also noted, "Angular grains of quartz ranging in size from fine sand to pebbles can be created by the natural weathering of quartzite. Handfuls of sharply angular small bits of quartz may be found throughout the eastern Piedmont where quartz veins in residual clay are freshly exposed by erosion."

80. Although similar inclusions appear to be natural to the clays tapped and used to make Cashie II vessels, random lumps of soft (chalky texture) salmon-pink, off-white or strong brown clays in the 1.0–4.0 mm size range can be seen on the exterior surfaces of some vessels or in fresh sherd break cores. These inclusions appear random and not purposefully included as tempering in the same sense that grog (i.e., crushed sherds) or dried/fired clay lumps were added as tempering elements to Middle and Late Woodland period Hanover series ceramics (Herbert 2003, 2009, this volume). One particular Neoheroka Fort site vessel from Feature 16 is "shot through" with tiny (.50–1.0 mm) iron rich clay lumps that are reddish orange-to-strong brown in color, but the nodules appear to be a natural constituent of the clay selected for the jar.

81. Although all regional clays contain some percentage of mica, so-called "micaceous clays" contain a greater abundance of mica flakes easily visible to the unaided eye. On the North Carolina Coastal Plain, highly micaceous clay deposits are most commonly associated with the Miocene Epoch St. Mary's formation (Clark et al. 1912), but no studies have been conducted to determine if these particular clays are suitable for forming coil-built pottery.

82. The purposeful selection of mica rich clays by Tuscarora potters potentially served functional purposes. Micaceous clay pastes vitrify at lower firing temperatures and fired vessels are more resistant mechanical and thermal shock. Micaceous paste vessels heat more rapidly and retain heat longer than comparable non-micaceous paste vessels (Eiselt 2005). Since mica absorbs thermal shock, the potentials for production firing cracks and spalls are less likely, and use-life is extended for vessels used for cooking or other food processing purposes requiring the application of heat. Micaceous clays improve vessel performance and initial firing success, but an additional drying step (low heat drying) is required during the production process (Eiselt 2005; Ortega 2007).

83. Depending on the specific soil series, most North Carolina clays generally contain some quantity (5–75 percent) of free sand (Ries 1897).

84. Binford's (1964) Branchville series definition includes fabric-impressed, plain, simple-stamped and cord-marked types. Millis (2001:271) and Bamann et al. (2006:Table 10) reported *single* occurrences of cord-marked sherds that otherwise exhibited the range of attribute variation associated with Cashie series ceramic assemblages recovered at sites 31WL37 and 31ED333. We have observed at least two cord-marked rim sherds with paste, temper and interior finishing characteristics, similar to contextually associated Cashie I series examples, in the Jordan's Landing site collection. At the Thorpe site (31NS3b), Phelps (1980:76) noted the recovery of "[a]…few

sherds with cob marked (corn cob impressed) surfaces on 'Cashie paste.'" Subsequent re-examination of the "cob marked" sherds suggests that the impressions were actually made by very coarse warp and very fine weft fabrics.

85. In our analysis of Cashie ceramics assemblages we occasionally see what at first glance appears to be cord-marking, but we typically find that such sherds often match or mend with sherds from fabric-impressed vessels. What often appears to be cord-marking on single sherds can be the result of the loosening or unraveling of non-cordage warp fabrics, where the weft cordage was woven around wood or river cane dowels to produce a paddle like tool. As Haag (1958:74) reported for some fabric-impressed sherds collected in his survey of coastal North Carolina, "Sometimes the weft elements have parted or slipped along this stick (?) or reed (?) and its bare impression may be seen among the cords."

86. Some "plain" vessels in the Neoheroka Fort site assemblage exhibit evidence that they were simple-stamped and scraped before the pieces were smoothed over to produce otherwise plain finished vessels (Heath 2002).

87. Percentages based on analysis of six 2-x-2-m excavation unit (Sq. 0, Sq. 0, R2, Sq. 0, L2, Sq. -5, L7, -10, R32) assemblages from site 31BR7.

88. Except for surface collection units and a single feature (Feature 135A), Phelps (1980a) did not report the surface treatment proportions for Cashie series sherds recovered at the Thorpe site (31NS3b). The surface treatment proportions, however, appear to be in keeping with the site's only radiocarbon date (cal intercept A.D.1240) firmly associated with a Cashie phase feature (Feature 135A). Phelps (1980a:76) noted, "[Cashie series] surface finishes, in order of popularity, are fabric impressing, simple stamping, plain surfaces, and incising."

89. For the North Carolina Coastal Plain, Colington series (shell-tempered) simple-stamped pottery appears to post-date A.D. 1350–1400, at least based on current radiocarbon data (Herbert 2009; Swindell 2010). Simple-stamped pottery types from the neighboring Piedmont province also post-date A.D. 1300–1350 (Boudreaux 2007; Dickens et al. 1987; Eastman 1999; Ward and Davis 1993, 1999; Wilson 1983). The currently known radiocarbon dates from reliable contexts suggest that carved-paddle simple-stamped (narrow land-and-groove) ceramics were not produced by potters of the eastern Piedmont or Coastal Plain regions except for those presently defined as Cashie series ceramics before ca. A.D. 1350. This approximate date is approximately one century later than the earliest Cashie series simple-stamped sherd assemblage from site 31NS3b, which dates to cal intercept A.D. 1240 (Table 2). Further systematic study of this hypothesis is needed.

90. Ceramics from Contentnea Creek survey sites (Byrd 1996, Byrd and Heath 1997) include simple-stamped, fabric-impressed and plain finished Cashie I–II series sherds. Although ostensibly associated with late seventeenth or early eighteenth century Lower Tuscarora towns, we cannot readily assess occupational time depth at any particular site since none have been investigated beyond the survey level.

91. Although the proportion of fabric-impressed sherds (70.7 percent) is greater than simple-stamped (13.6 percent) or "other" (15.7 percent [cord-marked, plain, unidentified]) sherds, at least based on MacCord's (1970:116) original analysis, the time-depth of the Branchville phase occupation at site 44GV1 is uncertain. See note no. 72.

92. Green (1986) and Phelps and Heath (1998) overemphasized well-wiped or floated interior finishing as a wholly unique and consistently diagnostic characteristic of Cashie I series pottery, which subsequently caused some analysts confusion (e.g., Millis 2009).

93. In some instances, vessel interiors appear to have been covered with a thin (.50–1.0 mm) layer of slip before firing. While the observed patterns may be a function of the floating process, the interior surfaces of some sherds are slightly softer than the exterior surfaces or the inner cores of the same sherds, and there may be a distinct color difference between such thin interior surface layers and the remainder of the sherd. The color differences noted for such well-finished sherds are readily visible, even to the unaided eye, when one closely studies fresh sherd breaks. It may be that these sherds were simply very well-floated. Sherd thin section examinations or replication experiments are needed to clarify this peculiar phenomenon.

94. Owens (1993) reported that highly weathered surface collection sherds may or may not exhibit evidence of interior floating or smoothing. Heath (2002) noted than some Cashie II series vessels exhibit extreme interior surface use-wear, probably from the manipulation of contents (e.g., stirring, grinding, crushing, pounding, scraping). Such use-wear obliterates original interior surfaces, fully exposing paste temper clasts, giving vessels in this category an interior surface texture akin to very coarse sand paper. Hally (1983, 1986) discussed pottery use alteration and the potential for chemically induced corrosion of vessel interiors associated with hominy (lye solution) or hickory nut oil (tannic acid) processing.

95. Interestingly, the terms (*Peak, Ronoak, Wampum*) documented by Lawson (1969:203–204, 235 [1709]) were commonly known terms, probably trade jargon, adopted by English speaking traders, but the regional Carolina Algonkian (Pampticough), Tuscarora and Coree (Woccon) language terms differ (Lawson 1967:235).

96. In contrast, examples of shell bead production debitage were recovered from ca. 1650–1725 midden deposits at the Cape Creek site (31DR1), which was occupied by Croatoan Indians in that period (Heath 2008).

97. Hundreds of melted lead objects are found in the Neoheroka Fort site artifact assemblage. While most such specimens are probably melted pieces musket shot or ball, it is possible that some of the objects are bale seals.

GIVING VOICE TO A SILENT PAST: AFRICAN AMERICAN ARCHAEOLOGY IN COASTAL NORTH CAROLINA

Patricia Samford

The beginning of the African American past in North Carolina is a compelling story shrouded in mystery. When Sir Francis Drake's fleet arrived at Roanoke Island in June of 1586, hundreds of South American Indians and Africans taken during Caribbean raids on the Spanish were aboard the ships (Mobley 2003:21; Crow et al. 1992:1). As promised, Drake granted them freedom, but from there, what little we know about them comes to an end. Doubtless some succumbed to disease or accidents, while the remainder dispersed, forming communities on their own or joining with the region's native cultures, over time vanishing into the larger Native American population. The culmination of this diasporic tale, like that of the Lost Colony, will doubtlessly remain tantalizing obscure.

This sixteenth-century mystery was in many ways analogous to researching what archaeology has revealed about North Carolina's African American past. Africans and their descendants were vital players in the Atlantic world system that carved plantations and towns out of the pine forests and swamps of eastern North Carolina. Theirs were the hands hoeing the fields, swinging the axes that felled trees, hauling the seine nets filled with struggling shad or stirring the thick, hot tar—activities critical to the region's economy. Sites where African Americans lived and worked are scattered across what remains to this day a largely rural landscape, however fleeting or unrecognized these sites might be in the archaeological record. But, unlike the Africans released by Drake, whose fate will probably never be known, it is possible to learn about the African American through archaeology. Despite significant advances in the archaeological study of the African diaspora past in other states, North Carolina has only begun to tap this buried reserve of history. This essay will summarize the work that has occurred to date and make suggestions for future directions in research and analysis.

After a hiatus of almost a century, Africans reappeared in the wake of permanent settlement of the colony's eastern regions in the mid-seventeenth century (Watson 2005:xi). Numbers remained small throughout the seventeenth century, comprising only about four percent of the colony's population in 1700 (Watson 2005:xi). In the eighteenth century, North Carolina had the smallest proportion of Africans and African Americans of the American colonies, as well as one of the smallest slave populations overall (Kay and Cary 1995:2). Although never exceeding about 35% of the colony's population before the Revolutionary War, the coastal regions were home to the largest numbers of enslaved and free African Americans (Cecelski 2001:103). Governor Tryon remarked in 1765 that African Americans were "very numerous I suppose five to one White Person in the Maritime Counties" (Watson 2005:12). Forty thousand Africans and African Americans were enslaved in the colony by 1767, jumping to over 100,000 by the 1780s and over 330,000 by 1860 (Crow et al. 1992:3; 51, Cecelski 2001:103). While never approaching the size of the enslaved population, numbers of free blacks increased over time, particularly in urban areas like New Bern and Wilmington and in counties that bordered Virginia (Cecelski 2001:90).

African Americans worked in every endeavor that drove the eastern North Carolina economy: their skills and labor powered the agricultural economy, they were crucial in the naval stores and wood products industries, in maritime commerce and fishing, and in the building trades. Understanding the formation and transformation of the black Atlantic world is crucial to comprehending the European colonial experience in North Carolina.

What has been learned archaeologically about eastern North Carolina's African American past? This paper concentrates on archaeological research done in the last twenty-five years on sites with African American components, with spatial parameters provided by Phelps' definition of Coastal Plain, encompassing 30 counties (Phelps 1983:3). Evidence was found of 41 sites, spread over 15 counties, with definite or likely African American components (Figure 11-1). Another 18 sites, from 8 counties, may contain African American components, unidentified as such in the reports. Sites fell within four primary categories: domestic (either slave quarters or late nineteenth- and early twentieth-century tenant houses), freedman's communities, cemeteries and places of work. The scope of work at all these sites varied, ranging from limited identification-level surveys to intensive excavation and analysis. The limited number of sites recorded, the range of site types, and the varying degrees to which these sites have been explored did not allow for the emergence of any patterns.

Figure 11-1. Reconstructed slave quarter buildings at Somerset Plantation. In the right foreground is a small slave quarter; in the middle, with its gable end facing the photograph is a large quarter containing four rooms and designed to house four families. At the left side of the photograph is the reconstructed slave hospital. Photograph taken by author.

Loftfield and Stoner (1997) have proposed that the Lower Cape Fear, settled in the 1720s by planters and their enslaved labor force moving north from the South Carolina colony, should be considered an extension of that region. Following that line of reasoning, the northeastern region, settled from Virginia, should more closely resemble that colony in cultural and economic practices. Both British colonies with the same legal and religious structures, the Virginia Chesapeake and South Carolina low country were characterized by very different systems of staple agriculture, labor management practices, slave demographics and ecologies (Morgan 1998). How will these cultural and ecological differences manifest themselves archaeologically in North Carolina's coastal plain and what changes can be seen through time as the frontier develops into a mature society? Additionally, the coastal plain cannot be viewed as a mirror of the Virginia and South Carolina colonies, since it followed different trajectories of colonization, with greater importance on naval stores production than rice and tobacco agriculture.

Research questions on sites with slave components have focused primarily on the material lives of the enslaved—their homes, their diet, and their material possessions. The most extensive archaeological investigations have taken place at Somerset Plantation (31WH14). Somerset, with one of the state's largest enslaved labor forces just prior to the Civil War, contained a core complex of slave support structures adjacent to the plantation house, including a chapel, kitchen, hospital, several two-story buildings housing four slave families each, and a row of one room cabins lining the shore of Lake Phelps. Archaeology aided in the reconstruction of quarters and a slave hospital. An archaeological overview of the plantation summarizes these projects as well as provides recommendations for future analysis and exploration (Penny 2003).

In the 1950s, archaeological trenching along the slave street under the direction of William S. Tarlton and J. C. Harrington revealed the foundations of the chapel, hospital, kitchen, meat house, furnace and overseer's house. Several of these structures were explored more fully in 1994 and 2001 in preparation for reconstruction and interpretation of the enslaved community (Steen 2003:35). Post-bellum use of the "Slave Street" structures as tenant housing and the 1950s archaeological trenching had destroyed much antebellum occupation data, but overall, results supported the historically documented interest of Josiah Collins in scientific plantation management. The kitchen, with its disproportionately large chimney and hearth, was capable of large-scale food preparation for the plantation's 300-plus slaves. Adjacent to the kitchen, a large furnace and cistern structure were suited for the processing of hogs and other livestock into fresh and cured meat products, as well as laundering linens and clothing. The physical and spiritual well-being of the enslaved, at least in Collins' mind, was provided for by the hospital and chapel.

The two excavated quarters did yield some insight into the daily lives of Somerset's enslaved labor force, although the scope of work prepared by North Carolina's State Historic Sites limiting excavation to the footprint of the two structures severely restricted the quality and quantity of data gathered. A large two-story quarter (20x40ft.) originally housing four extended families and one of the line of smaller lakefront quarters (18x18ft.) were excavated (Figure 11-1). The late eighteenth-century one-room structure, occupied through the end of the Civil War, was not as substantially constructed as the larger quarter, resting on shallow brick piers and containing a brick chimney. A deep ditch or drainage running along the rear of both structures had been backfilled with building destruction debris that also included late eighteenth to mid-nineteenth century English refined earthenware, bottle glass, machine cut and wrought nails, buttons and other domestic debris.

Almost 90,000 artifacts[1] were recovered during the excavations of the chapel, kitchen, hospital and large and small quarters (Steen 2003:72). Categorizing these artifacts using Stanley South's Carolina Artifact pattern (South 1977) revealed that approximately 95% of the artifacts from each structure were either architectural or kitchen-related (Steen 2003:64). Steen attributes these proportions to the "inability of the occupants of the site to participate fully in a money-based consumer society" (Steen 2003:71).

Additional projects on the enslaved community buildings were conducted in 1981 and 1982 in the context of archaeological field schools. Analysis for these two projects—for which no reports have been completed—needs to be undertaken, particularly in conjunction with the results of the later excavations. Cursory analysis at best has occurred on Somerset's archaeological assemblages and re-analysis of collections would provide excellent data, particularly when combined with the large extant documentary record of the plantation. As one of the first plantations to subscribe to scientific principles of farm management, Somerset Plantation makes a great case study for comparison with nineteenth-century plantations in Virginia and South Carolina. While the plantation's home quarter has been studied archaeologically, the sizeable enslaved population at Somerset would have required a number of outlying quarters. The vast landholdings that once comprised Somerset Plantation remain rural and little changed from the antebellum period. Locating these outlying quarters should be a priority—examining them would provide data with which to address questions about the differential treatment and quality of life for enslaved laborers who worked far from the main plantation house and the attention of the slave owner.

While excavation at Somerset has been extensive, other investigations have located grouped quarters on eighteenth- and nineteenth-century plantations. Quarters were generally sited on marginal land at the borders of agricultural fields. At Clermont, the late eighteenth- and early nineteenth-century quarters (31CV350) lined the edge of a ravine that divided the main plantation complex from agricultural fields (Samford 2002). At the Neils Eddy tract in Columbus County, six discrete clusters of late eighteenth- to early nineteenth-century domestic artifacts (31CB89-93, 31CB98) were located 800 feet from a contemporaneous plantation house overlooking the Cape Fear River (Lautzenheiser et al. 1997). Although plantation ownership could not be ascertained, the history of the Lower Cape Fear favors rice and naval stores as the economic products of this plantation. These sites were situated in a manner suggestive of two lines of buildings flanking a road. No subsurface structural remains were indicated by remote sensing or shovel testing, but the architectural artifacts point to wooden structures either seated on brick piers or built using earthfast construction. A final, larger artifact scatter (31CB88), believed to represent the former site of an overseer's house, was situated on a slight rise 200 feet east of the quarters and in direct visual line of the quarters.

The placement of the Neils Eddy artifact scatters is reminiscent of a description of mid-nineteenth-century slave housing at the Richlands Plantation in Onslow County (Avirett 1901:46, cited in Tibbetts et al. 2008). The cypress log dwellings, each with a small garden plot and pig pen, were aligned along a road and spaced fifty feet apart. This linear arrangement of quarters became more common on larger plantations in the nineteenth century and appears to be related to planters' desires for greater control and surveillance over their enslaved workforce, as part of adherence to scientific principles of plantation management. Often these quarters would line the main road leading to the plantation house; standing examples of this arrangement exist at Boone Hall Plantation in Mount Pleasant, South Carolina, and are also depicted in Thomas Coram's painting of Mulberry Plantation, circa 1770. These linear dwelling arrangements stand in stark contrast to the more organic form quarters often took in late seventeenth- and early eighteenth-century Virginia, where structures were arranged in groups around a yard that contained work areas and gardens (Fesler 2004).

While some structures were originally built as housing for the enslaved, other buildings were later repurposed as slave housing. At the Onslow County plantation of middling planter John Spicer Jr., also located in the southeastern coastal plain, the enslaved labor force was active in farming, naval stores production, and animal husbandry (Southerlin 2007; Tibbetts et al. 2008). Excavations at this plantation found the remains of a log structure that may have been an early planter's dwelling (31ON1582), later reused as a quarter. This repurposing approach was also employed at the Eden House site (31BR52), where a seventeenth-century earthfast structure contained an early eighteenth-century slave occupation (Lautzenheiser et al. 1998).

Comparing quarter assemblages with artifacts from associated plantation houses reveals that quarters have lower numbers of artifacts, smaller quantities of brick, mortar, window glass and other architectural debris, higher proportions of tobacco pipes, and ceramic wares remarkably similar to those of the main house. The more limited range and number of personal possessions echoes the findings at Somerset Plantation, with commonly recovered items including cast iron cooking pots, lead shot, net weights, and items relating to personal adornment, like buttons and beads. While the ceramic types recovered at the Neils Eddy plantation house were similar to overseer and quarter assemblages,[2] the range of vessel forms was disparate. With 16 vessel forms ranging from punchbowls, plates, drainers and castors, to butterpots and milkpans, the planter assemblage yielded over twice as many vessel forms as the quarter sites (Lautzenheiser et al. 1997). If slave owners were recycling outdated and no longer fashionable ceramics to their labor force, they perhaps felt no need to send specialized vessels for cooking and presentation to the quarter, rather sending plates and bowls that could be easily repurposed by the enslaved. For example, bowls originally produced for serving alcoholic punch were found in planter, overseer and slave assemblages; but were likely used differently by each group. The prevalence of hollow vessel forms, like small bowls and cups, on quarter sites, has been attributed in part to the preference for meat and vegetable stews, served with starchy sides and sauces (Yentsch 1994; Franklin 2001). Additionally, the enslaved may have rejected the more specialized vessel forms, finding little use for these items.

Second quality, re-used, and handmade items from quarter sites reinforce conclusions about the limited access to consumer goods and the marginal economic status of enslaved Africans during this period. A creamware plate whose underside was unglazed as the result of a manufacturing error was found at one of the Neils Eddy quarter sites (Lautzenheiser et al. 1997:99). This item—sold as a second—may have been obtained by the planter for use at the quarter or purchased by the enslaved because of its lowered cost. A number of reworked metal buttons were found at Somerset; after the loop fasteners had broken, holes had been punched through the metal button faces so they could be re-used (Steen 2003:160). Despite the minimal cost of earthenware tobacco pipes, the occurrence of handmade reed-stem pipes in the Somerset slave assemblage suggests that access to manufactured consumer goods may have been limited (Steen 2003:160). Ten percent of the tobacco pipes recovered from the late eighteenth-century Hobson-Stone House quarter were locally made (Madsen et al. 2002:43). More work is needed to determine how much the remote nature of these plantations and lack of access to merchants affected the range of consumer goods found on these quarters.

Other categories of material goods yield insight into the lives of enslaved African Americans. Despite laws against slave literacy, a stoneware ink bottle, slate pencils and slate tablets bearing traces of engraved letters and numbers found at the Somerset quarters speak of attempts by the enslaved to resist these restrictions (Steen 2003:160, 181).

Another type of artifact often associated with resistance is colonoware—low-fired, unglazed earthenware often found in association with eighteenth- and early nineteenth-century African American quarter sites on North Carolina's coastal plain. Carnes-McNaughton and Beaman's (2005) analysis of North Carolina colonowares revealed that this ceramic is also found in small quantities on urban sites in New Bern, Brunswick Town, Bath, Halifax, and Edenton.

North Carolina colonowares are generally undecorated hollow vessels like bowls or cooking pots, some with burnished interior or exterior surfaces. A very small percentage display rim decorations—scalloping, punctuations, incising or chevrons. A colonoware plate whose rim shape imitated the royal rim popular on Staffordshire creamware of the period was found at the overseer's dwelling at Neils Eddy (Figure 11-2) and a similarly shaped plate was recovered from Brunswick Town (Lautzenheiser et al. 1997:89; Loftfield and Stoner 1997:8). As in Virginia, colonoware rarely forms more than 5% of a site's total ceramic assemblage (Carnes-McNaughton and Beaman 2005). One notable exception was the quarter at the Hobson-Stone House (31BR187), where colonoware comprised 54% of the structure's ceramic assemblage (Madsen et al. 2002:45). Its presence around the plantation kitchen indicated the use of colonoware by enslaved cooks in meal preparation for the Stone family. Because it was found in such sizeable quantities at this site, colonoware may have been produced there. Stanley South, first encountering colonoware at Brunswick Town, believed this ceramic was produced by Native Americans and traded to colonists (South 1977), while other scholars feel that it was produced by enslaved people of African descent. Colonowares embody the multicultural nature of North Carolina's plantations, where cultural traditions from West and Central Africa, Europe and the native peoples of the region interacted to create new societies based in shared cultural ideas.

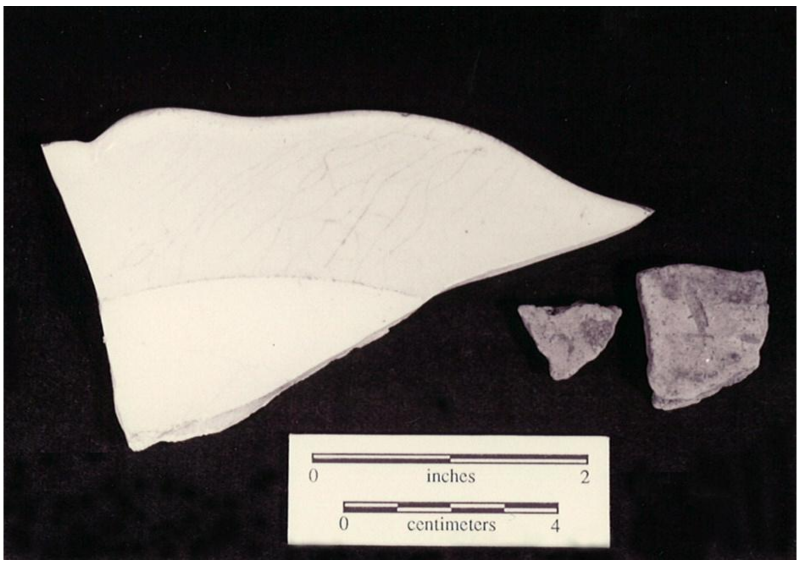


Figure 11-2. On the left is a royal rim creamware plate and to the right are two colonoware sherds showing the same royal rim shape. All three fragments are from the Neils Eddy site (31CB88) in Columbus County. Photo courtesy of Coastal Carolina Research, Tarboro.

Regardless of the manufacturers of these wares, studies should be undertaken to examine how this ceramic functioned within the context of coastal plantations and in urban areas. In addition to use in preparing and consuming food, did some of the colonowares appear to be serving spiritual or magical functions like those inferrred by Leland Ferguson (1992) in South Carolina? Were the enslaved producing colonoware out of a remembered cultural tradition and preference, or did lack of access to manufactured goods force them to produce colonowares? Do we see colonoware production continuing later in the Lower Cape Fear, whose large plantations concentrated the enslaved and isolated them from frequent contact with whites?

Foodways is another interpretively rich area where analysis is needed. At Williamsburg's Rich Neck Plantation, Maria Franklin (2001) charted the development of an Afro-Virginian identity through changes in subsistence strategies during the eighteenth century. Were the enslaved in North Carolina following a similar track, adapting new plant and animal species encountered in the coastal plain with the remembered tastes of West and Central Africa in the creation of a creolized cuisine? Natalie Adams' work at an outlying slave cabin (31CB110) at the Neils Eddy Plantation suggested that the naval stores workers living there relied heavily on fish and turtle, easily caught in the nearby river and creeks, and small mammals that were snared or trapped. The absence of deer and wild birds suggests that the workers had no access to firearms (Adams 2001). Similar results were noted at the Martindale-McGinnis Quarter in New Hanover County. The faunal remains included primarily wild species—turtle and wild turkey, as well as clams (Basedow 2001). It remains to future excavations to determine whether this reliance on non-domesticated meat sources, presumably acquired by the enslaved on their own time, is a pattern that holds across the coastal plain. Future excavations should incorporate sampling strategies and analysis of paleobotanical remains—seeds, pollen and phytoliths—to provide a more complete picture of food resources and preferences.

Architectural influences on African American sites in the coastal plain seem to encompass a spectrum of traditions that reflect the manner of settlement. Eighteenth-century quarters in the northeastern counties share similarities with sites in the Virginia tidewater—specifically in the traditions of impermanent earthfast housing and the use of subfloor pits—holes cut through the floors of quarters and used for the storage of food and personal possessions, as well as meeting spiritual needs as shrines. Subfloor pits have been found in Carteret County and on two sites in Bertie County–the Eden House Site and Bal Gra Plantation—in structures whose historical contexts suggest they were housing the enslaved (Jacobsen et al. 2008; Lautzenheiser et al. 1998). These sites, all located in northeastern counties, date to the first half of the eighteenth century, when this area was being settled by colonists from Tidewater Virginia, and appear to represent a continuation of building traditions brought into the coastal plain. Other regional architectural differences are apparent. The limited excavations at the Hobson-Stone House quarter suggested that it may have been a mud-walled structure (Madsen et al. 2002:46). Although more typical of South Carolina, mud-walled structures have been documented as far north as the Virginia Piedmont (Morgan 1998) and may be evidence of West Indian influences at this plantation. Other differences appear to be reflective of available building materials—at the Martindale-McGinnis Quarter in New Hanover County, the chimney base was constructed with a combination of ballast stone, coquina and local coral (Basedow 2001). Use of these materials is more typical in colonies further to the south, including Florida, Georgia and South Carolina, as well as the Caribbean.

A secondary research focus has been on the expression and transformation of African-based spiritual traditions, with the examination of possible spiritual caches recovered at the Bellamy Quarter and the Eden House quarter (David Jones, personal communication, 2005; Lautzenheiser et al. 1998). A young raccoon buried by the front door of the Martindale-McGinnis Quarter may have been placed there for ritual purposes (Basedow 2001). An early twentieth-century pierced Mexican centavo from a tenant farm (31CO137) almost certainly occupied by African Americans suggests the continuation of folk traditions of wearing charms for protection and healing (Russ and Seibel 2008; Davidson 2004).

Several Civil War-era freedman's communities have been located – Craven County's James City (31CV60) and Pocomoke (31NH500) in New Hanover County—with extensive archaeological work occurring at James City (Postlewaite and Seibel 2007; Wheaton 2002). The exact location of the freedman's community established on the northern end of Roanoke Island remains unknown, but was once home to over 3,500 residents in homes built on individual lots (Click 2001). A Phase I survey of a former plantation that became an African American community known as Hillfield in Jones County occurred in late 2008 (Joel Hardison, personal communication, 2008). Also interesting are two free black communities—Craven Corner and Davis Ridge—founded in the late eighteenth century by African Americans who gained their freedom through military service during the Revolutionary War (Cecelski 2001). No archaeological investigation has taken place at these communities, but work there could shed light on the poorly understood early history of free blacks in the coastal plain.

After the Civil War, coastal North Carolina retained its agricultural economy with cotton and corn remaining the dominant crops until diversification occurred at the end of the century. Single owner plantations were often transformed into leased farms, heralding a system of tenant farming and sharecropping that lasted well in to the twentieth century. A number of survey projects have recorded tenant farms (Russ and Seibel 2008; Southerlin 2002; Fesler and Laird 2006); in some cases, with houses still standing in varying degrees of disrepair. Recent investigations at the Benbury family property at Sandy Point in Chowan County attempted to reconstruct the transformation of a large antebellum plantation to tenancy based on archaeological data and historical research (Russ and Seibel 2008). No additional archaeological work was recommended for the tenant and sharecropper domestic sites identified in these survey projects, despite studies (Stine 1989) that have shown that these sites can provide important information on social inequality, race and gender roles during Reconstruction and the early twentieth century.

The very nature of many domestic sites associated with individuals and families of reduced economic means—the enslaved, free blacks and post-bellum tenants both white and black, for example—have tended to preclude the recovery of data through archaeology. These sites often appear as low-density scatters of eighteenth- and nineteenth-century artifacts. While recorded in archaeological identification and evaluation surveys, generally no additional archaeological work is recommended due to low feature densities and the effects of centuries of plowing. These sites should not be dismissed out of hand as ineligible for further investigation. Several sites from Maryland and North Carolina serve as examples of why low density sites deserve attention. A 1770s plat map documents the location of all plantation buildings, including the slave quarter, at the Smith's St. Leonard Plantation in Calvert County, Maryland (Grow 2006). Sixteen shovel tests placed systematically across the quarter site yielded only 86 artifacts—an average of five per shovel test. Excavation at the site over the last two summers has revealed structural postholes, possible subfloor pits, and a spread of domestic midden.

Closer to home, in Columbus County, Natalie Adams excavated a domestic site (31CB110) associated with naval stores laborers. Earlier survey work recovered 65 artifacts from surface collection and 224 from two test units. During data recovery, Adams located a 15 x 13.5' earthfast structure with an outdoor hearth and two exterior storage pits (Adams 2001). While the total number of artifacts recovered from this site was small, the assemblage did yield an interesting glimpse into the material life and diet of these isolated workers. It also allowed Adams to address larger questions about the relationships between the staple economy, slave demographics and slave lives, despite the small material footprint left behind at this site.

It is imperative that these low density sites not be dismissed out of hand. Large quantities of artifacts are not necessarily a prerequisite for site significance. Those portions of the population less well represented in the documentary record are the same individuals who are occupying these low artifact and feature density sites. Archaeology is one of the few ways to get at these undocumented histories. Archaeologists need to properly evaluate these low density sites at a Phase II level and recommend data recovery where it appears that subsurface features exist and where documents suggest that the African-American components are present. Because many quarter and tenant sites were located in areas later subjected to plowing, it is also imperative not to strip sites with a backhoe—instead formulate research designs that include adequate plowzone sampling. Combining the lessened probability that low density sites will be recommended for further work with the lack of serious consideration plowzone sites are often accorded creates a death knell for many sites that could provide us with valuable data on African American past.

Even identifying sites of significance is no guarantee that they will be studied or preserved. A case in point was the work done in advance of the expansion of the New Bern-Craven County Public Library. Excavations uncovered the remains of a probably eighteenth- and nineteenth-century urban quarter in the town's National Register Historic District (Espenshade and Elliott 1990). Despite recommendations by project archaeologists and the North Carolina Division of Archives and History that data recovery occur, the timely completion of the library project was deemed more important and the site was destroyed without further investigation (North Carolina Historical Commission 1990; Brook 1990). In addition, the 1882 "Gray's New Map of New Berne" shows the current library site to the location of an African American school, which was apparently never explored archaeologically before the initial construction of the library in the 1960s (Gray 1882).

While there is a need to dig more domestic sites, archaeologists should also be encouraged to think beyond plantation quarters as places where we can learn about the African American past. The wide variety of occupations where African Americans—both free and enslaved—spent long hours laboring is another area of interest. Enslaved and free blacks were a large presence in coastal urban areas like Wilmington, Edenton and New Bern. Here, they labored not only as domestics, but were predominant in the markets and along the waterfronts in industrial endeavors including turpentine and rosin distilleries, shipbuilding, saw mills, grist mills and tanneries. Excavations along the Neuse River waterfront in New Bern revealed traces of an eighteenth-century tannery and a late nineteenth-century turpentine distillery (Garrow and Joseph 1985), both industries where African American labor was critical.

The heyday of black maritime activity along North Carolina's coast and inland waterways began around 1800 and lasted through Reconstruction (Cecelski 2001:xviii). As shown by David Cecelski in *The Waterman's Song* (2001), African Americans were not only on the water catching fish, but living and working onshore in commercial fisheries often employing over fifty men and women in a variety of tasks: fishing, mending nets, cutting fish, and making barrels (Figure 11-3). Commercial fisheries on the Albemarle and Pamlico Sounds began to appear in the mid-eighteenth century and remained a thriving endeavor for over a century (Cecelski 2001:85, 102). African Americans were also employed in the production of salt, critical for preserving fish, as well as meats. Others worked in lumbering or wood-related occupations—with seasonal camps set up along the banks of the Dismal Swamp canal by laborers producing shingles from the dense cypress and juniper stands there.

Although one of the challenges will be locating sites associated with these occupations, they are out there. At the Sandy Point property in Chowan County, a site was discovered in the vicinity of the former Benbury family fishery (31CO133), a facility documented in oral history and census data (Russ and Seibel 2008:7.2). Recent work at the Sloop Point Site (31PD296) in Pender County recorded the remains of a salt pan and evidence of the pitch and turpentine work

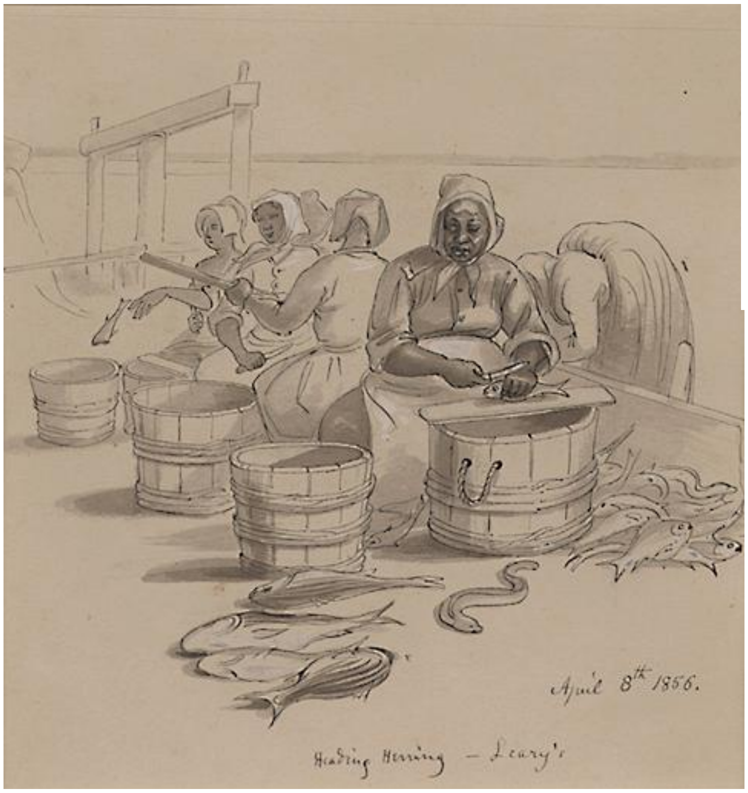


Figure 11-3. African American women removing the heads from herring at a North Carolina fishery. David Hunter Strother, April 8th, 1856. West Virginia Regional and History Collection, West Virginia University Libraries.

that occurred there (Di Gregorio and Seibel 2004). At the Clear Run Plantation (31SP300*1) in Sampson County, excavations have taken place on the farm's blacksmith and cooper shop; a turpentine distillery was known to exist on this 1700 acre property (Brady et al. 1998). A number of tar kilns have been recorded in the Croatan National Forest and near one of these kilns was a small scatter of late eighteenth-century artifacts (31CR342)—perhaps representing a housing site for workers (Snedecker et al. 2006; Hardison 2006). There appears to be movement from archaeologists in exploring these types of sites: one example is a recent proposal to create a predictive model for locating sites of runaway slaves and other African American settlements in the Dismal Swamp (McLean and Garland 2008). While these sites may be difficult to locate, documentary evidence suggests that there should be discernible archaeological footprints. In 1784, J. F. D. Smyth (1784:102) wrote that runaway slaves lived successfully in the Dismal Swamp, "for twelve, twenty or thirty years and upwards, subsisting…upon corn, hogs, and fowls" (Figure 11-4).

The analytical frameworks that have dominated research in the field of African American archaeology over the last several decades—those of cultural identity, class, race, cultural interaction and change, relations of power and domination, and the socio-politics of archaeological practice—have largely been ignored in North Carolina and deserve attention. In what ways do we see North Carolina's African Americans resisting oppression and racism? In addition to looking at African American/white relationships, we need to address the more hidden world of African American relationships, including those within communities and between kin, the informal economy of slaves and the more formal social and economic networks that developed after the Civil War (Penningroth 2003). Also of interest is the emergence of African

Figure 11-4. Artist David Hunter Strother drew this camp in Virginia's Dismal Swamp in 1856. It may provide an idea of the appearance of maroon settlements in the swamp. West Virginia Regional and History Collection, West Virginia University Libraries.

Americans as active participants in consumer society and the role of material culture in creating and maintaining individual and community identities (Mullins 1999).

Comparative studies are needed. In addition to the re-analysis of Somerset, there are collections from a number of North Carolina sites that contain as-yet unidentified African American components. Brunswick Town, Bath, New Bern, and Edenton were early North Carolina towns with sizeable enslaved and free black populations. Reanalysis of the field notes and artifacts, informed by more recent advances in African American archaeology, could reveal collections associated with urban slavery and the lives of free African Americans in the eighteenth and nineteenth centuries. It is important that revisiting previously-excavated collections be done and that there be a streamlined, uncomplicated process to facilitate these studies.

The archaeological study of North Carolina's African American past holds great potential for understanding the history of the coastal plain and as archaeologists we have the capacity to further this research. Since African Americans did not exist in isolation, we should frame our "research in such a way as to illuminate the complex social relations that bound people together…in positive, negative, and ambivalent ways" we can begin to address questions of significance (Wilkie 2004:111). This research should include how African Americans, both free and enslaved, resisted racial subordination, how personal and cultural identities were created, maintained, and transformed through time, and how material culture was used in these processes. We also need to remain cognizant of the political nature of doing African American archaeology (Blakey 1997), issues of archaeological authorship, and how archaeological knowledge is created. It is imperative that our research become culturally and politically inclusive, remaining sensitive to the needs of the public.

Acknowledgments. I would like to thank a number of people who were critical in helping me complete the first version of this paper, presented in Greenville at the Coastal Plains Conference in the fall of 2008, and then, later, the revised version for publication.. My thanks go out to Dolores Hall and Lynn Flora of the North Carolina Office of State Archaeology, Susan Bamann of Coastal Carolina Research, Victor Jones, Jr., Special Collections Librarian at the Kellenberger Room of the New Bern-Craven County Public Library, Ed Chaney at the Maryland Archaeological Conservation Laboratory, David Jones and Joel Hardison. An anonymous reviewer offered comments and suggestions which expanded the scope and made this a better article. Last, but not least, Dr. Charles Ewen deserves kudos for organizing the 2008 conference, heading up the editing of the volume and for keeping me up to date on all the North Carolina gossip.

REFERENCES CITED

Adams, Natalie
2001 Pattern of Living: A View of the African American Slave Experience in the Pine Forests of the Lower Cape Fear. In *Another's Country; Archaeological and Historical Perspectives on Cultural Interactions in the Southern Colonies*, edited by J. W. Joseph and Martha Zierden, pp 65-78. University of Alabama Press, Tuscaloosa.

Avirett, James Battle
1901 *The Old Plantation; How We Lived in Great House and Cabin Before the War*. F. Tennyson Neely Company, New York.

Basedow, Maureen
2001 The Martindale-McGinnis Excavation New Hanover County. Electronic document, www.uncwil.edu/people/basedowm/mm/home.html, accessed January 12, 2005.

Blakey, Michael
1997 Past is Present: Comments on "In the Realm of Politics: Prospects for Public Participation in African-American Plantation Archaeology". *Historical Archaeology* 31(3):140-145.

Brady, Ellen Mayo, Victoria L. Saxe, Clay Swindell, Daniel P. Lynch, and Loretta Lautzenheiser
1998 Archaeological Data Recovery site 31SP300*1* Clear Run Blacksmith-Cooper Shop, Sampson County, North Carolina (TIP B-1381, Federal Aid Project BRSTP-411(1)). Coastal Carolina Research, Inc., Tarboro, North Carolina. Manuscript on file, North Carolina Department of Transportation, Raleigh.

Brook, David
1990 Letter from David Brook to John M. Peterson, dated June 14, 1990. Letter on file at the North Carolina Office of State Archaeology, Raleigh.

Carnes-McNaughton, Linda F. and Thomas E. Beaman, Jr.
2005 Enigmatic Earthenwares: A Comparative Catalog of (North) Carolina Colonowares. Paper presented at the 2005 Southeastern Archaeological Conference, Columbia.

Cecelski, David S.
2001 *The Waterman's Song; Slavery and Freedom in Maritime North Carolina.* University of North Carolina Press, Chapel Hill.

Click, Patricia C.
2001 *Time Full of Trial; The Roanoke Island Freedmen's Colony, 1862-1867*. University of North Carolina Press, Chapel Hill.

Crow, Jeffrey, Paul D. Escott, and Flora J. Hatley
1992 *A History of African Americans in North Carolina*. North Carolina Division of Archives and History, Raleigh.

Davidson, James
2004 Rituals Captured in Context and Time: Charm Use in North Dallas Freedman's Town (1869-1907), Dallas, Texas. *Historical Archaeology* 38(2): 22-54.

Di Gregorio, Giampaolo and Scott Seibel
2004 *An Intensive Cultural Resource Investigation of the Proposed Sloop Point Development Pender County, North Carolina*. Environmental Services, Inc. Manuscript on file, North Carolina Office of State Archaeology, Raleigh.

Espenshade, Christopher T. and Rita Folse Elliott
1990 *Archaeological Testing at the Present Site and the Proposed New Site of the Gabriel Rains House, New Bern, North Carolina*. Manuscript on file, North Carolina Office of State Archaeology, Raleigh.

Ferguson, Leland
1992 *Uncommon Ground; Archaeology and Early African America, 1650-1800*. Smithsonian Institution Press, Washington, D.C.

Fesler, Garrett
2004 Living Arrangements Among Enslaved Women and Men at an Early-Eighteenth-Century Virginia Quartering Site. In *Engendering African American Archaeology; A Southern Perspective*, edited by Jillian E. Galle and Amy L. Young pp. 177-236. University of Tennessee Pres, Knoxville.

Fesler, Garrett and Matthew R. Laird
2006 *A Phase II Archaeological Significance Evaluation of Site 31PQ137 at Harvey Point Defense Testing Facility, Perquimans County, North Carolina*. Manuscript on file, James River Institute for Archaeology, Inc., Williamsburg.

Franklin, Maria
2001 Archaeological and Symbolic Dimensions of Soul Food. In *Race and the Archaeology of Identity*, edited by Charles Orser, Jr., pp. 88-107. University of Utah Press, Salt Lake City.

Garrow, Patrick H. and J. W. Joseph
1985 *Historical and Archaeological Investigations of the New Bern Motor Inn Site, New Bern, North Carolina*. Manuscript on file, Tryon Palace, New Bern.

Gray, O. W. and Son
1882 Gray's New Map of New Berne. O. W. Gray and Son, Philadelphia. Map on file, North Carolina Division of Archives and History.

Grow, Jessie
2006 *Excavations at the Smith's St. Leonard Site (18CV91)*. Manuscript on file, Jefferson Patterson Park and Museum, St. Leonard.

Hardison, Joel
2006 *Heritage Resources Survey for the Proposed Black Cherry Southern Pine Beetle Prevention Treatment Area Compartment 15, Croatan Ranger District, Croatan National Forest, Craven County, North Carolina*. Manuscript on file, North Carolina Office of State Archaeology, Raleigh.

Jacobsen, Karisa, Clay Swindell, Charles Heath, Nicholas Luccketti, Garrett Fesler, and Matt Laird
2008 *A Phase I and Phase II Cultural Resources Survey of Bal Gra, Bertie County, North Carolina (Volumes I and II).* Manuscript on file, James River Institute for Archaeology, Inc., Williamsburg.

Kay, Marvin L. Michael and Lorin Lee Cary
1995 *Slavery in North Carolina 1748-1775*. University of North Carolina Press, Chapel Hill.

Lautzenheiser, Loretta, Thomas Hargrove, Jane McManus Eastman, Patricia Samford, Jody Carter, and Mary Ann Holm
1997 Archaeological Testing Neils EddyTract International Paper Riegelwood Operations Reigelwood Columbus County, North Carolina. Coastal Carolina Research, Inc., Tarboro. Manuscript on file, North Carolina Office of State Archaeology, Raleigh.

Lautzenheiser, Loretta E., Patricia Samford, Jaquelin Drane Nash, Mary Ann Holm, and Thomas Hargrove
1998 *"I Was Moved of the Lord to Go to Carolina": Data Recovery At Eden House, Site 31BR52, Bertie County, North Carolina.* Coastal Carolina Research, Inc., Tarboro, North Carolina. Manuscript on file, North Carolina Office of State Archaeology, Raleigh.

Loftfield, Thomas C. and Michael Stoner
1997 Brunswick Town Colonowares Re-Examined. *North Carolina Archaeology* 46:6-15.

McLean, Wanda E. Hunt and Anne Garland
2008 The Neuse River: Watersheds, Waterways and Wetlands. Manuscript on file, Maryland Archaeological Conservation Laboratory, St. Leonard.

Madsen, Andrew, Rebecca A. Madsen and Loretta Lautzenheiser
2002 *The Halifax Road and Hope Plantation: An Archaeological Investigation to Determine the Influence of Transportation on the Slave Community of the Antebellum South*. Manuscript on file, Coastal Carolina Research, Inc., Tarboro.

Mobley, Joe editor
2003 *The Way We Lived in North Carolina*. University of North Carolina Press, Chapel Hill.

Morgan, Philip D.
1998 *Slave Counterpoint; Black Culture in the Eighteenth-Century Chesapeake and Lowcountry*. University of North Carolina Press, Chapel Hill, North Carolina.

Mullins, Paul
1999 Race and the Genteel Consumer: Class and African-American Consumption, 1850-1930. *Historical Archaeology* 33(1): 22-38.

North Carolina Historical Commission
1990 Minutes of the Executive Committee Meeting, North Carolina Historical Commission, Raleigh, North Carolina, April 5, 1990. On file at the North Carolina Office of State Archaeology, Raleigh.

Penningroth, Dylan C.
2003 *The Claims of Kinfolk; African American Property and Community in the Nineteenth-Century South*. University of North Carolina Press, Chapel Hill.

Penny, Robert
2003 *A Historical and Archaeological Overview of Somerset Plantation*. Unpublished M.A. thesis, Department of Anthropology East Carolina University, Greenville,.

Phelps, David
1983 Archaeology of the North Carolina Coast and Coastal Plain: Problems and Hypothesis. In *The Prehistory of North Carolina: An Archaeological Symposium*, edited by Mark A. Mathis and Jeffrey J. Crow, pp. 1-52. North Carolina Division of Archives and History, Raleigh.

Postlewaite, Matt and Scott Seibel
2007 An Intensive Archaeological Investigation at the Sutton Steam Plant, New Hanover County, North Carolina. Environmental Services, Raleigh, North Carolina. Manuscript on file, North Carolina Office of State Archaeology, Raleigh.

Russ, Terri and Scott Seibel
2008 *Archaeological Investigations at Sandy Point, Chowan County, North Carolina*. Environmental Services, Inc. Manuscript on file, North Carolina Office of State Archaeology, Raleigh.

Samford, Patricia
2002 *Archaeological Testing at Clermont Plantation (31CV350), June 2002*. Manuscript on file at Tryon Palace New Bern.

Smyth, J. F. D.
1784 *A Tour in the United States of America*. Price, Monfrieffe.

Snedecker, Rodney, Lorie M. Hansen and Megan Best
2006 *Heritage Resources Survey for the Proposed Lime Timber Sale, Croatan National Forest, Craven and Carteret Counties, North Carolina*. National Forests in North Carolina, Asheville. Manuscript on file, North Carolina Office of State Archaeology, Raleigh.

South, Stanley
1977 *Method and Theory in Historical Archaeology*. Academic Press, New York.

Southerlin, Bobby
2002 *Intensive Archaeological Survey of the Duplin County Agricultural Business Center, Duplin County, North Carolina*. With contributions by Michael K. O'Neal, Sharon Penton, Joseph Sanders, Carrie Collins and David Jenkins. Brockington and Associates, Inc., Raleigh, North Carolina. Manuscript on file, North Carolina Office of State Archaeology, Raleigh.

2007 *Archaeological Evaluation of the 515 Acre Summerhouse Tract on Everett Bay Tract, Onslow County, North Carolina*. Archaeological Consultants of the Carolinas, Clayton, North Carolina. Manuscript on file, North Carolina Office of State Archaeology, Raleigh.

Steen, Carl
2003 *Restoration Excavations at Somerset Place Plantation State Historic Site, 1994 and 2001*. North Carolina Archaeological Council Publication No. 28, Raleigh.

Stine, Linda France
1989 *Raised Up in Hard Times: Factors Affecting Material Culture on Upland Piedmont Farmsteads, circa 1900-1940s*. Unpublished Ph.D. dissertation, University of North Carolina at Chapel Hill.

Tibbetts, Rachel, Bobby Southerlin, Dawn Reid, Kimberly Villemez, Michael K.O'Neal, Kimberly Schaeffer and C. Margaret Scarry
2008 Data Recovery at 31ON1582: Early American Life on a Coastal Plantation Onslow County, North Carolina. Archaeological Consultants of the Carolinas, Inc. Manuscript on file, North Carolina Office of State Archaeology, Raleigh.

Watson, Alan D.
2005 *African Americas in Early North Carolina; a Documentary History*. Office of Archives and History, North Carolina Department of Cultural Resources, Raleigh.

Wheaton, Thomas R.
2002 Colonial African American Plantation Villages. In *Another's Country; Archaeological and Historical Perspectives on Cultural Interactions in the Southern Colonies*, edited by J. W. Joseph and Martha Zierden, pp. 30-44. University of Alabama Press, Tuscaloosa.

Wilkie, Laurie
2004 Considering the Future of African American Archaeology. *Historical Archaeology* 38(1):109-123.

Yentsch, Anne
1994 *A Chesapeake Family and their Slaves; A Study in Historical Archaeology*. Cambridge University Press, Cambridge.

NOTES

[1] This total does not include prehistoric artifacts, brick, mortar, shell, bone and charcoal.
[2] The planter assemblage contained 16 distinct ceramic types, while the overseer assemblage had 14 and the quarter site 12. From Lautzenheiser et. al 1997:106.

FORTY YEARS BENEATH THE WAVES: UNDERWATER ARCHAEOLOGY IN NORTH CAROLINA

Richard W. Lawrence

Over the past forty-five years, North Carolina's underwater archaeology program has undergone dramatic growth. For its first decade the program consisted of one or two staff members operating a modest preservation laboratory on the grounds of the Fort Fisher State Historic Site. By 2006, the state's Underwater Archaeology Branch (UAB) boasted a ten-person permanent staff located at three separate facilities in eastern North Carolina.

The growth of the program has been an evolutionary process. Like its natural counterpart, that process has progressed in fits and starts largely influenced by external events. Some of the program's turning points include the salvage of artifacts from sunken Civil War blockade-runners in the 1960s, the discovery of the USS *Monitor* off Cape Hatteras in 1973, integration into the state's archaeology and historic preservation program in the 1980s, and, most recently, the 1996 discovery of a shipwreck at Beaufort Inlet believed to be the pirate Blackbeard's flagship, *Queen Anne's Revenge*. At each of these junctures increased levels of interest from the public, the media, and administrators in Raleigh allowed the UAB to expand its capabilities and the scope of its mission.

WEIGHING ANCHOR – 1962 TO 1972

The Blockade-Runner Modern Greece

North Carolina's initial involvement with historic shipwrecks came about quite by chance. In March 1962 members of the Naval Ordnance School in Indian Head, Maryland made a holiday trip to Carolina Beach, North Carolina. The navy divers chartered a local boat to take them to a Civil War shipwreck site. Local lore identified the site as the British-built, blockade-runner *Modern Greece*, which was chased ashore by Union warships in June 1862. When the divers entered the water they found that a recent storm had largely uncovered the shipwreck. They emerged from the water with tales of cargo exposed in the hold of the ship and, as evidence, recovered a number of Enfield rifles, Whitworth projectiles, and other Civil War-vintage artifacts (Townsend 1972:15).

Word of the discovery soon reached officials with the North Carolina Department of Archives and History and the response was surprising. Rather than advising a cautious approach discouraging further recovery efforts, the department, along with the Governor's office and the North Carolina Confederate Centennial Commission, immediately contacted the Naval Ordnance School, as well as the US Coast Guard, for assistance in the salvage. Those requests were answered immediately, and within days additional divers and support vessels arrived on the scene. The work continued for several weeks in the spring of 1962 and resumed that summer. By summer 1963, navy divers had recovered over 10,000 artifacts from the *Modern Greece* and a smaller number of items from other Civil War shipwrecks in the area. The navy's activities were very much a salvage effort, with no records kept of artifact provenience or site mapping. In fact, on at least two occasions, the divers used dynamite at the *Modern Greece* to gain access to additional material (Bright 1977:19-22).

In order to understand the frenzied approach to the *Modern Greece* recovery it is necessary to look at the project from that era's perspective. Although by 1960 archaeologists had conducted major terrestrial excavations in North Carolina, there was no model at that time for the archaeological investigation of a shipwreck site. Even on an international level the discipline of underwater archaeology was in its infancy. In addition, from 1960 to 1965 the state and nation were in the midst of commemorating the 100-year anniversary of the Civil War. The discovery of a large cache of Civil War artifacts was too much to resist, and the decision was made to use the navy divers to salvage as much as they could. In addition to unfamiliarity with proper underwater archaeological techniques, the state and navy were only vaguely aware of the special treatment the recovered artifacts would require. Fortunately, project participants, acting on advice from the Smithsonian Institution, had the foresight to keep the recovered material wet. Wet storage space was at a premium, however, and it is reported, "some of the artifacts were even kept in a bathtub belonging to one of the state officials working on the project" (Bright 1977:21).

From today's perspective the uncontrolled recovery of thousands of artifacts from a Civil War shipwreck with no proper facilities to store and conserve the material would be impossible to justify. This is particularly true if the site was under no immediate threat from environmental or human actions. Even though the hurried, uncontrolled salvage of artifacts from the *Modern Greece* seems ill advised by current standards, the project did have positive results and, as will be seen, was the seminal event that launched North Carolina's underwater archaeology program.

Fort Fisher Preservation Laboratory

By 1963, the navy's salvage of the *Modern Greece* and other nearby Civil War shipwrecks resulted in the recovery of several tons of artifacts ranging in size from brass straight pins to 32-pounder cannon. In an effort to deal with this material, the Department of Archives and History (DAH) obtained funding from the state legislature as well as the Confederate Centennial Commission and local municipalities to construct an artifact preservation laboratory on the grounds of the Fort Fisher State Historic Site near Kure Beach (Townsend 1965:1-2).

Although the original preservation lab was a modest facility, it did provide a location where the salvaged artifacts could be safely stored and was in close proximity to the *Modern Greece* and other Civil War shipwrecks. Armed with a copy of H. J. Plenderleith's text, *The Conservation of Antiquities and Works of Art*, and practical advice from archaeologist Stanley South, who served as the manager of the Fort Fisher Historic Site, the preservation lab staff began experimenting with various processes to conserve the *Modern Greece* artifacts. The *Modern Greece* collection presented the conservators with the opportunity of multiple artifacts, such as 1,600 chisels, that they could experiment with to determine the best methods for stabilizing the material. By the time the Fort Fisher visitor's center opened in 1967, there were hundreds of blockade-runner artifacts available for display. Other items from the *Modern Greece* were placed on loan to various museums in North Carolina as well as the Mariners' Museum in Newport News and the Smithsonian Institution (Bright 1977: 22-23; Leslie Bright, personal communication 2008)

In 1964 Leslie Bright was hired as a laboratory assistant (Figure 12-1). Within a few years Mr. Bright was running the lab, and from 1967 to 1972 was the sole staff member. Bright stayed on for 34 years overseeing the conservation lab and playing an integral role in the development of all phases of the state's underwater archaeology program (Leslie Bright, personal communication 2008).

Figure 12-1. Leslie Bright in the Fort Fisher Preservation Laboratory with conserved artifacts from the blockade-runner *Modern Greece*, ca. 1966.

Legal Action

The publicity surrounding the recovery of artifacts from the *Modern Greece* soon prompted others to become interested in salvaging artifacts from the Civil War shipwrecks in the Fort Fisher vicinity. In the summer of 1965 a group named Flying "W" Enterprises began diving operations on the *Modern Greece* and other shipwrecks with the intention of recovering artifacts for private use. Concerned by those activities, the Department of Archives and History filed a complaint against Flying "W" with the New Hanover County Sheriff's Office charging, "damage to personal property" (*Wilmington Morning Star* [*WMS*], June 23, 1965). That complaint led to criminal charges against the group and a restraining order prohibiting further salvage activities.

The state based its ownership claim on the "1783 Treaty of Peace with Great Britain and common law . . . [which] provides that any sunken ship within a marine league reverts to the sovereignty after the 'reasonable' salvage period" (*WMS*, January 12, 1967). Court proceedings drug on for a year and a half, but the superior court judge ultimately sided with the state demanding that Flying "W" refrain from further salvage activities, turn over all recovered artifacts to the state, and pay court costs. On appeal, the Supreme Court of North Carolina upheld the superior court's decision (*WMS*, April 11, 1968).

Shipwreck Law

Although North Carolina was successful in prosecuting the Flying "W" case, the incident made it evident a statute was needed that clearly claimed title to abandoned shipwrecks and established a system for managing those sites. In 1967, New Hanover County representatives successfully introduced a bill in the state legislature that claimed title to "all shipwrecks, vessels, cargoes, tackle, and underwater archaeological artifacts which have remained unclaimed for more than 10 years lying on the said bottoms, or on the bottoms of any other navigable waters of the State" (NCGS 121 Article 3). The supporters of the bill were concerned that if it were overly restrictive, particularly in prohibiting private sector recovery of artifacts, the law would not pass. The commercial and private sector nature of the North Carolina statute is certainly reflected in its title "Salvage of Abandoned Shipwrecks and Other Underwater Archaeological Sites," as well as the law's language. For example, in describing the entities needing a permit, there is no mention of "archaeologists" or "academic institutions." Rather the law is directed toward, "Any qualified person, firm or corporation desiring to conduct any type of exploration, recovery or salvage operations." Furthermore, the statute states:

> Such permit or license may include but need not be limited to the following:
> - Payment of monetary fee to be set by the Department
> - That a portion or all of the historic material or artifacts be delivered to the custody and possession of the Department
> - That a portion of all of such relics or artifacts may be sold or retained by the licensee
> - That a portion or all of such relics or artifacts may be sold or traded by the Department (NCGS 121-25).

In addition to claiming title to abandoned shipwrecks and establishing a permitting system, the 1967 law authorized the Department of Archives and History (later changed to Department of Cultural Resources) to create a professional staff to manage the state's submerged cultural resources, and adopt rules to administer the program. The law stated that any violation of the statute or supporting rules would be a misdemeanor and empowered any state or local law enforcement agency to assist the department in enforcing the law's provisions.

The 1967 statute was a practical response to the status of underwater archaeology at that time. North Carolina's law was based on a similar Florida statute. The motivation behind those laws was to control, not eliminate, commercial salvage and relic collecting of underwater sites. The advent of academic programs interested in investigating shipwreck sites in U.S. waters was still over a decade away and the states did not have the resources to conduct their own projects. In 1967, and for five years to come, North Carolina's underwater archaeology program consisted of the Fort Fisher Preservation Lab and one staff member, Leslie Bright. What's more, the state had no boat or diving equipment and an almost nonexistent operating budget.

Permitting System

With no means to conduct its own research, the department viewed the permitting system as a way to collect information and artifacts from the state's shipwrecks. In 1968 the department issued a "special annual permit" to the newly formed North Carolina Skin Diving Council. That permit allowed members to participate in organization-sponsored projects including training dives on the *Modern Greece* and a search for the Spanish privateer *Fortuna* in the Cape Fear River (Watts & Bright 1973:134). The department also issued "Short Term Sports and Hobby Permits" to divers interested in exploring the *Modern Greece*. Those divers "brought back sketches and descriptions of the wreck as well as small samples of cargo and ship fittings" (Watts & Bright 1973: 133). Divers were required to bring their finds by the Fort Fisher lab and, if the artifacts were not unique items, the collectors were allowed to keep the material. By 1973, over 200 divers had participated in this program (Bright 1977:23)

The state's first salvage contract (1970 To 1973) was issued to Underwater Archaeological Associates, Inc. (UAA), a private group working out of Southport, North Carolina. The permit covered several sunken Civil War blockade-runners in southeastern North Carolina and allowed UAA to retain a percentage of the artifacts they recovered, a fact that would be frowned upon by today's standards of cultural heritage management. Nevertheless, UAA was a non-profit organization "dedicated to the recovery and preservation of marine history through the careful excavation and . . . documentation of underwater historic sites" (Peery 1973:2). Among its other accomplishments, UAA's work on the blockade-runner *Ella* produced the first site map of a North Carolina shipwreck.

These early permits were seen as a positive alternative to the uncontrolled commercial salvage of historic shipwrecks that was initiated by the Flying "W" operation. Starting in 1969, the department sponsored annual underwater archaeology seminars at the Fort Fisher visitor's center in cooperation with the North Carolina Skin Diving Council and UAA. Those conferences featured presentations and discussions on "the proper approaches to historical shipwreck archaeology" (Watts & Bright 1973:134). By the early 1970s, underwater archaeology, both as a discipline and a state program, was taking its first, tentative steps.

EXPANDING HORIZONS – 1972 TO 1981

In 1971, the state legislature appropriated funds to establish the underwater archaeology program envisioned by the 1967 statute. A year later, Gordon P. Watts, Jr. was hired as the first staff member, working out of the Fort Fisher Preservation Lab with Leslie Bright. Watts returned to North Carolina from Florida where he worked and trained under the direction of state underwater archaeologist Carl Clausen. Still lacking funding and equipment to undertake department-sponsored projects, Watts began to explore affiliations with various North Carolina universities as means of initiating fieldwork (Gordon Watts, personal communication 2009).

USS Monitor

One of the individuals Watts contacted was John Newton, director of operations for Duke University's Research Vessel *Eastward*. Those discussions led to a plan to use the *Eastward* to search for the remains of the USS *Monitor*. One of the country's most famous shipwrecks, the *Monitor* sank off Cape Hatteras on January 31, 1862, nine months after its famous battle with the CSS *Virginia* at Hampton Roads. Lacking funds for an independent expedition, Watts and Newton were able to team up with geologists who were using the *Eastward* as part of an August 1973 survey in the Cape Hatteras vicinity. Dr. Harold Edgerton of MIT was among the participants in the *Monitor* search. Along with his years of experience, "Doc" Edgerton brought a side scan sonar and a deep-sea camera system. The team located twenty-two shipwrecks and, based on the magnetic, acoustic, and photographic evidence, they identified one site as the *Monitor*. That identification was confirmed during a 1974 expedition to the site using the R/V

Alcoa Seaprobe. The sophisticated positioning and camera systems aboard the *Seaprobe* allowed researchers to compile a detailed photomosaic of the shipwreck site (Watts 1981:22-30).

The discovery of the *Monitor* brought North Carolina's nascent underwater archaeology program international attention. Although the shipwreck was found sixteen miles off the Cape Hatteras—well outside the state's three-mile jurisdiction—North Carolina took the lead in protecting the shipwreck. In 1974 Department of Archives and History nominated the site to the National Register of Historic Places. That same year the governor nominated the shipwreck as a National Marine Sanctuary under the recently enacted Marine Protection, Research and Sanctuaries Act. On January 30, 1975, the National Oceanic and Atmospheric Administration (NOAA) designated the *Monitor* as the nation's first marine sanctuary (Watts 1981:19). From 1975 to 1984 NOAA contracted with the department to assist in managing the Monitor National Marine Sanctuary and conducting research at the site. Financial support from NOAA provided both staff positions and operating funds for the North Carolina's Underwater Archaeology Branch (UAB).

CETA Program

The UAB received additional federal support beginning in 1975 through the Comprehensive Employment Training Act (CETA). The CETA program passed money on to the states to offer work to the long-term unemployed. The UAB received over a dozen CETA positions, hiring individuals with backgrounds in drafting, photography, archaeology, history, and marine technology. Among their many accomplishments, CETA staff played a key role in the following: publication of illustrated catalogs of artifacts recovered from the *Modern Greece* and CSS *Neuse*; participation in field schools and other field projects; excavation of a gun emplacement and bombproof shelter at Fort Fisher; construction and renovation of UAB facilities at Fort Fisher; conversion a surplus landing craft into a research vessel; conservation of artifacts from various underwater sites; and starting the UAB's extensive research files on historic shipwrecks. Two of the UAB's current staff members, Richard Lawrence (1975) and Mark Wilde-Ramsing (1977), began their extended state careers as CETA employees. The CETA program was phased out in 1979 (NCDAH 1979,1981).

University Field Schools

By 1974 the state's original permit holders—North Carolina Skin Diving Council, Underwater Archaeology Associates, and the sport divers searching the *Modern Greece*—were no longer active. Wanting to elevate the program to a more academic level, the Department of Cultural Resources (formed from the Department of Archives and History in 1973) entered into an agreement with the University of North Carolina at Wilmington (UNCW) to host a cooperative field school in underwater archaeology. From 1974 to 1977 UAB and UNCW staff hosted six-week summer field schools. Students were taught the basics of underwater archaeology including historical research, remote sensing, site mapping, underwater photography, and artifact conservation. For the first three years the program focused on southeastern North Carolina, mainly revisiting the region's Civil War shipwrecks but also conducting the first magnetometer survey in state waters to search for additional sites. Field school participants also visited nearby Lake Waccamaw in an effort to locate prehistoric sites. In 1977, field school students took part in the UAB's most ambitious project, the recovery of four

Civil War cannon, complete with gun carriages, and numerous small artifacts from the Roanoke River adjacent to Fort Branch (Watts, et al. 1975; Watts, et al. 1979).

After a one year hiatus, the UAB resumed its summer field school program with East Carolina University (ECU). The association with ECU came about mainly at the urging of Professor William (Bill) Still, who was already recognized as one of the country's leading maritime historians. From 1979 to 1982 the UAB and ECU conducted a series of field schools focused on exploring the state's colonial ports. The summer investigations visited Bath, Edenton, New Bern, and Beaufort (Figure 12-2). In each case, the local community supplied financial or in-kind assistance to support the projects. The fieldwork consisted of a controlled magnetometer survey of each towns' harbor followed by diver investigation of remote sensing targets (NCDAH 1981, 1983).

Figure 12-2. UAB and ECU staff with visitors from Virginia aboard R/V *Murphy Base* during the 1981 Edenton field school. Left to right, John Broadwater, Dave Hazzard, Richard Lawrence, Dina Hill, Bill Still, Gordon Watts, Mark Wilde-Ramsing, and John Sands.

The 1970s marked a period of tremendous growth for underwater archaeology in North Carolina. Undoubtedly, the discovery of the *Monitor* and the UAB's continued role in management and research at that site was a major factor in that growth. By the end of the decade the UAB had expanded from a single staff member operating the preservation lab to nine permanent and temporary employees with funding provided by the state as well as federal grants from NOAA and the National Park Service. Just as important, the UAB no longer had to rely on efforts of private individuals and avocational groups, but now had the equipment and expertise to conduct its own projects. In addition, the agency expanded the scope of the program beyond southeastern North Carolina, making valuable contacts with local groups up and down the coast.

Finally, the association with Bill Still and ECU's history department set the stage for underwater archaeology to be elevated to the level of an academic program.

INTO THE MAINSTREAM – 1981 TO 1990

By the early 1980s, the UAB's focus shifted from projects to programs. Two major factors brought about this change. First, with the academic program at ECU up and running there was no longer a need for the UAB to participate in the extensive summer field school projects that required a substantial commitment of the branch's staff, equipment, and resources. Second, and more importantly, the UAB became more fully involved with the department's growing resource management responsibilities that were a consequence of federal environmental and historic preservation legislation.

Establishment of ECU's Program in Maritime Studies

1981 marked a significant year in North Carolina underwater archaeology. In the fall of that year, Bill Still, working with ECU administrators, established the Program in Maritime History and Underwater Research (now the Program in Maritime Studies), a graduate level tract within the History Department. Gordon Watts resigned as the state underwater archaeologist to take a position as co-director of the new program.

ECU was one of only two U.S. universities offering a graduate level curriculum in underwater archaeology, and the program attracted students from around the country. Soon, ECU faculty and students were conducting historical and archaeological research on sites in North Carolina and elsewhere including Bermuda, Wisconsin, and Virginia. As the decade progressed, the UAB developed a close relationship with the ECU program and worked with ECU students on several research projects, including documenting nearly two dozen prehistoric canoes in Lake Phelps and investigating the remains of a Federal-period shipwreck at Oriental (Lawrence 1989).

Environmental Review Program and Guidelines

In 1977 the newly created Department of Cultural Resources combined two of its agencies to establish the Archaeology and Historic Preservation Section, later know as the State Historic Preservation Office (SHPO). The impetus for the reorganization was increased federal funding to North Carolina through the Historic Preservation Fund administered by the National Park Service. Along with added funding came added responsibility for administering federal historic preservation programs at the state level. Those programs included environmental review, survey and planning projects and grants, and the National Register program. As part of the SHPO, the UAB received a portion of the Historic Preservation Funds as well as the responsibilities.

Chief among those responsibilities was the review of federal undertakings on public lands (including submerged lands) to determine their affect on archaeological resources. The environmental review process, mandated by Section 106 of the National Historic Preservation Act, applied to government sponsored projects as well as private development activities that received federal funds or required federal permit. For the UAB that meant working with the U.S. Army Corps of Engineers (USACE), the federal agency that has the most impact on the state's waters through its projects and permits. By 1980, the relationship between SHPO and the

USACE had reached an adversarial level. The poor relationship began with disputes on the effectiveness of USACE contracted surveys of Oregon and Beaufort inlets. Relations were strained further by increased USACE dredging in the vicinity of three Civil War shipwrecks at Lockwoods Folly Inlet. That dispute eventually made its way to the Advisory Council on Historic Preservation for resolution.

In an effort to improve relations with the USACE and to clearly articulate the state's review procedures, the UAB developed environmental review guidelines. Drafted by Mark Wilde-Ramsing, UAB and USACE staff met and agreed to the guidelines in September 1981. By 1982 the UAB and USACE worked together to develop plans for investigating the shipwrecks at Lockwoods Folly Inlet. The corps conducted an initial magnetometer survey, and in 1984 contracted with the firm Tidewater Atlantic Research (TAR) to investigate the remote sensing targets. Prior to this, safety and liability concerns prevented the corps from contracts that involved diving operations. The Lockwoods Folly project marked the first time the Wilmington District hired archaeologists to conduct underwater exploration. TAR documented the three shipwrecks in Lockwoods Folly Inlet and made recommendations for avoiding the sites (Watts 1986). That work was followed by a similar investigation of Civil War shipwrecks at Carolina Beach Inlet (Watts 1984). Since that time, the USACE has routinely considered submerged cultural resource surveys and assessments as part of the planning process for any major project. Similarly, the North Carolina Department of Environment and Natural Resources, which is responsible for issuing Coastal Area Management Act (CAMA) permits, has been responsive to UAB comments, requiring private developers to hire qualified archaeologists to survey high potential areas prior to major projects such as marina construction.

Survey and Planning

The decision to abandon large-scale projects did not mean that the UAB abandoned fieldwork. In fact, locating and recording new sites throughout the state became a priority. The UAB staff felt that in order to effectively manage a resource it was necessary to define the resource base. That meant having and maintaining the equipment—boats, magnetometer, dive gear, excavation equipment, etc.—necessary to conduct field research in a wide variety of environments. Administrative staff in Raleigh were supportive of this policy, but operating funds were often in short supply. As a result UAB projects tended to be of short duration, generally limited to one or two day trips and never more than two weeks. Often a field trip combined a number of objectives. For example, during an August 1987 trip two staff members and a volunteer traveled to Ocracoke to inspect a shipwreck on the beach reported by National Park Service personnel. The next day the UAB team met town of Nags Head staff and made inspection dives on two Outer Banks' shipwrecks: USS *Huron* and *Oriental*. On the third and final day of the trip, the UAB staff conducted magnetometer surveys and diver inspections of two CAMA-permitted project sites in Elizabeth City. Throughout the 1980s and into the 1990s, the UAB averaged fifty field projects and site inspections a year (Lawrence 1995).

These small-scale projects had the added advantage of creating a network of contacts throughout eastern North Carolina including museums, historic sites, national seashores, state parks, municipal governments, and historical societies, as well as individual divers, fishermen, and local historians. Those groups and individuals provided a wealth of information on the local waterways and often provided material support such as housing and meals.

Coupled with fieldwork to record new sites, UAB staff focused on expanding its files for historic shipwrecks. The shipwreck files were first organized in the 1970s based on the landmark research of David Stick. During the 1980s Wilmington historian Bill Reaves and Division of Archives and History researcher Wilson Angley supplemented Stick's work extracting North Carolina shipwreck accounts from eighteenth and nineteenth-century newspapers.

Gradually, the UAB expanded its database of underwater sites. A 1985 paper reported less than 300 documented sites in the state and records on approximately 2,000 historic shipwrecks (Lawrence 1985). By 1989 the UAB had recorded over 400 underwater sites that included prehistoric dugout canoes, colonial sailing ships, dozens of Civil War shipwrecks, and a number of nineteenth and twentieth-century steamboats (Lawrence 1989). That steady growth in site documentation has continued over the past two decades. A query of the UAB's databases in December 2008 tallied 927 submerged sites and over 5,000 historically documented shipwrecks.

In an effort to manage this expanding resource base, UAB staff, working with researchers from ECU, the North Carolina Maritime Museum, and the USACE, started looking at shipwrecks within the wider context of North Carolina's maritime history. Those efforts were best exemplified by a series of six workshops on small craft remains. In addition to discussing the basics of small craft construction, function, and typology, the workshops grappled with larger issues of significance, management, and preservation (Wilde-Ramsing 1990).

National Register of Historic Places

Another major responsibility of the SHPO is to identify properties that are eligible for listing on the National Register of Historic Places (NRHP). In addition to the prestige of being determined "significant," sites listed on the NRHP receive added protection through the Section 106 review process. For shipwreck sites, NRHP eligibility became an important criterion for protection under the Abandoned Shipwreck Act when that law was passed in 1988. Prior to 1985, only two North Carolina shipwrecks, USS *Monitor* and USS *Peterhoff*, were included on the National Register. By the end of that year, two major initiatives by the UAB increased the number to 49.

Wilmington Waterfront Survey. When the Wilmington National Register Historic District was created in 1974 researchers included a portion of Cape Fear River and the Eagles Island shoreline opposite to downtown within the district boundaries. Although the UAB staff was aware of numerous vessels along the Eagles Island shoreline, as well as reported losses along the Wilmington waterfront, it was not until the summer of 1983 that the branch conducted a project to survey and record those shipwrecks. That project identified the remains of thirty-seven vessels within the boundaries of the existing Wilmington Historic District. Those sites included three paddlewheel steamboats, nine tugboats, five small craft, one ferryboat, and fourteen barges of various sizes and styles. The UAB was able to identify many of the vessels by name and found that most dated to the late-nineteenth and early-twentieth-centuries, while at least two of the steamboats were built in 1860. As a collection, the vessels represented a cross section of the utilitarian craft that played a critical role in development and expansion of the state's leading port. Recognizing the significance of these vessels and their link to the history of Wilmington, the UAB prepared an addendum that added the shipwreck sites as contributing properties to existing Wilmington Historic District nomination. The NRHP approved that addendum in 1985 (Lawrence 1985).

*Cape Fear Civil War Shipwreck District***.** In the early 1980s the UAB began to sort through the accumulated information on Civil War shipwrecks in southeastern North Carolina. For 20 years those shipwrecks, primarily British-built blockade-runners, attracted attention and study including the work of the navy divers and early permit holders in the 1960s, the UNCW/UAB field schools in the 1970s, and USACE contractors in the 1980s. The UAB expanded on that research, revisiting many of the sites, and conducted surveys to locate new wrecks. That research culminated in 1985 with the nomination of twenty-one Civil War-period shipwrecks to the National Register of Historic Places. The shipwrecks include sixteen blockade-runners, four Union blockaders, and one Confederate ironclad (Wilde-Ramsing 1985).

Adding the Wilmington shipwrecks and the Civil War sites to the NRHP had positive benefits beyond recognition of their archaeological and historical significance. Several of the Civil War sites located in or near coastal inlets received additional study by the USACE and protection from dredging activities based on the shipwrecks' National Register status. Likewise, the lost and abandoned vessels along the Wilmington waterfront were a major concern for staff in the USACE's Wilmington District office as they developed plans to deepen the river channel in that vicinity. As a result, the corps contracted with the firms Tidewater Atlantic Research and Mid-Atlantic Technology and Environmental Research to conduct a dozen additional Phase 1, 2, and 3 investigations in the Cape Fear and Northeast Cape Fear rivers near downtown Wilmington (Figure 12-3).

Figure 12-3. 1988 investigation of a sunken colonial sailing vessel at the Rose Hill Plantation landing, Northeast Cape Fear River. During the week-long project, the UAB was assisted by staff from the Office of State Archaeology and the North Carolina Maritime Museum, as well as volunteer divers.

Revisions to the Permitting System

The underwater archaeology law passed in 1967 assigned the Department of Cultural Resources (DCR) responsibility for issuing permits to "any qualified person, firm or corporation desiring to conduct any type of exploration, recovery or salvage operations." The procedures developed by DCR at that time to administer the permitting system were very much geared toward commercial salvage of shipwreck sites. Even permits like the ones issued to Underwater Archaeological Associates, which professed to be for archaeological investigation, allowed the permittee to retain a portion of the recovered artifacts.

In the early 1980s, UAB staff drafted changes to the North Carolina Administrative Code (NCAC) that would prohibit salvage of historically significant shipwrecks for commercial or personal gain. After legal review, however, those changes were eliminated since the statute itself clearly allowed awarding artifacts as part of the permitting process. The revised guidelines, eventually approved in 1984, did not exclude commercial recovery from historic shipwrecks, but attempted to ensure that all projects adhere to accepted standards of underwater archaeological investigation and reporting. The new guidelines also authorized the Secretary of DCR to designate "certain abandoned shipwrecks or underwater archaeological artifacts as areas of primary scientific, archaeological or historical value" (NCAC T07:04R.1009). The guidelines stipulated that all artifacts recovered from one of these "Protected Areas" must remain as an intact collection in an appropriate curation facility. While the protected area status was applicable to known sites with significant value, such as the Civil War shipwrecks, it could not be applied preemptively to undiscovered shipwrecks such as the Spanish "treasure wreck" *El Salvador* that was lost somewhere in the Beaufort Inlet/Cape Lookout vicinity in 1750.

El Salvador is the only North Carolina shipwreck that has attracted the attention of treasure salvors, though others have also searched for this shipwreck as an academic pursuit. Of the 134 permits issued by DCR since 1981, 12 have been issued to various groups to search for *El Salvador*. Of those, eight permits contained a condition that allowed for the division of artifacts if the permittee conclusively located *El Salvador* and demonstrated they had the resources to conduct all phases of the project in an acceptable manner. To date, the remains of *El Salvador* have not been found.

FAMILIAR WATERS – 1990 TO 1996

The first half of the 1990s saw a continuation of the UAB's research and management activities that marked the previous decade. Branch staff worked with ECU students on a dozen thesis projects throughout the state with an emphasis on Civil War shipwrecks in northeastern North Carolina. That research, coupled with the branch's own investigations, led to a second National Register nomination for Civil War shipwrecks, this time for 15 sites in the state's sounds and rivers. With grant funds provided by the American Battlefield Protection Program, the UAB contracted with Dr. Lindley Butler to prepare the multiple property nomination for those Civil War sites (Butler 2003)

In 1993 the UAB conducted its largest field project to that time: the Cape Fear River Comprehensive Survey. Plans by the USACE to deepen thirty miles of the Cape Fear River channel provided the impetus for the yearlong study. Using a special legislative appropriation, the UAB was able to supplement its permanent staff by hiring temporary employees including Claude Jackson, who compiled a 400-page overview of the river's maritime history, and Glenn

Overton, who directed field operations. During the three months of fieldwork, the UAB crew made over 150 dives on 102 targets, locating 33 new shipwreck sites. (Overton and Lawrence 1996:39-44).

Public Outreach and Education

The 1967 legislation that created the UAB did not mention public outreach and education as a function of the agency. Nevertheless, branch staff has always recognized the tremendous public interest in underwater archaeology and have done their best to keep the public informed on new and exciting discoveries as well as the state's rich maritime history. To that end, the UAB maintains a small museum on the grounds of the Fort Fisher State Historic Site. Since 1991, over a half million visitors have toured the exhibit building. In addition, staff members give an average of 50 presentations a year to various school, civic, and professional groups. The UAB also has a policy of working with local museums and historical societies so that artifacts conserved in the preservation lab can be displayed as near as possible to the site where they were recovered.

In the early 1990s, the UAB launched two major outreach initiatives— one designed to make shipwrecks more accessible, and the other to bring underwater archaeology into the public school system. The first project involved the USS *Huron*, a navy ship lost off Nags Head during a violent storm in 1877. Prompted in part by public access recommendations in the federal Abandoned Shipwreck Act of 1987, UAB staff explored the idea of establishing a shipwreck park in North Carolina. After looking into issues of liability, funding, and legal authority, DCR entered into agreements with the U.S. Navy and the Town of Nags Head to create the USS *Huron* Historic Shipwreck Preserve, the state's first underwater park. Since its 1991 designation as a preserve, approximately 300 divers a year visit the *Huron* and countless beach goers learn about the shipwreck's history at a nearby exhibit gazebo (Lawrence 2003).

The second initiative was a cooperative effort between the UAB and the Cape Fear Museum. Over a two-year period, Mark Wilde-Ramsing worked with museum staff to develop an underwater archaeology educational kit. Entitled *Hidden Beneath the Waves*, the self-contained outreach kit was designed for the eighth grade classroom and provided video presentations, historical research exercises, quiz games, and a mystery wreck to be identified by students. The kit debuted in 1993 and, for the next decade, was used by 600 middle school students a year (Wilde-Ramsing 1995).

WAYLAID BY PIRATES – 1996 TO 2008

The Queen Anne's Revenge *Shipwreck Project*

Although it was not apparent at first, 1996 marked the next major turning point for North Carolina's underwater archaeology program. On November 22 of that year, researchers working for Intersal, Inc. discovered an 18th century shipwreck in Beaufort Inlet. Intersal was operating under a permit from DCR to search for the Spanish vessel *El Salvador*, lost in 1750, as well two shipwrecks, *Queen Anne's Revenge* and *Adventure*, associated with Blackbeard, the infamous pirate captain. Blackbeard lost the two ships in June 1718 just five months before he was killed in battle at Ocracoke Inlet.

Based on the large number of cannon visible on the seafloor and a bronze bell recovered on Intersal's first dive that bore the date 1705, the researchers felt it likely the new shipwreck was Blackbeard's flagship, *Queen Anne's Revenge* (*QAR*). When North Carolina Governor Jim Hunt announced the discovery at a March 1997 news conference there was flurry of media attention and enormous public interest. For the next eight years, DCR obtained appropriations and grants that allowed the UAB to spend one to two months a year investigating the *QAR* site. That research resulted in the recovery of thousands of artifacts and supported the identification of the shipwreck as Blackbeard's flagship (Wilde-Ramsing 2006). In an effort to determine past, present, and future environmental impacts to the site, the UAB enlisted the help of geologists from the University of North Carolina at Chapel Hill's Institute of Marine Science. The geologists concluded that the shipwreck was resting on a scour-resistant layer of sand and that the remaining artifacts were in a precarious position, particularly during major storm events (McNinch et al. 2001).

Aware of the significance of a shipwreck associated with history's most notorious pirate, and concerned with the potential loss of artifacts from the site, DCR decided on a course of complete excavation and recovery. Such a project was in marked contrast to the UAB's past field efforts and certainly beyond the scope of the agency's small operating budget. The department's commitment to the project, coupled with financial support from the legislature, allowed the UAB to establish a new conservation lab on the grounds of East Carolina University's West Research Campus near Greenville and to create five new permanent positions to run the lab and oversee field operations.

In the fall of 2006, *QAR* and UAB staff, supplemented with temporary personnel, began systematic excavation of the shipwreck site. That effort continued through the 2007 and 2008 field seasons, and the archaeologists have excavated, mapped, and recovered approximately 55% of the site (Figure 12-4). Team members transported the recovered artifacts to the Greenville lab, where they have been cataloged, assessed, and placed in wet storage (Wilde-Ramsing 2009). A number of conserved *QAR* artifacts are on display at the North Carolina Maritime Museum in Beaufort, and the museum is developing plans for a new exhibit hall to house the complete collection.

Figure 12-4. Aboard the North Carolina Marine Fisheries' barge R/V *Shell Point* during the 2007 *QAR* project. Below the surface, divers excavate two 5-foot-by-5-foot grid squares with handheld dredges. The dredged material passes through the screen/sluice boxes seen amidships. At the bow, team members process the captured sediment to extract small lead shot and gold dust.

FUTURE DIRECTIONS

This paper has focused on the growth and development of the UAB; however, any discussion of North Carolina underwater archaeology must acknowledge the significant contributions made by other groups, most notably ECU's Program in Maritime Studies. Since its creation in 1981, Program in Maritime Studies (PMS) students have completed 37 theses related to North Carolina maritime history and underwater archaeology. With its regional and contextual studies the ECU program has taken underwater archaeology well beyond examining shipwrecks as individual sites. Sami Seeb's recent thesis on the abandoned vessels on Eagles Island is a prime example of how PMS faculty and students have built on the UAB's original inventory of sites. Seeb employed principles of behavioral archaeology, such as patterns of abandonment, to explore changes in Wilmington's cultural, economic and technological history (Seeb 2007). Undoubtedly, the ECU program will continue to expand our knowledge and understanding of North Carolina's maritime history.

Contract archaeology firms, especially Tidewater Atlantic Research and Mid-Atlantic Technology and Environmental Research, have conducted major remote sensing surveys in North Carolina, as well as site documentation and mitigation projects. As development continues in coastal North Carolina, those firms and others will surely play an important role in locating and protecting significant submerged archaeological sites.

The state has also benefitted from the efforts of various individuals and groups working under permit from DCR. Groups such as Surface Interval Dive Company (SIDCO) rely on a volunteer membership to undertake a variety of survey, mapping, and recovery projects. Participants donate their time and equipment to pursue those projects and are willing to work under the guidance of the UAB. During those projects, artifact retrieval is kept to a minimum and permittees do not keep any of the material they recover. These groups and individuals are motivated by their interest in the state's history and "learning to do things right." The UAB will continue to support and encourage avocational interest and participation in examining shipwrecks and other underwater archaeological sites.

As for the UAB, fieldwork at the *Queen Anne's Revenge* site will dominate staff for the next several years. Conserving artifacts from the shipwreck, and analysis and reporting on that material, will continue for years after that. It is not unreasonable to predict that by 2018—the 300-year anniversary of the *QAR's* sinking—a new exhibit hall will be in place in Beaufort displaying artifacts from Blackbeard's ship and that, it will be a major tourist attraction for decades to come.

This paper began with a discussion of the evolutionary course North Carolina underwater archaeology has taken over the past five decades. At each stage of that journey it was difficult to predict what future direction the program would take. It seems every year brought its own surprises—a drought uncovering prehistoric canoes in Lake Phelps, a storm exposing long buried shipwrecks along the Outer Banks, or a private research group discovering a pirate ship. Similarly, it is impossible to predict what the next turning point will be—perhaps a Corps of Engineers' contractor will find Vasquez de Ayllon's lost ship from 1526 off the mouth of the Cape Fear River, or archaeologists will locate evidence of the Lost Colony in Roanoke Sound, or maybe someone will finally find the treasure of *El Salvador*. Any of those or similar events is liable to take the UAB in a new direction. What will be critical in the future, as it was in the past, is that a program remains in place with adequate staff, experience, and equipment to respond and adapt to whatever new challenges and opportunities tomorrow may bring.

REFERENCES CITED

Bright, Leslie S.

1977 *The Blockade Runner Modern Greece and her Cargo*. NC Division of Archives and History, Department of Cultural Resources, Raleigh.

Butler, Lindley S., Dr.

2003 Eastern North Carolina Civil War Shipwreck District, 1861-1865, National Register of Historic Places Nomination Form. Ms. on file, NRHP, US Department of Interior.

Lawrence, Richard W.

1985 North Carolina's Underwater Archaeology Unit: Combining Research and Management. *Proceedings of the Sixteenth Conference on Underwater Archaeology* 4:141-143.

1985 Underwater Archaeological Site in the Wilmington Historical District, Addendum. National Register of Historic Places Nomination Form. Ms. on file, NRHP, US Department of Interior.

1989 Current Underwater Archaeological Research in North Carolina. *Underwater Archaeology Proceedings from the Society for Historical Archaeology Conference.* Baltimore, MD 1989:55-59.

1995 Managing Underwater Archaeological Resources in North Carolina. pp 34-39. *South Atlantic Ocean Management Workshop*. Division of Coastal Management, Raleigh, NC

2003 From National Tragedy to Cultural Treasure: The USS Huron Historic Shipwreck Preserve. In *Submerged Cultural Resource Management: Preserving and Interpreting our Sunken Maritime Heritage*. Edited by James D. Spirek and Della A. Scott-Ireton. Plenum, New York, NY

McNinch, Jesse E., John T. Wells, Thomas G. Drake

2001 The Fate of Artifacts in an Energetic, Shallow-Water Environment: Scour and Burial at the Wreck Site of *Queen Anne's Revenge. Southeastern Geology* 40-1:19-27

North Carolina Division of Archives and History

1979 Biennial Reports, July 1, 1976 – June 30, 1978. NC Division of Archives and History, Raleigh.

1981 Biennial Reports, July 1, 1978 – June 30, 1980. NC Division of Archives and History, Raleigh.

1983 Biennial Report, July 1, 1980 – June 30, 1982. NC Division of Archives and History, Raleigh.

1985 Biennial Report, July 1, 1982 – June 30, 1984. NC Division of Archives and History, Raleigh.

North Carolina Administrative Code
1984 Cultural Resources – Archives and History – Exploration: Recovery: Salvage. T07:04R.1000

North Carolina General Statutes
1967 *Salvage of Abandoned Shipwrecks and Other Underwater Archaeological Sites.* Chapter 121, Article 3

Overton, Glenn C. and Richard W. Lawrence
1996 *The Cape Fear – Northeast Cape Fear Rivers Comprehensive Study. A Maritime History and Survey of the Cape and Northeast Cape Fear Rivers, Wilmington Harbor, North Carolina. Volume 2, Submerged Cultural Resources Survey.* NC Division of Archives and History, Raleigh.

Peery, Charles V.
1973 Small Boats and Shipwrecks. Ms. on file, NC Underwater Archaeology Branch, Kure Beach.

Seeb, Sami Kay
2007 Cape Fear's Forgotten Fleet: The Eagles Island Ships' Graveyard, Wilmington, North Carolina. Unpublished Master's thesis, Department History, East Carolina University, Greenville.

Townsend, Samuel P.
1965 Progress in Underwater Archaeology in North Carolina. Paper presented at the 2nd Conference on Underwater Archaeology, Royal Ontario Museum, Toronto, Canada.

1972 Diving on Sunken Blockade-Runners, Underwater Archaeology off the Coast of Fort Fisher. *Tar Heel Junior Historian* Vol. II, No. 4: 15—16.

Watts, Gordon P., Jr.
1981 *Investigating the Remains of the U.S.S. Monitor. A Final Report on 1979 Site Testing in the Monitor National Marine Sanctuary.* North Carolina Division of Archives and History, Department of Cultural Resources, Raleigh.

1986 Underwater Archaeological Reconnaissance and Historical Investigation of Shipwreck Sites in Lockwood's Folly Inlet, Brunswick County, NC. Ms. On file, US Army Corps of Engineers, Wilmington District.

Watts, Gordon P., Jr., and Leslie S. Bright
1972 Progress in Underwater Archaeology in North Carolina 1962 – 72. *The International Journal of Nautical Archaeology and Underwater Exploration, 2.1:131-36*

Watts, Gordon P., Jr. and Hargrove, Thomas H.
1984 Underwater Archaeological Reconnaissance Carolina Beach Inlet, New Hanover County, North Carolina. Ms. On file, US Army Corps of Engineers, Wilmington District.

Watts, Gordon P., Jr., Leslie S. Bright, James A. Duff, Dina B. Hill, Richard W. Lawrence, James A. Pleasants, Jr., and J. Reed Whitesell
1975 Report of the Activities of the 1975 Field School in Underwater Archaeology. Ms. On file, Underwater Archaeology Branch, Kure Beach.

1977 *Fort Branch. Survey and Recovery Project.* North Carolina Division of Archives and History, Raleigh.

Wilde-Ramsing, Mark
1985 National Register Districts as a Management Tool for Underwater Resources. *Proceedings of the Sixteenth Conference on Underwater Archaeology* 4:130-133

1990 Management of Small Craft, Notes from the North Carolina Maritime Workshops I-VI. Ms. on file, NC Underwater Archaeology Branch, Kure Beach.

1995 North Carolina's Underwater Archaeology Educational Program: Hidden Beneath the Waves. *Public Archaeology Review*, Vol. 3, 1 and 2: 27-29.

2006 The Pirate Ship *Queen Anne's Revenge.* In *X Marks the Spot: The Archaeology of Piracy*, pp 160-195. Edited by Russell R. Skowronek and Charles R. Ewen, University of Florida Press, Gainesville, FL

2009 Steady as She Goes . . . A Test of the Gibb's Model Using the *Queen Anne's Revenge* Shipwreck Site. Unpublished Ph.D. dissertation, Coastal Resource Management, East Carolina University, Greenville, NC

Wilmington Morning Star
1965 Complaint filed by North Carolina Department of Archives and regarding *Modern Greece.* June 23.

1967 North Carolina Department of Archives and History cites "1783 Treaty of Peace" as ownership claim of *Modern Greece.* January 12.

1968 North Carolina Supreme Court upholds Superior Court decision on state ownership of *Modern Greece.* April 11.

NOW YOU SEE IT; NOW YOU DON'T. COASTAL EROSION AND COASTAL COTTAGES: TWENTY YEARS OF CULTURAL RESOURCE MANAGEMENT STUDIES

Loretta Lautzenheiser

Susan E. Bamann

Dennis C. Gosser

Twenty-five years ago, North Carolina was celebrating the 400th Anniversary of the first English settlement of the New World. As part of that celebration, archaeological investigations of Roanoke Island and the Outer Banks were being conducted by East Carolina University (ECU). There were, at this time, no Cultural Resource Management (CRM) firms with offices in the state. That project, funded through the North Carolina Office of State Archaeology (OSA), focused primarily on the Native American inhabitants of what would become North Carolina who were here when the first English colonists arrived on the Outer Banks in 1584.

The Roanoke Voyages were expeditions of exploration and discovery begun in 1584 under a royal patent to Sir Walter Raleigh. The landfall of his agents, Philip Amadas and Arthur Barlowe, on the Outer Banks in July of that year was the first contact of the native Algonkian-speaking inhabitants of the region with English explorers. The English claimed the new-found land in the name of Queen Elizabeth (Quinn and Quinn 1982).

The explorers landed on the north end of Roanoke Island where they found an Algonkian village of nine houses, "built of Cedar, and fortified round about with sharpe trees, to keepe out their enemies" (Quinn 1955:107). The explorers had made contact with the Algonkians when they first entered the sounds and were greeted "very cheerefully and friendly" and were escorted to the main house of the village where they were treated to a feast (Quinn 1955:107). Barlowe noted that the house had five rooms. Algonkian leaders informed the explorers about the many towns and villages along the coast and islands, one of which was Dasemunkepeuc, located on the mainland across the sound from Roanoke Island (Quinn 1955).

Two later voyages resulted in the first colonization of the New World by the English; a venture that was to result in failure, becoming the famous "Lost Colony" (Quinn and Quinn 1982). The settlers had left behind a fort, Fort Raleigh, which survives today, but the remains of the settlement have not been defined. While the 400th-Anniversary project did survey the sound below the National Park Service property containing the fort in an attempt to locate eroded materials, the project mainly focused on the native inhabitants who were here when the colonists arrived.

Earlier, in the mid-1950s, William Haag had conducted his seminal survey of the North Carolina coast. He primarily recorded archaeological sites known to residents of the area. His fieldwork involved non-systematic surface survey and limited test excavation of sites, with most of the effort focused along mainland shorelines of the sounds. The purpose of the study was to "depict the prehistory of coastal man and to unearth any evidence of the 'Lost Colony'" (Haag 1958:24). The areas selectively covered include Hatteras Island, Ocracoke Island, Bodie Island, Colington Island, Roanoke Island, the Albemarle Sound, the Pamlico Sound, and the lower

Neuse River. Due to the large area to be covered, Haag's survey methods involved the surface survey of sites that were already known to the local population.

Haag's study resulted in the identification of 79 sites including many sites with shell middens. He was quick to point out in his monograph that the "archaeological story" was already affected by natural and manmade forces and that many sites recorded during the fieldwork "are now wholly within the water edge of the Sound with no actual midden remaining" (Haag 1958:9). The extent of erosion along the northern edge of Roanoke Island, the presumed vicinity of the Lost Colony settlement, was later evaluated by geographers from the University of Virginia (Dolan and Bosserman 1972). They estimated that over a quarter of a mile of shoreline recession had taken place since the sixteenth century, making it more than likely that the Lost Colony settlement site has been destroyed.

DOCUMENTING THE EFFECTS OF SHORELINE EROSION

For the 400th-Anniversary project, surveys were conducted along the sound side of the Outer Banks and the mainland and along Roanoke Island looking for sites that were depicted on historic maps and also for the sites recorded by Haag. The crew dug holes all along what is now the northern end of Roanoke Island searching for the Algonkian village described by John White (Quinn 1955), searched in vain for Indian Hole and the "mounds" described by Talcott Williams (Williams 1896), and waded along the mainland shore looking for the village of Dasemunkepeuc.

During that survey numerous local informants were interviewed, 28 test units were opened, and miles of shoreline were examined. Northwest Point (31DR19), the possible site of the Algonkian village reported by the Roanoke Voyagers (Figure 13-1), had been recorded by Haag who collected sherds on the beach (Haag 1958). Eight units excavated in the area mapped as 31DR19 yielded nothing. It appeared that the site had completely eroded just since Haag's visit.

In 1988, Coastal Carolina Research (CCR) was founded, and almost its first project was to conduct a survey of a portion of the north end of Roanoke Island for the Historical Association. No evidence of the Native American village was found, but a Civil War site (31DR61) was recorded (Lautzenheiser 1988). A later survey of the area defined the site, which covered about 10 acres, as Camp Reno (Hargrove 1989). Evaluation of this camp in 1991 indicated that the site had been systemically plundered, and by the time of the investigation its destruction was virtually complete (Lautzenheiser and Hargrove 1991). Nearby Fort Huger was not investigated, but a brief examination revealed that the earthworks had by that time substantially eroded into Roanoke Sound.

Located on the mainland side of Currituck Sound, the Baum Site, 31CK9, had not been visited by Haag, but was recorded in 1972 when a local resident informed ECU's Dr. David Phelps of human burials eroding from the bank. That began a series of trips to the site by ECU from 1972 to 1974 and again between 1980 and 1983, and lastly by OSA in 1987, to salvage the ossuary burials eroding from the low bank overlooking the shoreline. Complete with a detailed research design (Phelps 1980), the Baum site was listed on the National Register of Historic Places (NRHP) in 1980 as a permanent village, and the presence of a number of ossuaries was taken to mean that the site was a capital village or at least one of extreme importance. Unfortunately, other than salvaging burials as they eroded, no other investigations were undertaken at the site until much later.

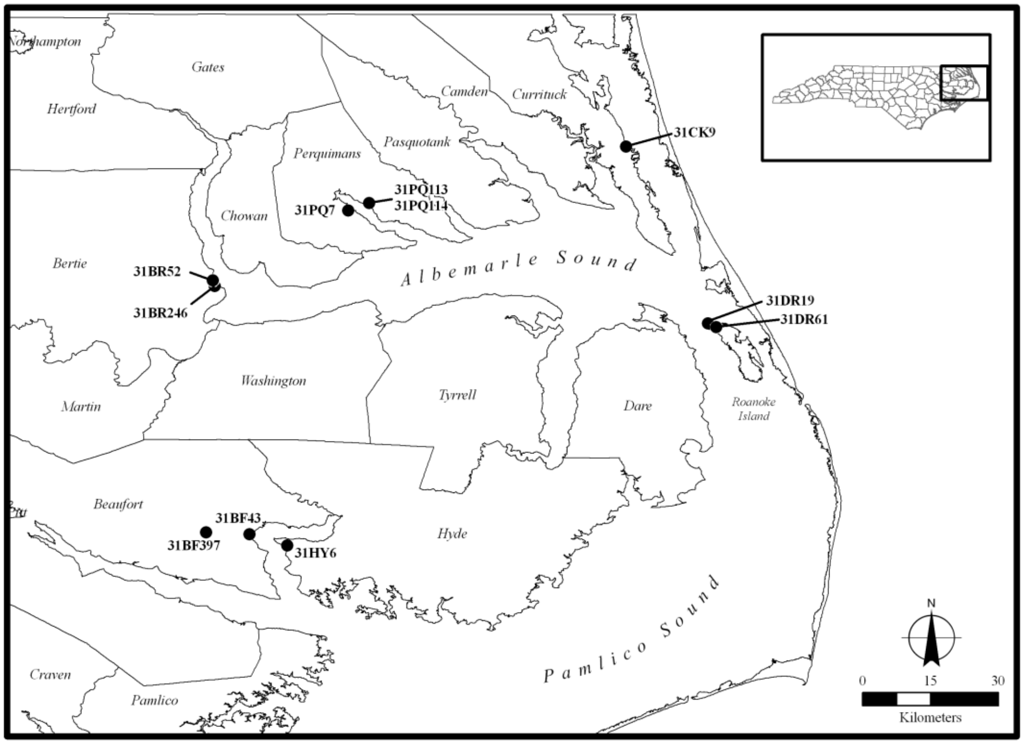


Figure 13-1. Map of Northeastern North Carolina showing the locations of sites discussed.

During a Baum site ossuary recovery in late September of 1983, a hurricane blew up requiring the ECU crew to abandon the site. Upon the crew's return, it was found that the wind had blown the water out of the Sound for several hundred feet from the shore. The beach was littered with shells and artifacts as far as could be seen, suggesting that the site had been considerably larger.

At this time, mainland Currituck County was sparsely settled, and conveniences were limited. The field crew stayed at a hunting camp in spartan accommodations. Lunch was a pack of nabs, if you managed to grab one before leaving the camp. Over time, however, as the Outer Banks were building up, development moved to the Sound side along the mainland, and the Baum tract was sold for development.

In 2005, CCR was hired to conduct test excavations to determine the condition of the site. Backhoe trenches were excavated to remove the overburden and hand excavation of the upper midden was conducted. The testing indicated that there was intact midden under the plow zone in much of the site; however, few features were noted, and no ossuaries were found. The testing did reveal that extensive erosion was continuing (Figure 13-2), and Phelps' 1983 datum was sought in vain and had apparently also eroded (Lautzenheiser and Stewart 2006).

In 2007, CCR conducted data recovery excavations at the site prior to the planned development (Gosser 2007). Upon the return to the site it was estimated that 5 to 10 feet of the site had eroded between the 2005 and 2007 work (see Figure 13-2). In addition to 256 shovel tests on a 10 meter grid, four 4-x-4-m excavation blocks, one 2-x-2-m unit, and one 1-x-1-m unit were excavated. The data recovery revealed that significant features did not survive, and though there was some preservation of faunal and archaeobotanical material in the remnant shell midden, the results of analyses add only limited insight into the nature of the occupation related to the documented ossuary burials. This can serve as a cautionary tale; coastal sites are not going to sit around and wait for us to get around to them. They are truly fragile resources.

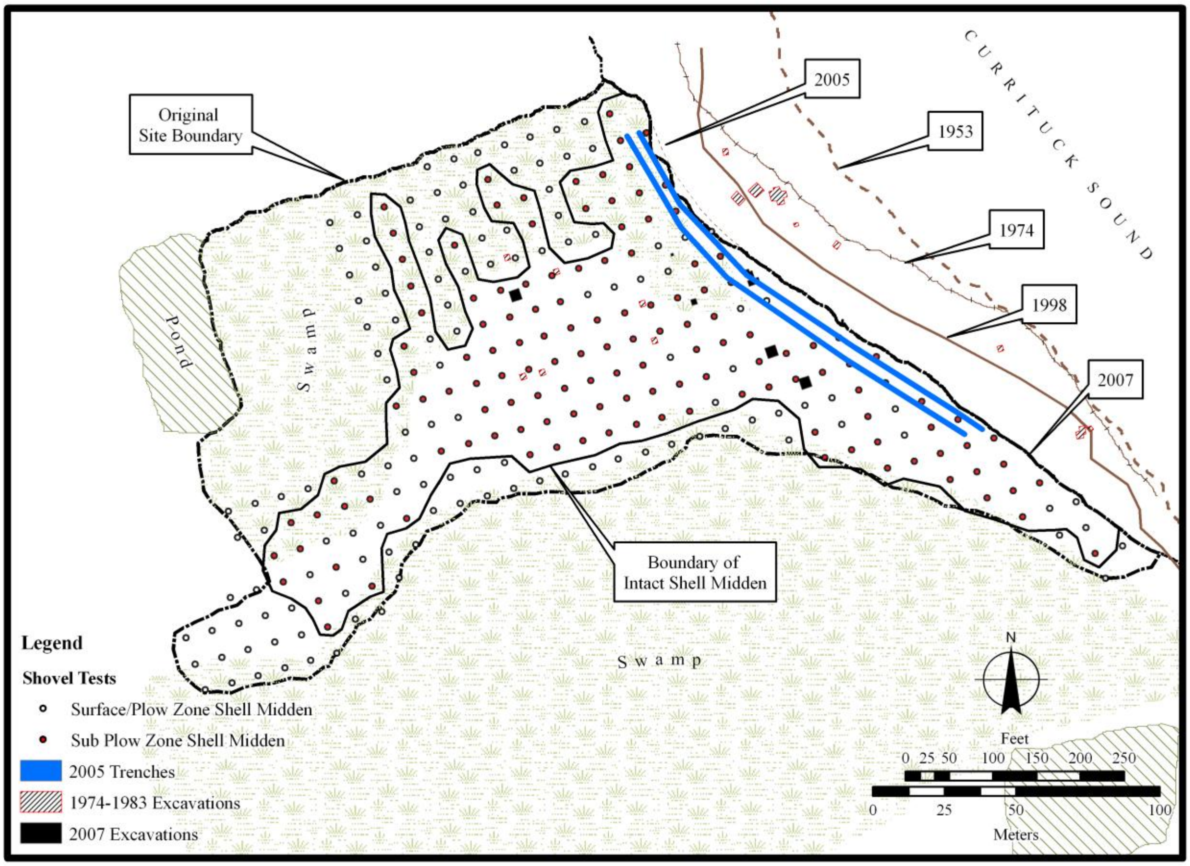


Figure 13-2. Plan view of the Baum Site, 31CK9, showing changes to the shoreline based on overlay of ECU site mapping, topographic maps, and aerial images and archaeological investigations by ECU (1974-1983) and CCR (2005 and 2007).

Approximately 50 years after William Haag recorded site 31HY6, the Davis Bay site, CCR was hired to conduct a site evaluation related to requirements of a Coastal Area Management Act (CAMA) permit application (Bamann et al. 2005). The site is (was) located on the banks of the Pungo River on a cultivated private tract in desperate need of bulkheading to protect a planned vacation retreat home. The Pungo is a tidal estuary of the Pamlico River estuary, and the site was described as being on a slight promontory along the river bank "in the midst of the only cleared area for miles around" (Haag 1958:53). The site was further defined as a circular, Woodland-period shell midden with an approximate diameter of 700 feet. The midden was generally one foot thick and varied in shell concentration. The artifacts included sand-tempered, shell-tempered, and clay/grit-tempered ceramics with various surface treatments; an elbow pipe fragment; a quartzite triangular point; and three hammerstones.

Prior to the CCR investigation, 31HY6 was revisited in the 1980s as part of the Hyde County Archaeological Project conducted by Cindy Cook (Cook 1984). The project was funded under a Survey and Planning Grant to the Hyde County Historical Society. Cook described 31HY6 as a "partially destroyed" shell midden (1984:13) with historic and Late Woodland deposits. She recognized a late eighteenth- to early nineteenth-century historic component at the site based on the presence of a plain pearlware sherd and a transfer-printed pearlware sherd. This was something that Haag had not described.

When CCR arrived at the site in 2005, the owner of the tract indicated that his parcel, containing approximately 76 acres, had originally contained over 100 acres (ca. 1950). The loss of acreage was all attributed to erosion of the river bank edge of the property, and based on dead trees within the river channel, it appeared that at least 200 feet of land had been lost in relatively recent times. The slight promontory noted by Haag was not apparent, but the northern portion of the tract does slope very gently downwards toward a poorly drained area. Past cultivation of the site area, which had included cultivation right up to the edge of the river bank, undoubtedly increased the severity of the erosion. Subsequent comparison of 1974 topographic map data and recent aerial photographs from the North Carolina Floodplain Mapping Information System (NCFMIS 2005) confirmed that at least 246 feet of shoreline had eroded in the later twentieth century.

CCR's initial revisit indicated a shell midden of varying composition exposed along the frontage of the tract for approximately 730 feet. Shell was also exposed on the surface at least 200 feet inland. Native American ceramics were collected along a narrow beach in the northern half of the site where they appeared to have eroded out of the shell midden. On the beach near the higher portion of the tract, at an area where the land comes to a slight point and is three to six feet above the water level, a series of eighteenth-century artifacts was noted. A quantity of brick appeared to have eroded onto the beach (Figure 13-3), and early eighteenth century artifacts were recovered. No dateable ceramics post-dating ca. 1760 were noted.

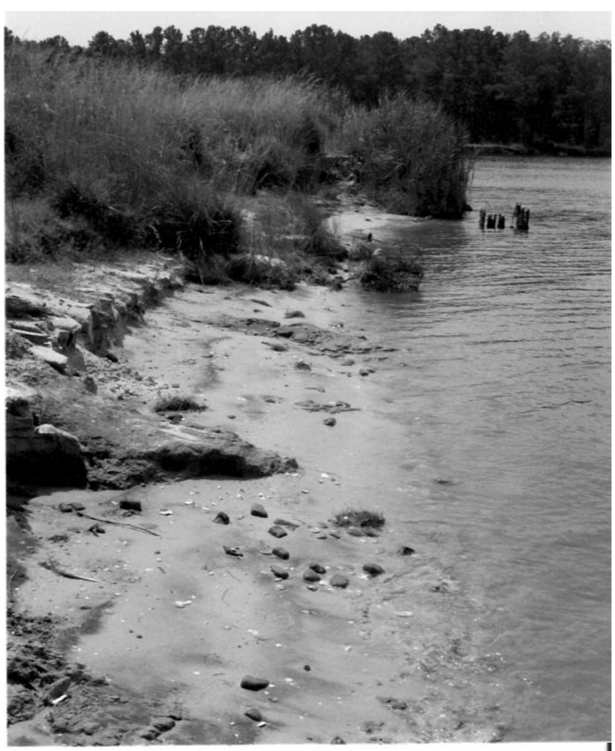


Figure 13-3. View of the shoreline at 31HY6, the Davis Bay Site, showing ongoing erosion. Note shell along beach and brick eroded from site in foreground.

Systematic surface survey was conducted across the tract within cultivated areas, and shovel testing and test unit excavation followed. The various testing strategies revealed low artifact densities and evidence for extensive disturbance from plowing. It appeared that much of the shell scatter noted during the surface survey represented dispersed material from plowing of a former midden area. Three 1-x-1-m test units on the higher shoreline area revealed stacked plow zones. The lower plow zone was characterized by mottled brown and very dark grayish brown soil with mixed Middle to Late Woodland ceramics, eighteenth- to early-nineteenth-century historic artifacts, and very fragmentary shell. A deeper but very thin zone of undisturbed, dark grayish brown soil was noted in two of the units. This zone contained little shell and a few Native American ceramics, and it was underlain by sterile subsoil.

Over 50 percent of the Native American ceramic sherds from the shovel testing and test units were very small (less than 2 cm maximum dimension) and approximately half of these were severely eroded from repeated plowing or wave action. Those that could be classified were attributed to the Late Woodland Colington series and the Middle Woodland Mount Pleasant series (Phelps 1983). The historic material collected during the excavations confirmed that an eighteenth-century component was present. This probably dated to the second half of the century based on the number of creamware (post 1762; Miller et al. 2000) and pearlware (post 1779; Miller et al. 2000) sherds. Some earlier material similar to that collected from the beach on the initial CCR visit was also present. Unfortunately, the excavated historic material was mixed with the earlier precontact material, and it appears that no intact portions of the historic component were present. Bricks and artifacts along the beachfront suggested that the historic component had eroded into the river. The presence of the historic site is consistent with evidence for numerous land patents in the project vicinity after 1758 (Hoffman 1982).

In general, it appears likely that any intact shell midden areas recorded during William Haag's research were on the portion of the river bank now eroded into the Pungo River. It is likely that the plow-disturbed deposits documented during the current testing represent material from the back edge of the original site. Most importantly, the project documented the recent loss of waterside site area and the peril of sites that would have been eligible for the NRHP 50 years ago.

Haag also recorded a site on the Pungo River at the confluence with Pungo Creek (Haag 1958). The site, 31BF43, was noted by Haag as extending at least 1,500 feet north-south and about 1,000 feet east-west. It was described as containing one of the largest midden deposits in the area, with depths of 18 inches. He noted ceramics from all time periods and stated that the site was a potential candidate for the Native American town of Aquascogoc visited in 1586 by members of Ralph Lane's party from the second of the Roanoke Voyages.

The site, now the location of a subdivision, Windmill Point, was investigated by CCR in 1995 (Lautzenheiser et al. 1995). The study consisted of a survey and collection of materials eroding along the shoreline, shovel testing, and excavation of mechanical trenches. Materials were found along the shoreline and in the water. It was possible to wade to a duck blind on an eroded tip of the point several hundred feet from the existing shoreline. This area also contained exposed shell and artifacts. Shell was also observed in six of eighteen shovel tests transects. These six adjacent transects defined the surviving extent of the midden. Only four shovel tests were positive, and these tests yielded only one artifact each.

A small grader was used to remove the disturbed plow zone in five trenches, and the trenches were shovel skimmed and troweled. Undisturbed midden was removed by hand. Full excavation of the trenches was hampered by water entering the trenches, but at least a 1-x-1-m unit was fully exposed in each trench. The trenches averaged three meters long and, while the shoreline survey yielded numerous artifacts, the trenches yielded a total of only seven artifacts. The base of Trench 3 contained a series of small postholes which might have been from a shelter or windbreak (Lautzenheiser et al. 1995).

Since Haag's visit in the mid-1950s, the site limits have been severely reduced through both erosion and sea level rise. The north-south extent of the midden was about 300 feet, but the east-west extent was under 100 feet, substantially reduced from the size noted by Haag (Lautzenheiser et al. 1995). Just south of site 31BF43 on the Pungo River at Woodstock Point, the town of Woodstock was thriving in the late eighteenth century and was attempting to rival the port at Bath. Since then the town has slipped under the water, and in 1916, historians R.T. and Lottie Hale Bonner reported that none of the town's buildings remained standing, but, at a very low tide, a large portion of the town could still be seen (Angley 1983).

In this area, subsidence likely also played a part in the erosion of the point (Lautzenheiser 1984). The Coastal Plain sediments are affected by major tectonic structure in the basement rock. The Hatteras Embayment is an active structural low, while the Cape Fear Arch is an active structural high. The large embayed estuaries, and the rapid rates of shoreline erosion are evidence of active subsidence in the area of the Hatteras Embayment (Hardaway 1980). The early settlement of Waupopin in neighboring Hyde County provides an example of the effects of subsidence in the region. The village included farms, churches, and several cemeteries. The area is now completely abandoned and today is savanna. Old fence lines, as well as an old corduroy road, which has already been overlain by several inches of peaty soil, can still be seen in the swamp. The area was reportedly abandoned as a result of the sinking of the land 18 inches after the Charleston earthquake in 1886 (Hyde County Historical Society 1976).

SITES IN RELATION TO OTHER RECENT LANDSCAPE ALTERATIONS

CCR conducted limited test excavations at the Newbold-White House in Perquimans County in an area previously identified as the seventeenth-century house location (31PQ7; Lautzenheiser 1995). The excavations encountered evidence that the small drainage ditch next to the early house site had originally been a much larger natural run. Changes to the natural drainage patterns through erosion were also noted during work at the ca. 1720-1730 Sutton-Newby House on Durants Neck in Perquimans County.

The Sutton-Newby House is located near the head of a small tributary of Sutton Creek, slightly over a mile from the mouth of the creek at the Perquimans River. The existing house, however, was probably not the earliest dwelling on the farm tract. The farm was occupied by the Nathaniel Sutton family since before 1670, passing to Joseph Sutton I in 1682. In 1724, Joseph Sutton II inherited the land and probably built the existing house. Joseph Sutton II was a prominent planter who represented Perquimans in the House of Commons from 1739 to 1760. He maintained a landing on Suttons Creek below his dwelling house as an official inspection place (Winslow and Cockshutt 1974).

During CCR investigations of the standing structure (31PQ113; Lautzenheiser 1992), the owner mentioned that there had been a ballast stone foundation near the landing on Sutton Creek. A surface survey of the area where the ballast stone had been (31PQ114) resulted in recovery of Rhenish stoneware, probably a bellarmine (ca. 1620-1700; Miller et al. 2000), and Nottingham stoneware (ca. 1683-1810; Miller et al. 2000) (Lautzenheiser et al. 1994). No artifacts with initial manufacturing dates in the eighteenth century were recovered, suggesting that this site may have originated in the seventeenth century as the original Sutton farm.

The location of the possible Sutton farm site is near a (formerly) navigable slough of Suttons Creek. This slough contains evidence of a historic landing. The owner noted that the field contained the head of a run which extended almost to the farm site.
The run had gradually become silted-in during the long term cultivation of the field.

Under a National Park Service grant administered by the North Carolina Division of Archives and History, CCR and Thomas Hargrove (Archaeological Research Consultants, Inc.) conducted a remote sensing survey across a 450-x-200-foot area which was believed to contain the remains of the seventeenth-century farm house (Lautzenheiser et al. 1994). The study documented subsurface anomalies, but before they could be investigated, the landowner removed the grid stakes and decided not to allow the work to continue.

In 2007, CCR (Gosser et al. 2007) conducted a survey of a private tract in Beaufort County for an owner who had been researching his land, through deeds, and, unfortunately, through digging up a pile of bricks he had noticed (later recorded as 31BF397). It is unclear whether the owner will develop the tract, referred to as the Barrow Tract, but he did appear quite interested in the history of the land which had come down through his wife's family. The background research for CCR's survey provides additional documentation of the importance of small watercourses, many now altered by erosion, in early settlement patterns.

Captain William Barrow was one of the earliest settlers of the Beaufort County area. In 1705, he received a grant for land on which he was already residing (Reed 1962). According to a reference provided by the landowner, eighteenth-century deeds state that Barrow owned property "on the South side of Machapongo Creek [Pungo Creek]." Two historic maps show the Barrow plantation home in the Barrow tract vicinity. Edward Moseley's 1733 map shows the Perkins plantation, and to the east, the Barrow plantation. An 1808 map shows a "Barrow" in approximately the same location at a road intersection in the same approximate location as current roadways.

A later deed notes that the "land beginning on the creek side near the Landing at the mouth of a Ditch Running a direct course through the Plantation to a Cart Road ….and including the Buildings where I now Live & fifty Acres at the head of Pasture Branch that Lies in Thomas BARROWS Pattent…" (Camin 1984:192-193). On an 1881 Coast Survey map you can still see the run accessing the site location. This site, and the sites discussed earlier, all had landings on the main creek or river, but all were specifically situated at the heads of small runs that drained into the main watercourse. The runs have since been silted in by run-off from cultivation.

The initial excavation of what was exposed as a brick foundation at 31BF397 was intended to remove some of the backdirt generated from the owner's excavations and determine if a feature was present. The initial contracted 1-x-1-m unit was expanded to expose more of the foundation. Since the digging was next to, and almost in, a cemetery, there was concern that the brick was related to a vault. The excavation, however, revealed a foundation five courses of brick high, two bricks wide, and held together with mortar heavily tempered with large fragments of burned oyster shell. The foundation defined a structure approximately 9.2 feet wide and probably 12 to 14 feet long, judging from additional brick piles and probing (Gosser et al. 2007). This represents a rather small building for a house.

The artifact assemblage, comprised of ceramic table and teawares, bottle glass, cutlery, tobacco pipes, faunal bone and clothing items, indicates a domestic use for the site (Figure 13-4). Taken as a group, the artifacts appear to date from the late seventeenth century to the end of the first quarter of the eighteenth century. There were also wrought rosehead nails, some of which appeared to have been burned, and no fragments of window glass were recovered. Most of the ceramics were types that began manufacture in the late seventeenth century or early eighteenth century. Three fragments of dipped white salt-glazed stoneware (1715-1775; Miller et al. 2000) were recovered as was one small fragment of North Midlands slipped earthenware (1660-1745; Miller et al. 2000). The assemblage includes numerous fragments from a black-glazed redware vessel; most of these fragments mended together, revealing that the vessel had been a large pitcher. There was an impressive number of ceramic mends from the test units, suggesting an intact site of early settlement with great research potential (Gosser et al. 2007).

Figure 13-4. Domestic artifacts from 31BF397 at the Barrow Tract. Top: pewter spoon with trifid terminal; Bottom: two-pronged iron fork.

THE CONTINUED PERILS OF DEVELOPMENT

The sites discussed above were not impacted by construction activities, but have been the victims of continuing shoreline erosion or exist in altered landscapes with important drainage features obscured by soil run-off from cultivation. Construction is, however, an issue with other sites in the coastal region. One example is the Eden House site (31BR52), a site representing the initial period of permanent European settlement in North Carolina (Lautzenheiser et al. 1998). CCR's research indicated that settlement at Eden House began around 1660 and lasted to approximately 1740. The seventeenth-century component, which yielded evidence for at least three structures and a possible stockade, was excavated prior to the construction of the US 17 bridge across the Chowan River. The ca. 1720 Eden House Manor site north of the highway, which survives, does so only because it was donated to the Archaeological Conservancy. Only the two tracts which contain the Manor House site were donated, and the remaining components related to the eighteenth-century complex have been now been developed.

More recent research in Bertie County, conducted by the James River Institute for Archaeology, Inc. (JRIA; Jacobsen et al. 2008) for a CAMA permit, has resulted in documentation of another seventeenth-century site that may be affected by construction activities. This site, 31BR246, yielded artifacts suggesting a Euroamerican presence in the second half of the seventeenth century. Jacobsen et al. (2008:157) suggest that the material may be associated with either the Nathaniel Batts settlement or the initial establishment of the Pollock plantation. Nathaniel Batts is considered the first known permanent settler in what is now North Carolina (Powell 1989), and by the mid-1600s he had established a trading post along the Albemarle Sound in the vicinity of the JRIA project. The Pollock plantation, later referred to as Bal Gra, was located in the JRIA project vicinity and may have been established as a residence of Thomas Pollock in the very early eighteenth century (Jacobsen et al. 2008). Thomas Pollock, a prominent landowner and merchant, served as acting governor of North Carolina in 1712 and 1722 and had marched against the Meherrin Indians in 1706 and 1707 in the cause of their suppression (Jacobsen et al. 2008; Powell 1989). The site is located within the project area for the proposed Bal Gra Harbor residential community site, and, in comments attached to the JRIA report (May 14, 2008) OSA has recommended mitigation plans to either 1) protect the site from direct or secondary impacts from construction, related erosion, relic hunting, or related subsequent development; or 2) recover any important information prior to disturbance.

CONCLUDING REMARKS

As we are attempting to refine our understanding of Native American settlement of the coastal region, and as we are just beginning to locate some of North Carolina's earliest historic resources, we are also seeing the coastlines of the sounds gobbled up by development, and there is intensive movement up the rivers in the Coastal Plain. Coastal sites are sensitive to this change. They are also sensitive to sea level rise and accompanying erosion, and predictions from a recent Environmental Protection Agency report on sea level rise in the mid-Atlantic region suggests that coastal areas of North Carolina are particularly vulnerable (Rawlins 2009). Of particular interest is the fact that there have been few seventeenth century sites recorded, not enough to make solid judgments about their locations, but enough to know they are likely to be located in areas that are attractive to development. Hopefully, with continued requirements for compliance with CAMA and Section 106 of the National Historic Preservation Act, and with more counties realizing they are losing their history and requiring some level of study, we will have further opportunities to save or record the heritage of North Carolina's peoples.

REFERENCES CITED

Angley, Wilson

1983 *A History of Woodstock Point on the Pungo River*. Ms. on file, North Carolina State Archives, Division of Archives and History, Raleigh.

Bamann, Susan E., Bill Hall, and Loretta Lautzenheiser

2005 *Archaeological Evaluation, Site 31HY6 on the Pungo River, Hyde County, North Carolina*. Ms. on file, Coastal Carolina Research, Tarboro, North Carolina.

Camin, Betty J.

1984 *Beaufort Orphans: Book A, 1808-1928*. Betty J. Camin, Raleigh.

Cook, Cindy

1984 *The Hyde County Archaeological Project, Hyde County, North Carolina.*Ms. on file, North Carolina Office of State Archaeology, Raleigh.

Dolan, Robert, and Kenton Bosserman

1972 Shoreline Erosion and the Lost Colony. *Annals of the Association of American Geographers* 62(3):424-426.

Gosser, Dennis C.

2007 *Management Summary, Archaeological Data Recovery of Site 31CK9, Proposed Currituck Crossing Subdivision, Currituck County, North Carolina*. Ms. on file, Coastal Carolina Research, Tarboro, North Carolina.

Gosser, Dennis C., Bill Hall, and Loretta Lautzenheiser

2007 *Archaeological Survey and Limited Subsurface Testing of the Barrow Tract (King Charles Town), Beaufort County, North Carolina.* Ms. On file, Coastal Carolina Research, Tarboro, North Carolina.

Haag, William G.

1958 *The Archeology of Coastal North Carolina*. Louisiana State University Press, Baton Rouge.

Hardaway, C. Scott

1980 Shoreline Erosion and Its Relationship to the Geology of the Pamlico River Estuary. Unpublished M.S. thesis, East Carolina University, Greenville, North Carolina.

Hargrove, Thomas

1989 *An Archaeological Survey of the Manteo Wastewater Treatment Plant, Dare County, North Carolina.* Ms. on file, North Carolina Office of State Archaeology, Raleigh.

Hofmann, Margaret M.

1982 *Colony of North Carolina 1735 to 1764: Abstracts of Land Patents*. The Roanoke News Company, Weldon.

Hyde County Historical Society
1976 *Hyde County History*. Herb Eaton, Charlotte.

Jacobsen, Karisa, Clay Swindell, Charles Heath, Nicholas Luccketti, Garrett Fesler, and Matt Laird
2008 *Phase I and Phase II Cultural Resources Surveys of Bal Gra, Bertie County, North Carolina*. Ms. on file, North Carolina Office of State Archaeology, Raleigh.

Lautzenheiser, Loretta
1984 *An Archaeological Reconnaissance Survey for the Towne of Pomeioc.* Ms. on file, Coastal Carolina Research, Tarboro, North Carolina.

1988 *Archaeological Survey of Areas Associated with the Roanoke Island Historical Association Performing Arts Center, Dare County.* Ms. on file, Coastal Carolina Research, Tarboro, North Carolina.

1992 *Limited Archaeological Testing, Sutton-Newby House, Perquimans County, North Carolina*. Ms. on file, Coastal Carolina Research, Tarboro, North Carolina.

1995 *Archaeological Investigations, Newbold-White House, Hertford, Perquimans County, North Carolina* (Preliminary Draft). Ms. on file, Coastal Carolina Research, Tarboro, North Carolina.

Lautzenheiser, Loretta, Jane M. Eastman, and Thomas Hargrove
1994 *Remote Sensing at the Sutton-Newby Farm, 31PQ114, Perquimans County, North Carolina*. Ms. on file, Coastal Carolina Research, Tarboro, North Carolina.

Lautzenheiser, Loretta, and Thomas Hargrove
1991 *". . . The Bright Glittering Sand"; Archaeological Survey and Test Excavations, Site 31DR61, Roanoke Island, Dare County, North Carolina.* Ms. on file, Coastal Carolina Research, Tarboro, North Carolina.

Lautzenheiser, Loretta, Mary Ann Holm, and Jane. M. Eastman
1995 *Archaeological Survey and Limited Testing, Site 31BF43, Windmill Point, Beaufort County, North Carolina.* Ms. on file, Coastal Carolina Research, Tarboro, North Carolina.

Lautzenheiser, Loretta, Patricia Samford, Jaquelin Drane Nash, Mary Ann Holm, and Thomas Hargrove
1998 "*I Was Moved of the Lord to Go to Carolina. . ."; Data Recovery at Eden House, Site 31BR52, Bertie County, North Carolina,* Volume 1. Ms. on file, Coastal Carolina Research, Tarboro, North Carolina.

Lautzenheiser, Loretta, and Jennifer Stewart
2006 *Archaeological Survey and Limited Testing, Sites 31CK9 and 31CK129 Currituck County, North Carolina*. Ms. on file, Coastal Carolina Research, Tarboro, North Carolina.

Miller, George L., Patricia Samford, Ellen Shlasko, and Andrew Madsen
2000 Telling Time for Archaeologists. *Northeast Historical Archaeology* 29: 1-21.

NCFMIS
2005 North Carolina Floodplain Mapping Information System, On-Line Flood Maps. Electronic document, http://www.ncfloodmaps.com, accessed October 21, 2005.

Phelps, David S.
1980 National Register of Historic Places Nomination Form, Site 31CK9. Ms. on file, North Carolina Office of State Archaeology, Raleigh.

1983 Archaeology of the North Carolina Coast and Coastal Plain: Problems and Hypotheses. In *The Prehistory of North Carolina*, edited by M. A. Mathis and J. J. Crow, pp. 53-81. North Carolina Division of Archives and History, Raleigh.

Powell, William S.
1989 *North Carolina Through Four Centuries*. University of North Carolina Press, Chapel Hill.

Quinn, David Beers, editor
1955 *The Roanoke Voyages 1584-1590.* The Hakluyt Society, London.

Quinn, David, and Alison Quinn
1982 *The First Colonists: Documents on the Planting of the First English Settlement in North America 1584-1590.* North Carolina Department of Cultural Resources, Raleigh.

Rawlins, Wade
2009 Rising Seas a Serious Threat to N.C. Coast, Feds Say. *The News and Observer* 21 January:1B, 2B. Raleigh.

Reed, C. Wingate
1962 *Beaufort County: Two Centuries of Its History*. Edwards and Broughton Co., Raleigh.

Williams, Talcott
1896 The Surroundings and Site at Raleigh's Colony. In *Annual Report of the American Historical Association 1895.* Government Printing Office, Washington, D.C., pp. 47-61.

Winslow, Raymond, and Catherine Cockshutt
1974 National Register of Historic Places Nomination Form, Sutton-Newby House, Perquimans County, North Carolina. Ms. on file, Division of Archives and History, Raleigh.

ROCK FEATURES OF WESTERN NORTH CAROLINA

Cheryl Claassen
Mary Elizabeth Compton

Abstract

Caves and rock shelters are typically treated as habitation spaces. In this paper we survey the potential for both to have been used in several ritualized ways. One use appears to have been for menstrual and birthing retreats, which were abandoned when a death occurred. Another use is the burial cave. Fauna, burial position, and rock art are some of the clues to ritual use. We will highlight several other landscape features that may have been revered as well. An inventory of recorded caves and shelters is provided.

Rock shelters, caves, sinkholes, knobs, bluffs, pools, waterfalls, springs, hot springs, rocks resembling humans, cliff faces, projecting rock, and other rocky or watery forms have been viewed with respect for thousands of years, and people traversing western North Carolina were no exception. Numerous authors and dozens of creation stories have documented Native American concepts of stone people as the earliest inhabitants of this world (Irwin 1994) and as the ultimate form taken by some fleshy humans. They also have documented the living attributes of stone: riverbed rocks sing (Milne 1995), sweat lodge rocks hear (Irwin 1994:175), mountains move (Iroquois origin of false face), crystals contain the soul of priests or can absorb sickness from a patient (Furst 1995:55), and sacred bundle rocks reproduce (Irwin 1994: 224). Bluffs and mountains hide the houses, lodges, and caves of spirits (Irwin 1994), and are the sources of animals, plants, rain, thunder, lightning (Bassie-Sweet 1996, Irwin 1994), and humans themselves, said the Alabamu, the Caddo, the Muskogee, the Choctaw, and the Iroquois (Gatschet 1884:187, 218, 230). Children were referred to as "the chips", "the flakes" by the Aztecs (Miller and Taube 1993). Historic accounts tell us that rock shelters and caves were good places for seeking visions, birthing and sweating (Moyes 2005), training as a weather shaman (Hayden 2005:23-25) or curer (Hayden 2005:26) or for diagnosing ills (Hayden 2005:26), and for burial (e.g., Hayden 2005:31), including the bodies of illegitimate children (Denig 1930). Rituals known to have occurred in caves are those for renewal of life forms, of communities, and for rain (Claassen 2011). Arrow offerings were common at caves on the Plains (Sundstrom 2000), and miniature weavings and weaving equipment are still important offerings in caves in northern Mexico (Claassen 2011; Schaefer 2002). Hunting shrines are typically situated in rock shelters in the Maya area (Brown 2005). Oracles were consulted in several caves (Teotihuacan, Wixarika [Schaefer 2002]), probably including one in North Carolina. Here in western North Carolina we have an entire culture group whose name derives from our region of caves—the Cherokee (James 2006; answers.com/topic/cherokee).

PROBABLE RITUAL PLACES AND FUNCTION IN WESTERN NORTH CAROLINA

Grandfather Mountain was surely a stone person and the caves near its top important destinations for sacred acts. The Blowing Rock retains an Indian affiliation today which emphasizes the powerful winds to be felt there, winds that can carry both human and prayer upward. Throughout western North Carolina we have other obvious candidates for sacred places: Stone Mountain, Linville Falls, Linville Cavern, Chimney Rock, Opera Box, Hickory Nut Falls, and Bat Cave. A mythscape important to the Cherokee (Ashcraft and Hansen 2009) involved Looking Glass Rock, Devil's Courthouse Rock, and Judaculla Rock. There are hundreds more such rocky or watery features.

There is a minimum of 123 rock shelters on record as sites in western North Carolina (Appendix 14-A). Fifteen have had testing. While archaeologists are quick to interpret rock shelters as habitation sites with the implications of short-term occupation by family units, few rock shelters are large enough or the debris extensive enough to support such an interpretation. If we think instead of rock shelters as retreat places where only one person at a time might be present, or a group for fewer than 48 hours, then both the size of geological feature and amount of debris often provide a better fit. Individuals in seclusion or taking medicine, or seeking a vision, may well have been the occupants. In larger shelters group initiations may have occurred.

Women's Seclusion Loci

Woman removed from their communities during their menses and after birthing in numerous native cultures (Galloway 1997). While Europeans recorded menstrual huts at some Southeastern towns, it is quite possible that rock shelters were used for both types of seclusion when they were available. The tiny Charles Church shelter in Watauga County is a possible example of the women's seclusion shelter. Here the skeleton of a 20 year old woman and bones of a peri-natal infant were encountered. Whyte (2004) suggested that this rock shelter had been a birthing shelter. This is one of hundreds of shelters in the eastern United States where the body of a single woman has been found, suggesting that a birthing/seclusion/medicine shelter was abandoned after the death of a user.

Artifacts from Church rockshelter included a clay pipe, several thousand animal bones, and mussel shells. While mussel shells may be food debris, some valves may also be the special utensil that menstruating women reportedly used, the "shell spoons" of numerous reports (e.g. Webb and Funkhouser 1936), shells being a symbol of rebirth and fertility (Claassen 2008b). Activities that a woman may have engaged in while in seclusion are fiber processing, braiding, weaving, nut oil rendering, bathing, and pecking "hominy holes" (Claassen 2007).

In Kentucky there is a high correlation between rock shelters with so called hominy holes and rock art, forcing an acknowledgement that rock art at shelters may have been produced by women (Isom 2004). In North Carolina there is a similar situation found at 31Tv732, Parker Creek (Scott Ashcraft field report) in Transylvania County. The rock art here consists of a pecked cupule and crescent. This place too might have been a "women's shelter".

Dog Ritual Place

A rock shelter with this possible ritual function may be Hidden Valley Rock Shelter in Bath County, Virginia. Here, two dog skulls were buried after the deposition of an infant (3–9 months old), and a 12–14 year old adolescent whose bones, when excavated, were mingled with numerous bones from a male. While the infant appears to have been a primary burial, the adolescent and male could have been secondary burials.

Claassen (2008a) has recently argued that dog burials are indicative of a rebalancing ritual performed most often at Archaic shell mounds and secondarily at caves, places appropriate for renewal. The Cherokee exemplify this belief about dogs (James 2006). Dog skulls, as well as entire carcasses, appear to have been used for rituals beginning in the Archaic (e.g., at the Kirkland site [Webb and Haag 1947]).

Hunting Shrines

In addition to the possible retreat function for Charles Church rockshelter in Watauga County, we propose that this “shelter” was also a hunting shrine at some time. Hunting shrines at rock shelters are still in use today among the Maya where literally thousands of bones from each animal killed have been returned to the Guardian of the Animals (Brown 2005). Tom Whyte has inventoried 7,506 bone fragments of at least 32 taxa from the seven square meters excavated at Charles Church shelter, including no more than one individual of several species. Thousands of bones were encountered in Parker Creek, another possible seclusion place, in the homeland of Judaculla the hunter (Rodney Snedeker, personal communication, October 2009).

Initiation Places/Training Places/Oracle Places

Among the caves where training and privation could have occurred are Bat Cave and Linville Caverns. Rock shelters that possibly could have served these functions would be larger than usual or darker than usual. Raven Rock in Cherokee County is a good candidate for an initiation location, judging from its large interior space; but until the roof fall is removed it will remain unexplored. Ashe County’s Ah45 is another large shelter, adjacent to a smaller shelter with a spring at the back.

Arrow Places

By this label is meant a place where points and chipped items in general were appropriately left as offerings or as bait to call out a deity or spirit that was particularly attracted to stone. Boone Fork Rockshelter and Ward Rockshelter, tested by Burt Purrington, are candidates for this type of place given the metric of one point every 1.47sq ft and one point every 0.9 sq ft.

Healing Places

Boone Fork Rockshelter is a candidate for a place where either healing occurred or a healer’s equipment was stored. Several quartz crystals were recovered.

SUGGESTIONS FOR FUTURE WORK

There is much to be done in the form of survey, testing, and excavation, including:

- Excavate larger areas of these sites—the majority of the 16 rock shelters that have been tested in western NC have exposures of fewer than 5 sq meters!

- Analyze ceramics, lithics, and fauna, and produce a report.

- Collect different faunal data than usual. There is reason to think that for offerings of fauna specific parts of the animal may have been used—particularly heads, wings, left sides—and that small animals were appropriate offerings. Faunal reports should strive to record parts and sides of all species and eliminate assumptions about accidental species.

- The presence of water is very important in some rituals and rock features with streams or springs were quite important ritually. We need to record the presence of water, distance to water, and the distance to any springs and waterfalls if known.

- Collaborate with cavers and hikers to record caves and shelters with artifacts. We also need to collaborate with geomorphologists and each other.

Reading ethnographies from Mexico and the United States, it is clear that many caves and rock shelters were frequently ritual loci. They were destinations for pilgrimages (e.g., Gatschet 1884), settings for specific rituals, and figured in annual rounds of ritual performance (see various articles in Brady and Prufer 2005; Prufer and Brady 2005).

Some ritually important rock shelters were "owned" by communities and the more scarce caves were often shared by several communities and distant pilgrims. Another suggestion is that we should be situating rock shelters and caves in a social environment, not only recording their geological and physical settings. Where would women seeking seclusion or individuals being initiated most likely have come from?

A quantification of the economic endeavor represented by stone, clay, bone, and shell items left at one ritual cave in Mexico (Dos Pilas) and its corresponding community found that 50% of the items recovered were found in the cave—representing a tremendous expenditure of human labor and resources for an Underworld ritual context (Brady 2005). We suggest that such an undertaking be performed for a cave or shelter and the corresponding habitation site.

Finally, we should stop assuming that rock shelters and caves were places for family campouts and begin to test alternative hypotheses for their uses. These and other landscape features were key elements in cosmology and ritual that we archaeologists have yet to appreciate.

REFERENCES CITED

Ashcroft, Scott, and Lorie Hansen

2009 The Cherokee's Tsul Kalu, and the Judaculla Rock petroglyphs of western North Carolina. Paper presented at the annual meeting of the Society for American Archaeology, Atlanta.

Bassie-Sweet, Karen

1996 *At the Edge of the World: Caves and Late Classic Maya World View*. University of Oklahoma Press, Norman.

Brady, James

2005 The Impact of Ritual on Ancient Maya Economy. In *Stone Houses and Earth Lords: Maya Religion in the Cave Context*, edited by Keith Prufer and James Brady, p. 115–134. University Press of Colorado, Boulder.

Brady, James, and Keith Prufer (editors)

2005 *In the Maw of the Earth Monster*. University of Texas Press, Austin.

Brown, Linda

2005 Planting the Bones: Hunting Ceremonialism at Contemporary and Nineteenth-Century Shrines in the Guatemalan Highlands. *Latin American Antiquity* 16(2):131–146.

Claassen, Cheryl

2007 Newt Kash Rock Shelter: A Menstrual Retreat? Paper presented at the annual meeting of the Society for American Archaeology, Austin.

2008a Archaic Dog Burials. Paper presented at the annual meeting of the Southeastern Archaeological Conference, Charlotte.

2008b Shell Symbolism in Pre-Columbian North America. In *Early Human Impact on Megamolluscs*, edited by Andrzej Antczak and Roberto Cipriani, p.231–236. British Archaeological Reports S1865.

2011 A Tradition of Cave Rituals. In *Enduring Motives: The Archaeology of Tradition and Religion in Native America,* edited by Linea Sundstrom and Warren DeBoer, in press. University of Alabama Press, Tuscaloosa.

Denig, Edward

1930 Indian Tales of Upper Missouri. D.C., Government Printing Office.

Furst, Jill

1995 *The Natural History of the Soul in Ancient Mexico*. Yale University Press, New Haven.

Galloway, Patricia
1997 Where Have All the Menstrual Huts Gone? The Invisibility of Menstrual Seclusion in the Late Prehistoric Southeast. In *Women in Prehistory: North America and Mesoamerica*, edited by Cheryl Claassen and Rosemary Joyce, p.47–64. University of Pennsylvania Press, Philadelphia.

Gatschet, Albert
1884 *A Migration Legend of the Creek Indians*. Brinton's Library of Aboriginal American Literature. Number IV. D.G. Brinton, Philadelphia.

Heyden, Doris
2005 Rites of Passage and Other Ceremonies in Caves. In *In the Maw of the Earth Monster*, edited by James Brady and Keith Prufer, p.21–34. University of Texas Press, Austin.

Irwin, Lee
1994 *The Dream Seekers: Native American Visionary Traditions of the Great Plains*. University of Oklahoma Press, Norman.

Isom, Cecil
2004 Farming, Gender, and Shifting Social Organization: A New Approach to Understanding Kentucky's Rock-Art. In *The Rock-Art of Eastern North America: Capturing Images and Insight*, edited by Carol Diaz-Granados and James Duncan, p. 177–189. University of Alabama Press, Tuscaloosa.

James, Jenny
2006 The Dog Tribe. *Southern Anthropologist* 32(1-2):17–46.

Miller, Mary, and Karl Taube
1993 *An Illustrated Dictionary of The Gods and Symbols of Ancient Mexico and the Maya*. Thames and Hudson, London.

Milne, Courtney
1995 *Sacred Places in North America: A Journey into the Medicine Wheel*. Stewart, Taboir and Chang, New York.

Moyes, Holly
2005 The Sweatbath in the Cave: A Modified Passage in Chechem Ha Cave, Belize. In *Stone Houses and Earth Lords: Maya Religion in the Cave Context*, edited by Keith Prufer and James Brady, p. 187–212. University Press of Colorado, Boulder.

Prufer, Keith and James Brady (editors)
2005 *Stone Houses and Earth Lords: Maya Religion in the Cave Context*. University Press of Colorado, Boulder.

Schaefer, Sally
2002 *To Think With a Good Heart.* University of Utah Press, Salt Lake City.

Sundstrom, Linea
2000 Blind Encounters: Archaeologists and Sacred Sites in the Northern Plains. Paper presented at the Annual Meeting of the Plains Anthropological Conference, Saint Paul.

Webb, William, and William Funkhouser
1939 Rock Shelters in Menifee County Kentucky. Department of Anthropology and Archaeology, University of Kentucky, Lexington 3(4).

Webb, William, and William Haag
1947 *Archaic Sites in McLean County, Kentucky*. University of Kentucky Reports in Anthropology 7(1). Lexington.

Whyte, Thomas
2004 A Whodunnit Case and What's Left of Yates Rockshelter in Valle Crucis, NC. Paper presented at the annual Uplands Conference.

APPENDIX 14-A

CAVE AND ROCKSHELTER SITES OF WESTERN NORTH CAROLINA

Ashe County
31AH7
31AH14
31AH43
31AH45
31AH46
31AH52
31AH53
31AH54
31AH76
31AH77
31AH90
31AH91
31AH107
31AH108
31AH109
31AH110
31AH112
31AH113
31AH114
31AH118
31AH119

Alleghany County
31AL1
31AL9
31AL12
31AL14
31AL15
31AL54
31AL55
31AL56
31AL67
31AL68
31AL88
31AL90

Avery County
31AV29
31AV60
31AV89
31AV90

Alexander County
31AX1

Burke County
31BK14
31BK42
31BK43
31BK77
31BK387
31BK469

Buncombe County
31BN201
31BN202
31BN203
31BN410
31BN464

Caldwell County
31CW036

Graham County
31GH299

Haywood County
31HW149
31HW231

Jackson County
31JK210

Macon County
31MA135
31MA427

McDowell County
31MC127
31MC128
31MC195

Polk County
31PL4
31PL5

Swain County
31SW144
31SW145
31SW148
31SW493

Stokes County
31SK128

Transylvania County
31TV589
31TV590
31TV726

31TV732
31TV740
31TV742
31TV911
(Petroglyphs)
31TV958
(Petroglyphs)

Watauga County
31WT19
31WT 39
31WT 40
31WT 48
31WT51
31WT59
31WT63
31WT79
31WT80
31WT81
31WT82
31WT83
31WT105
31WT121
31WT126
31WT127
31WT135
31WT136
31WT137
31WT151
31WT153
31WT154
31WT155
31WT157
31WT188
31WT205
31WT212
31WT215
31WT216
31WT217
31WT224
31WT225
31WT226
31WT228
31WT229
31WT230
31WT231
31WT232
31WT233
31WT234
31WT236
31WT243
31WT244
31WT245
31WT246
31WT252
31WT310

Yancey County
31YC11
31YC163

These site numbers were generated by searching the NC site file data base using keyword “cave”, “rock shelter”, bluff in site function and site type fields. Site numbers for Ashe Co were also augmented by reading the New River survey report. Beth Compton generated the list.

COLLISION AT THE CROSSROADS: CONFUSION IN THE LATE WOODLAND PERIOD (A.D. 800–1400) OF NORTHWESTERN NORTH CAROLINA

Thomas R. Whyte

THE LOST LATE WOODLAND PERIOD IN THE APPALACHIAN SUMMIT

As a child I was warned of the dangers of busy intersections. Not one to heed a mother's advice, I find myself confronted with the study of the prehistory of the Appalachian Summit, a veritable "cultural crossroads." It is not a place in which typologies and stratigraphy are consistent between sites or where one stratified site can serve as the type proxy for the entire region. One can no more generalize about the region's prehistory than about the region's weather. This is especially the case for later prehistory. Cultural and typological heterogeneity in many physiographic regions appears with the onset of sedentism. This is perhaps punctuated in regions such as the Appalachian Summit, characterized by more extreme variation in elevation, geomorphology, and hydrology. Moreover, since it is a cultural crossroads, what we tend to see is a blending of influences from all fronts rather than the convenient building blocks of phases and foci that form the foundations of traditional culture histories. Yet our predecessors made bold attempts to identify and organize these blocks of time and space from the chaos of the archaeological evidence at hand.

The earliest "archaeology" in the Appalachian Summit, like that of other areas of the Southeast, emphasized the mining of mounds for museum collections. The Garden Creek mounds in Haywood County were a favored source (Keel 1976). The later Depression Era archaeology (e.g., Setzler and Jennings 1941) and the Cherokee Project of UNC also attended much to the mounds because of what had been found by earlier excavators and their potential connection to the historic Cherokee.

The early results of the Cherokee Project, especially the oft-cited dissertations and books of Bennie C. Keel (1972; 1976) and Roy S. Dickens, Jr. (1970; 1976) serve as the foundations of Appalachian Summit typologies, cultural sequences, and other frameworks of archaeological reference, yet they are based largely on two sites: Garden Creek Mound No. 2 (31HW2) in Canton, North Carolina, and Warren Wilson (31BN29) on the Swannanoa River just east of Asheville. Neither intended his work to define cultural sequences for the entire region, yet for decades we have vainly pigeonholed our findings from new sites into the compartments conveniently provided in these and other handy publications such as Coe's (1964) *The Formative Cultures of the Carolina Piedmont*. This has resulted in some frustration for later prehistory, and particularly with regard to the elusive Late Woodland period. Indeed, evidence of a Late Woodland period was all but lacking in the part of the state on which the Cherokee project was focused. Keel (1976:239) concluded that by A.D. 600 the Connestee (Middle Woodland) phase "had evolved into a transition phase which would develop into the Pisgah (Mississippian) phase." Wetmore (2002:266) observes, "…no changes in material culture or subsistence or settlement patterns have been identified that would indicate an intervening cultural manifestation between the Connestee and Pisgah phases." In his overview of North Carolina mountain prehistory Burton L. Purrington (1983:142) said, "At the present time the Late Woodland period…in the Appalachian Summit is very poorly understood and no phase has been defined."

Jeff Chapman (1985:72), in discussing the Tellico project of the neighboring Ridge and Valley to the west noted "Unfortunately no sites were excavated on which a Late Woodland component could be isolated. The situation is probably due to our inability to recognize artifacts that are distinct to this period; on the sites we can identify, the artifacts are associated with and dated to the phase transitional to the Mississippian period." More recently, Ward and Davis (1999:157) wrote "At present, the cultural dynamics and stylistic markers of the Late Woodland period in the Appalachian Summit region are poorly understood. Currently, only ideas, suggestions, and hypotheses can be offered to fill the void between the Middle Woodland period and the beginning of the Mississippian period."

This statement implies that (1) a Late Woodland period is required in a sequence where there is a Middle Woodland period, and (2) a Mississippian period *should* be expected to exist throughout the Appalachian Summit, as it does in the small part of the Appalachian Summit where the University of North Carolina Research Laboratories of Archaeology has focused its Cherokee Project. Thus, our tried but not true cultural sequences fail to accommodate contemporaneous cultural (e.g., Woodland and Mississippian) patterns much like unilinear evolutionary schemes in paleontology fail to accommodate contemporaneous fossil congeners. Because the founders of our historical cultural units were working in a part of the mountains where evidence of a Late Woodland period was not discovered, we have failed to recognize the existence of Late Woodland evidence in other parts of the region and have stretched the existing Mississippian types (e.g., Pisgah) to accommodate that evidence. As aptly noted by Ward and Davis (1999:160), "some of the ideas and interpretations gleaned from these (Warren Wilson site) excavations may have been stretched beyond their limits to include areas of the region to which they may not necessarily apply."

For example, the Mississippian Pisgah phase was created on the basis of distinctive pottery, formally named and described by Patricia Holden (1966), and later embellished with architectural, settlement, and subsistence traits and temporal and geographic dimensions by Dickens (1970; 1976). Subsequently, archaeologists have assigned sites to the Mississippian Pisgah phase on the basis of a single ceramic trait—the distinctive Pisgah style punctuated collared vessel rim—even when most other traits of the ceramics, the architecture, political structures, and the relative dietary contribution of maize do not describe the phase or South Appalachian Mississippian culture in general. This was the case for the Ward site (31WT22) on the Watauga River in western Watauga County. Observing the prevalence of the distinctive Pisgah-style punctated collared rim in the ceramic assemblage, Ayers et al. (1980) and Purrington (1983) defined the site as a prehistoric Pisgah phase village, although the site has no mound, no double palisade, no rectangular architecture, nor evidence of maize dependence, and the ceramics generally lack other attributes (tempering and surface treatments) distinctive to the Pisgah type (Whyte 2003).

Mississippian chiefdoms did exist in the gentler climes and broader fertile floodplains of the larger valleys of the Appalachian Summit foothills and adjacent Ridge and Valley province. The existence of these Mississippian "outliers" or "frontiers," showing less evidence of maize dependence than places in the heart of Mississippia, has been explained by their proximity to important trade routes, sources of important commodities, or resource-rich ecotones (Beck and Moore 2002; Myers 2002). South Appalachian Mississippian phases recognized in western North Carolina include Pisgah (A.D. 1000–1450) concentrated at the headwaters of the French Broad and Little Tennessee Rivers (Dickens 1978), Qualla (A.D. 1450–1600) found in southwestern North Carolina at the headwaters of the Hiwassee and Little Tennessee rivers

(Dickens 1978), and Burke (A.D. 1300–1600) concentrated in the upper Yadkin and Catawba River valleys (Beck and Moore 2002). Pottery of these phases is found in small amounts outside of these areas of concentration and in the higher elevations of the Appalachian Summit. For example, Burke and Pisgah series pottery sherds occur in small numbers at sites such as the Ward site (31WT22) and Charles Church Rockshelter (31WT255) near the headwaters of the Watauga. In other words, the higher elevations of the North Carolina Appalachian Summit, drained by the Watauga, Yadkin, Catawba, and New River headwaters, was only brushed by the eddies of South Appalachian Mississippian culture as it was by the preceding Hopewell influences. This brushing likely involved some exchange of goods and ideas and some transhumance. But the Eastern Woodland cultural tradition of egalitarian societies supported by hunting, gathering, and maize horticulture remained intact until sustained European contact.

THE FOUND LATE WOODLAND PERIOD IN THE APPALACHIAN SUMMIT

Adoption of pottery, diminishing use of soapstone and large stone knives, and changes in projectile point size and hafting are the primary observable differences between Late Archaic and Woodland period culture in the region. From 1000 B.C. to A.D. 900, there is no definable deviation from the established Archaic period pattern of cyclical migration, consisting of seasonal visits to the higher elevations. While variations in archaeological evidence across this span of time may be more evident at lower elevations to the east and west, where the same players may have resided for the rest of the year, use of the higher elevations by these populations remained consistent until the onset of the Medieval Warm and the adoption of Flint maize permitted permanent residence (Whyte 2003, 2010a). Indeed, most of the larger base camps, whether found on river terraces such as the Colvard II site (31AH266) in Ashe County (Whyte 2010b) or on high elevation gaps or springheads such as Wakeman 3 (31WT219) in Watauga County (Purrington 1983), contain Late Archaic, Early Woodland, and Middle Woodland components.

Seasonal use of the higher elevations in Northwestern North Carolina prior to the Medieval Warm is evidenced in many ways. One example is the distribution of limestone-tempered net-impressed pottery along the Watauga River in western Watauga County. Recovered in abundance at the Ward site, this was originally considered contemporaneous with the village structure. A vertical distribution analysis of ceramic tempering and other attributes within the site's profile, however, indicates otherwise. In some parts of the site there is a dark artifact rich alluvium beneath the plowzone. Radiocarbon dates on charcoal from this zone range from A.D. 1010 to 1280. Limestone tempering increases with depth. Although some limestone tempered and net impressed pottery on the site is Late Woodland (possibly Radford series), and some sport the Pisgah-style rim, much probably represents a late Middle Woodland *seasonal* contribution. Similar pottery was found in late Middle Woodland contexts along with Candy Creek cord-marked pottery and dated to A.D. 630–660 just 20 kilometers downstream at a site (40JN89) now under Watauga Reservoir (Boyd 1986). Further evidence that seasonal visitors with their limestone-tempered pottery migrated up river from the west is revealed by a decreasing presence of limestone-tempered sherds in rockshelters along the Watauga (Figure 15-1). The Ward Shelter site (31WT126), just across the Watauga River from the Ward site village (31WT22), contained the most limestone-tempered pottery (10%). The Charles Church

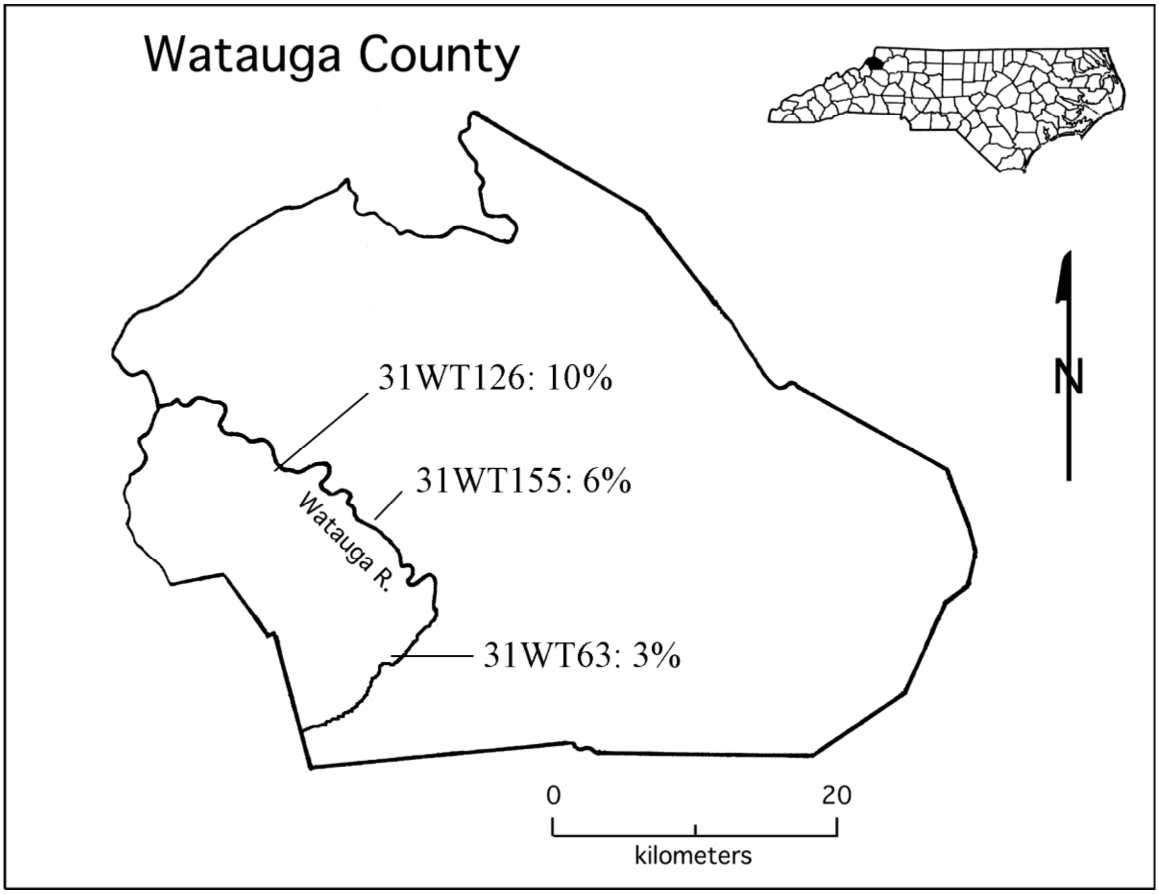


Figure 15-1. Diminishing evidence of limestone tempering at rockshelter sites along the Watauga River.

Rockshelter (31WT155) located 4.5 miles upriver contained 6%, and the Devil's Den Rockshelter (31WT63) located 7.5 miles further upriver contained the least (3%).

In contrast, very different and more complicated cultural currents were affecting human life to the immediate south, such as in the Asheville Basin and the headwaters of the Pigeon River, where Hopewellian influences led to the establishment of ceremonial mound centers at Biltmore (Kimball et al. 2010) and Garden Creek (Keel 1976). These Middle Woodland, Connestee phase village and mound complexes, and the travel-ways that linked them with more complex societies of the larger Southeast, arguably etched a cultural landscape that would influence the shape of subsequent Appalachian Summit Mississipian culture. This had little noticeable impact on Woodland societies utilizing the mountains of the northern counties.

The Late Woodland period emerges with the Medieval Warm climatic episode at about A.D. 900, when villagers and maize gardeners, possibly the descendents of earlier groups using the uplands only seasonally, expanded into the higher valleys (Whyte 2003). Global warming and Flint maize, which matures more quickly than its progenitors, permitted permanent residence for the first time above 2,500 ft. Dozens of these high-elevation residential sites have been identified, but few have been excavated. The Ward site, a palisaded village with circular houses on the Watauga River (Figure 15-2), was built, occupied, and abandoned sometime between A.D. 900 and 1300 (Whyte 2003). Most of the Late Woodland pottery from the Ward site, contemporaneous with the permanent village occupation, is tempered with crushed local mica

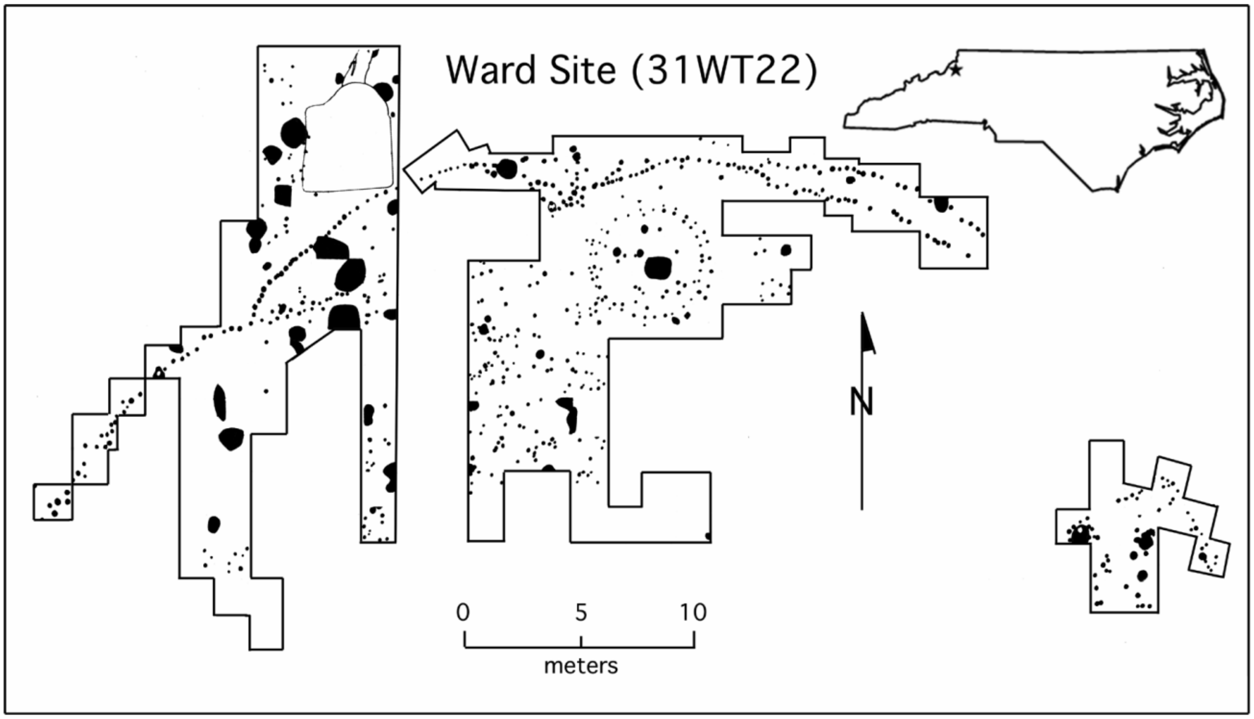


Figure 15-2. Excavation plan view of the Ward site (31WT22), Watauga County, North Carolina (from Whyte 2003).

schist or grit, is net impressed or rectilinear stamped, and boasts the classic Pisgah style rim (Figure 15-3). Collared and thickened rims, copied from Mississippian neighbors to the south and west, may have conferred an advantage by strengthening otherwise vulnerable rims; punctations, while decorative and undoubtedly symbolic (Whyte et al. 2011), were necessary for even firing.

Another site in the region providing evidence of a Late Woodland period residence with architecture preceded by Early and Middle Woodland seasonal components is located along a headwater stream of the South Fork of the New River (Figure 14-4). At the Katie Griffith site (31WT330), Late Woodland period pottery (Figures 15-5 and 15-6) is either net-impressed, rectilinear-stamped, or both, has scraped interiors, is tempered with either crushed soapstone or quartz, and also boasts the Pisgah rim (Whyte 2003). The paste contains an abundance of amphibolite grains, an unavoidable component of locally derived clays. In contrast, Early Woodland Swannanoa cord and fabric-marked pottery tempered with alluvial quartz sand, contains *no* amphibolite grains, indicating a more distant place of manufacture. This also is revealed in the site profile by a downward decrease in frequency of sherds containing amphibolite. In other words, people bearing non-locally made ceramics seasonally visited the site prior to the Medieval Warm period. The Late Woodland occupation is radiocarbon dated to about A.D. 1300 and is characterized by permanent architecture (a single residence) and locally made ceramics that, like those of the Ward site (Mathis and Moore 1984), have technological affinities with the Late Woodland Dan River and related Wythe series prevalent to the east and north, but exhibit the classic “Pisgah” rim, a likely borrowing from Mississippian neighbors to the south (Whyte 2003).

Figure 15-3. Pottery rim sherds from the Ward site (31WT22), Watauga County, North Carolina (from Whyte 2003).

Evidence of permanent residence in the northern part of the region disappears with the intensification of the Little Ice Age into the fifteenth century. When the Moravian August Spangenberg passed by the headwaters of the Watauga and South Fork of the New rivers in December 1752, he encountered no humans or evidence of them (Arthur 1915).

SUMMARY

In sum, it appears that the early history of Appalachian Summit archaeology, emphasizing tantalizing mound sites and a search for a prehistoric archaeological record of a historic tribe, influenced a focus on southwestern portions of North Carolina. Therein typologies and other archaeological constructs became established and assumed applicable to the broader Appalachian Summit region, thus resulting in an academic ignorance of the Woodland period of other parts of the region. Evidence indicates only seasonal use of the northern Appalachian Summit prior to the onset of the Medieval Warm period, which coincides with and likely made possible the appearance of more sedentary, horticultural village life at the start of the Late Woodland period. This Late Woodland period, previously confused with Mississippian because of pottery rim forms and decorations, may be characterized by nucleated and then disbursed village settlement, circular architecture (nearly a universal symbol of egalitarian society), and

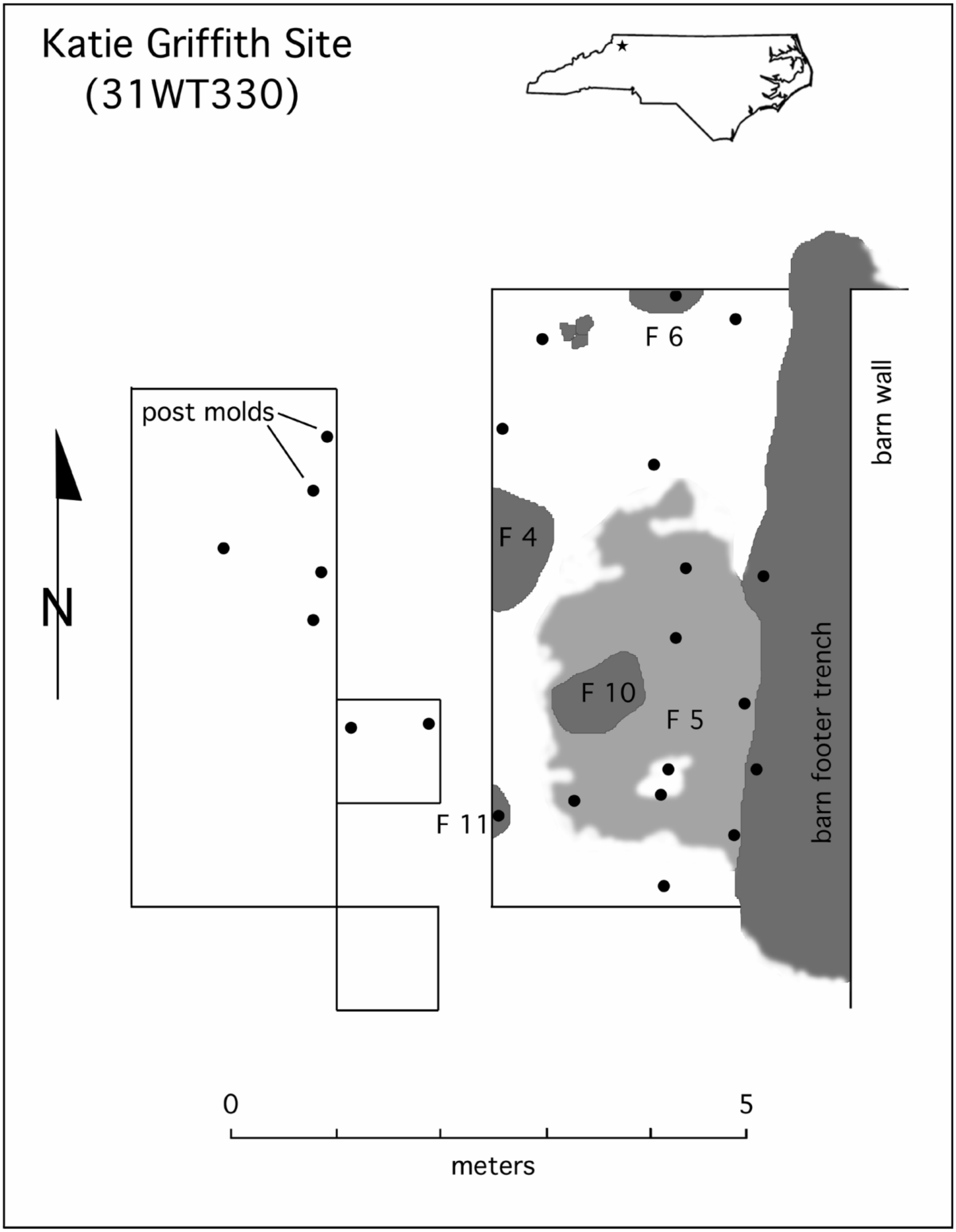


Figure 15-4. Excavation plan view of the Katie Griffith site (31WT330), Watauga County, North Carolina (from Whyte 2003).

Figure 15-5. Pottery rim sherds from the Katie Griffith site (31WT330), Watauga County, North Carolina (from Whyte 2003).

Figure 15-6. Pottery vessel body sherds from the Katie Griffith site (31WT330), Watauga County, North Carolina, showing rectilinear stamping (top row) and rectilinear stamping over net impressing (bottom row) (from Whyte 2003).

hunting, gathering, and horticulture, and has its strongest archaeological affinities with the Dan River and related phases downhill and to the east. Marginal Mississippian influence is reflected in the borrowing of ceramic motifs and the *occasional* presence of Pisgah and Burke series ceramics, possibly resulting from human transience or exchange from the south and west. The Appalachian Summit, long assumed to have been a homogeneous prehistoric cultural-geographical unit (Kroeber 1939), was indeed a cultural crossroads where a Woodland-Mississippian frontier existed in late prehistory, perhaps at or near the Toe River.

REFERENCES CITED

Arthur, John P.

1915 *A History of Watauga County, North Carolina*. Everett Waddey Co., Richmond.

Beck, Robin A., and David G. Moore

2002 The Burke Phase: A Mississippian Frontier in the North Carolina Foothills. *Southeastern Archaeology* 21:192–205.

Boyd, C. Clifford, Jr.

1986 *Archaeological Investigations in the Watauga Reservoir, Carter and Johnson Counties, Tennessee.*University of Tennessee Department of Anthropology Report of Investigations No. 44 and Tennessee Valley Authority, Publications in Anthropology, No. 46.

Chapman, Jefferson

1985 *Tellico Archaeology: 12,000 Years of Native American History*. Publications in Anthropology No. 41, Tennessee Valley Authority.

Coe, Joffre L.

1964 *The Formative Cultures of the Carolina Piedmont*. Transactions of the American Philosophical Society 54, pt 5.

Dickens, Roy S., Jr.

1970 The Pisgah Culture and its Place in the Prehistory of the Southern Appalachians. Unpublished Ph.D. dissertation, University of North Carolina, Chapel Hill.

1976 *Cherokee Prehistory : The Pisgah Phase in the Appalachian Summit Region*. The University of Tennessee Press, Knoxville.

1978 Mississippian Settlement Patterns in the Appalachian Summit Area: The Pisgah and Qualla Phases. In *Mississippian Settlement Patterns*, edited by B. D. Smith, pp. 115–139. Academic Press, New York.

Holden, Patricia P.

1966 An Archaeological Survey of Transylvania County, North Carolina. Unpublished M.A. thesis, University of North Carolina, Chapel Hill.

Keel, Bennie C.

1972 Woodland Phases of the Appalachian Summit Area. Unpublished Ph.D. dissertation, University of North Carolina, Chapel Hill.

1976 *Cherokee Archaeology: A Study of the Appalachian Summit.* University of Tennessee Press, Knoxville.

Kimball, Lary R., Thomas R. Whyte, and Gary D. Crites
2010 The Biltmore Mound and Hopewellian Mound Use in the Southern Appalachians. *Southeastern Archaeology* 29:44–58.

Kroeber, Alfred L.
1939 *Cultural and Natural Areas of Native North America*. University of California Publications in American Archaeology and Ethnology 38.

Mathis, Mark A., and David G. Moore
1984 Some Thoughts on Woodland Period Ceramics from Northwestern North Carolina and Adjacent Areas. In *Upland Archaeology in the East: Symposium 2*, edited by M.B. Barber, pp. 63–74. Cultural Resources Report No. 5, Department of Agriculture, U.S. Forest Service, Washington, D.C.

Meyers, Maureen S.
2002 The Mississippian Frontier in Southwestern Virginia. *Southeastern Archaeology* 21:178–191.

Purrington, Burton L.
1983 Ancient Mountaineers: An Overview of the Prehistoric Archaeology of North Carolina's Western Mountain Region. In *The Prehistory of North Carolina: An Archaeological Symposium*, pp. 83–160, edited by M.A. Mathis and J.J. Crow. North Carolina Division of Archives and History, Department of Cultural Resources, Raleigh.

Rodning, Christopher B.
2008 Temporal Variation in Qualla Pottery at Coweeta Creek. *North Carolina Archaeology* 57:1–49.

Ward, H. Trawick, and R.P. Stephen Davis, Jr.
1999 *Time Before History: The Archaeology of North Carolina*. The University of North Carolina Press, Chapel Hill.

Wetmore, Ruth Y.
2002 The Woodland Period in the Appalachian Summit of Western North Carolina and the Ridge and Valley Province of Eastern Tennessee. In *The Woodland Southeast*, edited by D.G. Anderson and R.C. Mainfort, Jr., pp. 249–269. The University of Alabama Press, Tuscaloosa.

Whyte, Thomas R.
2003 Prehistoric Sedentary Agriculturalists in the Appalachian Summit of Northwestern North Carolina. *North Carolina Archaeology* 52:1–19.

2010a *Erethizon dorsatum* (L.) (American Porcupine) Skeletal Remains from Charles Church Rockshelter, Watauga County, North Carolina. *Southeastern Naturalist* 9:821–826.

2010b Archaeological Investigations at the Colvard II Site (31AH266) on the South Fork of the New River, Ashe County, North Carolina: Field Season 1. Report submitted to the North Carolina Division of Archives and History, Office of State Archaeology, Raleigh.

Whyte, Thomas R., Scott A. Fleeman, and Cathleen D. Evans
2011 An Alternative Ontology and Experimental Study of Pottery Punctation in Southern Appalachian Region Prehistory. *Southeastern Archaeology* 30 (in press).

CHEROKEE ETHNOGENESIS IN SOUTHWESTERN NORTH CAROLINA

Christopher B. Rodning

Dozens of Cherokee towns dotted the river valleys of the Appalachian Summit province in southwestern North Carolina during the eighteenth century (Figure 16-1; Dickens 1967, 1978, 1979; Perdue 1998; Persico 1979; Shumate et al. 2005; Smith 1979). What developments led to the formation of these Cherokee towns? Of course, native people had been living in the Appalachian Summit for thousands of years, through the Paleoindian, Archaic, Woodland, and Mississippi periods (Dickens 1976; Keel 1976; Purrington 1983; Ward and Davis 1999). What are the archaeological correlates of Cherokee culture, when are they visible archaeologically, and what can archaeology contribute to knowledge of the origins and development of Cherokee culture in southwestern North Carolina? Archaeologists, myself included, have often focused on the characteristics of pottery and other artifacts as clues about the development of Cherokee culture, which is a valid approach, but not the only approach (Dickens 1978, 1979, 1986; Hally 1986; Riggs and Rodning 2002; Rodning 2008; Schroedl 1986a; Wilson and Rodning 2002). In this paper (see also Rodning 2009a, 2010a, 2011b), I focus on the development of Cherokee towns and townhouses. Given the significance of towns and town affiliations to Cherokee identity and landscape during the 1700s (Boulware 2011; Chambers 2010; Smith 1979), I suggest that tracing the development of towns and townhouses helps us understand Cherokee ethnogenesis, more generally.

Whyte (2007) has recently made a compelling case—based on archaeological, paleoenvironmental, and linguistic evidence—that a basic adaptation to mast forests was in place throughout the Appalachians by the Late Archaic period, and that the divergence between northern Iroquoian and Cherokee groups took place in this context. If there were basic similarities in adaptations throughout the Appalachians at the end of the Archaic period, what, then, led to the development of later groups that we know as “Cherokee,” “Yuchi,” “Chisca,” and “Monongahela,” or the groups we associate with archaeological phases such as “Connestee,” “Pisgah,” “Qualla,” and “Burke”? What clues are there from Woodland, Mississippian, and protohistoric sites that can help us understand the origins and development of Cherokee culture, as such?

Eric Wolf (1984) has argued that the names with which indigenous societies are labeled—the Creeks, the Iroquois, and others throughout native America—have taken shape within larger social and cultural fields that include other native groups and the European colonists with whom they interacted. From this perspective, the larger social and cultural field that was the setting for Cherokee ethnogenesis includes Muskogean–speaking peoples south and west of the Appalachians, the Siouan–speaking peoples east of the Appalachians, Catawbas, Yuchis, Chiscas, Westoes, Spanish expeditions, English traders, and French *coureurs de bois* (Corkran 1962, 1967, 1969; Merrell 1989). Wolf (1982, 1984, 1997) argues that the history and prehistory of “indigenous societies” around the world is best understood in terms of dynamic relationships among “colonists” and “natives.” The characteristics of Native North American groups, and the names applied to them, have taken shape, in part, in response to European colonialism in the Americas. This is not to say that native societies had no sense of identity or history before European contact. They did, there had been a long history of community formation and intercommunity interaction, and this history shaped responses by native groups to

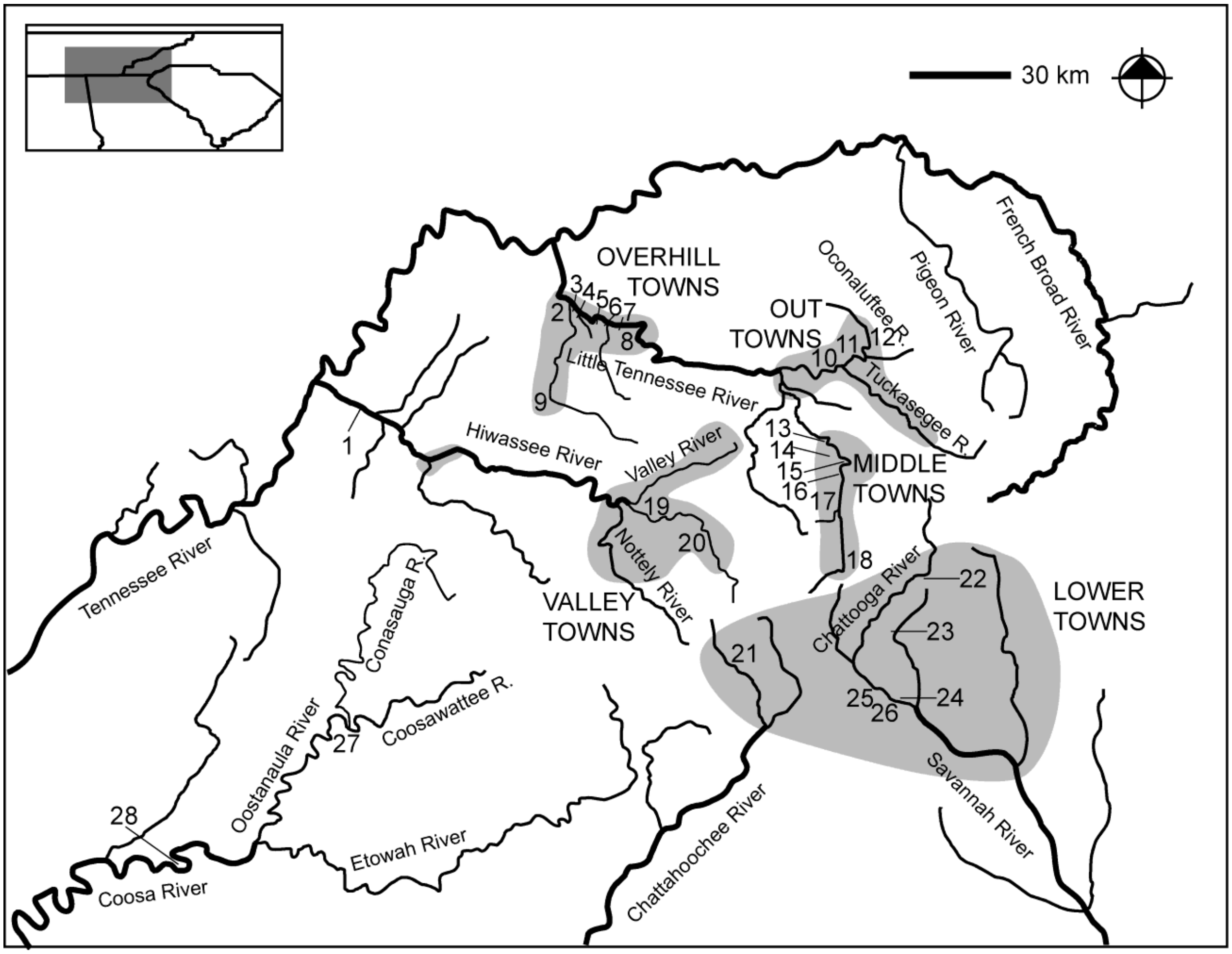


Figure 16-1. Selected archaeological sites and groups of historic Cherokee towns in the southern Appalachians (after Anderson 1994; Dickens 1979; Duncan and Riggs 2003:17; Hally 1994:168; Rodning 2008:11; Schroedl 2000:205, 2001:279; Smith 1979). Townhouses have been identified archaeologically at sites listed in italics, and ethnohistoric evidence suggests that townhouses were present at some other sites noted here, as well (Baden 1983; Chapman 1985; de Baillou 1955; Dickens 1976; Duncan and Riggs 2003; Goodwin 1977; Hally 2008; Keel 1976; Polhemus 1987; Russ and Chapman 1983; Schroedl 1978, 1986b, 2000, 2001; Smith 1992; Ward and Davis 1999; Wynn 1990). Sites shown here include: (1) *Ledford Island*, (2) *Mialoquo*, (3) *Tomotley*, (4) *Toqua*, (5) *Chota–Tanasee*, (6) Citico, (7) Chilhowee, (8) Tallassee, (9) Great Tellico/Chatuga, (10) *Kituwha*, (11) Birdtown, (12) Nununyi, (13) Cowee, (14) Joree, (15) Whatoga, (16) Nequassee, (17) *Coweeta Creek*, (18) Old Estatoe, (19) Peachtree (Hiwassee), (20) Spike Buck (Quanasee), (21) Nacoochee, (22) *Chattooga*, (23) Keowee, (24) Chauga, (25) Estatoe, (26) Tugalo, (27) *New Echota*, and (28) the *King* site. Reprinted from *American Antiquity* 74(4), © Society for American Archaeology (Rodning 2009a:628).

European colonial activity. Native North American cultures and traditions did not develop in isolation, and when Europeans landed in the Americas, they encountered native societies in the midst of making their own history.

The first written reference to a group known as the Cherokee, by that particular name, comes from Henry Woodward, the man credited with beginning the Charles Town trade with the Cherokee and other groups on the Carolina frontier (Gallay 2002). In 1674, at the newly settled Westo town on the Savannah River, Woodward encouraged the Westo to bring “deare skins, furrs and younge slaves” to trade in the following year, and he learned that in areas farther west lived "the Cowatoe and Chorakae Indians wth whom [the Westoes] are at continual warrs" (Hatley 1993:17). In 1684, the Cherokee signed a treaty with Charles Town, partly in response to Westo slave raids (Crane 1929). Before 1715, English trade networks emanating west from Charles Town focused more on the Creeks, Chickasaws, and Choctaws than on Cherokee towns (Rothrock 1976). After 1717, following Cherokee assistance to Carolina during the Yamassee War, direct and sustained trade developed between Carolina and Cherokee towns (Hatley 1993). English traders made distinctions between Lower, Middle, Out, Valley, and Overhill Cherokee towns (Smith 1979). These distinctions probably also reflect geographic, linguistic, and social distinctions within the greater Cherokee community, but the familiar locations of these groups of Cherokee towns, and the identification of them as such, are first documented in the late 1600s and early 1700s (Goodwin 1977).

Of course, there were Cherokee towns in southwestern North Carolina during the 1500s and early 1600s, before Woodward wrote about them. Spanish expeditions led by Hernando de Soto and Juan Pardo did not venture into the core areas where eighteenth–century Cherokee towns were located, but they did encounter Cherokee speakers (Booker et al. 1992; Hudson 1997). Members of the Pardo expeditions met with leaders from towns whose names are very similar to or the same as the names of eighteenth–century Cherokee towns, and they may have interacted with Cherokee people at Tocae and Cauchi, both of which were towns in western North Carolina, and both of which were probably located at or near the northeastern edge of Cherokee territory (Beck 1997; Beck et al. 2006; Hudson 2005; Moore 2002).

Shifting focus to another type of evidence, let us consider Cherokee oral traditions, as they were recorded in western North Carolina by James Mooney (1900), an ethnologist affiliated with the Smithsonian Institution, during the late nineteenth century. Mooney recorded a cosmogonic myth about how the world was made, and this myth refers to the earth as an island suspended by cords at its four corners. Archaeologists have drawn upon this and other evidence to characterize Mississippian mounds as earth icons (Knight 2006). Similarly, many Cherokee townhouses had four roof support posts placed around central hearths, perhaps symbolizing the four cords holding the earth in place (Rodning 2002, 2009a, 2010a). Public structures known as townhouses were hubs of public life and landmarks for Cherokee towns. Social groups known as towns, meanwhile, are likewise present in Cherokee myth and legend. Mooney summarized an early nineteenth–century written description of a migration legend—reportedly recited by Cherokee orators at annual Green Corn Dances until the mid–1800s—tracing the movement of *towns* from one place to another, from year to year, until those *towns* reached the Cherokee homeland in the southern Appalachians. These myths and legends identify towns, townhouses, and earthen mounds as significant components of the Cherokee cultural landscape, in its mythical and material forms.

Townhouses appear in other Cherokee myths, including those about the first Cherokee man and woman (Mooney 1900:242–250), the origin of the constellation Pleiades (Mooney 1900:258–259), and spirits who emerge from the Nequassee mound to help local warriors repel an enemy attack (Mooney 1900:336–337). In the historical myth about "The Mounds and the Constant Fire," there are references to fires that burn constantly in the Nequassee and Kituwha mounds (Mooney 1900:395–397). In the historical myth about "The Removed Townhouses," the Cherokee spirit folk known as the Nunnehi invite the Cherokee to fast for seven days in their townhouses, at which point the Nunnehi lifted those townhouses to take them into rivers and onto mountaintops (Mooney 1900:335–336). One townhouse is dropped on the ground in transit, forming an earthen mound, making symbolic connections between mountains, mounds, and townhouses. There are other references in oral tradition to mythical townhouses on mountain peaks and in other places.

Towns were, first and foremost, groups of people, more than particular places on the landscape, but Cherokee towns were materialized in the form of townhouses. Some townhouses were built on the summits of earthen mounds, as at Cowee, and probably at Nequassee and Kituwha (Duncan and Riggs 2003:10, 151–156, 171–174; King and Evans 1977:284; Riggs and Shumate 2003; Waselkov and Braund 1995:74–88). One of seven "Mother Towns" of the Cherokee, Kituwha gives its name to one Cherokee name for themselves, which translates as "the people of Kituwha" (Duncan and Riggs 2003:73; Hill 1997:72–74; Mooney 1900:525; Riggs and Shumate 2003).

Acknowledging that legends recorded by Mooney were written down in the relatively recent past, and that oral traditions are related differently by different people in different settings, let us make the following points. First, towns, as groups of people, are thought to have been present in the mythical past, demonstrating that towns are and have been fundamental social groups in the Cherokee world. Second, townhouses, as architectural manifestations of towns, are part of the landscape in these myths and legends, further indicating the significance of this architectural form to Cherokee cosmology. Third, townhouses and mounds are receptacles for sacred fire. Fourth, mountains are symbolic components of the Cherokee landscape, as landmarks and as settings for mythical townhouses. Of course, archaeologists know of several mounds and townhouses in southwestern North Carolina. Some of these sites postdate European contact, others date to the Mississippian period, and others date to the Woodland period.

Archaeologists have identified townhouses at Kituwha, at Chattooga, and at Coweeta Creek (Figure 16-1; Riggs 2008). Five stages of a townhouse have been uncovered at the Chattooga site, along the Chattooga River, in northwestern South Carolina, with an adjacent plaza and areas that were likely locations of domestic structures nearby (Schroedl 2000, 2001). The townhouse at Coweeta Creek was placed beside a town plaza, with domestic structures placed around the plaza (Ward and Davis 1999:183–190). At least six stages of the Coweeta Creek townhouse were superimposed on each other, with each successive stage built atop the burned and buried remnants of its predecessors (Figure 16-2; Keel et al. 2002; Rodning 2002, 2007, 2009a, 2009b, 2010b, 2011a, 2011b; Rodning and VanDerwarker 2002). The hearth was kept in place within each stage of the townhouse, and the alignment of the entryway was the same in each stage, although when the second stage was built, the entryway was moved (Rodning 2009a). Geophysical survey of the Kituwha mound has identified the footprint of a townhouse comparable to those seen at Chattooga and Coweeta Creek (Riggs and Shumate 2003). Townhouses at Chattooga and Coweeta Creek date to the 1600s and early 1700s, and the Kituwha townhouse may date to roughly the same period (Schroedl 2000, 2001). These structures are square with rounded corners, with central hearths and arrangements of four or eight roof support posts (Figure 16-3). At present, there are no archaeologically known examples of eighteenth–century Cherokee townhouses in the western Carolinas or northeastern Georgia, but eighteenth–century Cherokee townhouses in eastern Tennessee are round or octagonal (Figure 16-4). The shift from square to rectangular townhouses may be related to increases in the sizes of Cherokee townhouses—pushing out along the edges of the seventeenth–century townhouse template may have led to the eighteenth–century template of circular townhouses. As townhouses increased in size, so also did the area of townhouse roofs above centrally placed hearths—necessitating the increase in the numbers of roof support posts in Cherokee townhouses from four to eight. Primary documentary sources do refer to eighteenth–

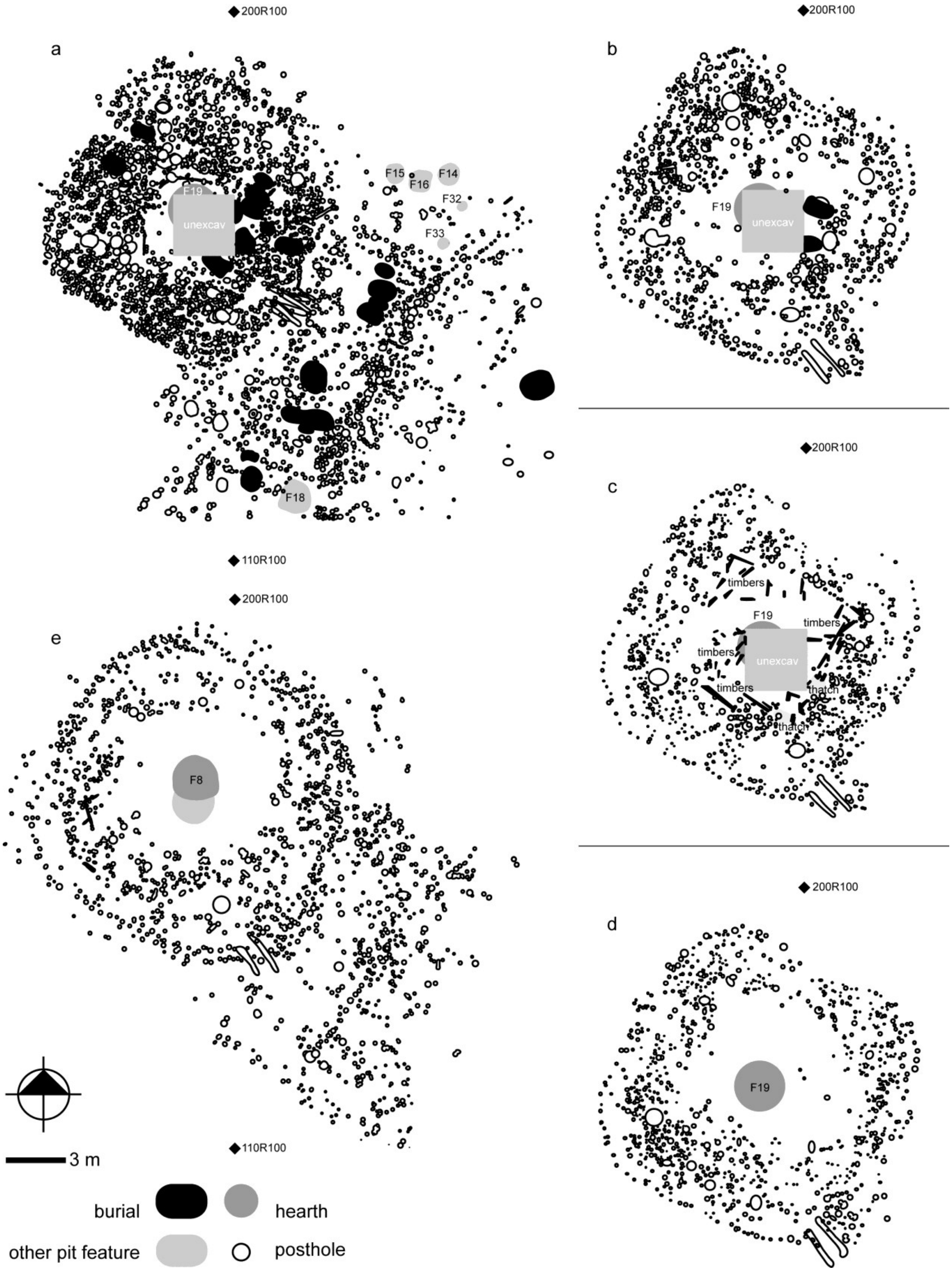


Figure 16-2. Sequence of townhouses at the Coweeta Creek site in southwestern North Carolina. Reprinted from *American Antiquity* 74(4), © Society for American Archaeology (Rodning 2009a:641).

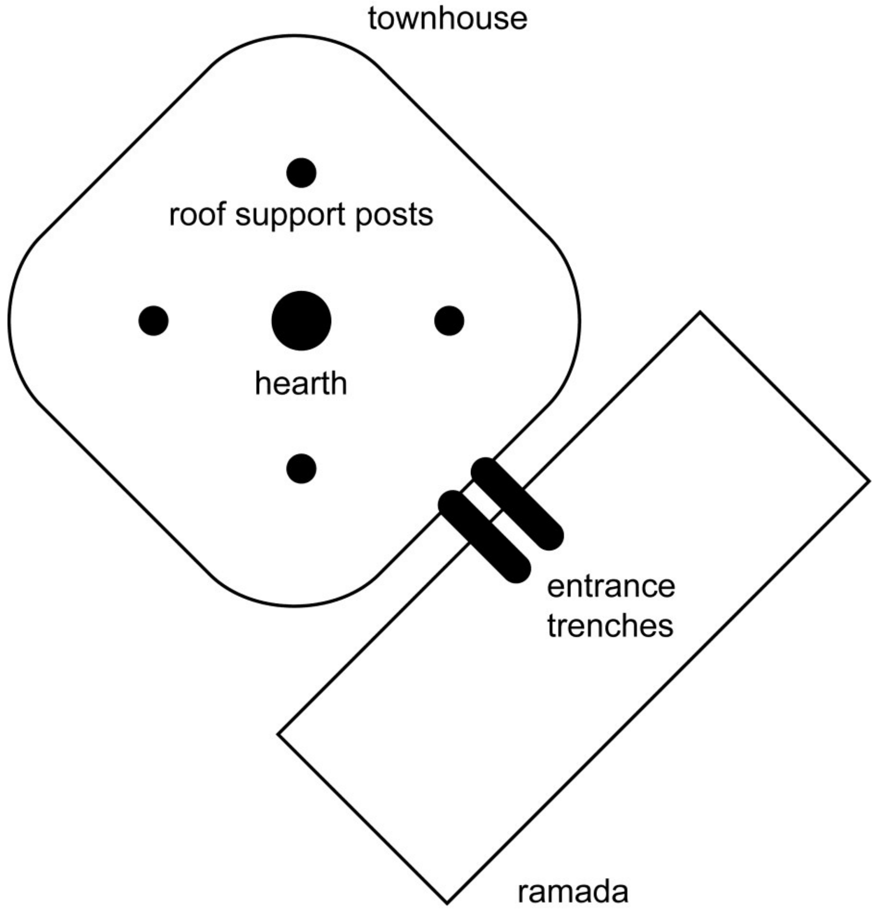


Figure 16-3. Schematic template of seventeenth–century Cherokee townhouses (after Rodning 2009a:641; Rodning and VanDerwarker 2002:5; Ward and Davis 1999:185; see also Schroedl 2000, 2001).

century townhouses placed on earthen mounds (Duncan and Riggs 2003; Waselkov and Braund 1995), but at present, there is no archaeologically known example of an eighteenth–century townhouse placed on an earthen mound. Archaeological and ethnohistoric evidence, and Cherokee oral tradition (Mooney 1900), all suggest an association between townhouses and earthen mounds, and the shapes of townhouses and mounds are broadly comparable to each other.

Earthen mounds are present at Nacoochee, Peachtree, Spike Buck, Garden Creek, Kituwha, Nununyi, Birdtown, Cowee, Whatoga, Nequassee, Chauga, Tugalo, Estatoe, and Dillard, and there probably were more mounds and townhouses in the past than archaeologists know about in the present (Figure 16-1; Steere 2011). Platform mound stages at Garden Creek were placed atop the collapsed remnants of Mississippian earthlodges, another form of architecture that probably fits within the ancestry of Cherokee townhouses (Dickens 1978; Keel 1976; Rudolph 1984; Ward and Davis 1999). Various structures are associated with mound stages at Chauga, Estatoe, Tugalo, and Peachtree, although architectural patterns are indeterminate, and it is unknown whether they were public or domestic structures (Anderson 1994; Hally 1986; Kelly and de Baillou 1960; Kelly and Neitzel 1961; Setzler and Jennings

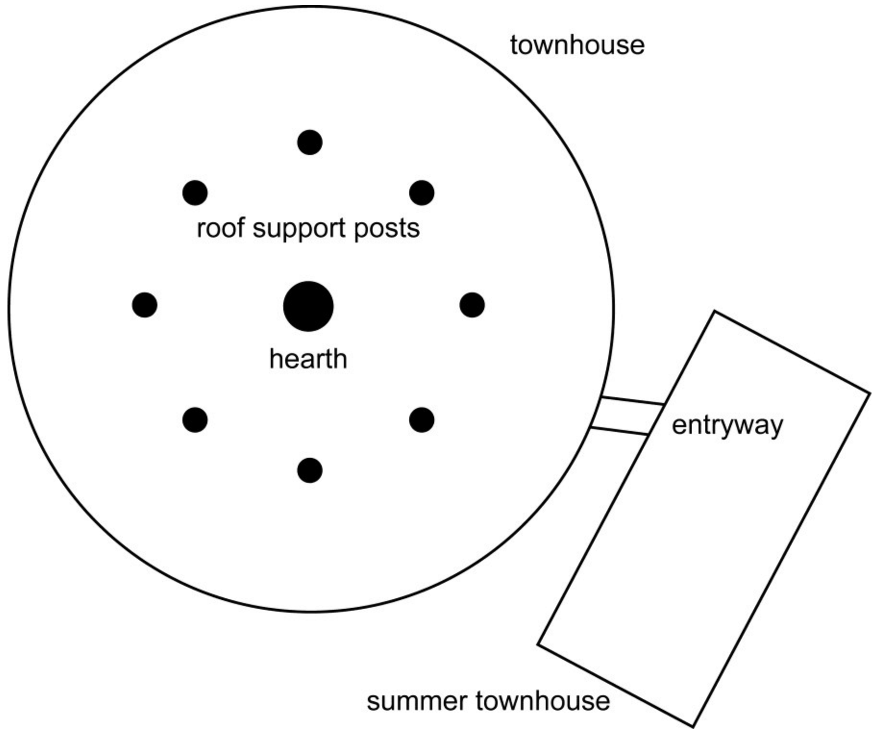


Figure 16-4. Schematic template of eighteenth–century Cherokee townhouses (after Schroedl 1986b:230; see also Baden 1983:36; Russ and Chapman 1983:52; Schroedl 2000, 2001).

1941). While details of mound sequences are unknown in some cases, many mound stages at these sites probably date to the Mississippian period, although most were used after European contact, as well.

Some earthen mounds in the Appalachian Summit date not to the Mississippian but to the Middle Woodland period, including one mound each at Garden Creek and the Biltmore Estate. The Middle Woodland mound at Garden Creek was a platform for a structure or structures. These structures, and hearths and other pits found in the two stages of the mound, are evidence for periodic visits to the site for ritual events and social gatherings (Keel 1976; Kimball 1985). Recent investigations of the Middle Woodland mound at Biltmore have unearthed evidence for several mound stages, as well as a very large post, and other evidence for a variety of ritual activities (Kimball et al. 2010). Comparable evidence has been found at Middle Woodland platform mounds elsewhere in the Southeast, including large posts (Kimball 1985; Knight 1990). These large posts probably are landmarks for gathering places within the Middle Woodland landscape, at which point there were semisedentary settlements in some areas of the Southeast, but at which point many groups were still relatively mobile, and were still primarily foragers rather than farmers. Large town posts have been found at other sites in the greater southern Appalachians dating to later prehistoric and early postcontact periods, including the King site (Hally 2008), the Berry site (Moore 2002), and Town Creek (Boudreaux 2008).

Although there are differences between Middle Woodland mounds, Mississippian mounds, and postcontact Cherokee townhouses, they all mark major community centers within the western North Carolina landscape. The Middle Woodland mounds date to a period just before or at the beginning of sedentary village life in the Appalachian Summit—as there are in Cherokee townhouses, there is evidence for hearths and firepits in these mounds, and like Cherokee townhouses, large posts and the mounds themselves mark symbolically significant points in the landscape. Mississippian mounds likewise mark significant points in the landscape of western North Carolina—and at least some of these mounds probably were settings for Cherokee townhouses built after European contact. During the 1700s, townhouses were hubs of public life in Cherokee towns, and they were visible landmarks for those towns. Tall posts and earthen mound stages are, of course, different forms of architecture than historic Cherokee townhouses, but, arguably, those Middle Woodland mounds and posts were ancestral to townhouses from later periods (David Moore, personal communication 2003).

Towns and town identity were fundamental components of the Cherokee world in the eighteenth century. The manifestations of Cherokee towns in the southern Appalachians were townhouses, the architectural ancestry of which can be traced back to mounds and marker posts from as early as the Woodland period. Pottery found at postcontact Cherokee settlements can be traced back to South Appalachian Mississippian pottery, including the Lamar ceramic tradition (Dickens 1979; Hally 1986; Riggs and Rodning 2002; Rodning 2008; Wilson and Rodning 2002). Adaptations to Appalachian environments were in place by the Late Archaic period (Whyte 2007). Linguistic evidence suggests that the split between northern Iroquoian and Cherokee languages may date to the Late Archaic, and Cherokee oral tradition identifies the southern Appalachians as the homeland of the Cherokee people. The roots of Cherokee culture in the mountains run deep.

From another perspective, articulated by Eric Wolf (1982), historically known Native American tribal groups coalesced as such in the course of or in the aftermath of European contact. For the groups that became the Cherokee towns of the eighteenth century, early episodes of European contact included the Spanish entradas of the 1500s (Beck 1997, 2009; Beck and Moore 2002; Moore 2002), the slave trade that was encouraged and abetted by English colonial groups in the 1600s (Bowne 2005, 2006, 2009; Gallay 2002; Ethridge 2006, 2009a, 2009b; Martin 1994; Meyers 2009; Worth 2009), and the deerskin trade that developed in the late 1600s and continued through the mid–to–late 1700s (Goodwin 1977; Hatley 1993). Conditions created by these and other developments set the stage in which the Lower, Valley, Middle, Out, and Overhill Cherokee towns formed, as such. This is not to say that the Cherokee or other "native societies" elsewhere in the Americas had no sense of shared history and identity. In fact, one of the main points Wolf makes is that there was considerable interaction among societies before and after European contact, and that European colonists encountered societies—including the Cherokee—in the *midst* of rather than at the *beginning* of a long history of community identity and interaction with other groups.

Ethnogenesis has both long–term and short–term dimensions. On one hand, some components of Cherokee cultural identity—pottery, language, adaptations to mountain environments—have considerable antiquity. There are ancient precursors to the manifestations of historic Cherokee towns and townhouses, as well, in the form of late prehistoric earthen mounds, and, perhaps, posts, hearths, and firepits in mounds dating as early as the Woodland period. These local traditions were incorporated within the architecture of Cherokee townhouses, and they were elements of architectural practices through which Cherokee people identified themselves as towns, and as groups distinct from others in the broader "social field" of the Southeast during the period just before and after European contact.

NOTES

Acknowledgments. Thanks to Tom Whyte for the invitation to participate in the North Carolina Appalachian Summit Archaeology symposium held at Appalachian State University in 2009, and in this online publication of papers from that symposium in 2010. Thanks to the North Carolina Archaeological Society and the North Carolina Archaeological Council for sponsoring recent conferences on archaeology in different culture areas within North Carolina and for supporting archaeological investigations throughout the state. Thanks to Allison Truitt, Burton Purrington, David Moore, Gerald Schroedl, David Hally, Mark Williams, Charles Hudson, Paul Webb, Brett Riggs, Ben Steere, Kathryn Sampeck, Rob Beck, Lynne Sullivan, Vin Steponaitis, Steve Davis, Trawick Ward, Bennie Keel, Robbie Ethridge, and Matthew Maughan for helping me develop the thoughts presented here, and thanks to Russell Townsend and Hope Spencer for support and encouragement. Any problems with this paper, of course, are my responsibility.

REFERENCES CITED

Anderson, David G.
1994 *The Savannah River Chiefdoms: Political Change in the Late Prehistoric Southeast*. University of Alabama Press, Tuscaloosa.

Baden, William W.
1983 *Tomotley: An Eighteenth Century Cherokee Village*. University of Tennessee, Department of Anthropology Report of Investigations 36, Knoxville.

Beck, Robin A., Jr.
1997 From Joara to Chiaha: Spanish Exploration of the Appalachian Summit Area, 1540–1568. *Southeastern Archaeology* 16:162–169.

2009 Catawba Coalescence and the Shattering of the Carolina Piedmont, 1540–1675. In *Mapping the Mississippian Shatter Zone: The Colonial Indian Slave Trade and Regional Instability in the American South*, edited by Robbie Ethridge and Sheri M. Shuck–Hall, pp. 115–141. University of Nebraska Press, Lincoln.

Beck, Robin A., Jr., and David G. Moore
2002 The Burke Phase: A Mississippian Frontier in the North Carolina Foothills. *Southeastern Archaeology* 21:192–205.

Beck, Robin A., Jr., David G. Moore, and Christopher B. Rodning
2006 Identifying Fort San Juan: A Sixteenth–Century Spanish Occupation at the Berry Site, North Carolina. *Southeastern Archaeology* 25:65–77.

Booker, Karen M., Charles M. Hudson, and Robert L. Rankin
1992 Place Name Identification and Multilingualism in the Sixteenth–Century Southeast. *Ethnohistory* 39:399–451.

Boudreaux, E. Anthony III
2008 *The Archaeology of Town Creek*. University of Alabama Press, Tuscaloosa.

Boulware, Tyler
2011 *Deconstructing the Cherokee Nation: Town, Region, and Nation among Eighteenth–Century Cherokees*. University Press of Florida, Gainesville.

Bowne, Eric E.
2005 *The Westo Indians: Slave Traders of the Early Colonial South*. University of Alabama Press, Tuscaloosa.

2006 "A Bold and Warlike People": The Basis of Westo Power. In *Light on the Path: The Anthropology and History of the Southeastern Indians*, edited by Thomas J. Pluckhahn and Robbie Ethridge, pp. 123–132. University of Alabama Press, Tuscaloosa.

2009 “Caryinge Awaye Their Corne and Children”: The Effects of West Slave Raids on the Indians of the Lower South. In *Mapping the Mississippian Shatter Zone: The Colonial Indian Slave Trade and Regional Instability in the American South*, edited by Robbie Ethridge and Sheri M. Shuck–Hall, pp. 104–114. University of Nebraska Press, Lincoln.

Chambers, Ian
2010 The Movement of Great Tellico: The Role of Town and Clan in Cherokee Spatial Understanding. *Native South* 3:89102.

Chapman, Jefferson
1985 *Tellico Archaeology: Twelve Thousand Years of Native American History*. University of Tennessee, Department of Anthropology Report of Investigations 43, Knoxville.

Corkran, David H.
1962 *The Cherokee Frontier, 1740–1762*. University of Oklahoma Press, Norman.

1967 *The Creek Frontier, 1540–1783*. University of Oklahoma Press, Norman.

Corkran, David H., editor
1969 A Small Postscript on the Ways and Manners of the Indians Called Cherokees, by Alexander Longe. *Southern Indian Studies* 21:3–49.

Crane, Verner W.
1929 *The Southern Frontier, 1670–1732*. University of Michigan Press, Ann Arbor.

de Baillou, Clemens
1955 The Excavations of New Echota in 1954. *Early Georgia* 1(4):18–29.

Dickens, Roy S., Jr.
1967 The Route of Rutherford’s Expedition Against the North Carolina Cherokees. *Southern Indian Studies* 19:3–24.

1976 *Cherokee Prehistory: The Pisgah Phase in the Appalachian Summit*. University of Tennessee Press, Knoxville.

1978 Mississippian Settlement Patterns in the Appalachian Summit Area. In *Mississippian Settlement Patterns*, edited by Bruce D. Smith, pp. 115–139. Academic Press, New York.

1979 The Origins and Development of Cherokee Culture. In *The Cherokee Indian Nation: A Troubled History*, edited by Duane H. King, pp. 3–32. University of Tennessee Press, Knoxville.

1986 An Evolutionary–Ecological Interpretation of Cherokee Cultural Development. In *The Conference on Cherokee Prehistory*, compiled by David G. Moore, pp. 81–94. Warren Wilson College, Swannanoa, North Carolina.

Duncan, Barbara R., and Brett H. Riggs
2003 *Cherokee Heritage Trails Guidebook*. University of North Carolina Press, Chapel Hill.

Ethridge, Robbie
2006 Creating the Shatter Zone: Indian Slave Traders and the Collapse of the Southeastern Chiefdoms. In *Light on the Path: The Anthropology and History of the Southeastern Indians*, edited by Thomas J. Pluckhahn and Robbie Ethridge, pp. 207–218. University of Alabama Press, Tuscaloosa.

2009a Introduction: Mapping the Mississippian Shatter Zone. In *Mapping the Mississippian Shatter Zone: The Colonial Indian Slave Trade and Regional Instability in the American South*, edited by Robbie Ethridge and Sheri M. Shuck–Hall, pp. 1–62. University of Nebraska Press, Lincoln.

2009b Afterword: Some Thoughts on Further Work. In *Mapping the Mississippian Shatter Zone: The Colonial Indian Slave Trade and Regional Instability in the American South*, edited by Robbie Ethridge and Sheri M. Shuck–Hall, pp. 418–424. University of Nebraska Press, Lincoln.

Gallay, Alan
2002 *The Indian Slave Trade: The Rise of the English Empire in the American South, 1670–1717*. Yale University Press, New Haven, Connecticut.

Goodwin, Gary C.
1977 *Cherokees in Transition: A Study of Changing Culture and Environment Prior to 1775*. University of Chicago, Department of Geography Research Paper 181, Chicago.

Hally, David J.
1986 The Cherokee Archaeology of Georgia. In *The Conference on Cherokee Prehistory*, compiled by David G. Moore, pp. 95–121. Warren Wilson College, Swannanoa, North Carolina.

2008 *King: The Social Archaeology of a Late Mississippian Town in Northwestern Georgia*. University of Alabama Press, Tuscaloosa.

Hatley, Tom
1993 *The Dividing Paths: Cherokees and South Carolinians Through the Revolutionary Era*. Oxford University Press, Oxford.

Hill, Sarah H.
1997 *Weaving New Worlds: Southeastern Cherokee Women and Their Basketry*. University of North Carolina Press, Chapel Hill.

Hudson, Charles
1997 *Knights of Spain, Warriors of the Sun: Hernando de Soto and the South's Ancient Chiefdoms*. University of Georgia Press, Athens.

2005 *The Juan Pardo Expeditions: Explorations of the Carolinas and Tennessee, 1566–1568*. University of Alabama Press, Tuscaloosa.

Keel, Bennie C.
1976 *Cherokee Archaeology: A Study of the Appalachian Summit*. University of Tennessee Press, Knoxville.

Keel, Bennie C., Brian J. Egloff, and Keith T. Egloff
2002 Reflections on the Cherokee Project and the Coweeta Creek Mound. *Southeastern Archaeology* 21:49–53.

Kelly, Arthur R., and Clemens de Baillou
1960 Excavations of the Presumptive Site of Estatoe. *Southern Indian Studies* 12:3–30.

Kelly, Arthur R., and Robert S. Neitzel
1961 *The Chauga Site in Oconee County, South Carolina*. Report 3. University of Georgia, Laboratory of Archaeology, Athens.

Kimball, Larry R.
1985 Early Hopewellian Ceremonial Encampments in the South Appalachian Highlands. In *Structure and Process in Southeastern Archaeology*, edited by Roy S. Dickens, Jr., and H. Trawick Ward, pp. 243–262. University of Alabama Press, University.

Kimball, Larry R., Thomas R. Whyte, and Gary D. Crites
2010 The Biltmore Mound and Hopewellian Mound Use in the Southern Appalachians. *Southeastern Archaeology* 29:44–58.

King, Duane H., and E. Raymond Evans, editors
1977 Memoirs of the Grant Expedition Against the Cherokees in 1761. *Journal of Cherokee Studies* 2:272–337.

Knight, Vernon J., Jr.
1990 *Excavation of the Truncated Mound at the Walling Site: Middle Woodland Culture and Copena in the Tennessee Valley*. Report of Investigations 56. Division of Archaeology, Alabama State Museum of Natural History, University of Alabama, Tuscaloosa. Submitted to the City of Huntsville.

2006 Symbolism of Mississippian Mounds. In *Powhatan's Mantle: Indians in the Colonial Southeast*, edited by Gregory A. Waselkov, Peter H. Wood, and M. Thomas Hatley, pp. 421–434. University of Nebraska Press, Lincoln.

Martin, Joel W.
1994 Southeastern Indians and the English Trade in Skins and Slaves. In *The Forgotten Centuries: Indians and Europeans in the American South, 1521–1704*, edited by Charles M. Hudson and Carmen Chaves Tesser, pp. 304–324. University of Georgia Press, Athens.

Merrell, James H.
1989 *The Indians' New World: Catawbas and Their Neighbors from European Contact Through the Era of Removal*. University of North Carolina Press, Chapel Hill.

Meyers, Maureen
2009 From Refugees to Slave Traders: The Transformation of the Westo Indians. In *Mapping the Mississippian Shatter Zone: The Colonial Indian Slave Trade and Regional Instability in the American South*, edited by Robbie Ethridge and Sheri M. Shuck–Hall, pp. 81–103. University of Nebraska Press, Lincoln.

Mooney, James
1900 Myths of the Cherokee. Smithsonian Institution, Bureau of American Ethnology Annual Report 19, Washington, D.C., pp. 3–576.

Moore, David G.
2002 *Catawba Valley Mississippian: Ceramics, Chronology, and Catawba Indians*. University of Alabama Press, Tuscaloosa.

Perdue, Theda
1998 *Cherokee Women: Gender and Culture Change, 1700–1835*. University of Nebraska Press, Lincoln.

Persico, V. Richard, Jr.
1979 Early Nineteenth–Century Cherokee Political Organization. In *The Cherokee Indian Nation: A Troubled History*, edited by Duane H. King, pp. 92–109. University of Tennessee Press, Knoxville.

Polhemus, Richard
1987 *The Toqua Site: A Late Mississippian Dallas Phase Town*. University of Tennessee, Department of Anthropology Report of Investigations 41, Knoxville.

Purrington, Burton L.
1983 Ancient Mountaineers: An Overview of the Prehistoric Archaeology in North Carolina's Western Mountain Region. In *The Prehistory of North Carolina: An Archaeological Symposium*, edited by Mark A. Mathis and Jeffrey J. Crow, pp. 83–160. North Carolina Division of Archives and History, Raleigh.

Riggs, Brett H.
2008 A Synthesis of Documentary and Archaeological Evidence for Early Eighteenth–Century Cherokee Villages and Structures: Data for the Reconstruction of the TsaLa–Gi Ancient Village, Cherokee Heritage Center, Park Hill, Oklahoma. Report on file at the Research Laboratories of Archaeology, University of North Carolina, Chapel Hill.

Riggs, Brett H., and M. Scott Shumate
2003 Archaeological Testing at Kituwha: 2001 Investigations at 31SW1, 31SW2, 31SW287, 31SW316, 31SW317, 31SW318, and 31SW320. Manuscript on file, Research Laboratories of Archaeology, University of North Carolina, Chapel Hill. Submitted to the Office of Cultural Resources, Eastern Band of Cherokee Indians, Cherokee, North Carolina.

Riggs, Brett H., and Christopher B. Rodning
2002 Cherokee Ceramic Traditions of Southewestern North Carolina, ca. A.D. 1400–2002: A Preface to "The Last of the Iroquois Potters." *North Carolina Archaeology* 51:34–54.

Rodning, Christopher B.
2002 The Townhouse at Coweeta Creek. *Southeastern Archaeology* 21:10–20.

2007 Building and Rebuilding Cherokee Houses and Townhouses in Southwestern North Carolina. In *The Durable House: House Society Models in Archaeology*, edited by Robin A. Beck, Jr., pp. 464–484. Occasional Paper 35. Center for Archaeological Investigations, Southern Illinois University, Carbondale.

2008 Temporal Variation in Qualla Pottery at Coweeta Creek. *North Carolina Archaeology* 57:1–49.

2009a Mounds, Myths, and Cherokee Townhouses in Southwestern North Carolina. *American Antiquity* 74:627–663.

2009b Domestic Houses at Coweeta Creek. *Southeastern Archaeology* 28:1–26.

2010a Architectural Symbolism and Cherokee Townhouses. *Southeastern Archaeology* 29:59–79.

2010b European Trade Goods at Cherokee Settlements in Southwestern North Carolina. *North Carolina Archaeology* 59:1–84.

2011a Mortuary Practices, Gender Ideology, and the Cherokee Town at the Coweeta Creek Site. *Journal of Anthropological Archaeology* 30:145–173.

2011b Cherokee Townhouses: Architectural Adaptation to European Contact in the Southern Appalachians. *North American Archaeologist* 32:131–190.

Rodning, Christopher B., and Amber M. VanDerwarker
2002 Revisiting Coweeta Creek: Reconstructing Ancient Cherokee Lifeways in Southwestern North Carolina. *Southeastern Archaeology* 21:1–9.

Rothrock, Mary U.
1976 Carolina Traders Among the Overhill Cherokees, 1690/1760. *Tennessee Archaeologist* 32:21–29.

Rudolph, James L.
1984 Earthlodges and Platform Mounds: Changing Public Architecture in the Southeastern U.S. *Southeastern Archaeology* 3:33–45.

Russ, Kurt C., and Jefferson Chapman
1983 *Archaeological Investigations at the Eighteenth Century Overhill Cherokee Town of Mialoquo*. University of Tennessee, Department of Anthropology Report of Investigations 37, Knoxville.

Schroedl, Gerald F.
1978 Louis–Phillipe's Journal and Archaeological Investigations at the Overhill Town of Toqua. *Journal of Cherokee Studies* 3:206–220.

1986a Toward an Explanation of Cherokee Origins in East Tennessee. In *The Conference on Cherokee Prehistory*, compiled by David G. Moore, pp. 122–138. Warren Wilson College, Swannanoa, North Carolina.

2000 Cherokee Ethnohistory and Archaeology from 1540 to 1838. In *Indians of the Greater Southeast: Historical Archaeology and Ethnohistory*, edited by Bonnie G. McEwan, pp. 204–241. University Press of Florida, Gainesville.

2001 Cherokee Archaeology Since the 1970s. In *Archaeology of the Appalachian Highlands*, edited by Lynne P. Sullivan and Susan C. Prezzano, pp. 278–297. University of Tennessee Press, Knoxville.

Schroedl, Gerald F., editor
1986b *Overhill Cherokee Archaeology at Chota–Tanasee*. University of Tennessee, Department of Anthropology Report of Investigations 38, Knoxville.

Setzler, Frank M., and Jesse D. Jennings
1941 *Peachtree Mound and Village Site, Cherokee County, North Carolina*. Bulletin 131. Smithsonian Institution, Bureau of American Ethnology 131, Washington, D.C.

Shumate, M. Scott, Brett H. Riggs, and Larry R. Kimball
2005 The Alarka Farmstead Site: Archaeological Investigations at a Mid–Seventeenth–Century Cherokee Winter House/Summer House Complex, Swain County, North Carolina. Report submitted by the Appalachian State University Laboratories of Archaeological Science to National Forests in North Carolina, Asheville.

Smith, Betty Anderson
1979 Distribution of Eighteenth–Century Cherokee Settlements. In *The Cherokee Indian Nation: A Troubled History*, edited by Duane H. King, pp. 46–60. University of Tennessee Press, Knoxville.

Smith, Marvin T.
1992 *Historic Period Indian Archaeology of Northern Georgia*. University of Georgia, Laboratory of Archaeology Report 30, Athens.

Steere, Benjamin A.
2011 Preliminary Results of Archival Research for the Western North Carolina Mounds and Towns Project: Documentary Evidence for Potential Mound Sites in Buncombe, Cherokee, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, Swain, and Transylvania Counties, North Carolina. Report submitted to the Eastern Band of Cherokee Indians Tribal Historic Preservation Office, Cherokee, North Carolina.

Ward, H. Trawick, and R. P. Stephen Davis, Jr.
1999 *Time Before History: The Archaeology of North Carolina*. University of North Carolina Press, Chapel Hill.

Waselkov, Gregory A., and Kathryn E. Holland Braund, editors
1995 *William Bartram on the Southeastern Indians*. University of Nebraska Press, Lincoln.

Whyte, Thomas R.
2007 Proto–Iroquoian Divergence in the Late Archaic–Early Woodland Period Transition of the Appalachian Highlands. *Southeastern Archaeology* 26:134–144.

Wilson, Gregory D., and Christopher B. Rodning
2002 Boiling, Baking, and Pottery Breaking: A Functional Analysis of Ceramic Vessels from Coweeta Creek. *Southeastern Archaeology* 21:29–35.

Wolf, Eric
1982 *Europe and the People Without History*. University of California Press, Berkeley.

1984 Culture: Panacea or Problem? *American Antiquity* 49:393–400.

1997 Preface. In *Europe and the People Without History (Second Edition)*, by Eric Wolf, pp. ix–xiv. University of California Press, Berkeley.

Worth, John E.
2009 Razing Florida: The Indian Slave Trade and the Devastation of Spanish Florida, 1659–1715. In *Mapping the Mississippian Shatter Zone: The Colonial Indian Slave Trade and Regional Instability in the American South*, edited by Robbie Ethridge and Sheri M. Shuck–Hall, pp. 295–311. University of Nebraska Press, Lincoln.

Wynn, Jack T.
1990 *Mississippi Period Archaeology in the Georgia Blue Ridge Mountains*. University of Georgia, Laboratory of Archaeology Series Report 27, Athens.

A NEW LOOK AT AN OLD SEQUENCE: TIME, TYPOLOGY, AND INTRUSIVE TRADITIONS IN THE CAROLINA PIEDMONT

I. Randolph Daniel, Jr.

The projectile point traditions proposed in *The Formative Cultures of the Carolina Piedmont* (Coe 1964) almost 50 years ago remain the backbone of North Carolina archaeology. And while the typology and associated cultural-historical sequence proposed by Coe (1964) has largely stood the test of time, archaeology done in the Piedmont and surrounding regions over the last five decades indicates that certain aspects of this sequence bear reassessment (e.g., Claggett and Cable 1982; Drye 1998). Here, typological refinements are proposed for point types associated with the Paleoindian and Archaic periods. With regard to the former, fluted point variability is linked to a proposed three-phase sequence in the Piedmont. With regard to the latter, the notion of "intrusive traditions" (Coe 1964) is reconsidered in light of work done at Haw River (Claggett and Cable 1982) and Lowder's Ferry (Drye 1998) as well as related work from outside the state as well (Chapman 1977).

First, however, I present some background and assumptions for this work.

BACKGROUND AND ASSUMPTIONS

The *Formative Cultures* sequence is familiar to all southeastern archaeologists (Figure 17-1). Suffice it to say that the sequence begins with the Hardaway complex that includes a point type marked by a concave eared base form similar to Dalton points elsewhere in the Southeast. Subsequently, a series of side-notched and corner-notched points mark the Early Archaic in the Piedmont, followed by a series of various stemmed points representing the Middle and Late Archaic. Finally, the Woodland period is marked by a series of triangular points.

Sometimes referred to as the Piedmont Tradition (Oliver 1985), Coe emphasized both technological continuity and change in the point sequence. Technological continuity implied a cultural relatedness in point types while technological change implied cultural intrusion. Much of the sequence is characterized by technological continuity. Technological similarities, for example, existed within the "Hardaway complex" that marked the beginning of the sequence: "The earliest material yet excavated in the Piedmont consists of a series of large, thin projectile points that begin with a very simple form and evolved into a very unique side-notched type" (Coe 1964:120). Likewise, technological continuity also characterized subsequent Archaic points as illustrated by the broad blade and squared stem affinities of the "Kirk-Stanly-Savannah tradition" that lasted for several millennia (Coe 1964:35). Implicit in this view of technological traditions is the notion of historical relatedness. Regardless of whether one buys into the notion of evolutionary archaeology (sensu O'Brien and Lyman 1999) and its emphasis on artifacts as phenotypic manifestations, most archaeologists would agree that some artifact types—including projectile points—exhibit attribute changes that reflect historical continuity. Archaeologists have long used changes in artifact form as exhibited by changes in specific characteristics to measure the passage of time. We are speaking more than metaphorically when we say that artifacts "evolve." Coe (1964:35), for example, implies as much when describing the relationship between Stanly and Savannah River point types: "The larger points of this [Stanly]

Chapter submitted on July 25, 2011, and final version received on June 21, 2013.

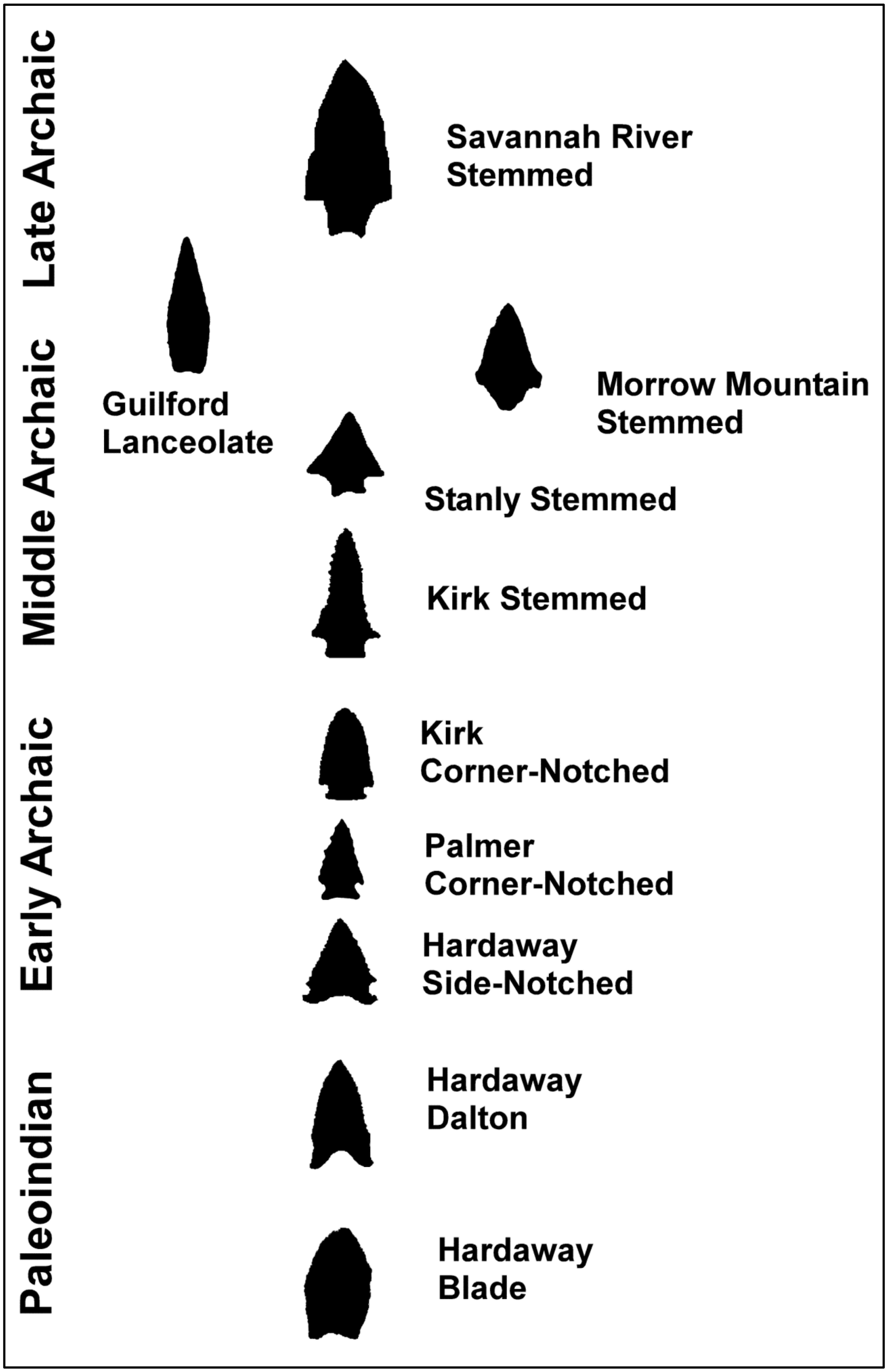


Figure 17-1. Pre-Woodland period projectile point traditions of the North Carolina Piedmont (after Coe 1964).

type tend to blend with the smaller points of the Savannah River type, and it may well be that they are related." Implicit, too, in this statement is the notion of "transitional" types. The notion that "blending" reflects morphological variation from a typical form allows us to build a sequence of point types using slight changes in artifact attributes to link types chronologically. Such an assumption underlies much of the following discussion.

IN THE BEGINNING

As noted above, the Hardaway complex marks the beginning of the *Formative Cultures* sequence. In particular, the Hardaway Blade is viewed as a Paleoindian point type for the Piedmont. Elsewhere in the Southeast, however, fluted Clovis-like points more typically mark the Paleoindian period. Clovis points are known from North Carolina (Daniel 2006; e.g., Daniel and Goodyear 2006; Daniel and Goodyear 2011) and in fact Coe (1964:120) did mention that three "Clovis-like" points were recovered from the surface at Hardaway (see Daniel 2006). Moreover, Coe (1964:120) proposed that the Hardaway Blade had technological affinities to Clovis points, noting that in some cases "they could be mistaken for fluted points."

In fact, the degree to which Hardaway Blades resemble Clovis points is questionable. As discussed elsewhere (Daniel 1998:6263; Goodyear 1974:24), morphologically the Hardaway Blade more resembles a Hardaway-Dalton preform than a Clovis point. Furthermore, the stratigraphic evidence from Hardaway does not support the claim that Hardaway-Blades predate Hardaway-Daltons (Daniel 1998:63–65). Not to belabor the issue but since Hardaway-Daltons were made at Hardaway, their preforms must exist, and it seems more parsimonious to interpret Hardaway-Blades as preforms rather than a point type *per se* (Figure 17-2a–e).

Yet, as Coe (1964:64) remarked, those bifaces assigned to the Hardaway Blade type exhibited "considerable variation" such that they were assigned to a single type based more on their common provenience (embedded in the residual clay from Level IV) than on any morphological similarity. A few small, thin specimens (Coe 1964:Figure 56A), for example, are perhaps more difficult to assign a preform designation. Indeed, some specimens (Figure 17-2f–h) arguably appear to be finished. Their trianguloid to lanceolate form is very similar to the two bifaces recovered about 7 cm below a Clovis surface that produced two fluted points among other artifacts at Cactus Hill, Virginia (Feathers et al. 2006; McAvoy and McAvoy 1997). What implications this has for possible pre-Clovis points in North Carolina is difficult to say. But if a microwear analysis were to be done on the small bifaces from Hardaway and yielded results similar to those done on the bifaces at Cactus Hill (e.g., Kimball 2000), then it could be argued that they represent finished specimens rather than preforms. Their temporal placement would have to await recovery from a datable context but their morphological similarity to the Cactus Hill specimens would beg the question of a pre-Clovis point type in North Carolina (McAvoy and McAvoy 1997:157).

Until this occurs, however, known fluted point forms found in the Piedmont represent the earliest recognizable point type for the region. Accordingly, I propose a three-phase sequence for the Paleoindian period that includes Clovis, Redstone/Cumberland, and Hardaway-Dalton points (see also Ward and Davis 1999:24–25). It should be emphasized, however, that the following sequence is constructed largely on typological grounds. No single stratigraphic deposit or any chronometric data yet exists to support it, but it is generally consistent with those proposed elsewhere in the Southeast (e.g., Goodyear 1999).

Figure 17-2. Hardaway Blades: proposed Hardaway-Dalton preforms (a–e); possible pre-Clovis bifaces (f–h).

Clovis points mark the first phase of the sequence. While this category generally corresponds to the Southwestern form (Haynes 2002) and is characterized by a lanceolate shape, straight sided fluted base, and shallow basal concavity, there is considerable size variability within this class that is at least partially attributed to stone raw material (Figure 17-3). With respect to geographic distributions, Clovis points are recorded in every region of the state but are particularly well represented in the Piedmont (Daniel and Goodyear 2006, 2011). Redstone and Cumberland points mark the middle phase of the sequence. Redstone (Mason 1962; Perino 1968) represents the second most frequent category of fluted point in the Piedmont. Redstone points exhibit a distinctive full facial fluting, relatively deep basal concavity, and triangular blade similar to what is called Redstone in the mid-South (Figure 17-4a–b). As such, this type likely represents a post-Clovis manifestation in the Piedmont (Daniel and Goodyear 2006, 2011).

Like Redstone points, Cumberland points also exhibit full facial fluting; but they also display a distinctive eared and somewhat waisted base (Figure 17-4c). While very rare, Cumberland points have been recorded in the Piedmont (Daniel and Goodyear 2006). Much greater frequencies are found to the west in Tennessee (Anderson et al. 2010); hence their presence in the Piedmont may represent rare group forays outside their usual geographic range.

Although these two types likely post dated Clovis, the temporal duration and relationship of Redstone and Cumberland remains unknown. Tentatively, I have placed them in the Middle

Figure 17-3. North Carolina Clovis Points.

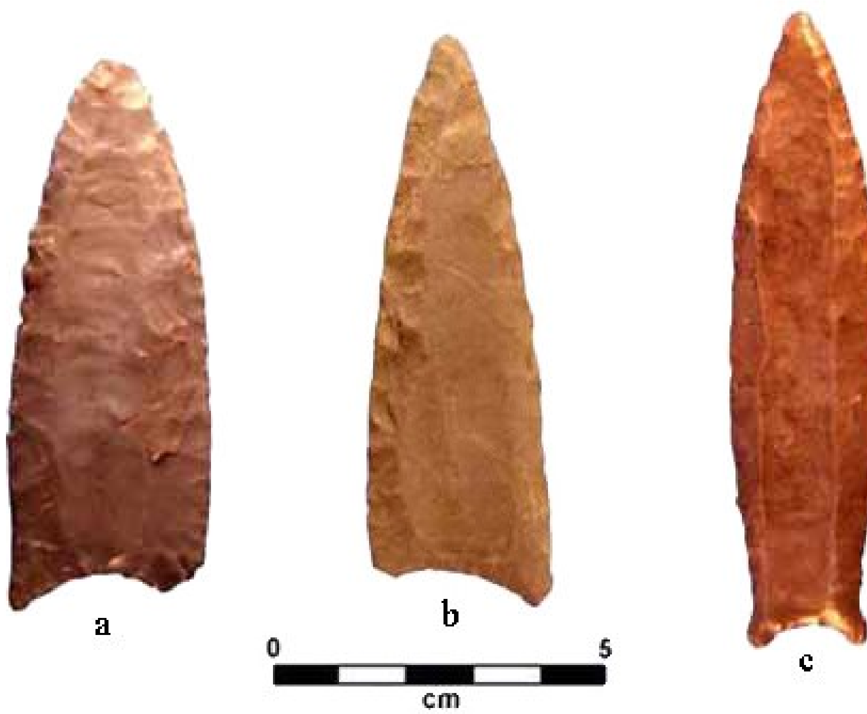


Figure 17-4. North Carolina Redstone Points (a–b) Cumberland Point (c).

Paleoindian phase as two coeval but geographically overlapping traditions. Although speculative, the greater number of Redstone points versus Cumberland points suggests that Redstone is part of the Piedmont sequence *per se*. Cumberland points, on the other hand, likely have their origins in the Mountains to the west and would represent an "intrusive" type in the Piedmont.

Greater regionalization is seen in the final phase that is represented by Hardaway-Dalton points. To date, they remain the only Paleoindian point type documented from good stratigraphic context in the region, being the earliest type recovered from Hardaway (Coe 1964; Daniel 1998) and Haw River (Claggett and Cable 1982). While surface collections indicate their presence across the state, their dense occurrence in the Piedmont (particularly in relation to fluted point types) and their clear raw material association with metavolcanic stone bespeak a strong demographic association with the Piedmont.

BIFURCATES: INDIGENOUS OR INTRUSIVE?

Bifurcated base points were not recognized by Coe (1964) as part of the *Formative Cultures* sequence.[1] Nevertheless, bifurcate points do exist in the Piedmont and this begs the question of their temporal and technological relationship to other notched and stemmed points in the region. Generally dating to the latter part of the Early Archaic elsewhere in the Southeast (ca. 10,000–8700 cal B.P.) (Anderson and Sassaman 2012:72), bifurcate points were initially identified by Broyles (1971) at the St. Albans site in West Virginia, and later were substantiated by the work of Chapman along the Little Tennessee River (Chapman 1975, 1976). Perhaps the best stratigraphic evidence for bifurcate points in North Carolina comes from the excavations at the Haw River site (31CH29), discussed further below.

The presence of bifurcate points in North Carolina *vis-a-vis* their presence elsewhere in the Southeast begs the question of their cultural-historical relationship to other Archaic point types of the *Formative Cultures* sequence. That is, do bifurcate points represent a cultural-historical tradition indigenous to the Piedmont—and overlooked in the *Formative Cultures* sequence—or do bifurcate points represent a tradition centered outside the region, perhaps in the Appalachians (e.g., Cable 1982:440–444; Chapman 1975:235–276) and thus "intrusive" to the Piedmont? The answer to this question has important implications for understanding Archaic period adaptations in North Carolina. If bifurcate points are indigenous to the Piedmont then the Piedmont tradition (cf. Oliver 1985) concept needs modification. On the other hand, if bifurcate points are intrusive, then it calls into question the "Coe axiom"[2] (Brennan 1967) and raises the possibility of two contemporaneous point traditions—the intrusive bifurcate tradition and a coeval local point tradition—at use in the Piedmont. In any case, with few exceptions (e.g., Cable 1982; Ward and Davis 1999), when researchers have documented bifurcate points in North Carolina, the implications of the presence of such a tradition essentially have been ignored.

Bifurcated base points are so-called for a distinctive small notch in the stem that results in either rounded or pointed basal ears. Two successive point types are recognized in the state: St. Albans Side Notched points and LeCroy Bifurcated Stem. St. Albans Side Notched points are relatively short and thin with triangular and often serrated blades and slightly notched, bifurcated

[1] That is not to say that no bifurcate points are present at Hardaway, rather they are present in such low frequencies as to represent a marginal presence (e.g., Daniel 1998: Table 2.1).

[2] Brennan coined this term based upon Coe's (1964:8) assertion that in archaeological contexts of short occupation spans, only one type of projectile point is found.

bases with distinct rounded ears. Although labeled a side-notched point, Chapman (1977:39) notes that this type is, in fact, corner-notched; it is the degree to which blade widths are reduced that creates the impression of side-notching. LeCroy Bifurcated Stem points are also relatively small, thin points with deeply notched bases and straight to slightly pointed basal ears. Most blades are triangular in shape and appear to have been resharpened and greatly reduced in length, resulting in an overall stubby appearance.

As noted above, the best stratigraphic context for evaluating the cultural-historical relationship of bifurcate points in North Carolina comes from the Haw River site in Chatham County. In brief, the Haw River site represents a stratified sequence of remains beginning with Dalton and ending with Woodland period materials. As elsewhere in the Southeast, St. Albans and LeCroy points were found in stratigraphic order above Kirk Corner-Notched points and beneath Stanly Stemmed points; however, each bifurcate type was also stratigraphically associated with one or more other point types. St. Albans points, for instance, were associated with a small corner-notched point referred to as Small Kirk Corner-Notched. Stratigraphically above the St. Albans/Small Kirk Corner-Notched zone was a zone containing LeCroy, Small Kirk Corner-Notched, Kirk Stemmed, and Stanly Stemmed points (Cable 1982). The stratigraphic co-occurrence of these point types has never been resolved. Cable succinctly summarized the situation as follows: "It is not known whether this indicates overlapping ranges of distinctively different groups, stratigraphic mixing of sequential relationships, or functional differentiation within a single cultural system" (Cable 1996:113).

When examining these alternative explanations I think serious consideration should be given the "overlapping ranges" interpretation, although stratigraphic mixing and functional differences of point types cannot be dismissed entirely. That is, the Kirk Stemmed and Kirk Serrated types (Coe 1964:70) would represent a Piedmont tradition that was roughly contemporaneous with a Bifurcate tradition that represented a mountain-based tradition. The occurrence of bifurcate points in the Piedmont, then, reflects the presence of an Appalachian adaptation that reached into the Piedmont. If true, both traditions could have their origins in a Kirk Corner-Notched type. This would be consistent with the notion of a Southeastern Kirk horizon proposed many years ago by Tuck (1974).

With respect to the Kirk tradition, Coe (1964:70) viewed a stemmed Kirk form existing "midway" between earlier corner-notched and later stemmed point types representing a "continuity of style" between Kirk Corner-Notched and Stanly Stemmed points culminating in a larger stemmed type referred to as Savannah River Stemmed. Kirk Stemmed/Serrated[3] points are medium sized with a relatively long, thick, and sometimes serrated blade and a broad, squared to slightly expanded stem. As such, they represent the earliest stemmed point type in the Carolina Piedmont. Although this type is identified as having a stemmed base, Coe (1964:70) describes the stem as being produced using a corner-notching technique that resulted in "broad notches" creating a stem that expanded slightly at the base. Presumably, this "notching" is a trait that links Kirk Stemmed and Kirk Corner-Notched points. In any case, technological continuity is implied (Coe 1964).

While also originating from a Kirk Corner-Notched technology, the Bifurcate Tradition is seen in the Little Tennessee River Valley as an intermediate stage between the Early Archaic practice of corner-notching points and the later practice of stemming points during the Middle Archaic period. Chapman (1977:124), for example, sees the shift from a corner-notched technology to a bifurcate technology in the Little Tennessee River Valley as "a gradual

[3] For present purposes, no distinction is made between Kirk Stemmed and Kirk Serrated types.

modification in the hafting element." This interpretation is plausible since, as noted above, the St. Albans type is essentially a corner-notched point, despite the presence of a bifurcated base. Historical affinity with the succeeding LeCroy Bifurcated Stem type is easily recognized as well with the presence of a bifurcated base, albeit more in the form of a stem than the preceding St. Albans type. The bifurcate tradition concludes with the Kanawha Stemmed type which exhibits a short stem with rounded corners resulting in a basal concavity that might be viewed as a vestige of bifurcation. In the Lower Little Tennessee River Valley of east Tennessee, Kanawha immediately precedes Stanly (Chapman 1985). To the best of my knowledge Kanawha points are not found in North Carolina, but given its clear morphological similarity to the Stanly Stemmed type in North Carolina, they are probably comparable in age.

The idea of coeval but separate point traditions in the Mountains and the Piedmont may also explain why Kirk Stemmed points are rare and bifurcates are common in the Lower Little Tennessee River Valley (Chapman 1977), while the reverse is true in the Piedmont. And while Kirk Stemmed points are not abundant across North Carolina, they occur in frequencies almost twice as great as bifurcates in the state (McReynolds 2005). The rarity of these points in North Carolina is highlighted in a study of some 35,000 points recovered from surface contexts prior to 1980 and curated by the Research Laboratories of Archaeology; only a fraction of a percent of these specimens were classified as bifurcate points (i.e., St. Albans and LeCroy points) (McReynolds 2005).

Although scarce statewide, Kirk Stemmed points appear to be relatively more common in the Mountains than elsewhere in the state (Purrington 1983). Interestingly, the vast majority of bifurcate points recovered in the Mountains are made of nonlocal cherts from outcrops in eastern Tennessee. These and other data suggest that bifurcate occupations in North Carolina represent temporary excursions of small groups from the more densely settled Ridge and Valley region of Tennessee (Ward and Davis 1999:69). Accordingly, the limited presence of metavolcanic bifurcate points in the North Carolina Piedmont and Coastal Plain could represent the further movement of such groups expanding their geographic range of adaptations using local toolstone.

That said, the apparent absence of bifurcate points at stratified sites like Hardaway and Doerschuk is somewhat puzzling. Chapman (1975:255) suggests their absence can be explained by the fact that bifurcate points occur too early to be represented at Doerschuk (where Stanly represents the earliest occupation) and too late to appear at Hardaway (where Kirk Corner-Notched represents the latest relatively undisturbed occupation).[4] While the absence of bifurcate points at Doerschuk *may* be explained by Stanly being the earliest occupation at the site, it is harder to explain their relative absence at Hardaway since both Kirk Corner-Notched and Kirk Stemmed/Serrated points were recovered from Zone II or the "Kirk midden" (see Chapman 1975:255; Coe 1964:57; Daniel 1998:17–27). If there was a bifurcate presence at Hardaway, one would expect to find it in the upper portion of Zone II or even in Zone I (plow zone) where a variety of point types post-dating corner-notched points were stratigraphically mixed. In short, bifurcate points are conspicuous by their absence.

In sum, reconciling the inclusion of bifurcate-based points with the other Archaic point traditions in the North Carolina Piedmont is an issue that has received little attention. Given the uncertainty regarding their proper stratigraphic placement, perhaps the interpretation of two

[4] Yet, while Stanly does represent the earliest component identified at Doerschuk—uncovered at ten feet below surface—it may not represent *the* earliest component at the site. That is, Coe (1964:23) notes that excavations were terminated at that depth due to safely issues and not because the cultural deposits had bottomed out. Hence, deeper excavations at Doerschuk might reveal the presence of pre-Stanly (i.e., bifurcate) occupations at the site.

coeval but geographically overlapping traditions—including a Kirk Stemmed complex based in the North Carolina Piedmont with a bifurcate complex centered in the Appalachians—is the most plausible explanation (e.g., Cable 1982:434). Accordingly, Bifurcate points would overlap temporally with Kirk Corner-Notched and Kirk Stemmed but would not be indigenous to the Piedmont sequence *per se,* having their origins in the Appalachian Mountains.

INTRUSIVE TRADITIONS AGAIN?

Turning now to the Middle Archaic portion of the sequence, it is marked by several stemmed point types. While Coe (1964) documented the chronological nature of these types, he did not see this sequence marked entirely by technological continuity. The Kirk–Stanly–Savannah River tradition, for instance, was viewed as technologically unrelated to two other Archaic stemmed types—Morrow Mountain and Guilford. Although they fall stratigraphically between Stanly and Savannah River, Coe (1964) believed Morrow Mountain and Guilford types to be “quite different in style” and hence historically unrelated to either Stanly or Savannah River. Coe (1964) postulated western origins for both types and viewed them as “intrusive traditions.” As in the case of bifurcate points, the notion of an intrusive point type has important implications for understanding the culture-history of the Middle Archaic, but the topic has been virtually ignored by researchers.[5] Here I examine new evidence that suggests historical links among these point types and raises doubts regarding the idea of intrusive traditions.

I begin by examining a possible Stanly Stemmed and Morrow Mountain link. Stanly points were defined at the Doerschuk site (Coe 1964) where they represent the earliest identified cultural component. They are characterized by a triangular blade with a small square stem. Its successor, the Morrow Mountain type, also recovered at Doerschuk, is characterized by a short tapering stem. As noted above, Morrow Mountain points were viewed by Coe (1964) as lacking a Piedmont antecedent. (For the purposes of this paper, I am ignoring the variability between Morrow Mountain types I and II, viewing such variability as being related to point use-life and not typological). As such, Stanly points rather than Morrow Mountain points were aligned with the later Savannah River tradition which “continued the development of a broad-blade, broad-stemmed point tradition” (Coe 1964:123).

At first glance, the contracting and rounded stem form of a Morrow Mountain point does appear distinct from the squared stem of the Stanly point that preceded it. Yet, it is unclear why such a change would necessarily represent a tradition based upon “a different cultural orientation” (Coe 1964:54). Why couldn’t the change in base shape also represent an *in-situ* adaptation to some functional need to change hafting modes? In the Little Tennessee River Valley, for example, Chapman (1977) includes Morrow Mountain points within the existing stemmed tradition. In this case, the Morrow Mountain type represents the culmination of a hafting trend from square to contracting stems. In fact, his Category 11 point variant with a short contracting stem is viewed as “a possible transition from the earlier stemmed points to the Morrow Mountain types” (Chapman 1977:34).

---

[5] One exception to this statement is Sassaman (2001, 2010) who has proposed that Morrow Mountain populations of the Carolina Piedmont resulted from fissioning of Midsouth groups who experienced mobility constraints and group conflict about 7500 B.P. Although speculative, his contention does fit the west-to-east movement of Morrow Mountain peoples proposed by Coe.

What implication, if any, this would have for North Carolina is unclear. Yet, a similar trend in stem forms has been postulated to exist in the archaeological sequence from Haw River (Claggett and Cable 1982) and Lowder's Ferry (Drye 1998). Finding few significant differences in point dimensions between Stanly and Morrow Mountain points recovered from the lamellae 5/4 occupation floor at Haw River (Cable 1982:Table 9.33), Cable (1982:488) suggests that the "Morrow Mountain Stemmed type does not represent a radical departure from the Stanly Stemmed type." While not conclusive, this observation raises the possibility that the two types are historically related. Certainly more data are needed to examine the issue, but I suspect that the perceived differences in contracting and squared stemmed technologies are more apparent than real. At the very least, the implications for technological continuity need to be more fully explored. In this regard, I explore the potential historical relatedness of Morrow Mountain, Guilford Lanceolate, and Savannah River points below.

Morrow Mountain Stemmed and its successor, Guilford Lanceolate, are the diagnostic point types for the Middle Archaic period. Guilford points were defined from excavations at the Doerschuk site where they were recovered from Zones V–VII, although Coe (1964:34–35) attributed the primary Guilford occupation to Zone VI. Stratigraphically, Guilford points were placed between Morrow Mountain Stemmed and the Savannah River Stemmed types.

Valuable data regarding these points also were found at Lowder's Ferry. Although Lowder's Ferry was never afforded the significance of the other sites reported in *Formative Cultures*, it is noteworthy in that Lowder's Ferry contained important Morrow Mountain, Guilford, and Savannah River components (Coe 1949, 1964). Located in Morrow Mountain State Park on the west bank of the Yadkin River, salvage excavations were conducted under the direction of Coe in the late 1940s. More recently, Drye's (1998) reanalysis of the Lowder's Ferry data suggests that the current Guilford type definition includes a degree of variability that masks the recognition of a technological continuity between Morrow Mountain and some Guilford points on the one hand and between some Guilford points and Savannah River points on the other. Accordingly, I propose two new "transitional types" within Guilford: *Guilford Lanceolate I* and *Guilford Lanceolate II*. These new types recognize a degree of technological continuity in haft form that suggests a previously unrecognized historical relatedness among Morrow Mountain, Guilford, and Savannah River points.

Rather spike-like in form, Guilford points are relatively long and slender with a lenticular and relatively thick cross-section. Guilford points are highly variable in their manufacture. Some specimens are quite well-flaked, while others are much less well made. Base shapes are straight, rounded, or concave (Coe 1964:43). Coe (1964:43) noted that a majority of his sample from Doerschuk displayed "precisely shaped concave bases," while about 10% had rounded bases. Straight bases were rare. Similar variability in base shape is seen at Lowder's Ferry where slightly more than 40% of the bases were either round or concave while about 14% were straight (Drye 1998:57) (Figure 17-5). If Coe attributed any significance to this variation in base form, he made no mention of it. In any case, Guilford points include a range of basal shapes not seen in other point types in the sequence. While little attention has been paid to this fact, I find this variation important. Based on the assumption that changes in haft style have temporal significance, I speculate that the variation in base shape among Guilford points represents evidence of transitional types. Following Drye (1998), I submit that the rounded bases on Guilford points technologically link them with the tapered stems of Morrow Mountain points, while Guilford points with concave bases are technologically linked to Savannah River points.

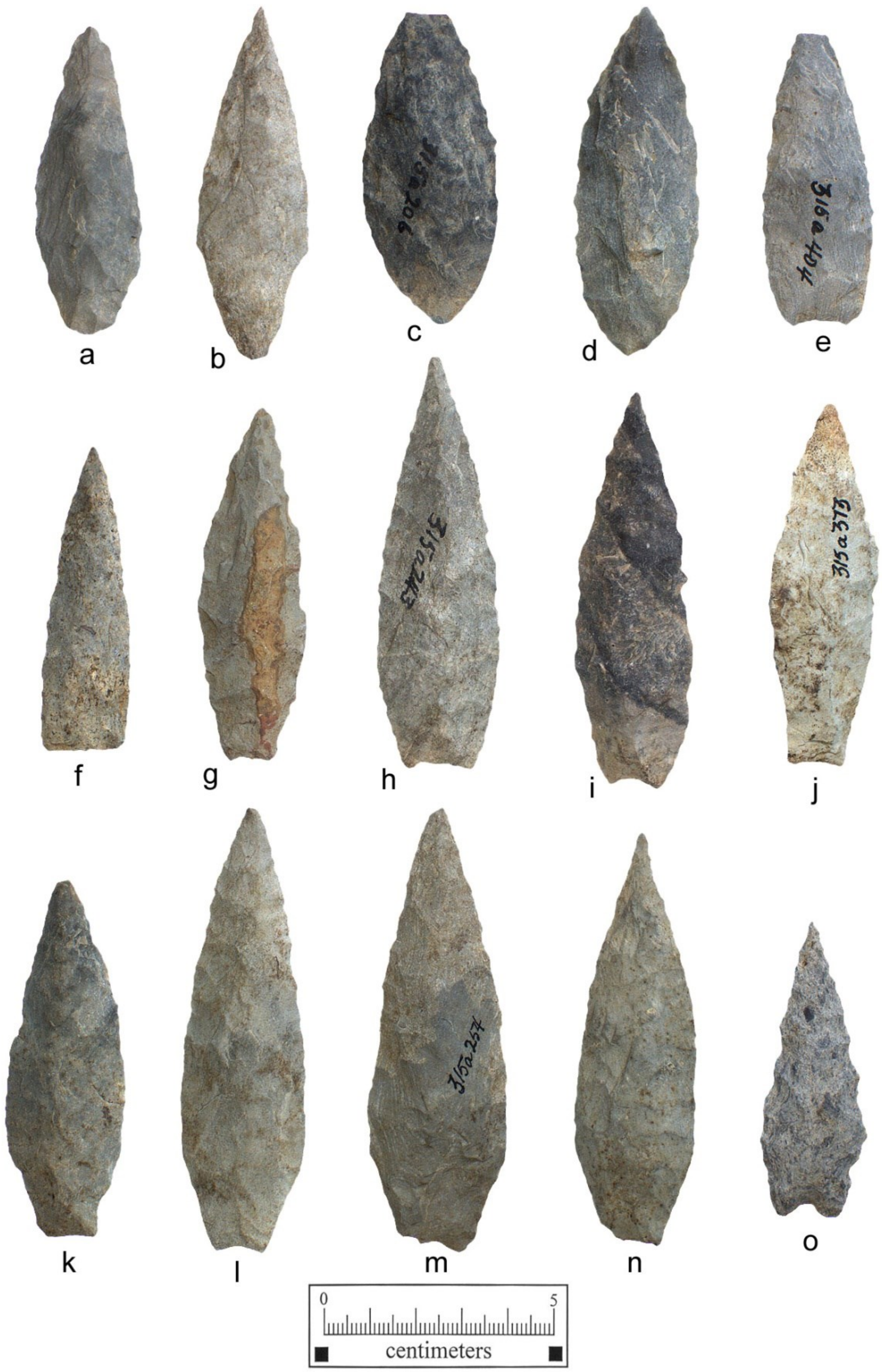


Figure 14.5. Variation in Guilford Lanceolate point bases found in stratified context from Trench 1 at Lowder's Ferry. Points with tapered bases (a–d); points with concave bases (e, h–o); and points with straight bases (f–g) (from Drye 1988:Figure 14).

Evidence supporting typological continuity among these types comes from Lowder's Ferry (Drye 1998). Although Drye's analysis indicates some stratigraphic mixing at the site, Guilford points predominate in the lower two strata described as "light sand" and "red soil" zones. These soil zones also contained several points that "were not typologically distinct from one another" (Drye 1998:37). That is, several of the specimens were ambiguous with respect to their classification as Morrow Mountain, Guilford, or Savannah River types (Figure 17-5).

With regard to Guilford points, Drye (1998:57) identified a few "transitional" specimens that resemble a Guilford point in overall form but exhibit stems that "showed a tapering similar to that of the Morrow Mountain II Stemmed point type." I view this as a significant observation and would include all rounded-base Guilford points in this category. This is based on the assumption that the rounded base on Guilford points is a hafting attribute derived from the tapered stems of Morrow Mountain points. Accordingly, I tentatively propose the type name *Guilford Lanceolate I* for Guilford points with rounded bases, some of which may also exhibit slight shoulders (Figure 17-6). This type likely represents a cultural-historic type immediately following Morrow Mountain. Moreover, I submit the technological similarities in basal form reflect an historical relatedness inconsistent with the notion of cultural intrusiveness.[6]

Similarly, I see a transitional form in the morphological similarities between the concave-based Guilford and the concave stem on Savannah River points. Drye (1998) noted such a type at Lowder's Ferry and regarded it to be a transitional form between Guilford and Savannah River types. I propose *Guilford Lanceolate II* as the type name for those points (Figure 17-7). It is characterized by a relatively long narrow shape similar to Guilford Lanceolate I but also displays a slight break in blade-base outline that is atypical of conventional Guilford points. Importantly, the stem on this type tapers into a concave base similar to Savannah River points. Interestingly, Coe (1964:43) included a "small percent" of Guilford points with slight shoulders in his definition, although he did not comment on the significance of this trait (Coe 1964:Figure 35a). However, the data from Lowder's Ferry (Drye 1998) suggest that this morphological variation could have chronological significance as large "shouldered" Guilford points—shoulders otherwise being an atypical trait on this point type—were recovered from the red soil zone containing Morrow Mountain, Guilford, and Savannah River points. Moreover, the "shoulder is slightly tapered into a straight or concave-based stem, similar to the stem of a typical Savannah River point" (Drye 1998:62). Thus, the shouldering on Guilford points may represent a technological link reflecting a transitional stage between those points currently recognized as Guilford Lanceolate and Savannah River Stemmed (Drye 1998).[7]

In any case, I regard the concave or straight base as the diagnostic attribute for this type. Moreover, I also regard the base shape of type II Guilford points as a technological trait that indicates an historical relatedness to the subsequent Savannah River point type.[8]

[6] Indeed, researchers in the Southeast have long noted the frustrating problem of distinguishing a Morrow Mountain point with a narrow blade from some Guilford points (e.g., Goodyear et al. 1979:204).

[7] In his volume on Town Creek, Coe (1995:Figure 10.4A) illustrates several examples of "Guilford blades with crude stems or notches." A distinct break in the blade-base outline occurs in those specimens. Unfortunately, those examples appear to have come from midden or mound fill context, making any determination of their temporal assignment impossible.

[8] With regard to Savannah River points Coe noted that the shoulders tended to be straight and at right angles to the stem. Yet he also illustrates some points (Figure 40 A & C) that lack a well defined shoulder. Rather, these specimens exhibit shoulders that taper into a stem. These points I would also regard as Guilford Lanceolate II.

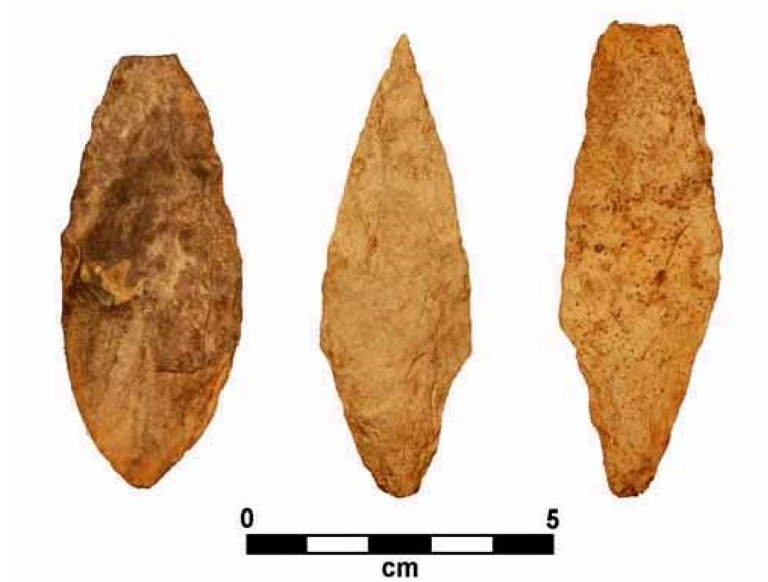


Figure 17-6. Guilford Lanceolate I. Note that these points have rounded bases that resemble the tapered stems present on Morrow Mountain points. The technological similarities in basal form reflect an historical relatedness with the Morrow Mountain type.

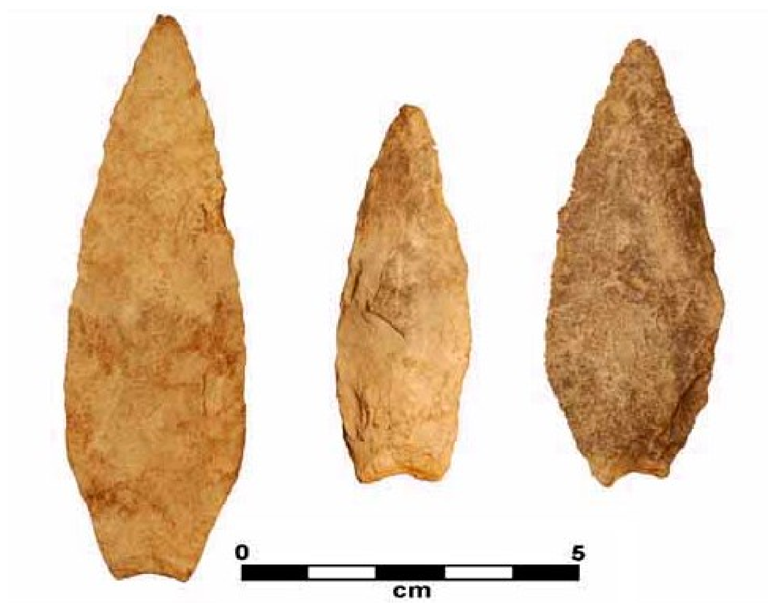


Figure 17-7. Guilford Lanceolate II. These lanceolate points display a slight break in the blade-base outline that is atypical of conventional Guilford points. This creates a shouldered effect whereby the blade tapers into a straight or concave-based stem that is the antecedent to the stem on a Savannah River point.

CONCLUSIONS

In the foregoing discussion, I proposed some revisions to the Paleoindian and Archaic period point types of the Carolina Piedmont. This revision is summarized in Figure 17-8. The key differences between Coe's (1964:Fig. 116) original point sequence and my proposed revision are as follows. First, I recognize the morphological variability among Hardaway Blades that seem to belie their common provenience at Hardaway. In particular, the small, thin, trianguloid forms do not seem to fit within the bounds of either Clovis or Dalton. Do they represent something earlier? Second, I recognize a fluted point tradition in the Piedmont represented by Clovis, Redstone, and Cumberland points. The variability in base shape and fluting likely has some spatial and temporal significance. Cumberland points are more common in Tennessee than North Carolina, and their presence in the Piedmont likely reflects the eastern limits of group forays from the west. As such, Cumberland points represent an intrusive point type that likely overlaps temporally to some degree with the more numerous and presumably indigenous Redstone type. Third, the "Piedmont Tradition" (Coe 1964; Oliver 1985), as originally conceived, makes no allowance for bifurcate-based points which are present in North Carolina. I speculate that bifurcate types also represent an intrusive tradition in the Piedmont that overlap temporally to some extent with Kirk Corner-Notched and Kirk Stemmed points. Fourth, in contrast to Coe (1964), I do not view the Morrow Mountain and Guilford Lanceolate types as successive intrusive traditions. Rather, I see a level of technological continuity in stemming that reflects some historical relatedness with the other stemmed types in the Piedmont. As such, the Morrow Mountain and Guilford Lanceolate types fit chronologically between Stanly Stemmed and Savannah River Stemmed.[9]

It bears repeating that the *Formative Cultures* sequence is as important today as it was five decades ago. Yet, it still does not account for all the variability seen in North Carolina points. In this paper I have attempted to provoke some reassessment of the *Formative Cultures* point typology. Finally, let me emphasize that I make no claim to having demonstrated any assertion I've made. Rather, I submit them as hypotheses to be tested in the same way that Coe's (1964) claims regarding intrusive point traditions should be tested. Whatever the outcome—whether the typological variability represents cultural continuity, discontinuity, or something else entirely—it's time that we recognize the variability exists and make serious efforts to explain it.

[9] For present purposes the Halifax Side-Notched point type is not included in this revision. It will be addressed in a future publication.

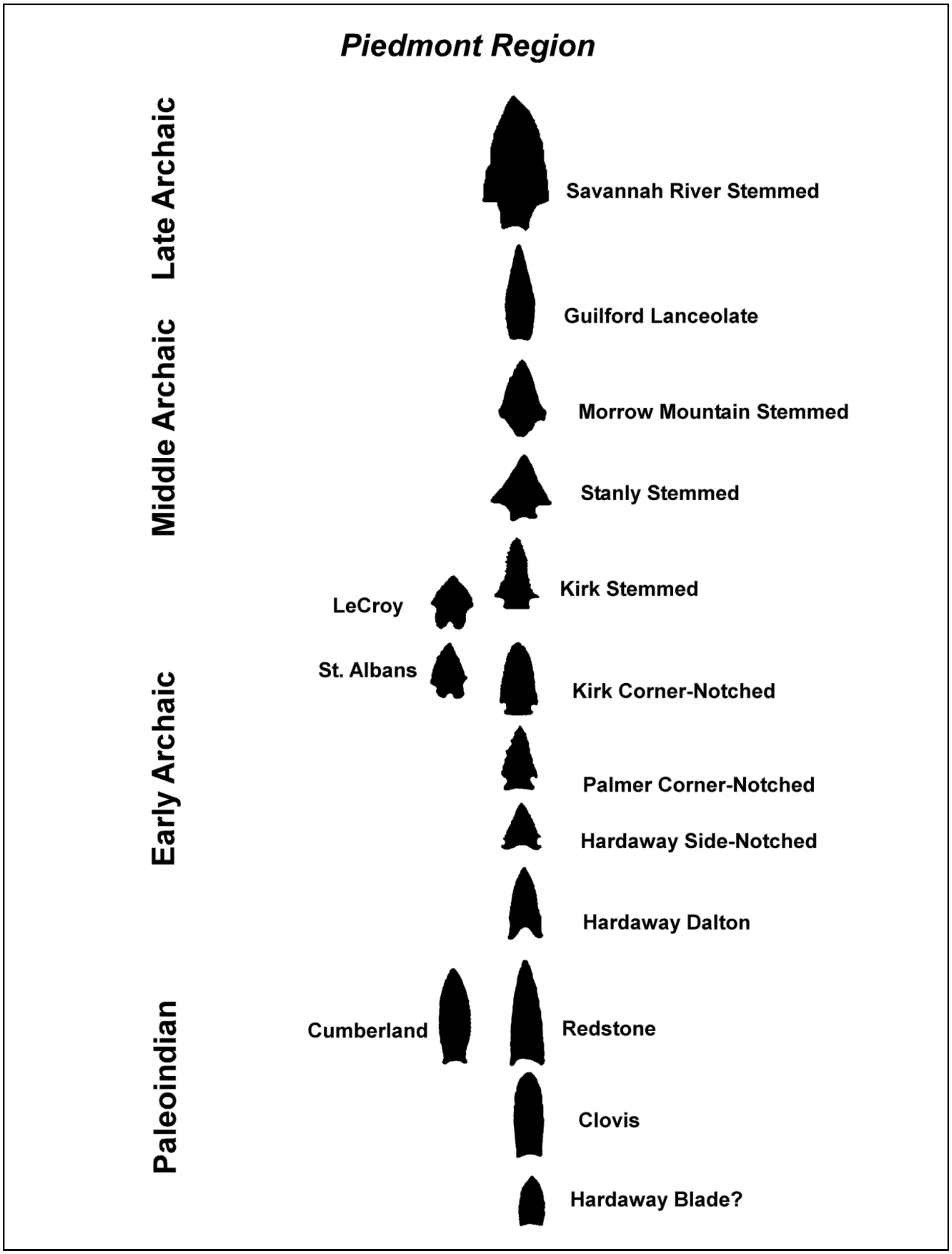


Figure 17-8. Proposed revision to the projectile point typology and chronology of the North Carolina Piedmont.

REFERENCES CITED

Anderson, David 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) 2010: Current Status and Findings. *Archaeology of Eastern North America* 38:63–90.

Anderson, David G., and Kenneth E. Sassaman

2012 *Recent Developments in Southeastern Archaeology: From Colonization to Complexity*. Society for American Archaeology, Washington, D.C.

Brennan, Louis

1967 The Taconic Tradition and the Coe Axiom. *Bulletin of the New York State Archaeological Association* 36:5–13.

Broyles, Betty J.

1971 *The St. Albans Site, Kanawha County, West Virginia*. Report of Archeological Investigations Number 3. West Virginia Geological and Economic Survey, Morgantown.

Cable, John S.

1982 Description and Analysis of Lithic Assemblages. In *The Haw River Sites: Archaeological Investigations at Two Stratified Sites in the North Carolina,* edited by S. R. Claggett and J. S. Cable, pp. 291–533. Report R-2386. Commonwealth Associates, Jackson, MI.

1996 Haw River Revisited: Implications for Modeling Terminal Late Glacial and Early Holocene Hunter-Gatherer Settlement Systems in the Southeast. In *The Paleoindian and Early Archaic Southeast*, edited by D. G. Anderson and K. E. Sassaman, pp. 107–148. University of Alabama Press, Tuscaloosa.

Chapman, Jefferson

1975 *The Rose Island Site and the Bifurcate Point Tradition in Eastern North America*. Report of Investigations 14, Department of Anthropology, University of Tennessee, Knoxville.

1976 The Archaic Period in the Lower Little Tennessee River Valley: The Radiocarbon Dates. *Tennessee Anthropologist* 1:1–12.

1977 *Archaic Period Research in the Lower Little Tennessee River Valley, 1975: Icehouse Bottom, Harrison Branch,Thirty Acre Island, Calloway Island*. Report of Investigations 18, Department of Anthropology, University of Tennessee, Knoxville.

Claggett, Stephen R., and John S. Cable (editors)

1982 *The Haw River Sites: Archaeological Investigations at Two Stratified Sites in the North Carolina Piedmont. Report 2386.* Commonwealth Associates, Jackson, MI.

Coe, Joffre Lanning
1949 Excavating in a Parking Lot at Morrow Mountain State Park. *Southern Indian Studies* 1:24–25.

1964 *The Formative Cultures of the Carolina Piedmont*. Transactions of the American Philosophical Society, new series, vol. 54, pt. 5. American Philosophical Society, Philadelphia.

Daniel, I. Randolph, Jr.
1998 *Hardaway Revisited : Early Archaic Settlement in the Southeast*. University of Alabama Press, Tuscaloosa.

2006 Three Fluted Points from the Hardaway Site. *North Carolina Archaeology* 55:103–111.

Daniel, I. Randolph, Jr., and Albert C. Goodyear
2006 An Update on the North Carolina Fluted-Point Survey. *Current Research in the Pleistocene* 23:88–90.

2011 North Carolina Clovis. Paper presented at the 2011 Annual Meeting of the Society for American Archaeology, Sacramento.

Drye, Carmen Morgan
1998 An Analysis and Interpretation of the Archaic Projectile Point Sequence from Lowder's Ferry, Stanly County, North Carolina. *North Carolina Archaeology* 47:34–65.

Feathers, James K., Edward J. Rhodes, Sebastien Huot, and Joseph M. McAvoy
2006 Luminescence Dating of Sand Deposits Related to Late Pleistocene Human Occupation at the Cactus Hill Site, Virginia, USA. *Quaternary Geochronology* 1:167–187.

Goodyear, Albert C.
1974 *The Brand Site: A Techno-functional Study of a Dalton Site in Northeast Arkansas*. Research Series No. 7, Arkansas Archaeological Survey, Fayetteville.

1999 The Early Holocene Occupation of the Southeastern United States: A Geoarchaeological Summary. In *Ice Age People of North America: Environments, Origins, and Adaptations*, edited by R. Bonnichsen and K. L. Turnmire, pp. 432–481. Oregon State University Press, Corvallis.

Haynes, Gary
2002 *The Early Settlement of North America: The Clovis Era*. University of Cambridge Press, Cambridge.

Mason, Ronald J.
1962 The Paleo-Indian Tradition in Eastern North America. *Current Anthropology* 3:227–283.

McAvoy, Joeseph M., and Lynn D. McAvoy
1997 *Archaeological Investigations of Site 44SX202, Cactus Hill, Sussex County, Virginia*. Research Report Series No. 8, Virginia Department of Historic Resources, Richmond.

McReynolds, Theresa E.
2005 Spatial and Temporal Paterning in the Distribution of North Carolina Projectile Points. *North Carolina Archaeology* 54:1–33.

O'Brien, Michael J., and R. Lee Lyman
1999 *Seriation, Stratigraphy, and Index Fossils: The Backbone of Archaeological Dating*. Plenum, New York.

Oliver, Billy L.
1985 Tradition and Typology: Basic Elements of the Carolina Projectile Point Sequence. In *Structure and Process in Southeastern Archaeology*, edited by R. S. Dickens, Jr. and H. T. Ward, pp. 195–211. University of Alabama, Tuscaloosa.

Perino, Gregory
1968 *Guide to the Identification of Certain American Indian Projectile Points*. Special Bulletin No. 3 of the Oklahoma Anthropological Society.

Purrington, Burton L.
1983 Ancient Mountaineers: An Overview of the Prehistoric Archaeology of North Carolina's Western Mountain Region. In *The Prehistory of North Carolina: An Archaeological Symposium*, edited by M. A. Mathis and J. J. Crow, pp. 83–160. North Carolina Division of Archives and History, Raleigh.

Sassaman, Kenneth E.
2001 Hunter-Gatherers and Traditions of Resistance. In *The Archaeology of Tradition: Agency and History Before and After Columbus*, edited by T. R. Pauketat, pp. 218–236. University Press of Florida, Gainesville.

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

Ward, H. Trawick, and R. P. Stephen Davis, Jr.
1999 *Time Before History: The Archaeology of North Carolina*. University of North Carolina Press, Chapel Hill.

THE CURRENT STATE OF TOWN CREEK RESEARCH: WHAT HAVE WE LEARNED AFTER THE FIRST 75 YEARS?

Edmond A. Boudreaux III

The twenty-fifth anniversary of the publication of *The Prehistory of North Carolina* provides an opportunity to take stock of contemporary North Carolina archaeology. This chapter considers what we have learned from the Town Creek archaeological site (31Mg2 and Mg3) since excavations ceased there in 1984. Town Creek is a multiple-component site in the southern Piedmont that was occupied during all periods of North Carolina's prehistory and early history. The site is best-known for its Mississippian occupation (ca. A.D. 1150–1400) during which a multiple-stage platform mound was built. The Town Creek site has been a North Carolina State Historic Site since 1955 (Carnes-McNaughton 2002; Coe 1995:31), and it is one of the state's most-visited archaeological sites. Town Creek's prominence within North Carolina archaeology derives from the extraordinary amount of fieldwork conducted at the site under the direction of Joffre Coe—one of the founders of Southeastern archaeology (Griffin 1985; Keel 2002). Town Creek's prominence within the archaeology of North Carolina is reflected by the statement of Ward and Davis (1999:131) that:

> With only mild hyperbole, it could be said that the mound on the banks of the Little River has been the center of the archaeological universe in the southern North Carolina Piedmont.

Town Creek is well-known for the extraordinary, "almost mythic" (Ward and Davis 1999:123) extent of its excavations. Fieldwork was undertaken at Town Creek from 1937 to 1984, with the exception of a seven-year hiatus (1942–1949) during and after World War II. These decades of fieldwork were part of what Coe (1995:11) referred to as "A Fifty-Year Program" for the investigation of Town Creek. The scale of fieldwork under Coe's program, and the size of the collections and records this program generated, is truly impressive. With the excavation of over 96,000 ft^2 in 984 units and the almost complete excavation of the site's platform mound (Boudreaux 2005; Coe 1995:60, 152), Town Creek is one of the most extensively investigated sites in the Southeast. The archaeological materials from these excavations comprise one of the largest collections curated by the Research Laboratories of Archaeology (RLA) at the University of North Carolina-Chapel Hill (UNC) (R.P. Stephen Davis, Jr., personal communication 2011).

The extraordinary history of field investigations and the outstanding archaeological collections these investigations produced might lead one to think that Town Creek is one of the best-understood sites in North Carolina. Ironically, much remains to be learned about the site. Until recently, some very basic aspects of Town Creek's occupation and material culture had not been thoroughly investigated. Major strides have occurred in Town Creek research in the past 25 years, and this chapter will consider some of these developments. The mid-1980s will be used as a baseline for Town Creek studies, which is appropriate for at least two reasons. First, 1983 saw the publication of *The Prehistory of North Carolina: An Archaeological Symposium*, a work that is used as a bit of a touchstone in this chapter. Indeed, according to the book's back cover, the authors of that volume "offer a contemporary view of what we now know about North Carolina's prehistoric past." A second reason the mid-1980s are used as a baseline for Town Creek studies

Chapter submitted August 13, 2011, and final version received on June 21, 2013.

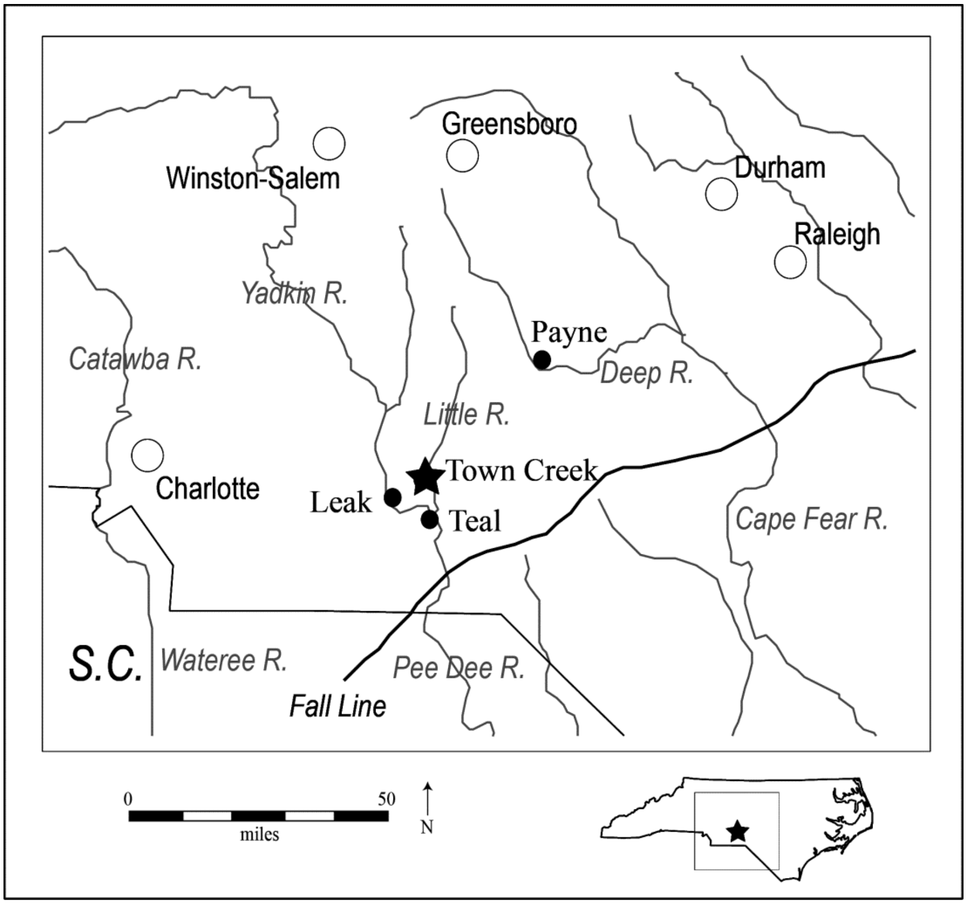


Figure 18-1. Town Creek area map showing sites mentioned in text (base map from Ward and Davis 1999:Figure 4.1).

is that 1984 was the last season of fieldwork at Town Creek under the overall direction of Joffre Coe, closing the fieldwork component of Coe's (1995:11) Fifty-Year Program for the site's investigation.[1]

BACKGROUND

The Town Creek site (31Mg2 and Mg3)[2] is located on the Little River in Montgomery County in the southern Piedmont of North Carolina near the town of Mt. Gilead (Figure 18-1). The site's Mississippian component consists of a 12-ft-tall platform mound that was almost completely excavated (Boudreaux 2005:19–23; Coe 1995:62–77). An area of intense occupation, indicated by thousands of features, is located adjacent to the mound, between it and the Little River which flows along the east side of the site (Figure 18-2). Decades of excavations at Town Creek have resulted in the documentation of over 15,000 features, the identification of approximately 40 structures, the excavation of over 200 burials that contained nearly 250 individuals, and the recovery of hundreds of thousands of artifacts (Boudreaux 2005, 2007a; Coe 1995).

Town Creek's Mississippian component is included within the cultural unit known as South Appalachian Mississippian, a regional variant of Mississippian culture that is characterized by paddle-stamped ceramics that are not shell-tempered (Caldwell 1958:34; Ferguson 1971:7–8;

Figure 18-2. Town Creek map showing all features documented at the base of plowzone.

Griffin 1967:190). Town Creek is the type site for the Pee Dee cultural unit, a localized Mississippian archaeological culture that occurs in portions of south-central North Carolina and northeastern South Carolina (Coe 1952:308–309; DePratter and Judge 1990:56–58; Kelly 1974; Mountjoy 1989; Oliver 1992; South 2002; Stuart 1975; Trinkley 1980). The Mississippian pottery found at Town Creek and nearby sites is attributable to the Pee Dee series, which is characterized by paddle-stamped surface treatments, pastes tempered with sand and medium-sized grit, and distinctive rim treatments (Boudreaux 2007b; Coe 1952:308–309, 1964:33, 1995:151–190; Reid 1965, 1967).

Although this chapter focuses on the Mississippian period at Town Creek, it is important to know that many other components are present at the site. Coe (1952, 1995:152) discusses projectile point and pottery types that indicate the presence of Native Americans at Town Creek during all cultural periods in the archaeological sequence of the North Carolina Piedmont (see Ward and Davis 1999:Figure 1.5) from the Early Archaic through Historic periods. The presence of a previously unrecognized Paleoindian component is indicated by the recovery of a Clovis point during excavations conducted in 2009 (Boudreaux et al. 2009). Such evidence of continued and repeated use of Town Creek clearly indicates that it was a good place to live throughout all of North Carolina's human occupation. As Coe (1995:85) points out, the site is located on a broad, flat, elevated terrace that has never been known to flood, and, perhaps, it was the site's elevated location adjacent to the Little River and its floodplain resources that attracted many different people to this location over thousands of years.

ESTABLISHING A BASELINE FOR TOWN CREEK STUDIES

In order to consider what has been learned about Town Creek and Mississippian culture in the southern Piedmont, it must first be established what was known 25 years ago. Ironically, the *Prehistory of North Carolina* volume tells us virtually nothing about the site, even though images of Town Creek's mound grace the book's front and back covers. Although it was the Alpha and the Omega of that volume, Town Creek and Mississippian culture were not integrated at all into Trawick Ward's (1983) fine chapter on the archaeological sequence of the Piedmont. Town Creek is included in a map of the Piedmont (Ward 1983:Figure 2.1), mentioned twice in the section on the history of Piedmont archaeology (Ward 1983:57 and 59), and represented by a single photograph (Ward 1983:Figure 2.3) showing a trench into the mound. The most likely reason for Town Creek's omission is that no one other than Coe would have been able, or, perhaps more likely, would have been willing, to discuss Town Creek, so it was simply not included. Few sites have been as closely associated with one of the founding fathers of Southeastern archaeology as Town Creek has been associated with Joffre Coe (Griffin 1985; Keel 2002). Coe was the clearinghouse for Town Creek data, and therefore information and interpretations, for half a century, so it is not surprising that the site was not discussed by Ward in any meaningful way. Apparently, Coe was not ready to talk about Town Creek because his chapter in *The Prehistory of North Carolina* volume dedicates only a single paragraph (Coe 1983:169-170) and four photographs (Coe 1983:Figures 4.4 and 4.5) to Town Creek, and these are in a section on the history of North Carolina archaeology.

The lack of information and interpretations about Town Creek in the *The Prehistory of North Carolina* forces one to look to other sources to establish a baseline for assessing the current state of knowledge about Town Creek. The earliest of these is Coe's (1952) contribution to the volume *Archeology of Eastern United States* where he first published his ideas about Town Creek and Pee Dee culture. In that chapter, Coe (1952:308–309) established that while Town Creek was similar to Mississippian sites to the south and west, it was different from the cultural traditions of the Piedmont to the north. Pee Dee culture was seen as intrusive to the North Carolina Piedmont, and the Mississippian occupation of Town Creek was interpreted as representing the migration of a foreign people into the region. Coe appears to have maintained this interpretation throughout his career because this idea is implied, although never explicitly stated, in his book on Town Creek which was published more than 40 years later (Coe 1995:154–155, 159–160, 167).

Two other works that made important, early contributions to Town Creek studies were both written by J. Jefferson Reid (1965, 1967), a graduate student at UNC who analyzed pottery from various contexts within the mound for his master's thesis (Ward and Davis 1999:125). Reid's 1965 publication discussed the similarities that the ceramics at Town Creek shared with Mississippian sites to the south, which suggested to him the existence of cultural similarities among the groups that occupied these sites. Reid's (1967) thesis, which focused on the mound at Town Creek and the ceramics that it contained, used radiocarbon dates to determine that the site's Mississippian occupation had occurred between ca. A.D. 1100 and 1400. Reid (1967) clearly showed that the site changed a great deal during this time, as indicated by significant architectural changes represented in the mound. Reid's thesis was important not only because of the interpretations it presented, but also because it represented one of the only, perhaps the only, presentation of information and data from the Town Creek fieldwork during all of Coe's Fifty-Year Program.

Coe's 1995 publication *Town Creek Indian Mound: A Native American Legacy*, which was published well after fieldwork ended at Town Creek in 1984, presents his ideas about Town Creek based on the totality of fieldwork that occurred there under his direction. A major theme of this book, an idea around which nearly all of its interpretations are centered, is that Town Creek had been largely, perhaps exclusively, ceremonial in purpose. Rather than being seen as the remains of a village (but see Coe 1952:309), the archaeological record of Town Creek was seen as coming from ceremonial activities (Coe 1995:61 96–97, 264; Wilson and Hogue 1995:145, 148) that were largely mortuary-based (Coe 1995:226, 263–278), and from the activities of a small, resident population of ritual specialists (Oliver 1995:108; Trinkley 1995:118).[3] Coe's book provides much useful information, including an excellent history of archaeological investigations at Town Creek (Coe 1995:11–41). It also includes chapters on major artifact classes, and some discussions of architecture and site structure. Although Coe (1995:xxv) states that the book is not intended as a comprehensive report of investigations at the site, the absence of such a report limits the book's utility because few data are presented and no data are systematically reported by context. This makes it difficult, if not impossible, to use archaeological evidence to evaluate some of the interpretations presented by the volume's contributors.

THE STUDY OF TOWN CREEK AFTER COE'S FIFTY-YEAR PROGRAM

Several notable accomplishments have occurred in Town Creek studies in recent years. One major change in Town Creek research has been the gaining of access to the site's collections by a larger group of scholars. The gaining of access by other researchers is significant because Town Creek is one of the most extensively excavated Mississippian sites in the Southeast, and its archaeological information and collections provide a rare opportunity to investigate an entire Mississippian settlement. Unfortunately, Town Creek has not really been integrated into Mississippian studies. The site's marginal position in Mississippian studies is the result of both the nature of its occupation during the Mississippian period and its modern history of research. Regarding its Mississippian occupation, Town Creek was a relatively small community on the very edge of the Mississippian world. Regarding its history of research, Town Creek has undoubtedly played a minor role in Mississippian studies because the information available about the site has been fairly limited. Coe controlled Town Creek studies for over 50 years, but he did not publish on the site until 1995, and this publication is problematic. With the exception of the works of Reid (1965, 1967, 1985), information about Town Creek and access to its collections simply was not available to other researchers.

The excavated materials from Town Creek hold great potential for addressing a number of archaeological research questions, and several recent studies have started to tap into the potential of these collections. Recent analyses of Town Creek data and collections have focused on ceramics (Boudreaux 2007b, 2010a), burials and associated mortuary goods (Boudreaux 2010b; Cunningham 2010; Davis et al. 1996; Driscoll 2001, 2002), and architectural remains (Boudreaux 2005, 2007a). These analyses represent significant progress toward better understanding the Mississippian period in the southern Piedmont of North Carolina and the Mississippian occupation of the Town Creek site itself.

These recent contributions can be grouped into three general categories. First, recent years have seen the definition and refinement of a Mississippian regional sequence (*sensu* Willey and Phillips 1958:27) for North Carolina's southern Piedmont (Boudreaux 2005, 2007b; Oliver 1992). Second, Town Creek's local sequence has been refined into a series of temporally restricted occupations that allow for a better understanding of how the site changed throughout the Mississippian period (Boudreaux 2005, 2007a). Third, several mortuary and bioarchaeological studies of the large number of human burials excavated at Town Creek have provided insights into health, activity patterns, and some of the social and political statuses expressed in the site's mortuary contexts (Boudreaux 2005, 2007a, 2010b; Cunningham 2010; Driscoll 2001, 2002).

Mississippian Regional Sequence for the Southern North Carolina Piedmont

Significant progress has been made in establishing and refining the Mississippian regional sequence of the southern North Carolina Piedmont since Coe (1952:308–309) first defined the Pee Dee culture concept. Efforts to subdivide the Mississippian period into smaller culture-historical units such as phases and subphases (Table 18-1), which presently range from 50 to 150 years in duration, represent considerable improvement over the previously undifferentiated span of four to five centuries (see Coe 1995:159). This progress has resulted from the testing of several Pee Dee sites outside of Town Creek, the acquisition of multiple radiocarbon dates associated with discrete ceramic assemblages, and the re-analysis of existing collections (Boudreaux 2005, 2007b; Mountjoy 1989; Oliver 1992). Oliver (1992:235–257) first subdivided the Mississippian period in the southern Piedmont into three cultural phases based on materials he excavated from the Teal and Leak sites. Although the general framework of these phases is still used, two significant revisions have been made. First, the ceramic content of these phases was explicitly defined, which has allowed the identification of diagnostic types, modes, and assemblages (Boudreaux 2005, 2007b). Second, the temporal span of the three phases has been refined based on assemblages and radiocarbon dates from the Town Creek, Leak, Teal, and Payne sites (Boudreaux 2005, 2007b; Mountjoy 1989; Oliver 1992). This process has allowed the Town Creek and Leak phases to be subdivided into early and late sub-phases based on the appearance of diagnostic ceramic types and modes (Boudreaux 2007b).

Table 18-1. Dates (A.D.) for Phases in the Town Creek Area.

Phase	Calibrated Date (A.D.)	Uncalibrated Date (A.D.)	Oliver's (1992) Original Dates
Leak	1300–1500	1300–1550	1400–1600
Late	1400–1500	1450–1550	
Early	1300–1400	1300–1450	
Town Creek	1150–1300	1050–1300	1200–1400
Late	1250–1300	1250–1300	
Early	1150–1250	1050–1250	
Teal	1000–1150	900–1050	950–1200

Town Creek's Mississippian Occupational Sequence

Establishing a chronology and controlling for the element of time has posed, and continues to pose, one of the greatest challenges to investigating the Town Creek site more fully. The large proportion and ubiquity of Pee Dee ceramics at Town Creek indicates that the bulk of the site's occupation occurred during the Mississippian period, and much of Coe's (1952, 1995) efforts focused on interpreting the origins, nature, and timing of the site's Mississippian occupation. Coe (1952, 1995) and Reid (1967) clearly established that Town Creek was occupied during the Mississippian period. It was less clear, however, exactly when the site was occupied during this long period of time and how the site changed during this occupation. One contribution of recent research at Town Creek is that the site's original chronology, based on four radiocarbon dates (Reid 1967), has been augmented by three additional dates (Table 18-2) (Boudreaux 2005, 2007b:Table 15). The span of these dates in combination with cross-dating against ceramic sequences to the south (Boudreaux 2005, 2007b) indicates that Town Creek's Mississippian occupation took place primarily, and perhaps exclusively, during the Town Creek and Leak phases in the centuries between A.D. 1150 to 1400 (calibrated).

This 250-year span is still a very long time, and significant efforts have been made to subdivide this period to investigate how Town Creek may have changed during the Mississippian period. Both Coe (1995) and Reid (1967, 1985) discuss change through time regarding the stratified deposits of the mound area where submound buildings were covered by a multiple-stage platform mound that had buildings on at least two of its summits (Boudreaux 2005, 2007a). Based on the significant amount of change represented in the architecture of the mound area, one would expect the archaeological deposits of the rest of the site to contain comparable evidence for change. Unfortunately, the investigation of discrete contexts within the site's Mississippian component is not as straightforward as one would hope. Part of the problem has to do with the complexity of the archaeological record at Town Creek. The site's extremely long history of human occupation, intensive occupation during the Mississippian period, and lack of stratified deposits has produced an archaeological record in which thousands of features and tens-of-thousands of artifacts from approximately 12,000 years of occupation are encountered in the plowzone and on the same surface at the base of plowzone (see Figure 18-2). In addition to

Table 2. Mississippian Period Radiocarbon Dates from Town Creek.

Sample Code	Context	Age (BP)	Uncalibrated Date	Calibrated 1-Sigma[a]	Calibrated 2-Sigma[a]	Phase Association	References
Beta-184061	Sq. 170L40/Pit	300	A.D. 1650$\pm$60	1495–1650	1450–1675	Late Leak	Boudreaux 2005:72
FSU-185/FSU-175	Townhouse I	595	A.D. 1355$\pm$50	1305–1405	1290–1420	Early Leak	Reid 1967:62[b]
FSU-186/FSU-176	Townhouse II	670	A.D. 1280$\pm$40	1280–1385	1270–1395	Early Leak	Reid 1967:62[b]
FSU-145/FSU-154	Townhouse II	600	A.D. 1350$\pm$140	1260–1450	1155–1640	Early Leak	Reid 1967:62[b]
Beta-201468	Structure 4a	820	A.D. 1130$\pm$40	1185–1260	1155–1275	Early Town Creek	Boudreaux 2005:157
FSU-184/FSU-174	Level A	745	A.D. 1205$\pm$140	1155–1395	1015–1440	Early Town Creek	Reid 1967:62[b]
Beta-201469	Structure 5a	940	A.D. 1010$\pm$40	1030–1160	1020–1185	Teal / E. Town Creek	Boudreaux 2005:157

[a] See Stuiver et al. 2005.
[b] Dates also discussed in Eastman 1994.

having to contend with "the forest of postholes" (Coe 1995:90) encountered at the base of plowzone, analysis and interpretation is complicated by the excavation methods used at Town Creek. Although the site was extensively excavated and huge portions of its Mississippian community were exposed, approximately half of the features encountered at the base of plowzone were not excavated (Boudreaux 2005:23; Coe 1995:60; Ferguson 1995:xv). One advantage of this approach was that the excavation of only plowzone deposits allowed for rapid, efficient investigations that exposed much of the site's Mississippian component. Another advantage is that future excavators can plan fieldwork with a reasonable expectation of the features they will encounter in the portions of the site where the plowzone has been previously excavated, a situation that has been likened to having an x-ray of the archaeological deposits at Town Creek (Ferguson 1995:xvi). A significant disadvantage to this approach is that it is challenging, if not impossible, to identify discrete architectural elements, such as structures, in portions of the site where features were not excavated (Boudreaux 2005:96–99).

Coe (1995:90) acknowledged the challenge of identifying architectural patterns in the morass of features at Town Creek, but he did not present any systematic attempt to identify or discuss structures. Instead, he significantly simplified the site's complex archaeological deposits by focusing on only a few of the clearest examples of architecture (Coe 1995:Figure 5.3)—which he leavened with a heavy dose of Creek ethnohistory—to extrapolate a tidy interpretation of site structure. For example, although he notes the presence of 17 circular structures with interior burials, a type of structure he interprets as a mortuary, he discusses only one of them in detail (Coe 1995:265). This structure (Structure 7 in Figure 18-6), known as Mortuary D in the Town Creek literature (Boudreaux 2005, 2007a), is one of the only structures of this type that was completely excavated, and it is the basis for the mortuary building that has been reconstructed at the site (Carnes-McNaughton 2002:13). Coe (1995:266–268) gives some general interpretations of how these structures were used, presumably based on the complete excavation of this single structure. The use of a single excavated example to define a type of structure also appears to have occurred with a rectilinear building (Coe 1995:Figure 5.10), first identified by Stanley South (Boudreaux 2005:215), along the northern edge of the plaza (Structure 38 in Figure 18-6). Coe (1995:96–97) interpreted this structure as a "shed," the function of which would have been analogous to the ceremonial buildings that surrounded the squaregrounds of historic Creek communities. Although Coe (1995:97–98) discusses the difficulty in indentifying additional sheds at Town Creek and he admits that these structures were not neatly arranged around the plaza as they were in historic Creek communities, he leaves the reader with the impression that these structures are present at Town Creek and that the site's plaza functioned in much the same way as did the Creek squareground. This is certainly the arrangement of structures depicted in Barton Wright's drawings of Town Creek, which Coe states are accurate with only minor modifications being needed (Coe 1995:Figure 5.11).

One of the greatest challenges to realizing the potential of the existing collections from Town Creek is being able to divide the quagmire of postholes and pits at the site into discrete spatial and temporal units so that meaningful comparisons of synchronic variation and diachronic change can be made. Imposing some sort of order on the chaos of the unstratified deposits away from the mound has been, and probably always will be, one of the greatest challenges for investigating Town Creek. Several recent accomplishments in Town Creek studies have come from attempts to identify architectural patterns in the bewildering mess of features at the site. A necessary first step in this process was a cleaning up of Town Creek's original site-wide map of archaeological features, a document that was known to contain a number of errors. R. P. Stephen Davis, Jr. of the RLA addressed this problem by undertaking a project that resulted in the construction of a digital photomosaic for the entire site (Boudreaux 2005:99–110; Boudreaux and Davis 2002). A well-known aspect of the Coe-directed fieldwork at Town Creek was that every non-mound excavation unit was photographed at the base of plowzone from a specially constructed tower for the purpose of arranging the photographs of each unit into a photomosaic that showed the archaeological features encountered across the entire site at the base of plowzone (Coe 1995:49–60; Dickens 1968). Although a site-wide mosaic of print photographs was never constructed, Davis designed a project that assembled a digital photomosiac by scanning the prints intended for the original mosaic and arranging these images spatially with geographic information system software (Boudreaux and Davis 2002). Now, for the first time, a site-wide photomosaic—envisioned by Coe at the beginning of fieldwork and contributed to by every on-site archaeologist since then—finally exists (Figure 18-3).[4]

The construction of the digital photomosaic has allowed the original, overall site map (Figure 18-4) to be edited and corrected, which has significantly reduced the clutter in some parts of the revised map (see Figure 18-2). The corrected map was then used as the basis for identifying architectural elements across the entire site, a task that had not been undertaken before (Boudreaux 2005:105–110). Several types of structures, dozens of individual structures, two enclosures, and several palisade lines were identified as part of this process (Figures 18-5 and 18-6) (Boudreaux 2005:Figure 3.15, 2007a:Figure 2.1; Boudreaux and Davis 2002). The superposition and spatial arrangements of these architectural elements were then used in combination with associated radiocarbon dates and diagnostic ceramics to subdivide Town Creek's Mississippian component into a sequence of occupational stages that shows how the spatial arrangement, form, and function of architecture across the site changed through time (Boudreaux 2007a:44–65). Changes in architecture suggest that Town Creek began during the early Town Creek phase (A.D. 1150–1250) as a village of circular houses around a plaza (Figure 18-7) (Boudreaux 2007a:49–55). The site was transformed around A.D. 1250 by the construction of the platform mound, after which, during the early Leak phase (A.D. 1300–1400), the space around the plaza was occupied by kin-group cemeteries and associated structures (Figure 18-8) (Boudreaux 2007a:55–60, 2010b).

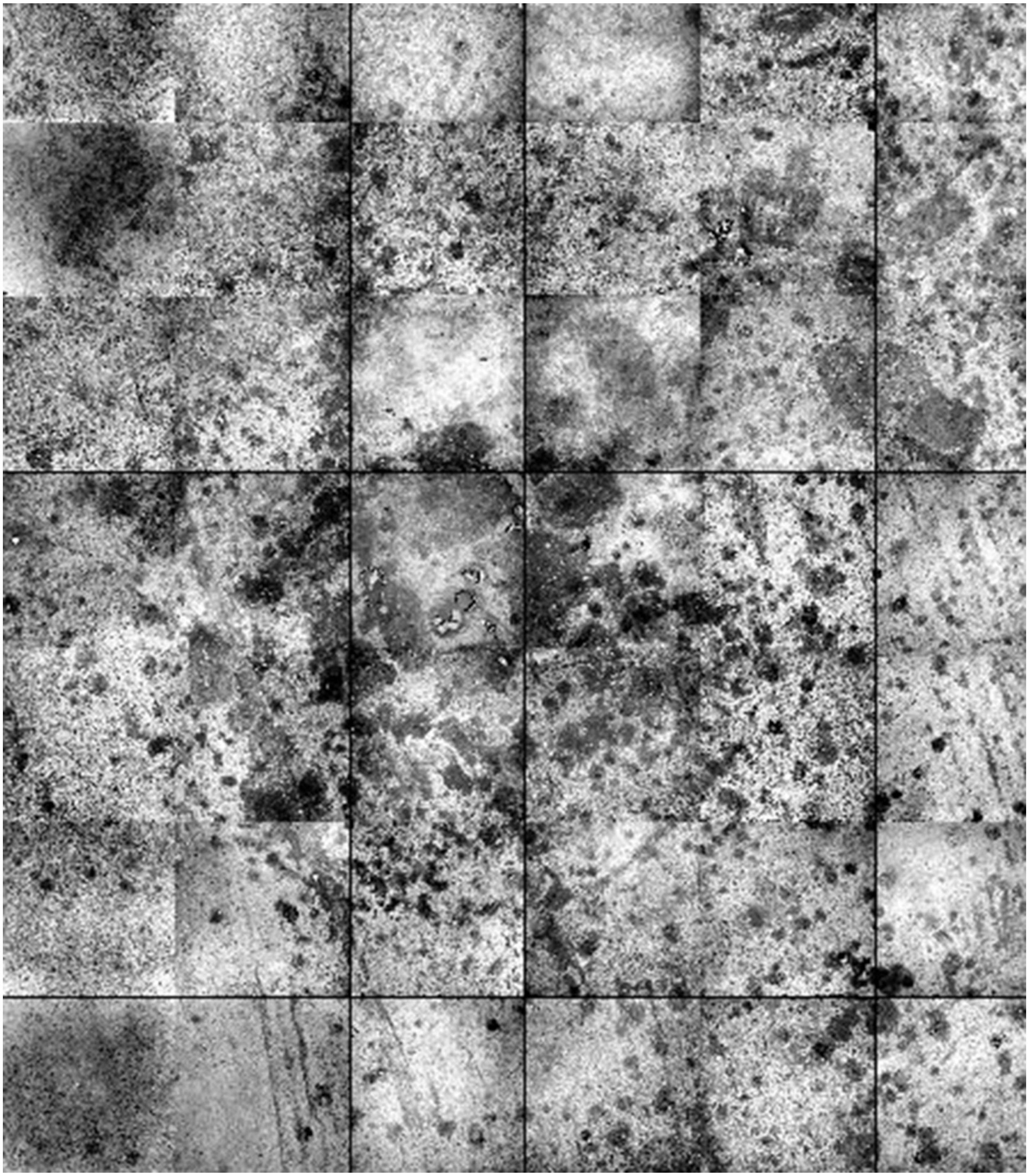


Figure 18-3. Section of the digital photomosaic showing Structure 7 (Mortuary D). Each square depicts a 10×10-ft excavation unit.

Figure 18-4. The original, unrevised map of archaeological features at Town Creek.

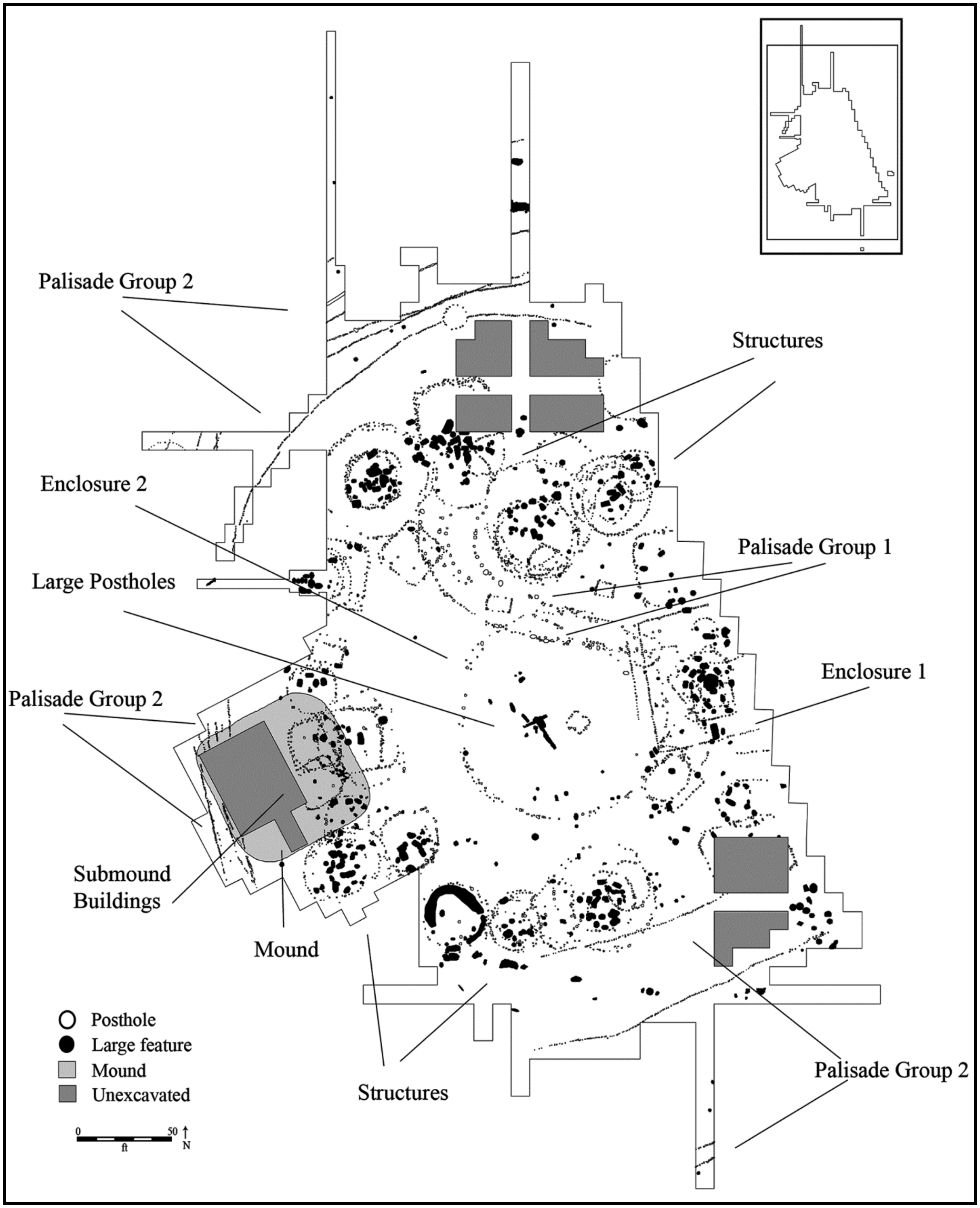


Figure 18-5. Identified architectural elements at Town Creek.

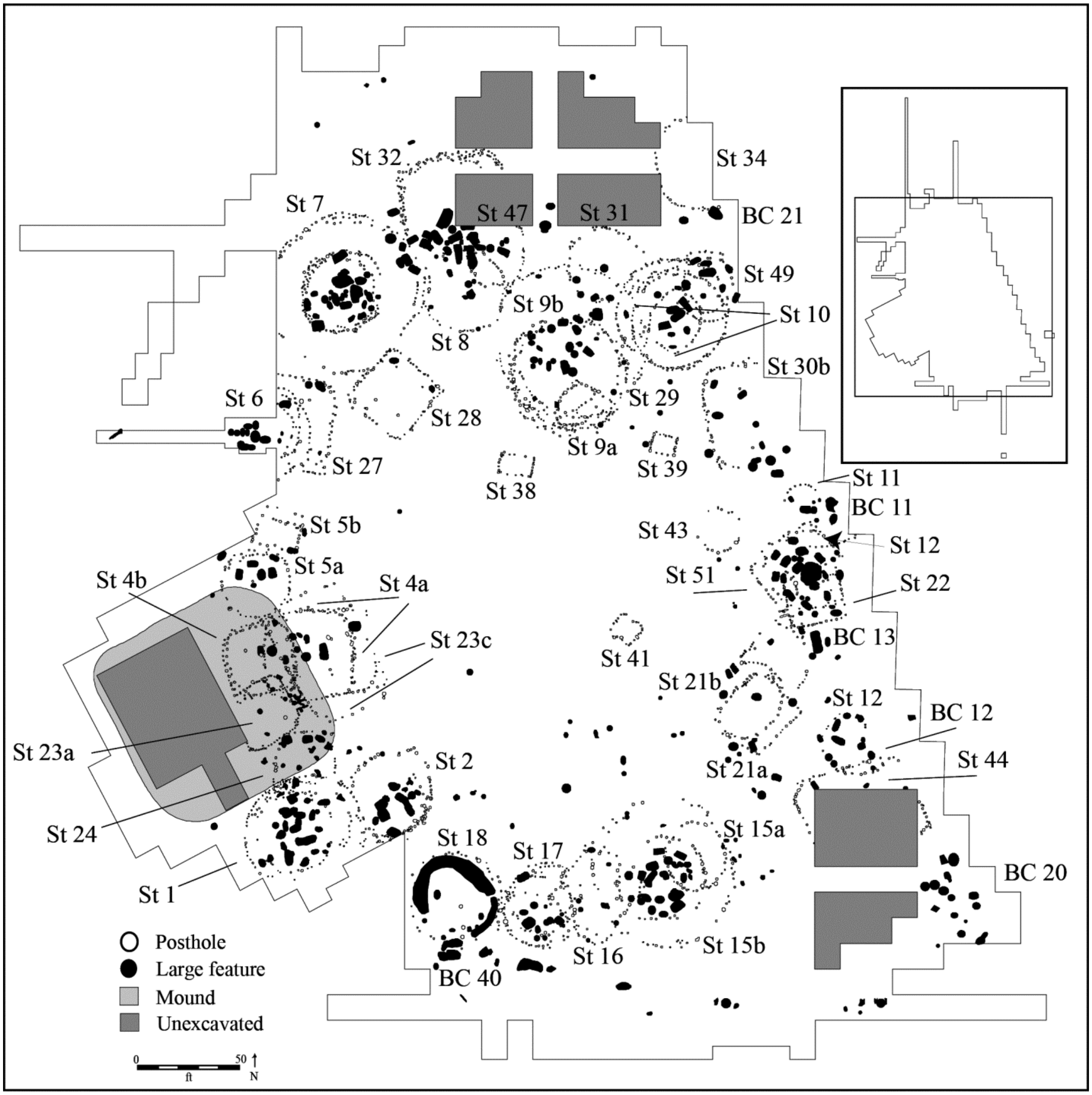


Figure 18-6. Structures (St) and burial clusters (BC) at Town Creek.

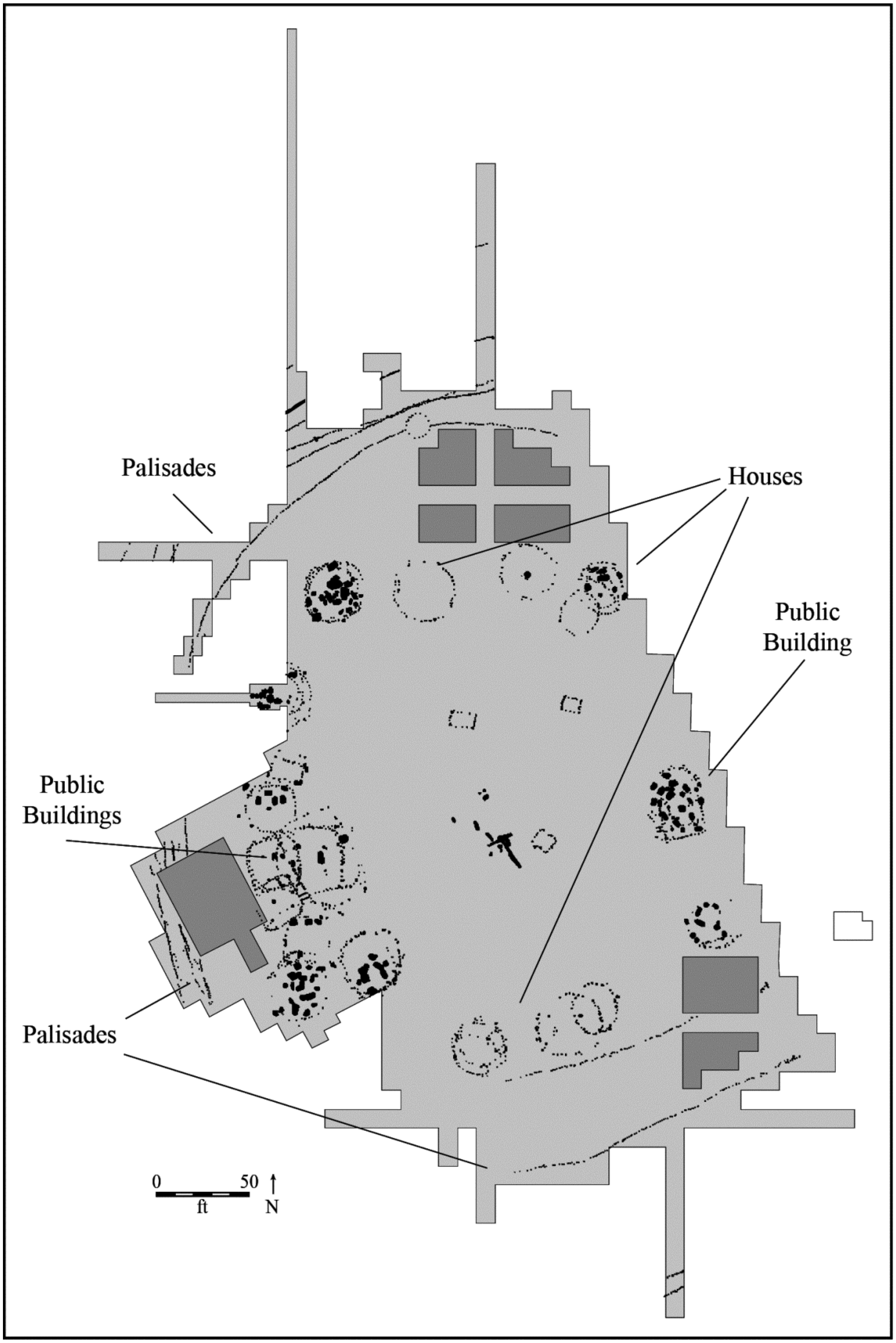


Figure 18-7. Select architectural elements from the early Town Creek phase occupation.

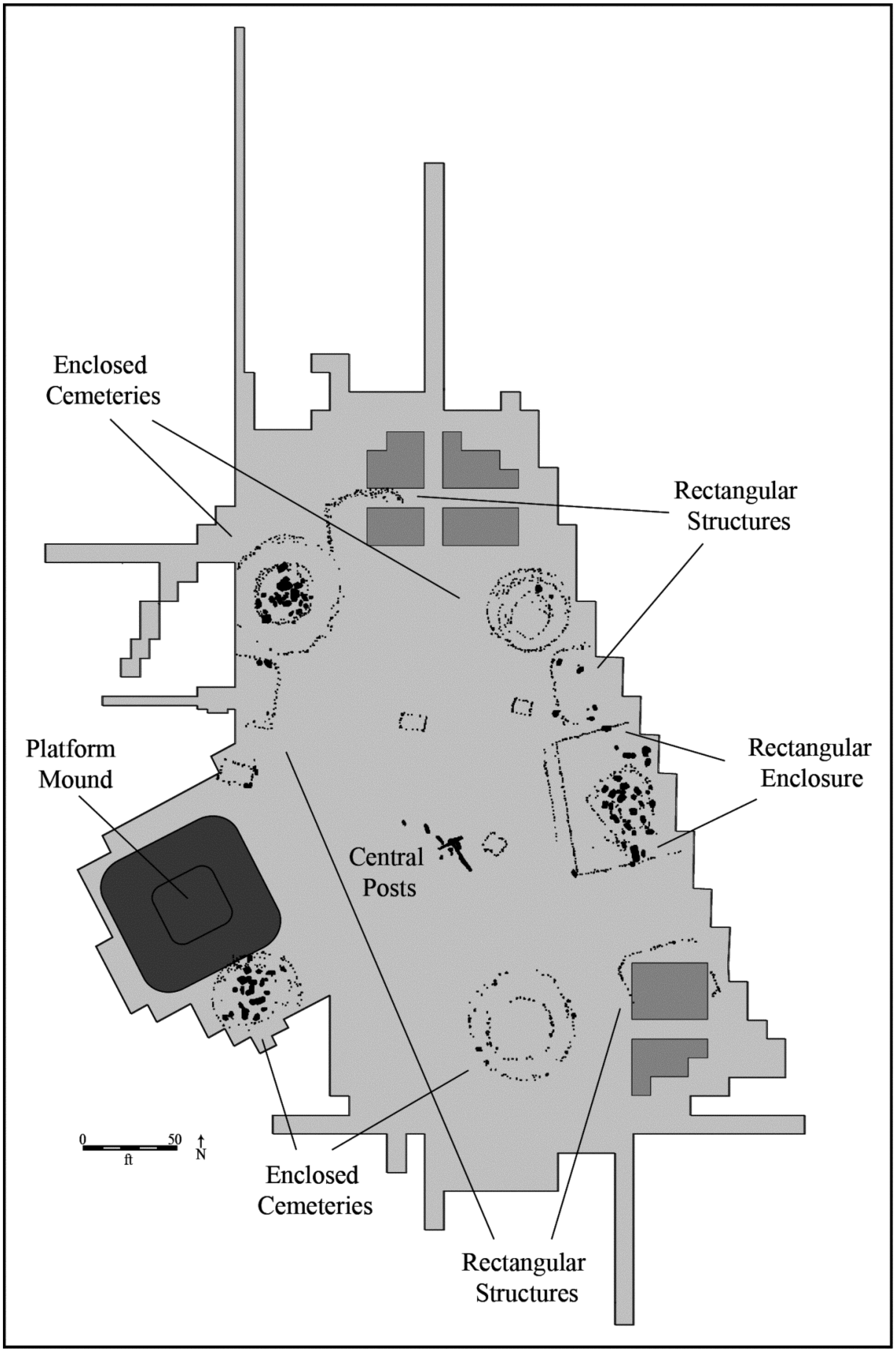


Figure 18-8. Select architectural elements from the late Town Creek-early Leak phase occupation.

Mortuary and Bioarchaeological Studies

Although a large number of burials—217 burials containing the remains of 249 individuals—were excavated at Town Creek (Boudreaux 2005), only five were discussed in detail in Coe's (1995) Town Creek book. These five individuals, which represent only 2% of the excavated burials and an even smaller proportion of the over 500 burials estimated to be present at the site (Coe 1995:264), were presented as examples of the people who lived at Town Creek during the Mississippian and Historic periods (Burke 1995). Since 1995, all of the excavated burials from Town Creek have been analyzed, the data have been reported, and these data have been used to investigate bioarchaeological and mortuary questions on multiple occasions (Boudreaux 2007a, 2010b; Cunningham 2010; Davis et al. 1996; Driscoll 2001, 2002). All of the human remains from Town Creek were first analyzed systematically as part of the site's Native American Graves Protection and Repatriation Act inventory (Davis et al. 1996). The age and sex data presented in that report were later used to investigate spatial and temporal differences in mortuary treatment among different contexts that may reflect the expression of social and political statuses (Boudreaux 2005, 2007a, 2010b). All of the human remains from Town Creek also were examined by Driscoll (2001, 2002), who considered them from a bioarchaeological perspective that emphasized social bases for differences in health and activity patterns. A second bioarchaeological analysis by Cunningham (2010) concluded that the people of Town Creek did not suffer from issues associated with poor nutrition or violence.

CONCLUSIONS

Significant progress has been made in the study of Town Creek and Mississippian culture in North Carolina's southern Piedmont over the last 25 years. This chapter has considered changes in Town Creek studies that have occurred since the beginning of Coe's Fifty-Year program, and it has emphasized analytical achievements since the fieldwork overseen by Coe ended in the mid-1980s. Accomplishments include: (1) involving more people in the study of Town Creek; (2) the interpretation and reporting of data from the analysis of human burials, mortuary contexts, ceramics, and architectural remains; (3) revising the region's Mississippian culture history; (4) constructing the site-wide photomosaic envisioned by Coe; and (5) identifying discrete episodes of occupation within the site's Mississippian component.

This chapter will conclude by summarizing some of what has been learned about Town Creek since the first fieldwork was conducted there in 1937. Town Creek was the location of a Mississippian town that was occupied during the Town Creek (A.D. 1150–1300) and Leak (1300–1500) phases (Boudreaux 2007a), and the nature of the Mississippian community at Town Creek changed a great deal during its existence. Town Creek was intensively occupied from approximately A.D. 1150 to 1400. Town Creek appears to have started during the early Town Creek phase as a community of circular houses surrounding a plaza with public buildings located on the plaza's east and west sides (see Figure 18-7) (Boudreaux 2007a:49–55). Around A.D. 1250, during the late Town Creek phase, a platform mound was built on the western side of the plaza over several earlier public buildings (Boudreaux 2007a:55–60). The mound was possibly built in four stages, and at least three of these stages probably supported public buildings (Boudreaux 2005:133–149, 2007a:31–38; Coe 1995:Figure 4.23). Mound construction and use appears to have continued into the early Leak phase, until at least A.D. 1350. Significant changes in the site's public and domestic architecture accompanied or followed the construction of the mound. A rectangular enclosure and several buildings were constructed on the eastern side of the plaza next to the Little River, possibly at the same time the mound was built (see Figure 18-8) (Boudreaux 2005:159–179, 2007a:38–40). After the mound was built, the former locations of houses were encircled with enclosures of wooden posts and used as cemeteries during the late Town Creek and early Leak phases (Boudreaux 2005:254–255, 2007a:59, 2010b:219–222). These enclosed cemeteries appear to have been associated with large, rectangular structures, and it is possible that buildings of both types were used by kin groups that constituted the Town Creek community (Boudreaux 2005:254–255, 2007a:60, 2010b:221). Town Creek appears to have started as a village with recognizable domestic and public spaces, but it later evolved into a largely ceremonial place that included a mound that was used for large-group gatherings and a plaza that was surrounded by kin-group cemeteries (Boudreaux 2005, 2007a, 2010a, 2010b).

It must be emphasized that the progress made in Town Creek studies in the last 25 years, really in the last 15 years, represents only a fraction of the potential for research that is represented in the collections from Town Creek, in its unexcavated archaeological deposits, and in the surrounding region of the southern Piedmont. In the existing collections, for example, entire classes of artifacts (e.g., stone tools and pipes) and ecofacts (e.g., ethnobotanical remains) from Town Creek remain largely unanalyzed. The recent discovery of the first Clovis point ever recovered at the site indicates that Town Creek still has secrets to yield, even after decades of extensive excavation. Coe envisioned Town Creek as a landmark and a laboratory for archaeological research (Coe 1983:170; Ferguson 1995:xvi). This vision has begun to be realized through the efforts of numerous people who have contributed to the investigation, protection, interpretation, and study of Town Creek. If the pace of Town Creek studies continues, who knows what we will be able to say about Town Creek and the Mississippian societies of the North Carolina Piedmont after the next 75 years?

NOTES

Acknowledgments. The ideas presented in this chapter have been shaped by many conversations with Steve Davis, Brett Riggs, Chris Rodning, Vin Steponaitis, Greg Wilson, and the late Trawick Ward. Thanks to the two anonymous reviewers who commented on an earlier version of this chapter. I also want to thank all of the people who have made the Town Creek site and its archaeological collection such valuable resources for learning about Native Americans in the Southeast. Since 1937, much effort has gone into excavating, processing, and curating artifacts from Town Creek. I want to thank the field workers, the lab workers, and the on-site supervisors for their efforts. I also want to acknowledge the late Joffre L. Coe, the man who envisioned and oversaw long-term research at the site. Town Creek is an important part of his legacy. I also want to thank the staff at Town Creek Indian Mound State Historic Site, especially Archie Smith and Rich Thompson. Finally, Steve Davis of the Research Laboratories of Archaeology at the University of North Carolina has put an incredible amount of effort into organizing the materials from Town Creek, especially the photographs and the site map. The occupational history of Town Creek could not have been investigated without Steve's previous work.

[1] I use the phrase "under the overall direction of Coe" because for nearly all of the fieldwork at Town Creek, Coe managed the research from afar. Coe was at Town Creek directly overseeing fieldwork during the 1937 and 1941–1942 seasons. At other times, however, he did not directly oversee day-to-day operations at Town Creek. Instead, a series of on-site supervisors directed excavations (Coe 1995:Table 2.1; Ferguson 1995:xvi), several of which went on to distinguished careers in Southeastern archaeology after their time at Town Creek (e.g., Roy Dickens, Leland Ferguson, Bennie Keel, Stanley South, and David Phelps).

[2] As was the practice at the time, the mound area was given a different site number than the rest of the site when fieldwork began in 1937. The area that encompassed the mound was designated $Mg^{o}2$ while the rest of the site was called $Mg^{v}3$ (Boudreaux 2005:15).

[3] In reference to the apparent contradiction between the abundant archaeological materials at Town Creek and the interpretation that the site was occupied only by a small group of ritual specialists, Ward and Davis (1999:133-134) remarked:

> If Town Creek was the home of only a handful of high-ranking priests, they must have had voracious appetites and the itch to constantly move and rebuild their houses and surrounding stockades.

[4] One outgrowth of the digital photomosaic's construction has been that several excavation units whose original photographs were lost or too damaged to use in the digital photomosaic have been re-excavated and photographed (Davis 2007, 2008).

REFERENCES CITED

Boudreaux, Edmond A., III

2005 *The Archaeology of Town Creek: Chronology, Community Patterns, and Leadership at a Mississippian Town*. Unpublished Ph.D. dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.

2007a *The Archaeology of Town Creek.* University of Alabama Press, Tuscaloosa.

2007b A Mississippian Ceramic Chronology for the Town Creek Region. *North Carolina Archaeology* 56:1–57.

2010a A Functional Analysis of Mississippian Ceramic Vessels from Town Creek. *Southeastern Archaeology* 29(1):8–30.

2010b Mound Construction and Community Changes within the Mississippian Town at Town Creek. In *Mississippian Mortuary Practices: Beyond Hierarchy and the Representationist Perspective*, edited by Lynne P. Sullivan and Robert C. Mainfort, Jr., pp. 195–233. University Press of Florida, Gainesville.

Boudreaux, Edmond A., III, and R. P. Stephen Davis, Jr.

2002 The Town Creek Photographic Mosaic: Old Pictures in a New Light. Poster presented at the 59th Annual Meeting of the Southeastern Archaeological Conference, Biloxi, Mississippi.

Boudreaux, Edmond A., III, R. P. Stephen Davis, Jr., and Brett H. Riggs

2009 *2009 Archaeological Investigations at Town Creek Indian Mound State Historic Site.* Research Report No. 30. Research Laboratories of Archaeology, University of North Carolina, Chapel Hill.

Burke, Thomas D.

1995 The People of Town Creek. In *Town Creek Indian Mound: A Native American Legacy*, by Joffre L. Coe, pp. 245–262. University of North Carolina Press, Chapel Hill.

Caldwell, Joseph R.

1958 *Trend and Tradition in the Prehistory of the Eastern United States*. Memoir Number 88. American Anthropological Association, Springfield, Illinois.

Carnes-McNaughton, Linda F.

2002 The Nature of Public Archaeology at Town Creek Indian Mound. In *The Archaeology of Native North Carolina: Papers in Honor of H. Trawick Ward*, edited by Jane M. Eastman, Christopher B. Rodning, and Edmond A. Boudreaux III, pp. 12–17. Special Publication 7, Southeastern Archaeological Conference, Biloxi, Mississippi.

Coe, Joffre L.
1952 The Cultural Sequence of the Carolina Piedmont. In *Archeology of Eastern United States*, edited by James B. Griffin, pp. 301–311. University of Chicago Press, Chicago.

1964 *The Formative Cultures of the Carolina Piedmont*. Transactions of the American Philosophical Society Volume 54, Part 5. Philadelphia.

1983 Through a Glass Darkly: An Archaeological View of North Carolina's More Distant Past. In *The Prehistory of North Carolina: An Archaeological Symposium*, edited by Mark A. Mathis and Jeffrey J. Crow, pp. 161–177. Division of Archives and History, North Carolina Department of Cultural Resources, Raleigh.

1995 *Town Creek Indian Mound: A Native American Legacy.* University of North Carolina Press, Chapel Hill.

Cunningham, Sarah L.
2010 *Biological and Cultural Stress in a South Appalachian Mississippian Settlement: Town Creek Indian Mound, Mt. Gilead, NC*. Unpublished Master's thesis, Department of Sociology and Anthropology, North Carolina State University, Raleigh.

Davis, R. P. Stephen, Jr.
2007 *2006 Archaeological Investigations at Town Creek Indian Mound State Historic Site.* Research Report No. 26. Research Laboratories of Archaeology, University of North Carolina, Chapel Hill.

2008 *2007 Archaeological Investigations at Town Creek Indian Mound State Historic Site.* Research Report No. 28. Research Laboratories of Archaeology, University of North Carolina, Chapel Hill.

Davis, R. P. Stephen, Jr., Patricia M. Lambert, Vincas P. Steponaitis, Clark Spencer Larsen, and H. Trawick Ward
1996 *NAGPRA Inventory of Human Remains and Funerary Objects from Town Creek Indian Mound.* Research Laboratories of Anthropology, University of North Carolina, Chapel Hill.

DePratter, Chester B., and Christopher Judge
1990 Wateree River. In *Lamar Archaeology: Mississippian Chiefdoms in the Deep South*, edited by Mark Williams and Gary Shapiro, pp. 56–58. University of Alabama Press, Tuscaloosa.

Dickens, Roy S., Jr.
1968 The Construction of a Photographic Mosaic for the Town Creek Archaeological Site, Montgomery County, North Carolina. Manuscript on file, Research Laboratories of Archaeology, University of North Carolina, Chapel Hill.

Driscoll, Elizabeth Monahan
2001 *Bioarchaeology, Mortuary Patterning, and Social Organization at Town Creek.* Unpublished Ph.D. dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.

2002 Mortuary Patterning and Social Organization at Town Creek Mound and Village. In *The Archaeology of Native North Carolina: Papers in Honor of H. Trawick Ward*, edited by Jane M. Eastman, Christopher B. Rodning, and Edmond A. Boudreaux III, pp. 18–27. Special Publication 7, Southeastern Archaeological Conference, Biloxi, Mississippi.

Eastman, Jane M.
1994 The North Carolina Radiocarbon Date Study (Part 1). *Southern Indian Studies* 42:1–63.

Ferguson, Leland G.
1971 South Appalachian Mississippian. Unpublished Ph.D. dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.

1995 Foreword. In *Town Creek Indian Mound: A Native American Legacy*, by Joffre L. Coe, pp. xiii–xx. University of North Carolina Press, Chapel Hill.

Griffin, James B.
1967 Eastern North American Archaeology: A Summary. *Science* 156(3772):175–191.

1985 Joffre Lanning Coe: The Quiet Giant of Southeastern Archaeology. In *Structure and Process in Southeastern Archaeology*, edited by Roy S. Dickens, Jr. and H. Trawick Ward, pp. 287–304. University of Alabama Press, Tuscaloosa.

Keel, Bennie C.
2002 North Carolina Archaeology in Historical Perspective. In *Histories of Southeastern Archaeology*, edited by Shannon Tushingham, Jane Hill, and Charles H. McNutt, pp. 136–144. University of Alabama Press, Tuscaloosa.

Kelly, A. R.
1974 Excavation History at the Mulberry Plantation. *The Notebook* 6(3-4):67–87.

Mountjoy, Joseph B.
1989 Early Radiocarbon Dates from a Site on the Pee Dee-Siouan Frontier in the Piedmont of Central North Carolina. *Southern Indian Studies* 38:7–21.

Oliver, Billy L.
1992 *Settlements of the Pee Dee Culture.* Unpublished Ph.D. dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.

1995 Stone Available and Used. In *Town Creek Indian Mound: A Native American Legacy*, by Joffre L. Coe, pp. 103–116. University of North Carolina Press, Chapel Hill.

Reid, James J., Jr.
1965 A Comparative Statement on Ceramics from the Hollywood and the Town Creek Mounds. *Southern Indian Studies* 17:12–25.

1967 *Pee Dee Pottery from the Mound at Town Creek.* Unpublished Master's thesis, Department of Anthropology, University of North Carolina, Chapel Hill.

1985 Formation Processes for the Practical Prehistorian: An Example from the Southeast. In *Structure and Process in Southeastern Archaeology*, edited by Roy S. Dickens, Jr. and H. Trawick Ward, pp. 11–33. University of Alabama Press, Tuscaloosa.

South, Stanley
2002 *Archaeological Pathways to Historic Site Development*. Kluwer Academic/Plenum Publishers, New York.

Stuart, George E.
1975 *The Post-Archaic Occupation of Central South Carolina*. Unpublished Ph.D. dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.

Stuiver, Minze, Paula J. Reimer, and Ron Reimer
2005 CALIB Radiocarbon Calibration. Electronic document, http://radiocarbon.pa.qub.ac.uk/calib, accessed September 12, 2010.

Trinkley, Michael B.
1980 *Investigation of the Woodland Period along the South Carolina Coast.* Unpublished Ph.D. dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.

1995 Plant Resources. In *Town Creek Indian Mound: A Native American Legacy*, by Joffre L. Coe, pp. 117–135. University of North Carolina Press, Chapel Hill.

Ward, H. Trawick
1983 A Review of Archaeology in the North Carolina Piedmont: A Study of Change. In *The Prehistory of North Carolina: An Archaeological Symposium*, edited by Mark A. Mathis and Jeffrey J. Crow, pp. 53–81. Division of Archives and History, North Carolina Department of Cultural Resources, Raleigh.

Ward, H. Trawick and R. P. Stephen Davis, Jr.
1999 *Time before History: The Archaeology of North Carolina.* University of North Carolina Press, Chapel Hill.

Willey, Gordon R., and Philip Phillips
1958 *Method and Theory in American Archaeology.* University of Chicago Press, Chicago.

Wilson, Jack H. and S. Homes Hogue
1995 Animal Remains. In *Town Creek Indian Mound: A Native American Legacy*, by Joffre L. Coe, pp. 136–150. University of North Carolina Press, Chapel Hill.

THE BURKE PHASE: NATIVE AMERICANS AND SPANISH CONQUISTADORES IN THE WESTERN NORTH CAROLINA PIEDMONT

Christopher B. Rodning, David G. Moore, Robin A. Beck, Jr.

Abstract

Several years before English settlements at Roanoke and Jamestown, Spanish colonists traversed the western edge of the North Carolina Piedmont, and they attempted to establish permanent settlements in the upper Catawba and Yadkin river valleys. Archaeologists attribute sites and artifacts dating from A.D. 1400 to 1600 in the Western Piedmont to the Burke phase, which is best known from sites in the upper Catawba Valley. This paper summarizes current knowledge about the Burke phase, and about encounters and interactions between Native Americans and Spanish conquistadores and colonists in the North Carolina Piedmont during the sixteenth century. From 1540 to 1568, the Western Piedmont formed the northern edge of the Spanish colonial province of La Florida, and before 1540, the Western Piedmont formed a frontier between South Appalachian Mississippian societies to the south and west, and Piedmont Village Tradition societies to the north and east.

During the late prehistoric and early historic periods, the upper Catawba and Yadkin valleys constituted a cultural frontier. During late prehistory, these areas formed the northeastern edge of the Mississippian world—with South Appalachian Mississippian towns and chiefdoms to the south and west, and Piedmont Village Tradition societies to the east and north (Baker 1974; Beck 2013; Beck and Moore 2002; Davis 2002; Davis and Ward 1991; Fitts 2006; Hudson 1970, 1976; Levy et al. 1990; Merrell 1987, 1989, 2006; Moore 2002; Ward and Davis 1993, 1999:190, 2001; Woodall 1999:55–56, 2009:2–3). During the sixteenth century, these areas also formed the northern edge of the Spanish colonial province of La Florida (Figure 19-1; Beck 1997; Booker et al. 1992; Clark 2007:21–26, 2010; DePratter and Smith 1980; Hudson 1997, 2005; Lyon 1976, 1990; Worth 1994). Given the status of the western Piedmont as a cultural frontier, we might expect evidence for different forms of settlement, diverse social structures, and varying degrees of political centralization and hierarchy. In this paper we review documentary evidence of Spanish expeditions led by Hernando de Soto (Figure 19-2) and Juan Pardo (Figure 19-3), and we review the archaeology of the Berry site, the location of Pardo's outpost of Cuenca and Fort San Juan, and selected other sites attributed to the Burke phase (A.D. 1400–1600). Together, the historic sources and unique archaeological resources support the identification of Native American chiefdoms in the Western Piedmont, and they provide evidence for experimentation and innovation in response to the Spanish invasion.

Burke-phase sites are located in the foothills of the Blue Ridge Mountains, along the upper reaches of the Catawba and Yadkin rivers, and they date to the 1400s and 1500s. The Burke phase was defined to describe a regionally and temporally distinctive distribution of earthen mounds and soapstone-tempered pottery (Figure 19-4; Beck and Moore 2002; Keeler

Chapter submitted October 12, 2011, and final version received on August 30, 2013.

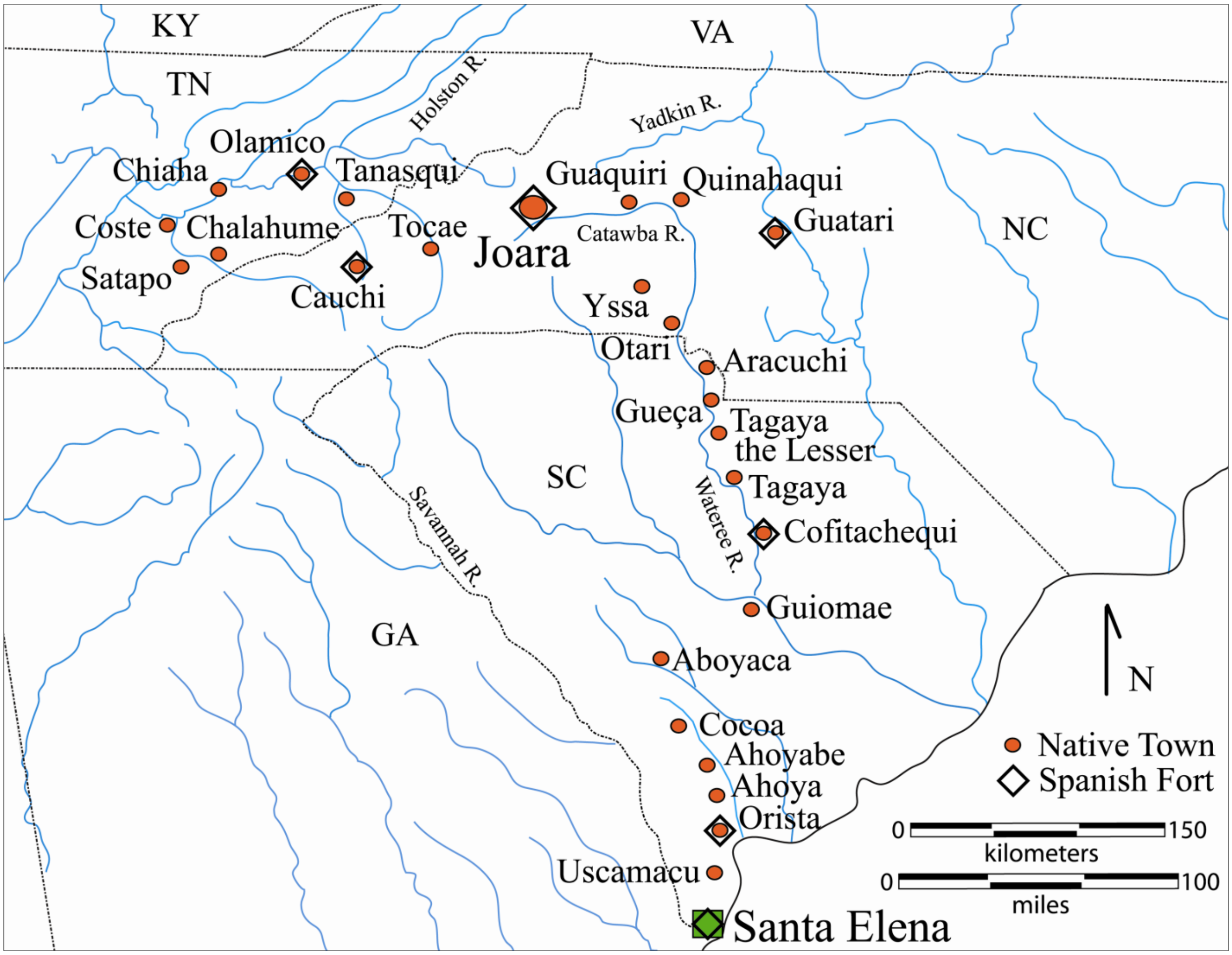


Figure 19-1. Spanish forts and Native American towns and villages in the northern borderlands of La Florida (after Beck et al. 2011:22).

1971; Moore 2002:93–99; Ward and Davis 1999:189–190). Like other regional variants of late prehistoric and protohistoric Lamar pottery across the greater southern Appalachians, Burke pottery includes large globular complicated stamped jars with folded and notched rims, and carinated bowls with bold incised motifs (see Figure 19-5; Hally 1994b; Holmes 1903:143–144; Moore 2002:257–280; Rodning 2008).

Burke-phase sites provide evidence of earthen mounds, large structures, mortuary practices marking elite statuses, and hierarchical settlement patterns centered on large sites. At least 50 Burke-phase sites are located in the core phase area along Upper Creek and Johns River in Burke County (Beck and Moore 2002; Moore 2002:50–99), and in the vicinity of the Nelson Mound and Triangle sites in the extreme upper Yadkin valley in Caldwell County (Moore 2002:100–124, 315–321; Thomas 1894:333–350). Surveys along Upper Creek and Warrior Fork have identified the locations of small sites representing Burke-phase farmsteads and larger sites representing villages, and a single site, Berry, whose location, large size, and earthen mound all support its identification as the focal settlement within the province of Joara (Figure 19-6). Based on our research during the past ten years, we focus here on four lines of evidence—mound construction, settlement patterns, mortuary assemblages, and documentary sources—in arguing

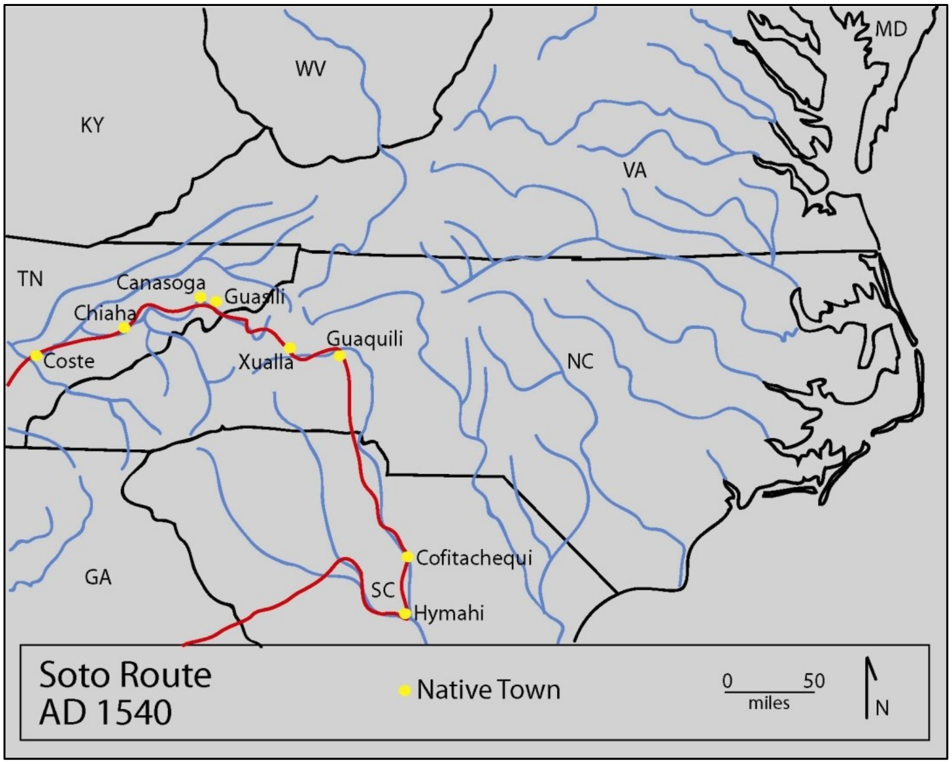


Figure 19-2. Route of the Soto expedition through the North Carolina Piedmont and surrounding areas.

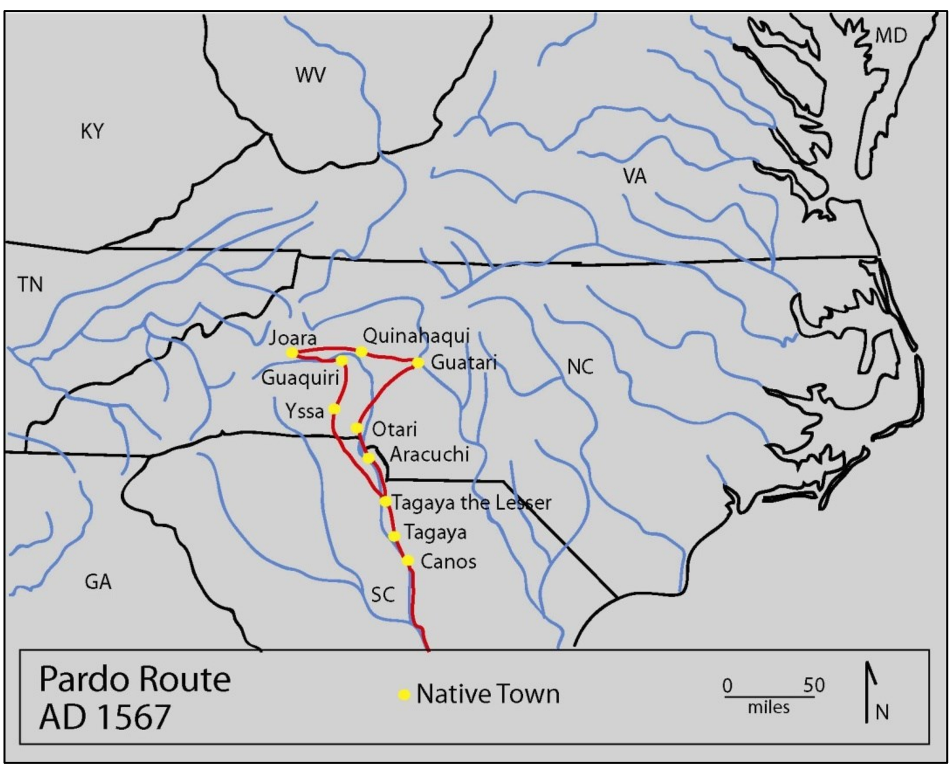


Figure 19-3. Route of the first Pardo expedition through the North Carolina Piedmont and surrounding areas.

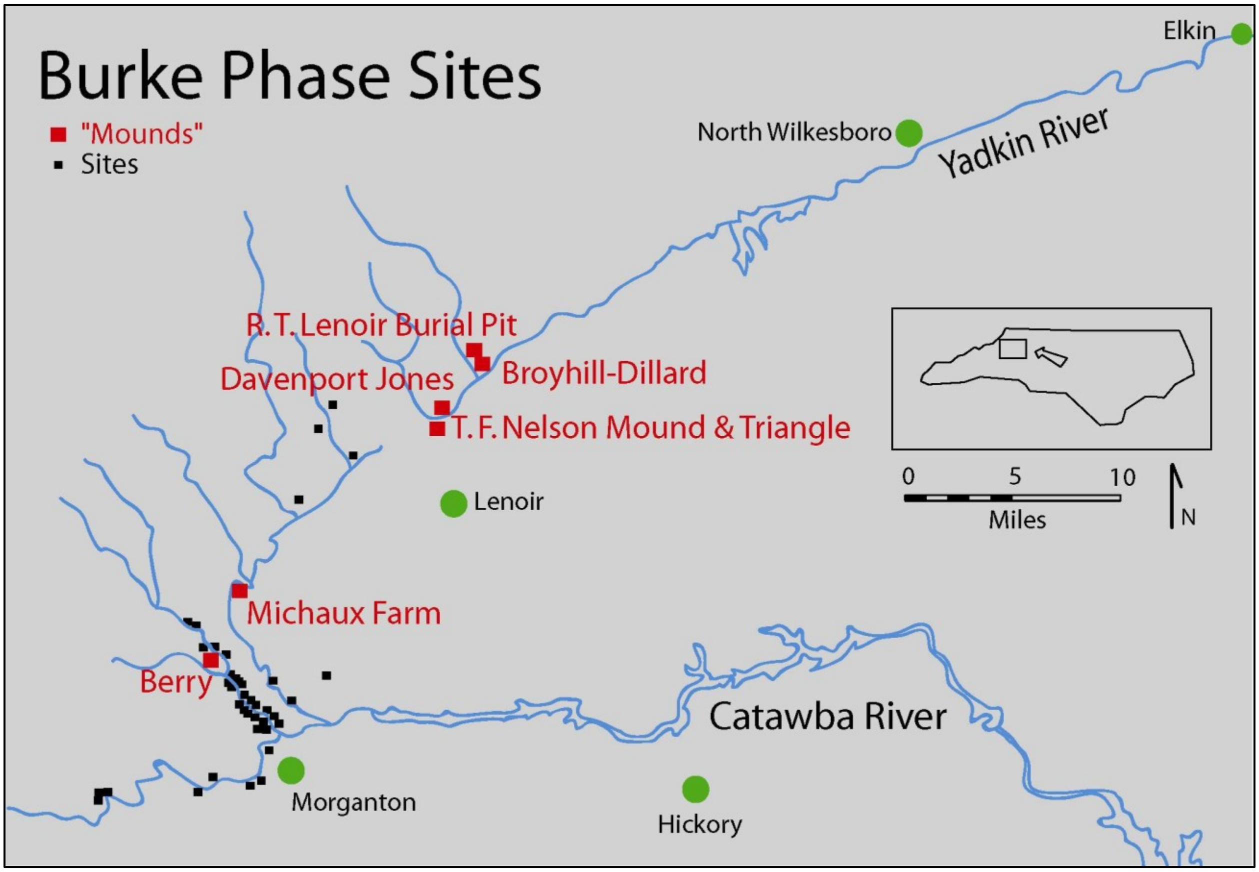


Figure 19-4. Burke–phase sites in the Western North Carolina Piedmont (after Beck and Moore 2002:193; Moore 2002:51, 101).

that the Burke phase represents a single regional polity or chiefdom, and, specifically, the chiefdom known to the Pardo expeditions as Joara.

The first encounter between Europeans and Native American towns in the Western North Carolina Piedmont took place in 1540, when the Hernando de Soto expedition marched through the upper Catawba Valley, stopping briefly at the town of "Xuala" (Hudson 1997:185–189). During the Soto expedition, the most powerful chiefdoms in the greater southern Appalachians were Cofitachequi—centered in the Wateree Valley of central South Carolina (Beck 2009; DePratter 1994; Fitts and Heath 2009; Hudson 1997:172–184; Hudson et al. 2008)—and Coosa, centered at the Little Egypt site in northwestern Georgia (Hally 1994a; Hally et al. 1990; Hudson et al. 1985; Smith 1987, 2000, 2001). In 1567, Pardo and 250 men arrived at Santa Elena, where the fort and settlement were in bad shape. After helping to build Fort San Felipe at Santa Elena, Pardo and an army of 120 men set forth from Santa Elena, the colonial capital of La Florida, to establish an overland route connecting Santa Elena to the Spanish silver mines near Zacatecas, Mexico; to pacify Native American groups; and to establish Spanish outposts along this route (Hudson 2005). After departing Santa Elena, Pardo marched northward, visiting several of the towns Soto had visited in the Carolinas, and he arrived at "Joara"—the same community as Soto's "Xuala"—in late 1566. Construction of Fort San Juan, adjacent to the native settlement of Joara, was completed in January of 1567, and Pardo also established a colonial town, Cuenca,

Figure 19-5. Burke pottery from the Berry site (31BK22; after Beck et al. 2006:69; Moore 2002:85).

at this locale. Together, Cuenca and Fort San Juan formed Pardo's principal outpost along the frontier of La Florida.

The Pardo expeditions built five more forts in the fall of 1567 and winter of 1568, but Pardo chose Joara as the location for his major outpost at the northern edge of La Florida. Joara was one of three towns visited by Pardo—the others were Cofitachequi and Guatari—at which he met community leaders known as *micos*. Micos were powerful chiefs who outranked village chiefs known as *oratas*. Joara was a powerful and prosperous town, and Joara mico was a powerful chief—making the town of Joara a good candidate as an ally for Pardo and the setting for his primary outpost. Pardo met the leaders of Joara and other native towns, he gave them gifts, and he asked the people of Joara to build houses for his men—which they did. When Fort San Juan was first built, Pardo stationed 25 men and related supplies at the fort. There were favorable relations at first between the people of Joara and the Pardo expeditions, but by May of 1568, news reached Santa Elena that Fort San Juan and Pardo's five other forts had been attacked by Native American warriors, and had been abandoned.

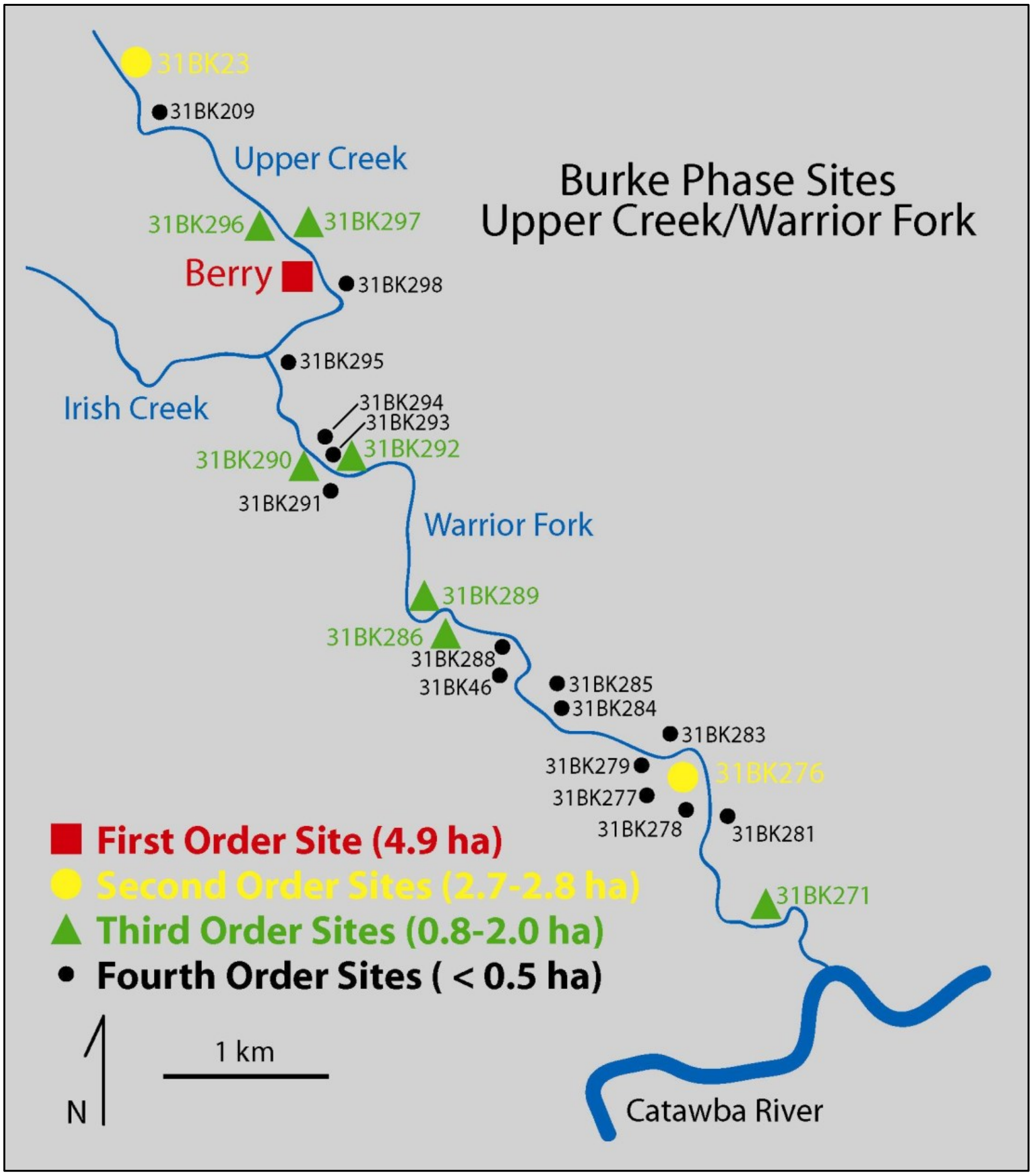


Figure 19-6. Burke–phase settlement pattern along Upper Creek and Warrior Fork (after Beck and Moore 2002:200; Moore 2002:98).

Thus ended Spanish colonial settlement in western North Carolina, but these direct and sustained interactions between native groups in the Western Piedmont and Spanish expeditions must have had dramatic impacts upon the people of Joara and other native groups in the upper Catawba Valley and surrounding areas. As it happens, not only were there attacks on all six of Pardo's forts in the northern borderlands of La Florida in 1568, but several Spanish forts and settlements in the southern borderlands of La Florida were also sacked by Native American warriors during the same year and soon thereafter. Meanwhile, documentary evidence indicates that the 1560s and 1570s were dry years—prolonged droughts may have made it difficult for native groups to support themselves and to generate surpluses to support Spanish settlements

(Anderson 2001; Anderson et al. 1995). Warfare nearly erupted between native chiefdoms near Santa Elena in 1570, and Native American warriors burned down the settlement and fort at Santa Elena in 1576 (Hoffman 1990; South 1988; South et al. 1988).

Archaeological evidence and written accounts of the Pardo expeditions support the identification of Joara and other Native American groups in the upper Catawba Valley and surrounding areas of North Carolina as chiefdoms. The Pardo chronicles refer to a hierarchy of leaders within native communities, including *micos*, *oratas*, *caciques*, *mandadores*, and *Indios principales*—the chief of Coosa is referred to as "*cacique grande*," or paramount chief. The Pardo documents refer to practices of paying tribute—in fact, many native groups probably thought of Pardo as a new chief to whom they could pay tribute, and some groups built houses for the Pardo expeditions and set aside stores of food for him specifically to shift their allegiances to him.

Pardo noted differences from one chiefdom to another—for example, there were differences between the Joara chiefdom in the upper Catawba Valley, and the chiefdom of Guatari in the Yadkin River Valley. Guatari mico was a woman, for example, and the village chiefs within her domain were less amenable to donating labor and resources to the Pardo expeditions than were chiefs from the province of Joara. The location of the main town of Guatari is not known with certainty, but our archaeological investigations at the Berry site, near Morganton, in Burke County, have identified this site as the location of Joara, Cuenca, and Fort San Juan (Beck 1997; Beck et al. 2006, 2011; Moore 2002; Moore et al. 2004, 2005).

Written accounts of the Pardo expedition do not include any detailed descriptions of architecture or earthen mounds in the province of Joara, but they do specify that Chisca villages to the north were enclosed by log stockades, that people in the province of Chiaha to the west lived in semisubterranean houses, and that the circular houses of villages in the province of Guatari were different than houses in the province of Joara. While it is difficult to directly correlate regional archaeological survey data with the Spanish observations, we can describe some aspects of sixteenth–century aboriginal settlements in the upper Catawba Valley based on excavations at Berry and at several other Burke-phase sites.

The Berry site covers roughly five hectares along the west side of Upper Creek, 12 kilometers above the point at which this stream enters the Catawba River. Its size makes the Berry site one of the largest Native American settlements in western North Carolina. Based on the surface scatter of artifacts, it is by far the largest Burke-phase site in its drainage—the densest concentration of pottery on the ground surface at Berry corresponds to the remnant of an earthen mound at the site. Archaeologists affiliated with the Smithsonian Institution noted in the late nineteenth century that this mound was "about 15 feet high and unexplored" (Thomas 1891:151). The mound was still standing until 1964, when it was bulldozed to fill in low-lying areas in the surrounding fields (Moore 2002:60–61). Excavations in 1986 uncovered evidence of intact, basket-loaded mound deposits, as well as pits and burials near the southern edge of the mound itself (Moore 2002:213–256)—some of those include large postholes, probably representing large town posts, like those seen at the Town Creek site in the North Carolina Piedmont (Boudreaux 2007a, 2007b; Coe 1995), and at the sixteenth–century town at the King site in Georgia (Hally 2008), dating to the period of the Hernando de Soto (1539–1543; Hudson 1997) and Tristan de Luna (1559–1561; Milanich 1990) expeditions. Excavations near the Berry site mound remnant in 2013 uncovered features related to Fort San Juan itself, and more detailed discussion of these finds is forthcoming.

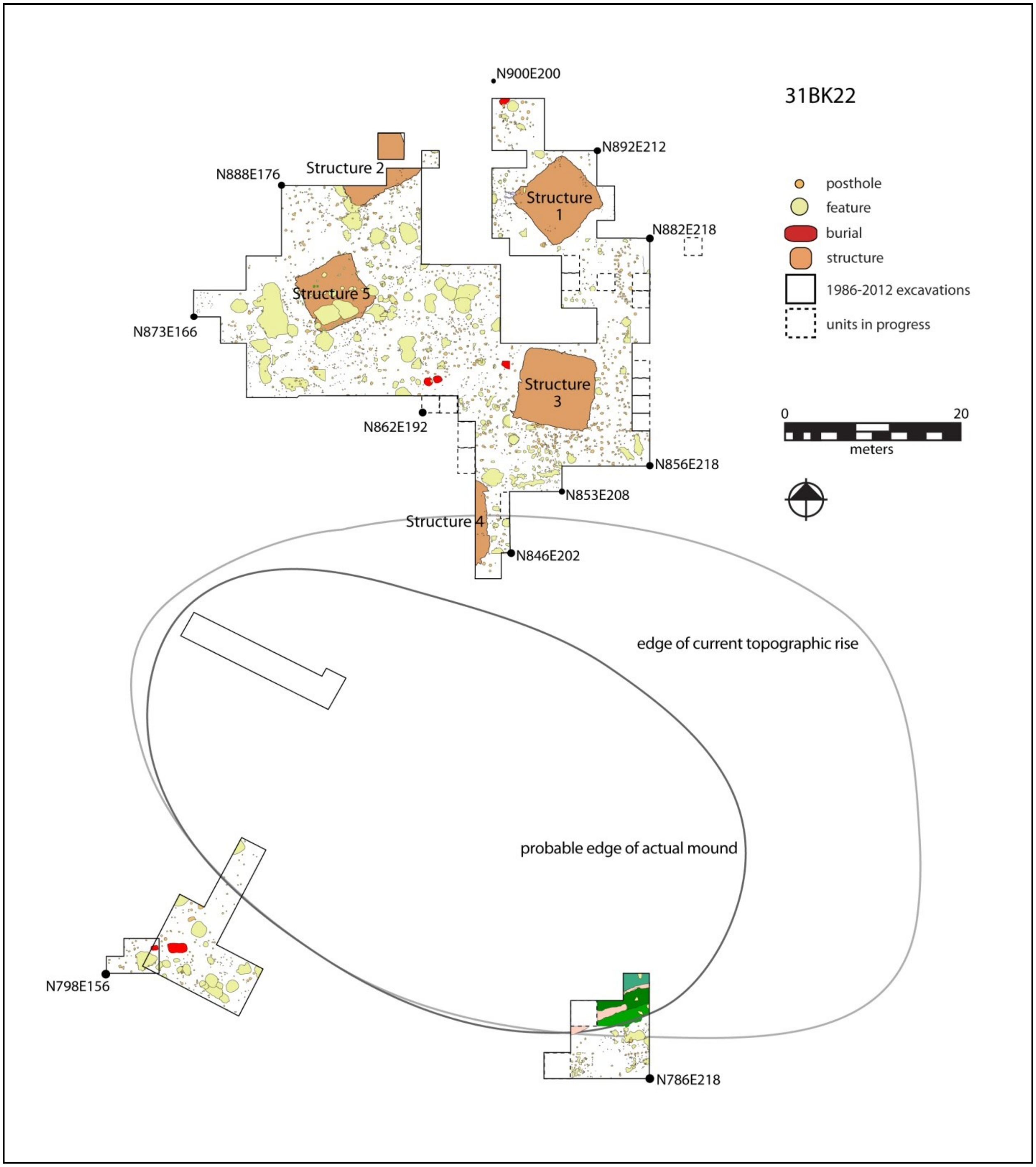


Figure 19-7. Structures and pit features at the Berry site (31BK22; see also Beck et al. 2006:66; Moore 2002:215, 219, 220).

North of the Berry site mound are remnants of five burned structures and numerous postholes and pit features related to the Spanish colonial town of Cuenca, and excavations from 2001 through 2012 have focused primarily on this area of the site (Figure 19-7; Beck et al. 2006). Pit features in the vicinity of these structures include large circular pits that may have

Figure 19-8. Structure 3 at the Berry site (31BK22).

been daub pits associated with the construction and maintenance of buildings, and several small circular pits or postholes are filled with charred corncobs and stacks of Burke-phase potsherds. The structures themselves are square with rounded corners, they range from roughly eight to nine meters per side—Structure 3 is the largest, at an estimated 81 square meters in area (Figure 19-8). At least two of these buildings, including Structure 2 (Figure 19-9) and Structure 5 (Figure 19-10), were built in areas with dense concentrations of large circular pit features, most of which seem to predate the buildings themselves—although it is possible that these structures were built relatively soon after these pits were utilized and, then, filled in. Although these buildings generally resemble Native American structures from the greater southern Appalachians from the late prehistoric and protohistoric periods, they are 20–30% larger than typical domestic structures. Excavations of collapsed architectural debris and the floor of Structure 1 have revealed an arrangement of four roof support posts around two successive stages of a central hearth (Figure 19-11). Excavations in Structure 1 have recovered many Burke potsherds, as well as sixteenth-century glass beads and pieces of iron wire that may represent chain mail (Beck et al. 2006).

The assemblage of sixteenth-century Spanish artifacts from the Berry site includes glass beads, wrought iron nails, possible chain mail, lead shot and lead sprue, olive jar fragments, pieces of Mexican Red Ware, one piece of Caparra Blue Majolica, copper aglets, copper beads or bangles, pieces of scrap copper, and the iron knife from Burial 1 (Figure 19-12; Beck et al. 2006; Moore 2002). These artifacts have been recovered from surface and plowzone contexts as well as from pit features and structures north of the mound. All of these items are comparable to

Figure 19-9. Structure 2, and pit features at its corner, at the Berry site (31BK22).

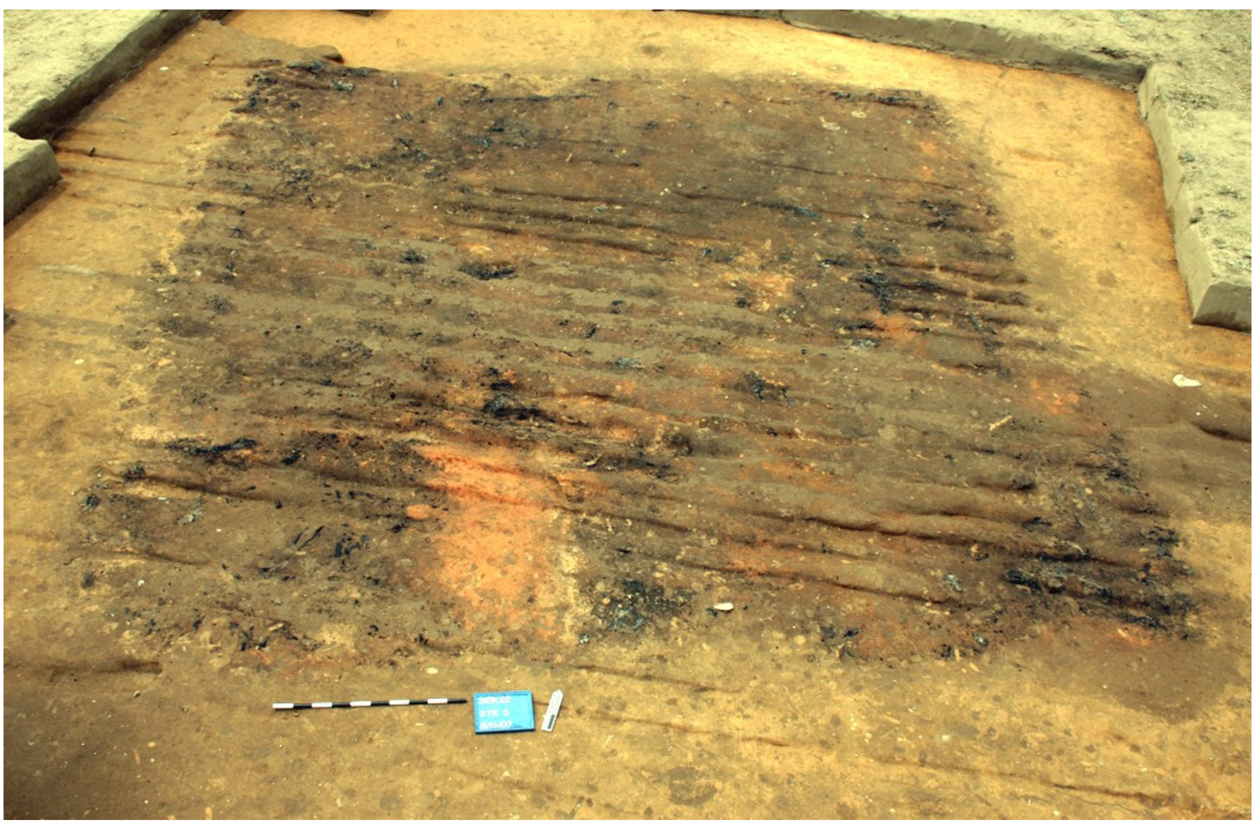


Figure 19-10. Structure 5 at the Berry site (31BK22).

Figure 19-11. Structure 1 at the Berry site (31BK22).

artifacts found at Santa Elena, and all are consistent with the lists of provisions issued to Pardo and to his forts (Hudson 2005; Lyon 1976; South 1988; South et al. 1988). One of the more remarkable sixteenth-century Spanish artifact finds at Berry is an iron steelyard scale from Structure 5. Such a scale would have been helpful in keeping track of supplies in a setting that was far from the settlement at Santa Elena, the primary source of what provisions Pardo had. It also would have been valuable for evaluating rock samples—members of the Pardo expeditions are known to have brought samples of quartz crystal back to Fort San Juan (Hudson 2005:160–161). Lying near the steelyard scale in Structure 5, as it happens, was a faceted quartz crystal. Other metal artifacts from Structure 5 include a large piece of wrought iron wedged in the side of a large posthole near the southwestern corner of the structure, and a piece of possible chain mail from a pit feature underneath the floor (Beck et al. 2006; Beck et al. 2011:33–36).

These structures are thought to have housed members of the Pardo expeditions stationed at Fort San Juan. While we identify this configuration of five such buildings in a small area at the Berry site as Cuenca, it is also clear that similar large structures are common on other Burke-phase sites in the upper Catawba Valley. Located on the Johns River, roughly four kilometers southeast of the Berry site, the Ensley site includes a series of large structures that were built and rebuilt in place. It was impossible to differentiate floors in the sandy deposits uncovered during salvage excavations of the Ensley site in 2006, but stratigraphic profiles and the presence of six stages of the hearth do indicate that this structure was built and rebuilt in place at least three times (Figure 19-13). Another Burke-phase domestic structure has recently been uncovered—and partly excavated in 2010—at the Catawba Meadows site, located at a bend of the Catawba River on the grounds of Catawba Meadows Park in Morganton (Figure 19-14). Other Burke-

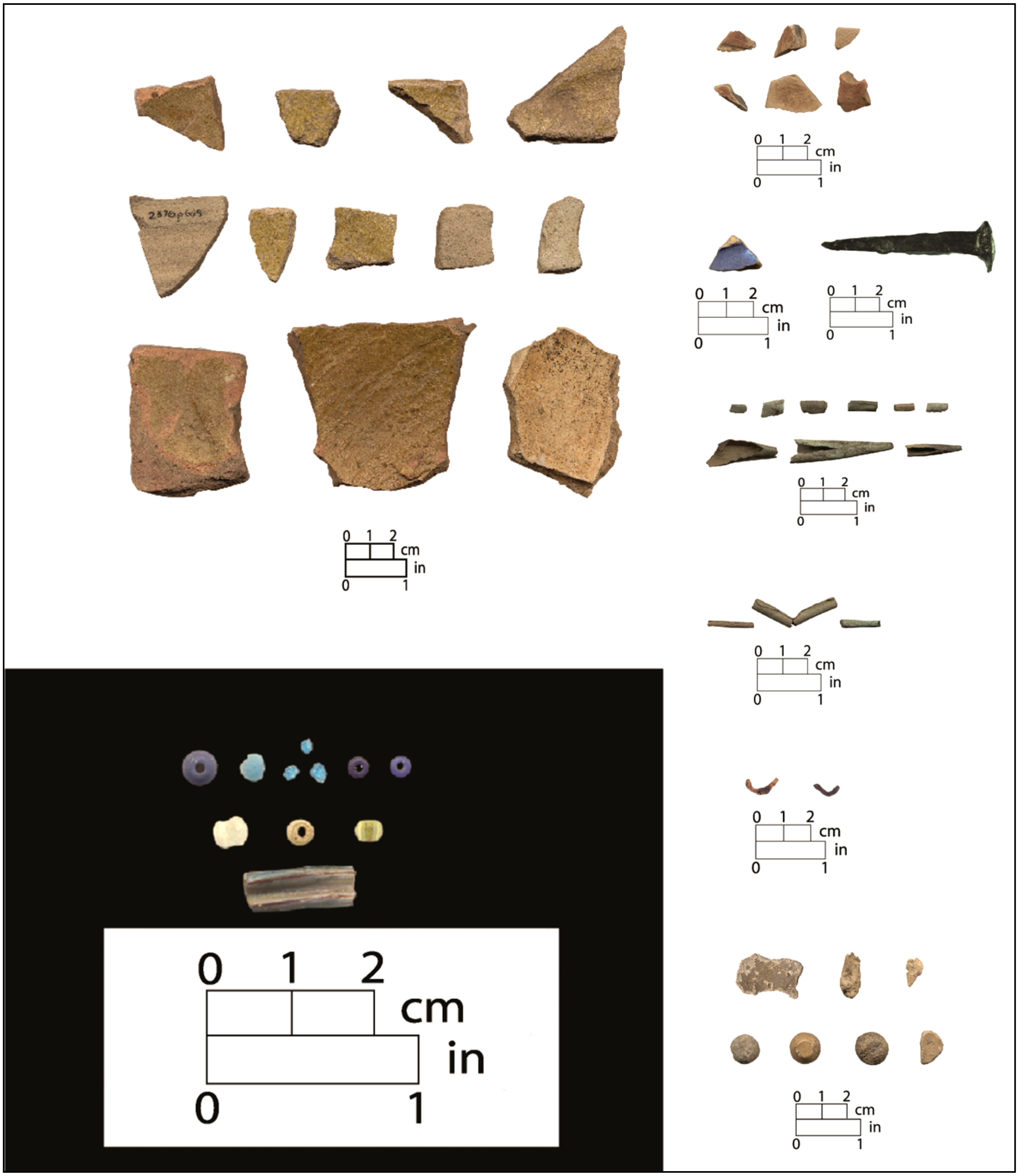


Figure 19-12. Spanish goods from the Berry site (31BK22; see also Beck et al. 2006:70–74).

phase structures have been found at the McDowell site, located on the Catawba River in McDowell County—including a probable public structure on or near an earthen mound, and a domestic structure nearby (Moore 2002:197–211).

Figure 19-13. Structure 1 at the Ensley site (31BK468) on the Johns River.

Figure 19-14. Structure 1 at the Catawba Meadows site (31BK18) on the Catawba River.

Evidence of Burke-phase mortuary practices is rare in the upper Catawba Valley, but Burial 1 at the Berry site, near the south edge of the mound, is an adult male, whose grave goods include an iron knife, and a flintknapper's kit rather like those from several adult male burials at the King site in Georgia (Cobb and Pope 1998; Cobb and Ruggiero 2003; Hally 2008:238–244, 452–456, 474–486; Moore 2002:234–237). Pardo did give eight iron knives to the chief of Joara, and the knife from Burial 1 at the Berry site could be one of them. At Burke-phase sites in the upper Yadkin Valley, mortuary evidence is more striking. At sites like the Nelson Mound and the Nelson Triangle, the Davenport Jones Mound, and the Lenoir Burial Pit, there are mortuary facilities associated with Burke pottery, as well as prestige goods such as engraved shell gorgets, shell masks, stone pipes, spatulate celts, copper, mica plates, and European metal implements (probably Spanish), all of which suggest the presence of elite burials (Moore 2002:100–120, 315–321).

Ned Woodall (2009) has recently questioned our identification of these sites in the upper Yadkin Valley as "mounds." Because these sites are critical to our overall understanding of the Burke phase, we would like to briefly address this point. We describe these sites as "mounds" largely because they have been described as such for more than a century. However, in our publications we have noted that what is important is not whether they were mounds or subterranean features, but the degree to which they represent mortuary practices new to the Western Piedmont during the early historic period. We argue that mortuary evidence from the upper Yadkin Valley reflects the presence of a new level of regional hierarchy—that is, a chiefdom—that developed in the Western Piedmont during the period just before or after European contact.

Taken together, Burke-phase sites demonstrate evidence of mound centers and hierarchical settlement patterns, mortuary practices marking elite statuses, and direct and sustained contact between Native American groups and Spanish colonists. Some of the Spanish artifacts from the Berry site, such as glass beads and copper scrap, probably represent gifts and trade goods—others, such as wrought iron nails and olive jar fragments, reflect Spanish settlement and domestic activity. Spanish colonists at Fort San Juan largely relied upon the people of Joara for food and other resources—eventually, warriors from Joara attacked the fort, but before then, there was support in the local community for the Pardo expeditions. People from Joara built houses for Pardo and his men, and they generated surpluses of food that were then shared with their new neighbors. Support for the Pardo expeditions was probably led by the chief or chiefs of Joara, who had the power to mobilize people and surplus resources to benefit Fort San Juan. Written accounts of the Pardo expeditions suggest that chiefs and villagers in the province of Guatari, in the Yadkin Valley, were less amenable to helping Pardo than were the people of Joara, and less active in supplying labor and resources to Fort Santiago and to the mission where Pardo installed Sebastian Montero as chaplain.

The archaeology of the Burke phase demonstrates the presence of South Appalachian Mississippian chiefdoms and Spanish entradas and settlements in the Western Piedmont province of North Carolina. During the 1400s and early 1500s, the upper Catawba and Yadkin valleys were situated along a cultural frontier differentiating South Appalachian Mississippian towns and chiefdoms to the south and east, and the less centralized, more egalitarian villages of Siouan speakers to the east and north. During the mid–to–late sixteenth century, the area associated with the Burke phase also marked the northern edge of the Spanish colonial province of La Florida.

Given the setting of the Western Piedmont in these cultural borderlands, there should be evidence for diversity in settlement patterns and sociopolitical organization in the Catawba and Yadkin valleys. This is, in fact, the case. There is archaeological and documentary evidence for chiefdoms, especially in the province of Joara, in the upper Catawba Valley, whereas in the middle and lower Catawba Valley, there were smaller villages and less centralized societies. While demonstrating the presence of settlements by sixteenth-century Burke-phase chiefdoms in the upper Yadkin Valley, the Burke-phase sites along the headwaters of the Yadkin—which are located only 20 to 30 kilometers north of the Berry site and the upper Catawba Valley—are different than any other currently known South Appalachian Mississippian sites.

Ned Woodall (1999) has related the spread of Mississippian culture to the Catawba and Yadkin valleys during the 1400s and 1500s to climatic changes during the Little Ice Age. Similarly, Tom Whyte (2003) has noted evidence for widespread abandonment of the Watauga Valley during the same period, arguing that sedentary settlement and farming were simply not sustainable during the Little Ice Age at high elevations in western North Carolina. These developments may have favored settlement in lower areas such as the upper Catawba and upper Yadkin valleys. Alternatively, they may have put Burke-phase groups already living in these areas at an advantage, as they were already situated in places where farming was still viable.

The Burke phase, dating to the 1400s and 1500s, corresponds with a period of considerable changes in the broader South Appalachian Mississippian landscape. Large areas along the Savannah River were abandoned during the fifteenth century (Anderson 1994; Anderson et al. 1986). Much of the Etowah Valley was abandoned during late prehistory, and only a relatively small town (Itaba) was situated at the monumental Etowah mounds when the Soto expedition visited Itaba and the province of Coosa in 1540 (King 1999, 2001, 2003a, 2003b). The Oconee Valley in Georgia, the province of the chiefdom of Ocute, was largely abandoned during the mid-to-late sixteenth century, following the Soto expedition's visit to Ocute in 1540 (Williams 1994; Williams and Shapiro 1996). It is possible that the abandonment of these areas contributed to population growth in the Western Piedmont—and to the appearance in several areas of North Carolina of material culture and settlements that represent regional variants of the broader Lamar tradition (Hally 1994b), including the Burke phase (Moore 2002), the Qualla phase associated with Cherokee towns in southwestern North Carolina (Dickens 1976; Keel 1976; Riggs and Rodning 2002; Rodning 2008), and the Pee Dee phase and Mississippian mound center at Town Creek (Boudreaux 2007a, 2007b; Coe 1995). If there was a broad spread of Lamar cultural groups across North Carolina during late prehistory, these developments would have taken place not long before the arrival of a new and dramatically different cultural tradition—that of the Soto and Pardo expeditions.

The Western Piedmont gives us the chance to study cultural dynamics along a cultural frontier—both before and after European contact. Continuing archaeological investigations in the Western Piedmont can and should explore the development of chiefdoms and other forms of social and political organization, the effects of climate on Native American settlements and societies, the nature of contact between Native American groups and colonial expeditions, and the combinations of environmental and historical forces that led to the abandonment of large areas of the upper Catawba and Yadkin valleys during the seventeenth century. Given the threats facing archaeological sites in this part of North Carolina, it is well worth studying them now, before more of our nonrenewable cultural resources are lost.

NOTES

Acknowledgments. Thanks to Trawick Ward, Steve Davis, Brett Riggs, Vin Steponaitis, Jane Eastman, Bennie Keel, Robbie Ethridge, Maureen Meyers, David Anderson, Lynne Sullivan, Greg Waselkov, Ramie Gougeon, Paul Webb, Tasha Benyshek, Tom Hargrove, Scott Ashcraft, Scott Shumate, Tom Whyte, Larry Kimball, Linda Wall, Janet Wilson, Rachel Ammonds, Dub Hord, Patti Matthias, Robert Paganuzzi, David Heavner, Grady Pitts, Caroline Ketron, Emma Richardson, the people of Morganton and Burke County, the Berry family, the many field school students and staff members who have participated in excavations in the upper Catawba Valley, and the many students who have helped to sort and catalog artifacts from sites in Burke County and surrounding areas of western North Carolina. Our research has benefited greatly from support by Warren Wilson College, Western Piedmont Community College, Tulane University, the University of Oklahoma, the University of Michigan, the Burke County Historical Society, the National Geographic Society, the National Science Foundation, the City of Morganton, the National Park Service, and the Exploring Joara Foundation.

REFERENCES CITED

Anderson, David G.

1994 *The Savannah River Chiefdoms: Late Prehistoric Political Change in the Southeastern United States*. University of Alabama Press, Tuscaloosa.

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

Anderson, David G., David J. Hally, and James L. Rudolph

1986 The Mississippian Occupation of the Savannah River Valley. *Southeastern Archaeology* 5:32–51.

Anderson, David G., David W. Stahle, and Malcolm K. Cleaveland

1995 Paleoclimate and the Potential Food Reserves of Mississippian Systems: A Case Study from the Savannah River Valley. *American Antiquity* 60:258–286.

Baker, Stephen J.

1974 Cofitachequi: Fair Province of South Carolina. Unpublished M.A. Thesis for the Department of History, University of South Carolina, Columbia.

Beck, Robin A., Jr.

1997 From Joara to Chiaha: Spanish Exploration of the Appalachian Summit Area, 1540–1568. *Southeastern Archaeology* 16:162–169.

2009 Catawba Coalescence and the Shattering of the Carolian Piedmont, 1540–1675. In *Mapping the Mississippian Shatter Zone: The Colonial Indian Slave Trade and Regional Instability in the American South*, edited by Robbie Ethridge and Sheri M. Shuck–Hall, pp. 115–141. University of Nebraska Press, Lincoln.

2013 *Chiefdoms, Collapse and Coalescence in the Early American South*. Cambridge University Press, Cambridge.

Beck, Robin A., Jr., and David G. Moore

2002 The Burke Phase: A Mississippian Frontier in the North Carolina Foothills. *Southeastern Archaeology* 21:192–205.

Beck, Robin A., Jr., David G. Moore, and Christopher B. Rodning

2006 Identifying Fort San Juan: A Sixteenth–Century Spanish Occupation at the Berry Site, North Carolina. *Southeastern Archaeology* 25:65–77.

Beck, Robin A., Jr., Christopher B. Rodning, and David G. Moore

2011 Resisting Resistance: Juan Pardo and the Shrinking of Spanish La Florida, 1566–1568. In *Enduring Conquests: Rethinking Indigenous Resistance to Spanish Colonialism in the Americas*, edited by Matthew Liebmann and Melissa Murphy, pp. 19–39. School for Advanced Research Press, Santa Fe, New Mexico.

Booker, Karen M., Charles M. Hudson, and Robert L. Rankin
1992 Place Name Identification and Multilingualism in the Sixteenth–Century Southeast. *Ethnohistory* 39:399–451.

Boudreaux, E. Anthony III
2007a *The Archaeology of Town Creek*. University of Alabama Press, Tuscaloosa.

2007b A Mississippian Ceramic Chronology for the Town Creek Region. *North Carolina Archaeology* 56:1–57.

Clark, Larry R.
2007 *Burke County, North Carolina: Historic Tales from the Gateway to the Blue Ridge*. The History Press, Charleston, South Carolina.

2010 *Spanish Attempts to Colonize Southeast North America, 1513–1587*. McFarland and Company, Jefferson, North Carolina

Cobb, Charles R., and Melody Pope
1998 Sixteenth–Century Flintknapping Kits from the King Site, Georgia. *Journal of Field Archaeology* 25:1–18.

Cobb, Charles R., and Dino A. Ruggiero
1998 Lithic Technology and the Spanish Entrada at the King Site in Northwestern Georgia. In *Stone Tool Traditions of the Contact Era*, edited by Charles R. Cobb, pp. 13–28. University of Alabama Press, Tuscaloosa.

Coe, Joffre Lanning
1995 *Town Creek Indian Mound: A Native American Legacy*. University of North Carolina Press, Chapel Hill.

Davis, R. P. Stephen, Jr.
2002 The Cultural Landscape of the North Carolina Piedmont at Contact. In *The Transformation of the Southeastern Indians, 1540–1760*, edited by Robbie Ethridge and Charles Hudson, pp. 134–154. University Press of Mississippi, Jackson.

Davis, R. P. Stephen, Jr., and H. Trawick Ward
1991 Evolution of Siouan Communities in Piedmont North Carolina. *Southeastern Archaeology* 10:40–53.

DePratter, Chester B.
1994 The Chiefdom of Cofitachequi. In *The Forgotten Centuries: Indians and Europeans in the American South, 1521–1704*, edited by Charles Hudson and Carmen Chaves Tesser, pp. 197–226. University of Georgia Press, Athens.

DePratter, Chester B., and Marvin T. Smith
1980 Sixteenth Century European Trade in the Southeastern United States: Evidence from the Juan Pardo Expeditions (1566–1568). In *Spanish Colonial Frontier Research*, compiled and edited by Henry F. Dobyns, pp. 67–77. University of New Mexico, Center for Anthropological Studies, Spanish Borderlands Research 1, Albuquerque.

Dickens, Roy S., Jr.
1976 *Cherokee Prehistory: The Pisgah Phase in the Appalachian Summit*. University of Tennessee Press, Knoxville.

Fitts, Mary Elizabeth
2006 Mapping Catawba Coalescence. *North Carolina Archaeology* 55:1–59.

Fitts, Mary Elizabeth, and Charles L. Heath
2009 "Indians Refusing to Carry Burdens": Understanding the Success of Catawba Political, Military, and Settlement Strategies in Colonial Carolina. In *Mapping the Mississippian Shatter Zone: The Colonial Indian Slave Trade and Regional Instability in the American South*, edited by Robbie Ethridge and Sheri M. Shuck–Hall, pp. 142–162. University of Nebraska Press, Lincoln.

Hally, David J.
1994a The Chiefdom of Coosa. In *The Forgotten Centuries: Indians and Europeans in the American South, 1521–1704*, edited by Charles Hudson and Carmen Chaves Tesser, pp.–. University of Georgia Press, Athens.

1994b An Overview of Lamar Culture. In *Ocmulgee Archaeology, 1936–1986*, edited by David J. Hally, pp. 144–174. University of Georgia Press, Athens.

2008 *King: The Social Archaeology of a Late Mississippian Town in Northwestern Georgia*. University of Alabama Press, Tuscaloosa.

Hally, David J., Marvin T. Smith, and James B. Langford
1990 The Archaeological Reality of de Soto's Coosa. In *Columbian Consequences, Volume 2: Archaeological and Historical Perspectives on the Spanish Borderlands East*, edited by David Hurst Thomas, pp. 121–138. Smithsonian Institution Press, Washington, D.C.

Hoffman, Paul E.
1990 *A New Andalucia and a Way to the Orient: The American Southeast During the Sixteenth Century*. Louisiana State University Press, Baton Rouge.

Holmes, William Henry
1903 *Aboriginal Pottery of the Eastern United States*. Smithsonian Institution, Bureau of American Ethnology Annual Report 20, Washington, D.C.

Hudson, Charles M.
1970 *The Catawba Indian Nation*. University of Georgia Press, Athens.

1976 *The Southeastern Indians*. University of Tennessee Press, Knoxville.

1997 *Knights of Spain, Warriors of the Sun: Hernando de Soto and the South's Ancient Chiefdoms*. University of Georgia Press, Athens.

2005 *The Juan Pardo Expeditions: Explorations of the Carolinas and Tennessee, 1566–1568*. University of Alabama Press, Tuscaloosa.

Hudson, Charles M., Marvin T. Smith, David J. Hally, Richard Polhemus, and Chester B. DePratter
1985 Coosa: A Chiefdom in the Sixteenth–Century Southeastern United States. *American Antiquity* 50:723–737.

Hudson, Charles, Robin A. Beck, Jr., Chester B. DePratter, Robbie Ethridge, and John E. Worth
2008 On Interpreting Cofitachequi. *Ethnohistory* 55:465–490.

Keel, Bennie C.
1976 *Cherokee Archaeology: A Study of the Appalachian Summit*. University of Tennessee Press, Knoxville.

Keeler, Robert W.
1971 An Archaeological Survey of the Upper Catawba River Valley. Unpublished B.A. Thesis for the Department of Anthropology, University of North Carolina, Chapel Hill.

King, Adam
1999 De Soto's Itaba and the Nature of Sixteenth Century Paramount Chiefdoms. *Southeastern Archaeology* 18:110–123.

2001 Long–Term Histories of Mississippian Centers: The Developmental Sequence of Etowah and its Comparison to Moundville and Cahokia. *Southeastern Archaeology* 20:1–17.

2003a *Etowah: The Political History of a Chiefdom Capital*. University of Alabama Press, Tuscaloosa.

2003b Over a Century of Explorations at Etowah. *Journal of Archaeological Research* 11:279–306.

Levy, Janet E., J. Alan May, and David G. Moore
1990 From Ysa to Joara: Cultural Diversity in the Catawba Valley from the Fourteenth to the Sixteenth Century. In *Columbian Consequences, Volume 2: Archaeological and Historical Perspectives on the Spanish Borderlands East*, edited by David Hurst Thomas, pp. 153–168. Smithsonian Institution Press, Washington, D.C.

Lyon, Eugene

1976 *The Enterprise of Florida: Pedro Menéndez de Avilés and the Spanish Conquest of 1565–1568*. University Press of Florida, Gainesville.

1990 The Enterprise of Florida. In *Columbian Consequences, Volume 2: Archaeological and Historical Perspectives on the Spanish Borderlands East*, edited by David Hurst Thomas, pp. 281–296. Smithsonian Institution Press, Washington, D.C.

Merrell, James

1987 "The Western World": The Evolution of the Carolina Piedmont, 1525–1725. In *The Siouan Project: Seasons I and II*, edited by Roy S. Dickens, Jr., H. Trawick Ward, and R.P. Steven Davis, Jr., pp. 19–28. University of North Carolina, Research Laboratories of Anthropology Monograph 1, Chapel Hill.

1989 *The Indians' New World: The Catawbas from European Contact through the Era of Removal*. University of North Carolina Press, Chapel Hill.

2006 "Our Bond of Peace": Patterns of Intercultural Exchange in the Carolina Piedmont, 1650–1750. In *Powhatan's Mantle: Indians in the Colonial Southeast (Revised and Expanded Edition)*, edited by Gregory A. Waselkov, Peter H. Wood, and Tom Hatley, pp. 267–304. University of Nebraska Press, Lincoln.

Milanich, Jerald T.

1990 The European Entrada into La Florida. In *Columbian Consequences, Volume 2: Archaeological and Historical Perspectives on the Spanish Borderlands East*, edited by David Hurst Thomas, pp. 3–29. Smithsonian Institution Press, Washington, D.C.

Moore, David G.

2002 *Catawba Valley Mississippian: Ceramics, Chronology and Catawba Indians*. University of Alabama Press, Tuscaloosa.

Moore, David G., Robin A. Beck, Jr., and Christopher B. Rodning

2004 Joara and Fort San Juan: Culture Contact at the Edge of the World. *Antiquity* 78(299). Project Gallery. http://antiquity.ac.uk/ProjGall/moore/

2005 Joara and Fort San Juan Revisited. In *The Juan Pardo Expeditions: Explorations of the Carolinas and Tennessee, 1566–1568*, by Charles Hudson, pp. 343–349. University of Alabama Press, Tuscaloosa.

Riggs, Brett H., and Christopher B. Rodning

2002 Cherokee Ceramic Traditions of Southwestern North Carolina, ca. A.D. 1400–2002: A Preface to "The Last of the Iroquois Potters." *North Carolina Archaeology* 51:34–54.

Rodning, Christopher B.

2008 Temporal Variation in Qualla Pottery at Coweeta Creek. *North Carolina Archaeology* 57:1–49.

Smith, Marvin T.

1987 *Archaeology of Aboriginal Culture Change in the Interior Southeast: Depopulation During the Early Historic Period*. University Press of Florida, Gainesville.

2000 *Coosa: The Rise and Fall of a Southeastern Mississippian Chiefdom*. University Press of Florida, Gainesville.

2001 The Rise and Fall of Coosa, A.D. 1350–1700. In *Societies in Eclipse: Archaeology of the Eastern Woodlands Indians, A.D. 1400–1700*, edited by David S. Brose, C. Wesley Cowan, and Robert C. Mainfort, Jr., pp. 143–155. Smithsonian Institution Press, Washington, D.C.

South, Stanley A.

1988 Santa Elena: Threshold of Conquest. In *The Recovery of Meaning: Historical Archaeology in the Eastern United States*, edited by Mark P. Leone and Parker B. Potter, Jr., pp. 27–71. Smithsonian Institution Press, Washington, D.C.

South, Stanley A., Russell K. Skowronek, and Richard E. Johnson

1988 *Santa Elena*. South Carolina Institute for Archaeology and Anthropology, Archaeology Series 7, Columbia.

Thomas, Cyrus

1891 *Catalogue of Prehistoric Works East of the Rocky Mountains*. Smithsonian Institution, Bureau of American Ethnology Bulletin 12, Washington, D.C.

1894 *Report on the Mound Explorations of the Bureau of American Ethnology*. Smithsonian Institution, Bureau of American Ethnology Annual Report 12:3–730, Washington, D.C.

Ward, H. Trawick, and R. P. Stephen Davis, Jr.

1993 *Indian Communities on the North Carolina Piedmont, A.D. 1000 to 1700*. University of North Carolina, Research Laboratories of Archaeology Monograph 2, Chapel Hill.

1999 *Time Before History: The Archaeology of North Carolina*. University of North Carolina Press, Chapel Hill.

2001 Tribes and Traders on the North Carolina Piedmont, A.D. 1000–1710. In *Societies in Eclipse: Archaeology of the Eastern Woodlands Indians, A.D. 1400–1700*, edited by David S. Brose, C. Wesley Cowan, and Robert C. Mainfort, Jr., pp. 125–141. Smithsonian Institution Press, Washington, D.C.

Whyte, Thomas R.

2003 Prehistoric Sedentary Agriculturalists in the Appalachian Summit of Northwestern North Carolina. *North Carolina Archaeology* 52:1–19.

Williams, Mark

1994 Growth and Decline of the Oconee Province. In *The Forgotten Centuries: Indians and Europeans in the American South, 1521–1704*, edited by Charles Hudson and Carmen Chaves Tesser, pp. 179–196. University of Georgia Press, Athens.

Williams, Mark, and Gary Shapiro

1996 Mississippian Political Dynamics in the Oconee Valley, Georgia. In *Political Structure and Change in the Prehistoric Southeastern United States*, edited by John F. Scarry, pp. 92–127. University Press of Florida, Gainesville.

Woodall, J. Ned

1999 Mississippian Expansion on the Eastern Frontier: One Strategy in the North Carolina Piedmont. *Archaeology of Eastern North America* 27:55–70.

2009 The T. Jones Site: Ecology and Agency in the Upper Yadkin Valley of North Carolina. *North Carolina Archaeology* 58:1–58.

Worth, John E.

1994 Late Spanish Military Expeditions in the Interior Southeast, 1597–1628. In *The Forgotten Centuries: Indians and Europeans in the American South, 1521–1704*, edited by Charles Hudson and Carmen Chaves Tesser, pp. 104–122. University of Georgia Press, Athens.

EASTERN PIEDMONT FARMSTEADS AND PLANTATIONS: A SITE FILE EXPEDITION

Linda France Stine

For much of North Carolina's history her people toiled on plantations and farmsteads. Through their labor they shaped North Carolina's agrarian landscapes and through their interactions they formed, maintained, and transformed a good part of North Carolina's culture. Using the eastern piedmont of North Carolina as an example, this author argues for the importance of farmstead archaeology, spanning the colonial through postbellum periods. This is illustrated in a brief historical review of settlement and of the rise and fall of agrarian lifeways in the eastern piedmont drawn partially from a few intensive Carolina piedmont farm studies (e.g., Joseph 1997; Stine 1989, 1990). Previous investigations in the piedmont were often driven by cultural resource or heritage management project needs (e.g., Wheaton and Reed 1987) and most were not undertaken within a regional research framework. Although this can still lead to some creative research questions (e.g., Houston and Novick 1993), it often results in perfunctory and descriptive research designs and site-specific determinations of an agrarian site's potential eligibility to the National Register of Historic Places (http://www.nps.gov/nr/). This single-site approach has been lamented by farmstead archaeologists nationally and well-voiced since Wilson's (1990) classic article on farmstead significance. This is in part due to the volume of farmsteads, the ephemeral material culture at some farms and the fact that plowing, an agricultural practice, is often used to declare a site poorly preserved (Cleland 2001a, 2001b; Clements 2009; Delle and Heaton 2003; Drucker et al. 1982; Groover 2008; Jorgenson and Brown 2009; Joseph et al. 2004; Lees and Noble 1990; Stine 1985, 1989).

Archaeologists who wish to place a particular steading or plantation within a broader comparative context often turn first to the Office of State Archaeology (OSA) which houses the state's archaeological site files recording past survey, testing, and excavation projects. The OSA also maintains numerous archaeological reports related to those works. At present, any inquiry into agrarian archaeological sites starts with a search of their data base.

As an example of how the current system works, the relative frequency of reported significant historic sites and components in portions of the North Carolina piedmont was investigated. Particular attention was paid to farmsteads and plantations—those places and spaces where most colonial, antebellum, and postbellum piedmont Tarheels lived. Were these site types well represented in the OSA database? Could the recorded data inform scholars about cultural transformations in the economy, political integration, and social relationships over time?

This case study of Guilford County compared numbers of eligible to ineligible historic sites or components, meaning which cultural resources met or did not meet the criteria for nomination to the National Register of Historic Places (NRHP) (http://www.nps.gov/nr/; Neumann et al. 2010). The North Carolina archaeological site files were examined to see if these data could be used to determine the number of farmstead and plantation sites found and figure how many: (1) were determined eligible for the NRHP; (2) were actually placed on the study list (SL); or (3) were listed on the National Register. Focusing on the eastern piedmont, the frequencies of National Register and eligible historic sites were encoded for nine counties. Results were compared as a broader interregional sample with special discussion of farmstead

---

Chapter submitted May 4, 2012, and final version received on March 18, 2013.

and plantation properties or components. All of these farm/plantation sites or components were tabulated and briefly described.

This study illustrates how important but difficult it is to build an interpretive scaffolding for farmsteads and plantations out of site file data. The results provide an initial snapshot of piedmont agrarian archaeological sites as well as offer suggestions for improving completion of individual site forms for plantation and farm archaeological resources. This research documents the need for the development of a regional archaeological context for farmstead and plantation research. Such a context or in-depth cultural assessment and summary of known historic patterns, architectural stylistic ranges, and archaeological trends and variations will aid future assessments of farmstead/plantation site research potential by academic investigators, cultural resource management (CRM) specialists, and heritage managers, akin to that developed by the architectural survey group in the North Carolina Department of Cultural Resources. This will provide a relevant guide to research themes and summary resource information that will greatly enhance theoretical studies as well as determinations of National Register significance.

AGRARIAN ARCHAEOLOGY

Agrarian archaeology—the historical archaeological exploration of rural life—is primarily a study of the material culture found on farmsteads and plantations. Myriad arrangements of terraced or eroded fields, woods, orchards, pastures, houses, outbuildings, kitchen yards, gardens, livestock pens, fencelines, wells, cisterns, roads, rivers, ponds and springs formed much of the historic North Carolina piedmont landscape. Part of that view includes the occasional trash pile or midden, often conveniently located in a discrete gully behind the main house core (Drucker et al. 1982; Joseph 1997; Stine 1989). Farmstead and plantation sites are varied in food production systems and settlement patterns, and offer interesting examples of anthropogenic (human-made) change across the land through time. As discussed by Joseph et al. (2004), farms are typically smaller units of production (less than 500 acres) than plantations (over 500 acres) and, unlike plantations, are primarily focused on producing subsistence crops. Plantation owners focus much more of their resources on producing cash crops and use slave or hired labor (Joseph et al. 2004). Cash crops are grown on farmsteads to garner money for sewing goods and other sundries. Labor is family-based, with the occasional neighbor, hired laborer, or enslaved worker forming part of the workforce (Joseph et al. 2004; Stine 1989, 1990).

Farmstead and plantation archaeology offers a rich data resource for delving into perennial questions about families, households, neighborhoods, and communities (e.g., King 2006). Carolina farmers and planters lived together in communities of dispersed steadings with ties to small hamlets and towns (Prunty 1955; Stine 1989, 1990; Stine and Selikoff 2000). The makeup of farm and plantation households vary based on chronological and spatial variables. They also differ due to social factors such as ethnicity, age or gender, and the class and economic statuses of its members (Clements 2009; Groover 2008; Joseph et al. 2004; Stine 1989). Orser (2007:57) theorizes that households are constituted as social relations that can be represented in various settlement patterns as well as through specific cultural rules related to the use of space and other forms of material culture. Whether explored within a landscape, political-economic, practice theory, or feminist theoretical framework, the archaeology of agrarian sites offers an abundance of landscape evidence, settlement patterning, architectural data, portable material culture, oral histories, and historic documents on transforming farm lives from the colonial through modern periods (e.g., Adams 1990; Delle and Heaton 2003; Groover 2004, 2008; Joseph 1997; Joseph et al. 2004; Jorgenson and Brown 2009; Robinson 2004, 2009, Stewart-Abernathy 1986; Stine 1989, 1990, 1991, 1992, 2011; Stine and Madry 1986; Stine and Stine 1996). Broad trends in the agricultural history of the upland south have parallels in the North Carolina piedmont, but archaeologists as yet do not have a firm grasp of plantation and farmstead interregional patterns of variation.

PIEDMONT AGRARIAN OVERVIEW

The North Carolina piedmont was settled primarily by individuals and families wanting to farm or to participate in agrarian-related industries that serviced farmsteads. The immigrants and workers of African, English, German, Irish, and Scots descent who arrived in the mid-eighteenth century settled large and small tracts of farmland deeded to them through the representative of Lord Granville, the Lord Proprietor and owner of this section of the piedmont (Mitchell 1993; Powell 1989). Some individuals set up small stores, mills, smithies, and ordinaries along major travel routes. These various groups and their descendants lived in a mostly rural environment until the stirrings of urbanization in the decades before the Civil War, spurred by increasing industrialization and concomitant improvement in railroad and roadway transportation systems, altered these rural settings (Bishir 1990; Brown 1995; Daniel et al. 1994; Lautzenheiser 1990; Robinson 2004, 2009; Stine 2011; Stine and Selikoff 2000). The creation of the town and subsequent city of Greensboro, for example, resulted from a political battle between northern and southern Guilford County farmers over control of the location of the new county courthouse. Each group wanted to ride or walk the shortest possible distance to conduct court business as well as transport some of their goods to local markets. The courthouse was moved from the old northern location (Martinville) to the present, central site of Greensboro circa 1808 (Brown 1995; Stine 2011; Stine and Selikoff 2000) and brought with it the construction of inns, stores, markets, and residences, and the expansion of its road system as the area urbanized. As this demonstrates, the importance of growers to the political, intellectual, ethnic, economic, and cultural history of the piedmont cannot be understated, especially when the majority of piedmont Carolinians were engaged in farming or some related pursuit through the late nineteenth century (Jorgenson and Brown 2009; Stine 1989, 1990). Their influence upon the state's landscape cannot be denied.

Early farmers cut and milled old growth timber, tilled the soil, built small dams and millraces along many creeks, constructed and maintained roads, brought in non-native plants (crops and weeds) and animals, and planted orchards (Mrozowski 2006). They also constructed farm buildings, often initially based on their native vernacular traditions (Bishir 1990; Bishir and Southern 2003; Brown 1995; Smith 1978; see Groover 2008 for general national trends). These farming and building practices were not stagnate; indeed, they reflected changes in technology, access to materials, and the intermixing of cultural ideas and practices. This has been documented in historical archaeological research of agrarian sites (e.g., Groover 2008; Joseph 1997; Robinson 2004, 2009; Stine 1989, 1990).

The agricultural history of the south, while varying in its regional specifics, had a broad, shared history. Transformations in the economy related to the successful development of cash crops such as tobacco, cotton, and orchard products led to the consolidation of large colonial and antebellum plantations in some portions of the piedmont. At the same time, many farmers remained subsistence agriculturalists or balanced subsistence-based farming with a little cash cropping for luxury items or those things the family could not produce for itself (Stine 1989, 1990). The labor-intensive qualities of some of the cash crops led eventually to the development of a slave-based agricultural economy in many areas of the south. Slavery was a continued presence in the piedmont, although there were only a handful of plantations inhabited by over 50 enslaved Africans and/or African-Americans. In Guilford County Governor Morehead maintained a household and estate with about 30 slaves at Blandwood, while Chatham County's DeGraffenreids held over 60 persons in bondage in some decades (Houston and Novick 1993; Stine 2011). In other cases, such as the Hoskins farmstead in present-day Greensboro, a single enslaved woman and possibly her infant were in residence without the support of other African-Americans in the household. After the Civil War the labor situation changed. Owners of farms and plantations had to hire their labor, or, if cash poor, worked out tenant agreements or did the labor themselves. Both cash and share tenancy were common in the piedmont (Houston and Novick 1993; Jorgenson and Brown 2009; Stine 1989, 1990). Occasionally the same families that had served as slaves on a property became tenants on a portion of that property. Sometimes they or their descendants were able to purchase some of those lands to create their own farm (Fearnbach 2009; Houston and Novick 1993). This broke the land up into smaller and smaller units.

In some cases land patterns changed again. With industrialization in the twentieth century, mechanized farming became the norm on large, consolidated holdings. Numerous tenants, those who could not purchase their lands, were driven off their holdings or kept on as hired laborers on the larger farmsteads (Groover 2008; Stine 1989, 1990). This led to a major transformation in the agrarian landscape. In the later twentieth century, inheritance patterns also played a role in the modification of the rural piedmont landscape.

The total number of farms and plantations in 1850 North Carolina was about 56,963 for a general population total of 869,039. Fifty years later the farm total increased to 224,637 in a general state population of 1,893,810. By 1950 there was close to the same number of farms (n=288,508) in a population measuring about twice as great (n=4,061,929) (Historic Census Browser, http://mapserver.lib.virginia.edu/php/newlong2.php). In 1900, North Carolina had a farm population of 125,800 persons or 6.6 percent of the general population (United States Bureau of the Census 1900:xx, Table V.). Guilford County, for example, was divided into approximately 63.7% rural and 36.3% urban in 1900 (http://www.learnnc.org/lp/table.php?id=5691). The total farm population in the United States dropped from 41.9% in 1900 to 2.2% in 1985 (United States Bureau of the Census 1975:457, Series K 1-16; 1986:619, Table No.1093). Comparably, the majority of early eighteenth-century colonial settlers arrived with the purpose of starting farms or plantations. Even those who migrated with the purpose of starting a small community, such as the Moravians of Bethabara, came knowing their town would service a large agrarian hinterland (South 1999).

The frequency of farm families and their place within the landscape has definitely been altered from the dominant colonial household form to a much smaller portion of the modern household. The problem is that piedmont families and other residents are relinquishing the state's agrarian heritage—and unwittingly its plantation and farmstead archaeological sites. Overall, North Carolina is losing in both sheer number of farms and total farm acreage. Recent state trends are accelerating as North Carolina removed over 6,000 farms and 300,000 farm acres from state records between 2002 and 2008, making it one of the highest-ranking states in the union participating in this cycle of abandonment or removal (Kish 2008). Abandoned farm buildings are being reused as storage, torn down and salvaged, burned by chance or for fire

Figure 20-1. Abandoned farmhouse in Guilford County, 2011. Photo by Linda Stine.

Figure 20-2. Dismantling Hines Log Cabin in Guilford County, 2011. Photo by Linda Stine.

fighter practice, or are slowly returning to the earth through sheer neglect (Figures 20-1 and 20-2). These sites are being lost an alarming rate, even though focused rural preservation efforts have been on-going for over 30 years (Southern n.d.).

The site file search should reveal a myriad of farmstead and plantation archaeological sites, reflecting the numerous piedmont Carolinians who lived on farms throughout much of the colonial, antebellum, and pre-World War II periods. However, realistically, archaeologists know that archaeological sites are most often found during government land surveys and pipeline, highway, lake, and other infrastructural development projects (e.g., Millis 2000). This leaves large expanses of non-surveyed lands in the eastern piedmont, lands slated for development that often do not need a federal or state permit requiring archaeological site assessment.

METHODS

Site file data for this project were collected at the North Carolina OSA, which houses the complete database of archaeological site files, from an electronic, access-style database available to qualified researchers. Site forms were transferred to the researcher's hard-drive (August 30, 2010 and the week of July 18, 2011). Some of the older, non-digitized files were photocopied (agrarian sites or a Guilford County site form). The report room at OSA was revisited (April 8, 2012)and CRM and grant reports were matched to all sites deemed potentially eligible for nomination to the NRHP, sites on the study list, and sites on the NRHP for Guilford County. Other county reports were also skimmed to provide further information about significant agrarian sites. Occasionally a report was not filed in place, most likely because it was being used by OSA staff in light of other project needs or by other researchers. Informal interviews were conducted with OSA staff about specific projects.

Additional information was sought from the North Carolina National Register of Historic Places' offices housed at the Department of Cultural Resources. Separate records kept there pertain to archaeological sites, objects, houses, districts, and landscapes deemed eligible for, nominated to, or placed on the National Register. Some of these data were accessed online through the Department of Cultural Resources web portal. Insightful reports with differing approaches toward farmstead/plantation research were obtained. They provided information into particular types of agrarian resources and various means of exploring, recording, and analyzing them as well as management recommendations for these properties within the North Carolina CRM and heritage management communities.

Nine eastern piedmont counties were selected as a study subset and compared for frequency of farmstead/plantation National Register sites, including those pending on the study list. These were as follows: Alamance, Caswell, Chatham, Durham, Guilford, Orange, Person, Rockingham, and Wake counties. A second subset was taken from one county, Guilford, to delve more deeply into its data base. Guilford County archaeological site forms were collected by scanning them, if paper, or by digitally copying them as .pdfs from the Office of State Archaeology (OSA)'s database.

It was first of interest to compare the relative frequency of prehistoric to historic recorded archaeological properties (sites and districts) for the nine counties under study. This is illustrated in Figure 20-3 below.

It should also be noted that the number of recorded prehistoric as opposed to historic sites is consistently near 3:1 if not greater (Table 20-1). One explanation is the archaeological community's inconsistency in recording farmsteads or postbellum historic scatters—often viewed as just "whiteware and glass in a plowed field" or too recent to be of interest to a serious researcher (cf. discussion in Lees and Noble 2001). This results in agrarian sites being overlooked and underrepresented in the literature and in the site files, especially those sites listed as DOE (determination of eligibility), SL (study list), or on the National Register.

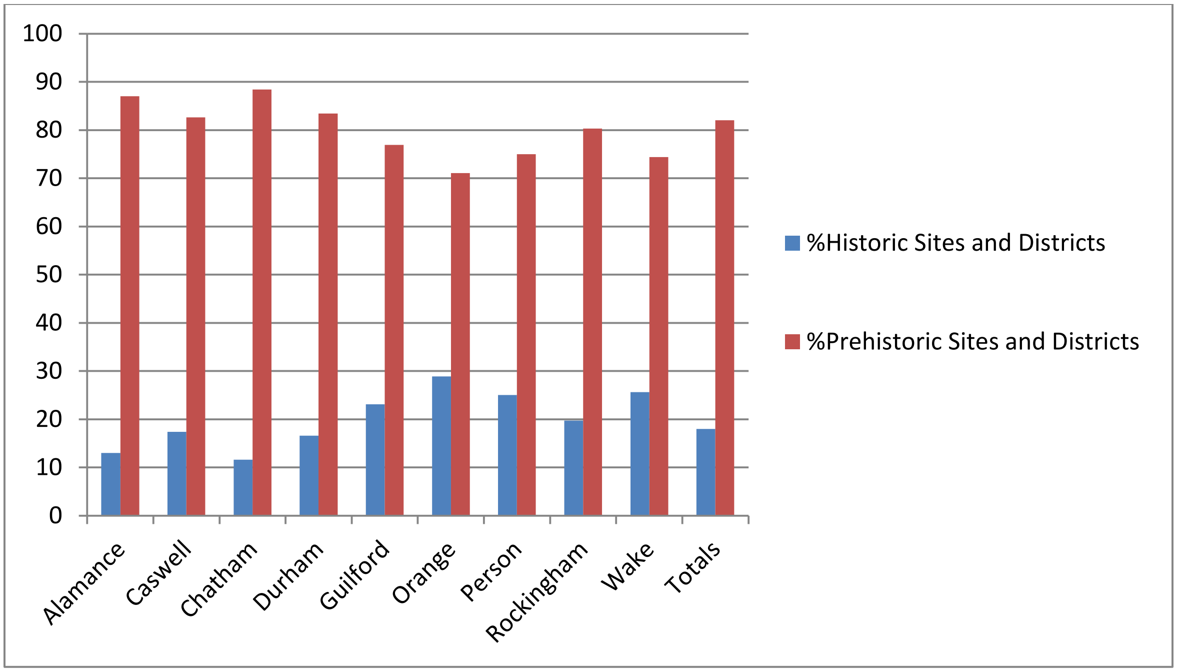


Figure 20-3. Relative frequencies of prehistoric and historic properties in nine Piedmont counties.

Table 20-1. Number of Historic and Prehistoric Properties in Nine Piedmont Counties.

County	Historic Sites and Districts	Prehistoric Sites and Districts	Total Sites
Alamance	54	350	404
Caswell	12	57	69
Chatham	111	843	954
Durham	122	612	734
Guilford	111	369	480
Orange	37	91	128
Person	31	93	124
Rockingham	40	163	203
Wake	161	468	629
Totals	679	3,046	3,725

One would suspect that the high ratio of prehistoric to historic sites might be reflected in the numbers chosen for nomination to the National Register of Historic Places or actually placed on the NRHP. This investigation, however, illustrates that that assumption is false.

NATIONAL REGISTER SITES

The examination of historic sites on the NRHP in the eastern piedmont was not limited to farmsteads and plantations, but extended to examination of all property types. In all, there were 20 historical properties listed on the NRHP under archaeology or on the study list for possible listing (as of July 18, 2011) in the OSA archaeological site databank for the nine study counties with the addition of two potteries from Randolph County (Appendix 17-A). The types were varied and included domestic, quarrying and mining, potteries, and other industrial sites. Many of these sites served more than one function over time or held various components. To confound matters, some of the properties were districts with multiple sites which in some cases also included both prehistoric and historic components.

The Bennehan-Cameron Plantation District offers a good example of some of the problems inherent working with the site file data. This district encompasses the Stagville plantation with its house, outbuildings, and possible slave quarters. It also includes Horton Grove quarters. Although counted as one district, each has its own site number (31DH191** and 192** respectively). Both sites can be found referenced as DOE, or determined eligible, and/or as listed as on the National Register. This makes constructing tables of each management category difficult. The NRHP nomination form (no author or date) encompasses 6,000 acres and includes Fairntosh Plantation, the adjoining plantation started by the original landholder's descendant and spouse.

It is important to note that these are the NRHP properties listed in the OSA site files. The majority of these properties are archaeological sites or districts which include sites as part of their significance evaluations. A few seem to have been initially recorded as part of a project for the Survey and Planning Branch at the Department of Cultural Resources which were revisited, with archaeologist in tow, to reassess and update the property nomination. Possible sites found through Survey and Planning surveys that have not been recorded or assessed are not included in the present analysis. For example, the Battle of Alamance (Study List 2000) and Gov. Tryon's military camp (near battlefield, NR 1970) are in the Alamance County files but not listed under evaluated archaeological sites as yet. Blandwood Plantation (31GF191**) and the Hoskins farmstead (31GF413**) in Guilford County are not listed in Appendix 17-A because they were initially placed on the NRHP as significant buildings or through their connection with important events (Battle of Guilford Courthouse) and not for their archaeological components. Appendix 17-A lists the 20 National Register or Study List archaeological sites and districts by county as of July 2011. The results are summarized in Figure 20-4 below.

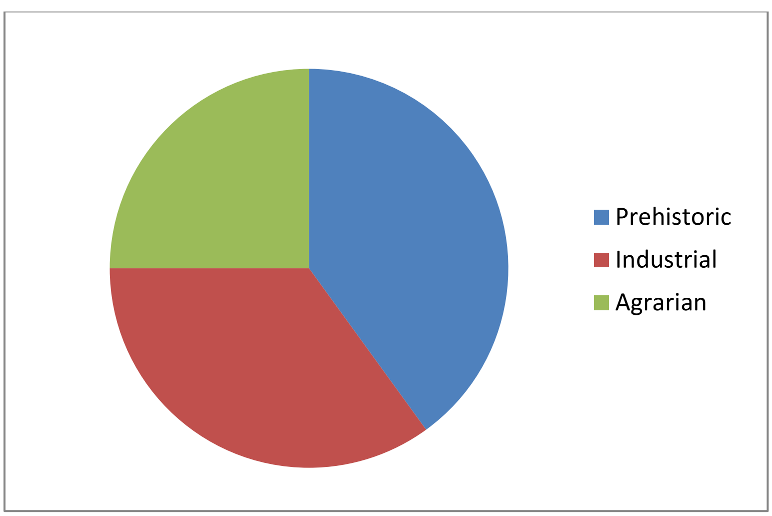


Figure 20-4. Relative frequency of National Register of Historic Places and study list properties in 10 eastern counties.

There are four solely Native American sites listed plus two that fall within the Hillsborough Historic District. There are two other major prehistoric districts, mainly with Archaic components (one, Rolling View, crosses the two counties of Durham and Wake) that also contain historic farmstead or plantation remains, some with graveyards. These historic components are listed as contributing to a district or a site nomination that primarily focuses on the prehistoric findings. The multi-component forms' research questions for further work take an ecological approach to constructing potential research questions. Investigators seek to preserve a series of sites within an Upland South ecotone to test theories about changing settlement over time (e.g., Hargrove, Sandling Site NRHP nomination, ARC March 7, 1983; form further prepared and edited by Richard H. Lewis, Archaeologists USAED, Wilmington, NC). In all, eight prehistoric properties or districts are located on the Study List or the National Register from the eastern Carolina piedmont.

There are varied reasons for nominating historic sites to the NRHP. For example, the dearth of information on upland, isolated plantations in the 1980s was offered as an example of the importance of nominating the Sandling Site's antebellum through twentieth century farm/plantation complex. (See also Rolling View NRHP nomination information, Durham and Wake counties for a similar situation.) This was echoed in a nearby Forsyth County farmstead excavation report (Wheaton and Reed 1987) and a nomination supporting an extended boundary for Chatham County's Alston-Degraffenreid Plantation in 1993 (Houston and Novick 1993). It can still be argued today (e.g., Fearnbach 2009; Jorgenson and Brown 2009).

Historic sites listed in Appendix 17-A fall within two major categories: industrial sites or agrarian ones for a total of 12 sites or districts. The industrial sites and districts number seven and include a myriad of mills and associated dams, potteries, an ironworks and a gold mill. Plantations and farmsteads (five in total) make up the agrarian site types although some are recorded as associated districts while others are simply recorded and nominated as single sites. As mentioned, two of the prehistoric districts include a number of possible contributing farmsteads but their forms were not clear as to if the historic sites were considered contributing versus possibly contributing. St. Mary's Road corridor study (Stine et al. 1999) was an in-depth map and site file survey that was field checked through mostly windshield survey and oral history. Possible taverns, road remnants, farmhouses, plantations and mills were located along this historic road leading northeast of Hillsborough. (A number of interesting prehistoric sites were located there as well.) It tangentially included Ayr Mount Plantation house site. The archaeology of that site was limited and additional studies could offer much comparative information to other plantation sites in the region (Stine and Madry 1986).

The Bennehan-Cameron Plantation District contains numerous farm buildings: a main house, the Horton Grove slave cabins, an immense barn, and various other outbuildings. The district also encompasses part of the historic agricultural landscape. This is said to have been the largest plantation in North Carolina at one time (Bishir 1990). Archaeological work has been intermittent and usually performed by North Carolina Historic Sites personnel (now integrated into OSA) to mitigate for reconstruction, repair, or utility work. Research questions have centered on finding features and determining their clarity and integrity for management. For example, in the late 1970s the author worked under the direction of Terry Harper of Historic Sites on a testing project at Horton Grove slave quarters to determine the site's potential for intact below-ground features and clearly defined soil levels. The site was in good condition at the time. The work was primarily undertaken to help with planned renovations and stabilization of the structures. Sites such as Horton Grove offer both above- and below-ground material culture to investigators with rich results. For instance, one two story, four-room framed structure was insulated by low-fired brick noggin. This architectural detail would have been difficult to decipher from a torn down structure.

In agrarian families, when nuclear family members aged the young adults either left to pursue their own careers or chose to stay and take over the homeplace (Groover 2004, 2008; Houston and Novick 1993; Stine 1989). This is often manifested archaeologically through construction (new outbuildings) or pit fill, resulting from the "spring cleaning" of last generation's odds and ends. The Alston-Degraffenreid Plantation complex (31CH719**) dates from about the 1780s through the 1940s, when it ceased to primarily be an agricultural enterprise. Its importance lies in its long-term ownership and residency by the same primary family line. The plantation survived three major family life cycles as well as head-of-household transitions and should offer archaeologists features and settlement patterns for study that correspond to changes in family composition and leadership.

This plantation site, one of the largest in the piedmont, was partially investigated by Hargrove in 1990 as prelude to road widening of Highway 64 (Houston and Novick 1993). He surveyed the site of a possible slave cabin that was later used as a tenant house in the twentieth century (Houston and Novick 1990). This site, 31CH 657**, is on the expanded NRHP boundaries of site 31CH719** (it originally was placed on the National Register in 1974 under criterion d, for aspects of the main house's architecture). This plantation site, like the Bennehan-Cameron Plantation District, offers numerous related historic documents and oral histories along with the archaeological materials and the remaining remnants of their respective historical agricultural landscapes (roads, fields, forests, outbuildings), including evidence of slave settlements. A comparison of just these two plantations, for instance, would be of great benefit to students of plantation archaeology and especially those wanting to elucidate piedmont plantation lifeways using an historical ecological or landscape approach. The Alston–DeGraffenried Plantation also offers data on a large plantation that existed during a substantial period in the nineteenth century by a widow with the help of an overseer and provides data on the transition from a slave-based agricultural enterprise to a share and cash-crop tenant based one (Houston and Novick 1993; see Stine 1989 for an overview of the post-bellum "agricultural ladder").

The David Caldwell House site in Guilford County is also on the National Register. It once was part of a 550-acre plantation that housed the Caldwell family and their enslaved workers. David Caldwell and his wife Rachel Craighead Caldwell lived on this small plantation from about 1766 to the first quarter of the nineteenth century. Their holdings also served as an important colonial school, either in the main house or an outbuilding. They were instrumental in educating some of the state's most prominent future governors, including John Motley Morehead. A mill site and a purported African-American cemetery are associated with the Caldwell place. Archaeologists have investigated the site searching primarily for information on the construction of the main home and to seek the possible "log school" as well as other outbuildings (Baroody 1980; Robinson 2004, 2009). Activity areas were interpreted within the yard areas of the site and the results placed within the socio-historical context of the county's colonial and antebellum eras, and numerous features were uncovered (Baroody 1980; Robinson 2004, 2009). It was judged an important site as it offered comparative information for studies of small colonial and antebellum piedmont agrarian sites, such as the Hoskins farm a few miles to the north (Stine and Selikoff 2000) and those sites discussed previously. Material remains included local and imported ceramics and other items. This was one of the state's early historic archaeological projects, led by Stanley South who tested the foundations in the mid-twentieth century (Baroody 1980). He isolated the cellar foundation and found what he interpreted as a tunnel leading to a nearby creek, perhaps used as part of the Underground Railroad, or perhaps used by the Caldwells to escape Loyalist or British persecution. Subsequent excavations reinterpreted the tunnel as more likely a drainage system; however, the Caldwells did lose part of their library, set fire by their British enemies (Baroody 1980).

Orange County's Alexander Hogan Plantation (31OR296**) is the site of a small antebellum through postbellum plantation in present-day Duke Forest (Daniel et al. 1994; see also his NRHP nomination form, 1996). This site finds its significance for the National Register in its well-preserved building foundations, midden (found through test augering) and rich oral and written history. The site once was a small, 380-acre plantation where a few slaves grew various grains for their owner, Alexander Hogan. Three slaves were there in the 1840s, and less than 10 were there in the 1850s. Most were young adults (under age 20). Hogan is said to have fathered a slave child. This may have been the case as after the Civil War the land was divided into shares, with some land sold and some deeded over to former Hogan slaves. The site had an approximately 50x25 ft square stone foundation with one stone chimney fall. There was a possible kitchen and three other outbuildings (perhaps slave cabins) present (Daniel et al. 1994).

One of the NRHP sites recorded primarily for its association with one of the earliest iron manufactures in the state, a colonial mill and furnace complex called Troublesome Creek and/or Speedwell Ironworks, also contains the remnants of a log cabin and an antebellum plantation. They may provide additional comparative data to Hogan, DeGraffenried, and the other plantation/farmstead sites in the piedmont. These two archaeological sites have yet to be assessed as to their eligibility to the NRHP so it is not known if they might be contributing or not. The cabin site has been only been surface collected. It measured 16x20 ft. The cabin's extant features include a stone chimney and some stone footings (Phillips 2011). The plantation site was tested during a University of North Carolina at Greensboro (UNCG) fieldschool in 2005, and survey results described in an M.A. thesis compare data from the two sites (Phillips 2011). These data were shared with North Carolina Department of Transportation (DOT) archaeologists when a bridge replacement project was going to impact the site area (Petersen 2008). Data derived from three excavation units at the main plantation site are being inputted into the UNCG database for further comparative analysis.

The Orange County Fews Ford Community in Eno River State Park was nominated as representing a small settlement surrounding a natural ford with various types of homes and mills plus a road associated with this rural community. It is difficult to tell from the nomination if any of these homes served as rural or "urban" farmsteads (Stewart-Abernathy 1986) or if the inhabitants were early Quakers or Scots-Irish (i.e, Engstrom 1983). (See Hargrove 1982 for a discussion of the Cate's Ford Phase 1 Survey results, also located in Eno River State Park.) New Hope Rural Historical Archaeological District was once part of an agrarian landscape, formed now by the foundation ruins of various farmsteads (31CH538-543, with 331CH542** being listed as "Tara slave cemetery"). These sites were located during an Army Corps of Engineer (COE) survey before impounding Jordan Lake and are periodically inundated (NRHP nomination for New Hope Rural Historical Archaeological District, COE, Richard Lewis, 1985).

For a state that was primarily rural until the early decades of the twentieth century, it is hard to imagine that so few eastern piedmont farmsteads and plantations have been nominated and placed on the National Register or its Study List. The North Carolina National Register section states that 2,780 North Carolina properties have been listed on the Register, with about

85% being owned privately and only 15% owned by the public (North Carolina Preservation Office, http://www.hpo.ncdcr.gov/nrfacts.htm). They mention that the Department of the Interior, National Park Service has records on approximately 66,000 historic resources in North Carolina as "individual listings or as contributing properties within districts" (http://www.hpo.ncdcr.gov/nrfacts.htm). This indicates that these buildings, archaeological sites, and districts remain protected by the good graces, will power, and abilities of their owners. It is hoped that good citizens and government managers are caring for this agrarian heritage. It is unfortunate that so few NRHP resources include agrarian sites.

Were many of North Carolina's agrarian sites surveyed, determined eligible but mitigated and subsequently destroyed? One avenue of investigation was to figure how many farms and plantations were listed as determined eligible for nomination to the NRHP or "DOE." These cultural resources, usually listed under criterion "D," are sites, districts, or properties "having yielded or are likely to yield, information important in prehistory or history" (36CFR60.4; Neumann et al. 2010:35). They are almost always listed as a result of a CRM survey or testing project. Site management solutions are recommended such as avoidance of the historic property or mitigation with subsequent destruction of the resource (Neumann et al. 2010). Actual nomination forms are rarely completed for the National Register, even for avoided or protected eligible properties first discovered during the course of a CRM survey (Dolores Hall, personal communication 2012).

To implement this part of the investigation, site data for nine eastern piedmont counties were collected and all historic sites (listed as a site number with an asterisk) were pulled into a table. Their site forms were examined to see how each site was assessed. Next, the DOE sites were cross-checked against Appendix 17-A. Redundant site listings were classed under the highest level of Historic Preservation Office (HPO) management (Appendix 20-A) and removed from Table 20-2.

Table 20-2. Number of Sites in Nine Piedmont Counties Determined Eligible for Nomination to the National Register (DOE).

County	**Total Sites**	**Historic Sites and Districts**	**DOE Historic Properties**
Alamance	404	54	3
Caswell	69	12	1
Chatham	954	111	12
Durham	734	122	14
Guilford	480	111	9
Orange	128	37	3
Person	124	31	0
Rockingham	203	40	12
Wake	629	161	5
Totals	3,725	679	59

Table 20-2 shows that less than 10% of the total historic sites in these counties were Determined Eligible or DOE. The range falls between 3–30% of the total number of historic sites per county. Historic site significance and the presence or absence of above-ground remains was also examined. Approximately 28.3% of significant sites had no above-ground features while the remaining 71.6% were recorded as significant historic properties with above-ground remains. This suggests that historic sites with remains such as foundations, chimney falls and other noticeable features have a better chance at being judged worthy of nomination. That does not mean that properties or sites with no above-ground remains, but deemed eligible, were actually placed on the NRHP. Determining eligibility is a tool designed to investigate whether a property should be investigated further, be curated, be avoided, or simply be destroyed after consultation of all interested and legal parties involved in the Section 106 of the NHPA resolve their different opinions. Eligible sites are more often excavated and eventually destroyed through the undertaking that triggered the federal regulatory process and the HPO involvement (Neumann et al. 2010).

GUILFORD COUNTY HISTORICAL ARCHAEOLOGICAL SITES

Guilford County was examined more closely to check all of its listed historic archaeological resources. Site relative frequencies were determined by type. Both evaluated and non-evaluated listings were investigated, recorded and described.

Beginning in the colonial era, this region provided natural resources for sustaining numerous farms and plantations— small, medium and large—throughout what is now Guilford County. Small settlements of Quakers, Scots-Irish, English, and Germans based their steading locations on access to land as well as proximity to their places of worship. They also settled in locations that were convenient to the paths, fords, and river systems of the piedmont. Historic maps of the 1781 Battle of Guilford Courthouse depict a series of small farms with alternating cleared fields, fencelines, and large wooded areas between farm cores, a typical pattern for the era (Stine and Selikoff 2000). One of the Guilford County farmsteads drawn on those Revolutionary-era maps was not listed on the NRHP for its archaeological component, but was listed on the National Register in 1988 as part of a district. This site was called the Hoskins House (31GF413**) (not included in Table 20-2 above).

The Hoskins site has an extant log cabin, measuring 18x24 ft in size, that is seated on the Guilford Courthouse National Military Park (GUCO). The building sits on an approximately seven-acre parcel donated to the National Park by the City of Greensboro to become part of GUCO. This colonial farm held a substantial one and one half-story log dwelling resting on a stone foundation. It was heated with a large chimney of local fieldstone. This important structure is at least an early antebellum log structure (Grissino-Mayer and Henderson 2006) that may date to the 1780s (Abbott 1984; Stine and Selikoff 2000). Dendrochronology results suggest that the extant logs were cut circa 1813–1816 (Grissino-Mayer and Henderson 2006) and the site Mean Ceramic Date (MCD) is about 1808 (Stine and Selikoff 2000). Based on the distribution of colonial-era ceramics in the assemblage it is clear that a colonial domestic site was located on the main site, as is the existing structure. A hypothesized predecessor to the extant log structure most likely was located on the same small hill. The site was investigated archaeologically by Wake Forest University in the 1980s (Abbott 1984) and by University of North Carolina at Greensboro from 1999–2004 (Stine 2005; Stine and Adamson 2003; Stine and Selikoff 2000). The site was tested to see if twentieth-century additions and modifications of the landscape during creation of a city park (Tannenbaum Historic Park) had destroyed the colonial and antebellum archaeological materials. Results showed that although some areas were severely impacted, others portions of the site retained integrity and contained below-ground features. Testing at the site revealed intact features that can shed light on colonial and antebellum adaptations before, during, and after the Revolutionary War. The Hoskins place was listed as historic military instead of a domestic site although its primary purpose was as a farm. Its importance to the National Park Service and local support groups such as the Guilford Battleground Company (and ultimately to the NRHP at the moment) lies in its use as the staging ground for Cornwallis' troops and as a hospital after the Battle of Guilford Courthouse.

Like the families at Troublesome Creek (31RK135**), the Hoskins family used a mixture of local and European ceramics for preserving, serving, and eating their food, and maintained a diet consisting of wild and domestic animals as well as foodstuffs they harvested from their orchards and fields. The Hoskins family lived on a relatively small farm of about 150 acres, in the vicinity of Horsepen Creek, just east of the Quaker New Garden community and west of Guilford Courthouse. The author included the site, now part of the GUCO National Landmark, in the case study as it is a prime example of a smaller farmstead containing a large farm family with perhaps one slave woman and her child in residence. This site remained connected to the Hoskins family until at least the 1930s, paralleling the length of family residence of the Alston-DeGraffenreid plantation.

It is easy to predict that a great number of other farmstead/plantation sites should be recorded for Guilford County. The OSA site files for Guilford were first queried in 2010 under headings of "historic domestic" and "historic above ground ruins" as well as "agricultural" and "barns." Results revealed that about 56 agricultural and 26 nonagricultural historic sites were present out of a total of 440 sites. Only four sites were keyed in as farmsteads (31GF389**, 31GF372** and 31GF449**). Nothing came up under site component names such as bake oven, dairy, ice house, kitchen, and privy, or tobacco barn headings. Many of the agricultural sites turned out to be like 31GF11**, an unknown twentieth-century agricultural site (601–5,000 m in size) found in scrub pine, heavily impacted by construction.

Re-examining the site files in 2011 using the OSA tracking list revealed site numbers 1–480 for Guilford County, which indicated about 40 (31GF10, 181 and 182 are still open numbers) new sites had been recorded, often through numerous recent transportation projects. A number of family cemeteries were recorded, such as the King Family (31GF435**), Pitchford (31GF377**), Auberndale (31GF351**), and Lambeth-Dougherty Family (31GF480**) cemeteries. The county was also once busy with mills and dams to power rural industries: Holton Mill (31GF85**), Lake Jackson Dam (31GF173**), McCulloch's gold mill (31GF191**), David Ingle's Grist Mill and house (31GF194**), Faust Mill (31GF195**), a mill component at the Caldwell site (31GF196**), Mendenhall Mill (31GF440**), Stewart's Mill (31GF433**), Young's mill dam (31GF270**), Freeman's Mill (31GF373**), Hanner Mill (31GF315**), Woody's Mill (31GF321**), Field-Company Mill (31GF326**), and the Kimesville Mill complexes (31GF349**) were recorded. Determining the number of farmstead sites was a bit more difficult. Some researchers apparently called an historic scatter in a field an "unknown agricultural site" while others designated it an unknown "historic scatter." Upon the recommendation of OSA personnel the historic sites listed with above-ground ruins were examined. These sites tended to have site function indicated on the forms. Once revised, a total of eight historic farmstead sites were derived from querying the database at OSA. Six more were added based on the author's knowledge of the area (Table 20-3). These sites range in date from the colonial era to before World War II, and their physical remains range from chimney falls to reconstructed or extant farmsteads.

Table 20-3. Archaeological Farmstead Sites Listed for Guilford County.

Site	Site Number	Status	Comment
Guilford Courthouse	31GF44**	NRHP battlefield	Webb Farmstead component
Ed Smith Farm	31GF87**	Not evaluated	
Caldwell/House on Hobbs Road	31GF196**	NRHP famous person	plantation
White Site	31GF198**	Not evaluated, famous person	Dolley Payne Madison birthplace
Blandwood	31GF199**	NRHP Architecture	farm and urban plantation
Beal Homestead	31GF200**	Determined Eligible	Quaker, later dairy farm
Edward R. Murrow Birthplace	31GF216**	NRHP famous person	Weavers, some farming
Oakely Farm	31GF308**	Not evaluated	
Clark-Hodgin House Site	31GF372**	Not evaluated	Historic farm, later dairy, eroded/house destroyed.
Farmstead	31GF389**	Farm not evaluated	
Farmstead	31GF399**	Not evaluated	Quaker? 19th c. farmstead
Hoskins Farmstead	31GF413**	NRHP House, battle	plantation
Jarrett Farm	31GF417**	Not evaluated	
Farmstead	31GF449**	Not evaluated	tobacco barns, barn

Guilford Courthouse National Military Park (GUCO, 31GF44**) holds a number of historic components besides the Hoskins farm: military, agrarian and village (Stine et al. 2011). In the mid-1860s a farmhouse was built on the ruins of a colonial town, Martinville. This postbellum farm was in the vicinity of the Revolutionary-era, all-important “third line action” of the 1781 battle. The family that farmed the land, the Webbs, retained the property until the park purchased it about 100 years later. Their farmstead, as an important example of regional postbellum agrarian culture, should be preserved as its study could be vital to understanding the archaeological layers and components in this part of the federal park. For example, one family member recalls collecting numerous lead balls and gun parts, plus her family used large pier stones from colonial buildings such as the Courthouse jail to shore up her family’s outbuildings (Hatch 1970). The archaeology of the Webb place could also contribute more data on a piedmont postbellum occupation that has some clear surface features (foundations, chimney fall, well, drive) and potential subsurface features (Stine et al. 2011).

The David Caldwell plantation (31GF196**) consisted of a mill, a one- or two-pen house resting on a stone foundation, and a purported slave cemetery. The plantation once contained orchards, fields, gardens, and likely slave quarters and other outbuildings. As mentioned, the Caldwell’s maintained an important colonial school at their place, either in a separate space or in their household. Archaeology has revealed the main house as well as outdoor features such as a possible oven (Baroody 1980; Robinson 2004, 2009).

In 1971 archaeologists from the then Division of Historic Sites and Museums, North Carolina Department of Archives and History, conducted test excavations at the White Site (formerly 31GF2**, now 31GF198**). This site, traditionally associated with the home of Dolley Payne Madison (Schwartz 1971), was explored by digging two test units to the base of the plowzone. They uncovered eighteenth- and nineteenth-century domestic ceramics and other items as well as a subsurface feature believed to be part of a “potato hole.” Members of the

White family filled in the feature sometime around 1915 (Schwartz 1971). Root cellars or potato holes were not uncommon in northern Guilford County. The Folley house, located west of Guilford College, was an early period log house that had a similar feature. By 1942 this structure was gone, but the cellar depression was evident adjacent to the hearth remnants (Schwartz 1971 cites this from a March 24, 1942 article by Eleanor Fox Pearson concerning Dolley Madison's life in Guilford County).

The Bland family constructed a colonial farm or small plantation in the vicinity of present-day downtown Greensboro before the courthouse was moved from Martinville to the north about 1808 (Stine 2011). This farmstead was later purchased by a Mr. Humphries, a wealthy industrialist and merchant from the bustling, yet small town of Greensboro. He lived on the outskirts on what is called an urban farmstead, meaning water and sanitation services were not provided by the town. They also may have tended a small kitchen garden and kept livestock to supplement their food supplies (Stewart-Abernathy 1986; Stine 2011). His son-in-law, John Motley Morehead, soon Governor Morehead, purchased the home with its added acreage (about 50). He commissioned a famous architect to design a new front to the frame farmhouse, and expanded the house by placing an Italianate villa onto the front of the traditional two-story hall and parlor, renamed Blandwood (summarized in Stine 2011).

In 1985, archaeologists working on the preferred alternative route for the Benjamin Parkway Extension intensively surveyed the area (Padgett 1985). One historic site, discovered just east of New Garden Road, on what was then Jefferson-Pilot Country Club property, consisted of a well and two distinctive rises (possible building locations) with scattered recent-era artifacts (Padgett 1985). This site (31GF200**) was judged potentially eligible for nomination to the NRHP based on its proximity to the intersection of two eighteenth-century roads (Horse Pen and New Garden roads) and initial historical research results. Plat research revealed that Thomas Beals, a Quaker, once owned these lands. In 1990 archaeologists from Wake Forest University instigated a program of intensive research at Site 31GF200** to further identify and evaluate the location (Keller et al. 1990).

Wake Forest archaeologists uncovered the remains of a small structure, including an estimated 4.5-ft square stone-and-mortar chimney base and hearth. Feature attributes indicated that it might have been rebuilt. It is hypothesized that the chimney stack was brick (Keller et al. 1990:20–24). The associated 30 x 40-ft structure was delineated by pier remnants, which consisted of stones and/or unmortared stone piles, mixed brick and stone piles, and "set posts surrounded by unconsolidated stone rubble" (Kellar et al. 1990:24–25). This structure was interpreted as a small house, either a Hall-and-Parlor or an I-House variant. Another site feature found near the structure was a well and associated brick and stone paving. The approximately 2-ft diameter well proved to be extensively modified in the twentieth century, making it difficult to determine when it was initially dug (Keller et al. 1990:27).

Over 15,800 artifacts were recovered during archaeological investigations at this site (Keller et al. 1990:36). The majority of artifacts date from the late nineteenth to mid-twentieth centuries, although a total of 61 pearlware ceramic fragments were found. The average manufacture date of ceramics found is 1884.44. Technological attributes of glasswares indicate a post 1890s occurrence. The majority of iron nails were wire (post 1880) and, using a dating formula based on the thickness of window glass, a post-1900 date was calculated (Keller et al. 1990:42). The range of materials found was typical for an average-to-poor farm family based on the authors' viewpoint. Oral history and documentary research indicate that renters farmed these lands, probably as cash tenants. These farmers would have been tenants for a local family (the

Taylors) before Jefferson-Pilot bought the property in 1924. Until the 1950s that company continued to operate the farm through use of tenants and a farm manager (Keller et al. 1990:46). Although judged worthy of nomination to the NRHP, this site has since been destroyed through construction. The data collected is the only remaining evidence of a series of small farmsteads on these lands.

Two other historic sites were found on Jefferson-Pilot Club property: site 31GF223** (recorded as "unassessed for eligibility") and 31GF224** (determined not eligible for nomination to the NRHP). These sites were discovered during the archaeological survey of alternatives for the proposed Greensboro western loop roadway (Lautzenheiser 1990). Site 31GF223**, a small historic site, was considered potentially eligible for nomination to the NRHP at the time of the report. It was found about 2,000 ft east of the Jefferson Pilot Club swimming lake near the western side of Jefferson Road. The site is on an upland ridge knoll in a relic orchard. It contained a brick chimney fall, depression feature, and a light scatter of historic artifacts (e.g., wire nails, window glass, and brick fragments). It is believed that this represents the remains of a turn-of-the-century small farmstead (Lautzenheiser 1990:55, 57, 95).

Site 31GF224**, located about 0.2 miles south of Julian and Ethel Clay Price Park, has been destroyed by construction of Jefferson Elementary School. This historic site was deemed potentially eligible for nomination to the National Register of Historic Places but no further work was undertaken before construction. Archaeologists discovered a button, whiteware and stoneware sherds, bottle glass, cut and wire nails, and other materials dating from the past two centuries. The preponderance of materials dated to the late nineteenth-early-twentieth centuries, but some artifacts dated to the early nineteenth century (Lautzenheiser 1990:58, 95). The site was interpreted as an early twentieth-century small farmstead, perhaps overlying an earlier Quaker or at least antebellum house site. The chronological and functional associations of both site 31GF224** and site 31GF200** have been interpreted in a similar manner, as earlier farmstead sites that are obscured by an overlay of more recent domestic materials. This settlement pattern of colonial Quaker farms strung along the creeks or early paths is echoed and later blurred by antebellum and postbellum farmsteads (Hargrove 1996; Lautzenheiser 1990; Stine 1999; Stine and Selikoff 2000).

Archaeological Research Consultants (ARC) undertook a survey of 51 acres just north and west of Greensboro's Price Park, across New Garden Road (Hargrove 1996). During that survey another historic site (31GF372**) was located close to Jefferson Pilot Club lands. Named the Clark-Hodgin house site, it consists of above-ground remains. The house was originally built in 1840 by Asenath and Dougan Clark, superintendents at the New Garden Boarding School. Later outbuildings such as a twentieth-century dairy barn were constructed at the site. In 1996 the eighteenth-century house had already been demolished, but a few later outbuildings remained standing (Hargrove 1996; see also North Carolina Office of State Archaeology site form). Once again a pattern is clear, where a Quaker-built house and farmstead was adapted by late twentieth-century small farmers in the New Garden area. This was found at a nearby survey as well.

In 1999 approximately 79 acres of Jefferson Pilot land were surveyed for archaeological resources under the auspices of the Piedmont Land Conservancy and the City of Greensboro Parks and Recreation Department (Stine 1999). These acres are now part of Greensboro's Julian and Ethel Clay Price Park. One purpose of the survey was to search for evidence of the Revolutionary War action that occurred in the vicinity the morning of March 15, 1781 (Newlin 1977). No such evidence for the Battle of New Garden was found, although local informants did indicate that arms from that era had once been found on Jefferson-Pilot lands (Stine 1999). Prehistoric and other historic materials were discovered in the project area. An approximately 400 x 400-ft historic farmstead site was located near the intersection of New Garden Road and the original Clubhouse Drive (Site 31GF399**). This historic site conformed to the pattern established in previous studies. The site contained below-ground features and a general sheet midden. Indications are that an early nineteenth-century component (evidenced by cut nails and a creamware sherd) was masked by later nineteenth- through twentieth-century assemblages.

NATIONAL REGISTER FARMSTEADS LISTED BY THE ARCHITECTURAL SURVEY

Other farms and plantations are listed for Guilford County, but these are recorded on forms developed by the "sister" branch of the OSA, the architectural survey side of North Carolina's Department of Cultural Resources' historic preservation equation. For this paper the author did not copy the standing architectural survey lists of agrarian properties. During this initial study, the author decided not to investigate farms and plantations listed on the NRHP based solely on their architectural heritage or contribution to understanding a cultural theme such as colonial agriculture, the tenant farming system, or a tobacco farm, and not their archaeological potential. One grouping of two farms, however, caught the author's notice as it was nominated due to the preservation of many landscape, architectural, and probable archaeological elements. These farms (Foust-Carpenter and Dean Dick Farms) are located in southeastern Guilford County. Listed on the NRHP July 1, 2009, they have retained the same landscape pattern from at least the third decade of this century through the present. They too show an alternating pattern of woods and smaller fields, with long strips of woods usually paralleling creeks, rivers, and springs such as was recorded for the Hoskins farmstead. Roads are maintained but dirt, such as they are described at the Alston-DeGraffenreid planation. At its greatest extent the farm entailed about 419 acres, but current holdings from the era of significance (1880–1950) are about 325 acres (Fearnbach 2009). Four generations of the Foust-Carpenter family have farmed this land, often with the help of tenants. The Carpenter farmstead held 17 persons with various household and working arrangements with tenants and family members. Their current property holds an 1898 I-House, a circa 1850s log house, a two-story tenant house (circa 1880s), an 1875 tenant house, two twentieth-century barns, a late nineteenth-century outbuilding, nine equipment sheds, two corn cribs (circa 1930s), two pack houses, a tobacco barn, four sheds, an outbuilding (circa 1930s), a granary, and a hay shed. There is also a related lake house (one-story) nearby (Fearnbach 2009).

One neighboring section (just under 20 acres) was pieced together by an African-American farmer, Dean Dick, over a period of years. This was ultimately added to the Carpenter property at his death in the late 1940s. It may have become a tenant house at that time. The present and future data from this site could fruitfully be compared to that from the Alston-DeGraffenreid tenant site Cabin C and some of the sites associated with the Alexander Hogan Plantation. At the Ernest Dean Dick Farm (c. 1880s–1947), Fearnbach (2009) found that the main house initially may have been an outbuilding converted for habitation, as only a single stove provided heat for the home. She describes it as a one-and a-half-story log building on stone piles with dovetail notching and porches front and back. In association is an extant ice house, once a common feature in the area (e.g., Bauman House, on the NRHP for architecture). A wooden upper-story structure is positioned over a deep stone foundation like others in the region. This farm complex also includes a log barn thought to be a dairy. These agrarian complexes reveal that the property was intensively farmed during the late nineteenth and twentieth centuries. It entailed numerous buildings with diverse and often multiple functions, various machinery and animals to help power the workload, and people to plan and implement the hard work necessary to provide a living. Besides generational knowledge or that handed down between friends, family, and employers and employees, certain state institutions were developed to educate and thus improve a farmer's chances of staying on his or her place, especially in the years before World War II.

During the Great Depression, North Carolina farmers such as Carpenter and Dick had to deal with the consequences of earlier farming practices that led to severe erosion of the topsoil; and perhaps up to one foot of topsoil was lost in some areas (Trimble 2008). Alternate farming practices were introduced to agriculturalists such as terracing, crop rotation, and field-side planting systems through the growth of agricultural institutions such as the extension service, home economics and agricultural courses in public schools, and the growing popularity of farming magazines (Fearnbach 2009; Stine 1989). One 80-year old farmer recalls learning about a new form of long grass to plant along the field banks to prohibit erosion; he was able to show the tall, feathery "grass" to the author as it had naturalized across the landscape since the 1930s and 1940s (Kenneth Stine, personal communication 1988). In Guilford County, African-American and Euro-American extension service agents succeeded in convincing 600 farmers to use these new systems of farm management, a remarkable achievement for a North Carolina county in the late 1930s (Fearnbach 2009). One could wonder how many more were too traditional to try them. Modern agricultural specialists continue to experiment with erosional controls helping to improve soil retention by about 30–50% (e.g., Ted Bilderback, http://www.ces.ncsu.edu/depts/hort/nursery/ accessed Dec 31, 2011).

Fearnbach (2009) completed a parallel farmstead study, by querying the North Carolina HPO Survey and Planning architectural database. She discovered a total of 28 farms recorded varying in size from over 200 or more acres to 1–9 acres listed for Guilford County from all time periods (Table 20-4).

Table 20-4. Frequency of Guilford Farms by Acreage, 2009 Architectural Survey.

Count	Percentage	Acreage Range
1	3.5	200+
3	10.7	100–199
5	17.9	50–99
6	21.4	10–49
7	25.0	1–9
6	21.4	undetermined
28 Total	**99.9**	

Fearnbach reports what most Greensboro area residents can see for themselves—many of these and other Guilford farms have been subdivided into smaller and smaller plots. Farming is often generational, and if at least one descendant member wishes to continue the occupation the farm is preserved—if siblings do not contest the parents' arrangements of their inheritances. Today, larger places are often broken into smaller holdings so each descendant receives his or her inheritance. These lands sometimes are still farmed as one unit but may also be broken into much smaller agricultural or solely residential units (Groover 2008; Stine 1989). Farmsteads are also preserved by collateral descendants such as an uncle's or aunt's or even nephew's or nieces' children (e.g., Fearnbach 2009; Stine 1989). It is important to note that with new tax instruments available in some areas, farmers are able to save lands and still provide some inheritance monies to non-farming children. The State's Conservation Tax Credit Program (GS 113A-231, as well as GS 105-130.34 and 151.12) allows landowners to donate a conservation easement to a nonprofit or other qualified group and receive in return a tax credit "equal to 25 percent of the fair market value of interest in real property donated for conservation purposes" of up to $250,000 for individuals (North Carolina Department of Cultural Resources http://www.onencnaturally.org/pages/CTC_Overview.html).

CONCLUSIONS

The North Carolina archaeological site files have been sifted to see if their data can be used to decipher the number of historic farmstead and plantation sites found in the eastern piedmont of North Carolina and to assess how many were determined eligible for the NRHP (DOE), were placed on the study list (SL), or were actually listed on the National Register. It is difficult to figure relative percentages with absolute certainty as the site form and file information is uneven. The required data on the forms has changed with time, and diverse people fill out the forms (e.g., amateurs, students, academics, CRM specialists). On the other hand, the OSA site file forms have improved over the years and researchers are taking the time to complete the forms more thoroughly. It is clear that historic sites are judged worthy of preservation, but farmsteads and plantations still have not garnered the additional attention that these sites deserve. This can only be accomplished through a focused debate within the archaeological community about the importance of understanding the causes of variation in the historic archaeological record, including agrarian sites.

These data have allowed the author to develop a clear picture of the types of sites present in nine eastern piedmont counties and their relative abundance. She has discerned that about three times as many prehistoric sites are typically recorded per county than historic archaeological properties. This too is likely a relic of past archaeological practice more so than relative site frequencies on the ground. It is clear that having standing ruins versus being a subsurface site is somewhat related to a site's chances of being nominated to the NRHP or for determinations of eligibility. In terms of percentages, only about 9% of historic sites in the nine counties studied are listed as DOE for nomination to the National Register.

As for the properties themselves, a good number of rural industrial sites in the form of mills, ironworks, potteries, dams, and mines are recorded in the piedmont. This reflects the rich geologic resources here as well as the numerous creeks with "good fall" to turn a miller's water wheel for hydropower. The soils of the county were once rich, but poor farming practices led to a great deal of soil erosion in the nineteenth and early twentieth centuries. There are fewer historic archaeological plantation and farm sites listed than anticipated, even for Guilford County, although a quick perusal of the Department of Cultural Resources Survey and Planning architectural sites or listings of standing structures on the NRHP reveals various types of farmstead and plantation structures and, occasionally, agricultural landscapes. This is likely due to the more systematic system of county surveys of architectural remains in the state. It is strongly recommended that these sites be visited by archaeologists to determine their archaeological potential. At the least, each of these nominations should be amended to include the "OSA Recommended Statement of Archaeological Potential (Where Deemed Applicable)" if they do not already have the insert:

> The structure is closely related to the surrounding environment. Archaeological remains, such as **trash pits, wells, and structural remains** which may be present, can provide information valuable to the understanding and interpretation of the structure. Information concerning **use patterns, social standing and mobility**, as well as structural details, is often only evident in the archaeological record. Therefore, archaeological remains may be an important component of the significance of the structure. At this time no investigation has been done to discover these remains, but it is likely that they exist, and this should be considered in any development of the property.

Otherwise, even if listed as a NRHP property, the archaeological potential of the plantation or farmstead site will not have to be taken into account during renovations or other ground-breaking activities (Dolores Hall, personal communication 2012). One other possible solution to the difficulty of discovering and assessing information on farmsteads and plantations would be to combine survey and planning and archaeology of these rural sites with a landscape or district nomination. The NRHP bulletin for rural landscapes (McClelland et al. 1999) (in the process of being updated) offers good advice on how to apply a landscape perspective to researching, determining significance, and nominating farms and plantations at a larger scale of analysis. It would be helpful to develop an overlapping context at the historic preservation office, perhaps supported through a survey and planning grant (e.g., Jorgenson and Brown 2009; Joseph et al. 2004). Perhaps state historic preservation agencies could share in the cost, or partner with the Forest Service, Department of Transportation, Army Corps of Engineers, or other agencies to support this context. A context would provide a stronger notion of variation in the archaeological record of the piedmont. The perusal of reports and site forms for this project indicates that building construction (log, brick or frame), presence or absence of half or full cellars, number of rooms or styles of additions, size (circa15x15 ft to 40x50 ft), anthropogenic changes, and artifact assemblages and distributions need to be assessed systematically. There is indeed variation in the piedmont sites and this should be indicative of cultural nuisances within farm and plantation life.

In some instances the occasional small, special grant project offers a glimpse of the possible density of agrarian piedmont sites (e.g., Daniel et al. 1994; see also Daniel and Ward 1993; Joy 2007). In a survey of portions of Orange County, a Chapel Hill team discovered numerous historic scatters plus 14 sites with chimney falls, stone foundation remnants, several with cellars, and two associated with cemeteries (Daniel et al. 1994). These were not officially assessed as to eligibility to the NRHP ("unassessed"), although the researchers did state that these sites offered a unique opportunity to test questions of settlement variation in time and space in a particular river basin (Daniel et al. 1994). An example is found in site 31OR548**, the Cate farmstead. This farm had a chicken coop, smoke house, wash house, barn, house, and a lithic workshop (prehistoric). These sites, and many more unassessed properties, could offer good testing grounds for research. Ferreting out these sites, however, will be difficult as their site forms are not always filled out as to site association or function.

The present project raises issues about the quality of the available data for piedmont agrarian archaeology and site type frequency comparisons. The archaeological potential of some of these important plantation and farmstead sites is addressed in light of their ability to address broader anthropological questions. There are rich comparative plantation and farmstead sites, but their data recovery to date has not always been framed within a broader research agenda. These past survey and testing projects can still be mined for comparative information. A long-term research plan can be enacted in conjunction with acquired survey and planning data and historical research on local settlement patterns and landscape changes. There is, for example, very little extant archaeological information collected on African-American piedmont sites. The presence of enslaved and free African-Americans in the archaeological record has to be teased out from the documents, the artifacts, the assemblage patterns, and the settlement patterns within the landscape.

Farmstead and plantation researchers have to educate fellow archaeologists and students as to the value of agrarian archaeological sites due to their potential to answer critical questions in our discipline, such as: (1) processes of acculturation, assimilation and resistance; (2) the change from subsistence to cash-based farming; and (3) the transformation from a mercantile-based economy to a capitalistic one, and its effect on the family plantation or farm. Questions can also include: (1) the formation, maintenance, and disintegration of community; (2) human-directed landscape metamorphosis over time; and (3) the negotiation of asymmetrical social relations within a household and between households within a community as expressed through material culture. As more and more archaeologists working in the piedmont read relevant background literature (e.g., Adams 1990; Beck 1989; Delle and Heaton 2003; Groover 2004, 2008; Jorgenson and Brown 2009; Joseph 1997; Joseph et al. 2004; Phillips 2011; Robinson 2009, Stewart-Abernathy 1986; Stine 1989, 1990, 1991, 1992, 2011; Stine and Stine 1996), piedmont agrarian interpretations will become more diverse and rich, reflecting the complexity of these important colonial through postbellum landscapes.

NOTES

Acknowledgments. I would like to thank Dolores Hall, Susan Meyers, and Heather Olson for providing information, research space, and research materials.

REFERENCES CITED

Abbott, Lawrence E., Jr.
1984 *Archaeological Investigations at the Hoskins House, Guilford County, North Carolina*. Prepared by Wake Forest University Archeology Laboratories of the Museum of Man under the direction of J. Ned Woodall, Principal Investigator. Prepared for the Guilford Battleground Company, Greensboro.

Adams, William Hampton
1990 Landscape Archaeology, Landscape History, and the American Farmstead. *Historical Archaeology* 24(4):92–101.

Baroody, John C.
1980 *Archaeological Investigations at the Site of David Caldwell's Log College*. Report on file at the Greensboro Public Library and the N.C. Office of State Archaeology.

Beck, Monica
1989 "A Fer Ways Off from the Big House": The Changing Nature of Slavery in the South Carolina Backcountry. In *The Southern Backcountry: Interdisciplinary Perspectives on Frontier Communities*, edited by David Colin Crass, Steven D. Smith, Martha A. Zierden, and Richard D. Brooks, pp. 108–136. University of Tennessee Press, Knoxville.

Bilderback, Ted
n.d. http://www.ces.ncsu.edu/depts/hort/nursery/[Accessed Dec 31, 2011] Ted Bilderback Nursery Extension Specialist, Department of Horticultural Science, North Carolina State University, Raleigh.

Bishir, Catherine W.
1990 *North Carolina Architecture*. University of North Carolina Press, Chapel Hill.

Bishir, Catherine, and Michael Southern
2003 *A Guide to the Historic Architecture of Piedmont North Carolina*. University of North Carolina Press, Chapel Hill.

Brown, Marvin A.
1995 *Greensboro: An Architectural Record*. Preservation Greensboro, Inc. The Junior League of Greensboro, Greensboro, NC.

Cleland, Charles E.
2001a Historical Archaeology Adrift? *Historical Archaeology* 35(2):1–8.

2001b Reply to Douglas V. Armstrong, Lu Ann De Cunzo, Gregory A. Waselkov, Donald L. Hardesty, and Roberta S. Greenwood. *Historical Archaeology* 35(2):28–30.

Clement, Christopher Ohm
2009 *Historic Context. Late 19th and Early 20th Century Plantations and Farms in the Center and Lower Townships of Richland County, South Carolina*. Applied Research Division, South Carolina Institute of Archaeology and Anthropology. Prepared for the South Carolina National Guard, Columbia.

Daniel, I. Randolph, Jr.
1996 Alexander Hogan National Register Nomination Form. On file, Office of State Archaeology, Raleigh.

Daniel, I. Randolph, Jr., and H. Trawick Ward
1993 *Test Excavations at Selected Log Cabin Sites in Orange County, North Carolina.* Research Report No. 10, Research Laboratories of Anthropology, University of North Carolina, Chapel Hill, NC.

Daniel, I. Randolph, Jr.
1994 *An Archaeological Survey of Portions of Orange County, North Carolina*. Research Report 12. Research Laboratories of Anthropology, University of North Carolina, Chapel Hill.

Delle, James, and Patrick Heaton
2003 The Hector Backbone: A Quiescent Landscape of Conflict. *Historical Archaeology* 37(3):93–110.

Drucker, Leslie M., Woody C. Meiszner, and James B. Legg
1982 *The Banister Allen Plantation (38AB102) and Thomas B. Clinkscales Farm (38AB221): Data Recovery in the Richard B. Russell Multiple Resource Area, Abbeville County, South Carolina*. Resource Studies Series No. 55, Carolina Archaeological Services, Columbia.

Engstrom, Mary Claire
1983 Early Quakers in the Eno River Valley ca. 1750–1847. *Eno* 7(2):1–73.

Fearnbach, Heather
2009 National Register Form, Foust-Carpenter and Dean Dick Farms, Whitsett Vicinity, Guilford County, GF4959. Listed July 1, 2009. On file, North Carolina State Historic Preservation Office, Office of Archives and History, Department of Cultural Resources.

Grissino-Mayer, Henri, and Joe Henderson
2006 *The Historical Dendroarchaeology of the Hoskins House, Tannenbaum Historic Park, Greensboro, North Carolina*. Prepared for Tannenbaum Historic Park and the Guilford Battleground Company by the Laboratory of Tree-Ring science, Department of Geography, University of Tennessee, Knoxville.

Groover, Mark D.
2004 Household Succession as a Catalyst of Landscape Change. *Historical Archaeology* 38(4):25–43.

2008 *The Archaeology of North American Farmsteads*. University Press of Florida, Gainsville.

Hargrove, Thomas
1982 *Archaeological Survey Within Revised Phase 1 Development Areas of Cate's Ford Access Area, Eno River State Park, Orange County, North Carolina*. Prepared by Archaeological Research Consultants for the Division of Parks and Recreation, North Carolina Department of Natural Resources and Community Development, Raleigh.

1983 Sandling Site NRHP Nomination, ARC March 7, 1983; form further prepared and edited by Richard H. Lewis, Archaeologists USAED, Wilmington, NC.

1996 *An Archaeological Survey of the Proposed New Garden Road Development, New Garden, Guilford County, North Carolina*. Prepared by Archaeological Research Consultants, Raleigh.

Hatch, Charles E.
1970 *Guilford Courthouse and Its Environs*. Office of History and Historic Architecture. Washington, D.C. U.S. Department of Commerce. National Technical Information Service Report No. FNP-HH-71-77.

Historical Census Browser
2004 Retrieved May 3, 2010 from the University of Virginia, Geospatial and Statistical Data Center: http://mapserver.lib.virginia.edu/collections/.

Houston, Kitty, and Lee Novick
1993 Amended National Register Nomination for Alston-DeGraffenried Plantation. On file, Office of State Archaeology, Raleigh.

Jorgenson, Matthew, and Marvin Brown
2009 *Final Archaeological and Historical Context Report Lincoln, Catawba and Gaston Counties and Region. Proposed Relocation of NC 16 Lincoln, Catawba and Gaston Counties, North Carolina NCDOT-Division 12*. Submitted to the North Carolina Department of Transportation by URS Corporation, Morrisville.

Joseph, J.W.
1997 Building to Grow: Agrarian Adaptations to South Carolina's Piedmont Landscapes. In *Carolina's Historical Landscapes, Archaeological Perspectives*, edited by Linda F. Stine, Martha Zierden, Lesley M. Drucker, and Christopher Judge, pp. 45–59. University of Tennessee Press, Knoxville.

Joseph, J.W., Theresa Hamby, and Catherine Long
2004 *Historical Archaeology in Georgia*. Georgia Archaeological Research Design Paper No. 14, University of Georgia Laboratory of Archaeology Series Report Number 39. Athens, GA. Prepared by New South Associates.

Joy, Deborah (editor)
2007 *Archaeological Survey for the Future New Hope Park at Blackwood Farm near Hillsborough in Orange County, North Carolina*. Final Technical Report. Prepared by Legacy Research for Orange County Environment & Resource Conservation Department, Hillsborough, NC.

Keller, John E.
1990 *Data Recovery at 31GF200, Bryan Boulevard Extension, Guilford County, North Carolina*. Prepared for the North Carolina Department of Transportation by the Archaeology Laboratories, Wake Forest University, Winston Salem, NC.

King, Julia A.
2006 Household Archaeology, Identities and Biographies. In *The Cambridge Companion to Historical Archaeology*, edited by Dan Hicks and Mary C. Beaudry, pp. 293–313.

Kish, Stacy
2008 USDA United States Department of Agriculture national Institute of Food and Agriculture. NIFA News. Farmland Values Project Measures Economic Importance of Rural Land. March 10, 2008. [Accessed 3/24/2012]. CSREES. http://www.csrees.usda.gov/newsroom/impact/2008/nri/03102_farmland_value.html.

Lautzenheiser, Loretta
1990 *Archaeological Survey of Greensboro Western Urban Loop, Guilford County, North Carolina U-2524*. Prepared for Kimley-Horn and Associates by Coastal Carolina Research, Tarboro, NC.

Learn North Carolina.
n.d. Population of North Carolina Counties 1900. http://www.learnnc.org/lp/table.php?id=5691 [accessed 4/25/2012].

Lees, William B., and Vergil E. Noble
1990 Other Questions That Count: Introductory Comments on Assessing Significance in Historical Archaeology. *Historical Archaeology* 24:10–13.

Lewis, Richard
1985 NRHP Nomination for New Hope Rural Historical Archaeological District, COE. On file, Office of State Archaeology, Raleigh.

McClelland, Linda, Timothy Keller, Genevieve Keller, and Robert Melnick
1999 *Guidelines for Evaluation and Documenting Rural Historic Landscapes*. U.S. Department of the Interior, National Park Service.

Millis, Heather
2000 *Cultural Resource Survey of the Greene Tract, Orange County, North Carolina*. Submitted to the Town of Chapel Hill, Department of Waste Management, by TRC Garrow Associates, Chapel Hill, NC.

Mitchell, Thornton W.
1993 The Granville District and Its Land Records. *The North Carolina Historical Review* LXX(2):103–129.

Mrozowski, Stephen A.
2006 Environments of History: Biological Dimensions of Historical Archaeology. In *Historical Archaeology*, edited by Marin Hall and Stephen W. Silliman, pp. 23–41. Blackwell Publishing, Cornwall, UK.

National Register of Historic Places
n.d. http://www.nps.gov/nr/ [Accessed October 19, 2011].

Neumann, Thomas, Robert Sanford, and Karen Harry
2010 *Cultural Resources Archaeology: An Introduction*. Second edition. AltaMira Press, Rowman and Littlefield, Lanham, England.

Newlin, Algie
1977 *The Battle of New Garden*. Published by The North Carolina Friends Historical Society and the North Carolina Yearly Meeting of Friends, Greensboro, NC.

NC Department Natural Environmental Resources
n.d. http://www.onencnaturally.org/pages/CTC_Overview.html. Conservation Tax Credit Program Overview. North Carolina Department of Environment and Natural Resources. Accessed December 31, 2011 and May 3, 2012.

North Carolina Preservation Office
n.d. http://www.hpo.ncdcr.gov/digital/NCHPO_Digital_Start_Page.html. GIS and Digital Photography Guidelines. Accessed April 18, 2012.

Orser, Charles Jr.
2007 *A Historical Archaeology of the Modern World*. Plenum Press, New York.

Padgett, Thomas
1985 *Archaeological Study Benjamin Parkway Extension Project No. U-510*. North Carolina Department of Transportation, Division of Highways, Raleigh.

Peterson, Shane C.
2008 *Archaeological Survey Replacement of Bridge No. 4 on SR 2422 Over Troublesome Creek, Rockingham County, North Carolina*. NC Department of Transportation Project Development and Environmental Analysis Branch Office of Human Environment, Raleigh.

Phillips, Harriet Lauren
2011 *Landscape Analysis and Cultural Resource Inventory of Troublesome Creek Ironworks: A Geographical and Archaeological Approach*. Unpublished MA Thesis, Department of Geography, University of North Carolina, Greensboro.

Powell, William S.
1989 *North Carolina Through Four Centuries*. University of North Carolina Press, Chapel Hill.

Prunty, Merle
1955 The Renaissance of the Southern Plantation. *The Geographical Review* 45(4):457–491.

Robinson, Kenneth
2004 *Archaeological Testing and Assessment Proposed Interpretive Center, David Caldwell Historic Site, Greensboro, NC*. Prepared for Greensboro Beautiful, Inc. by Wake Forest University Archaeological Laboratories.

Robinson, Kenneth
2009 *Archaeology at the David and Rachel Caldwell Site: A Colonial and Federal Period Farmstead in the North Carolina Piedmont, Greensboro, Guilford County, North Carolina. Vol. I: Project Description & Analysis*. Prepared for Greensboro Beautiful, Inc. by Wake Forest University Archaeology Laboratories.

Schwartz, Stuart C.
1971 The White Site (GF2), Guilford College, North Carolina. Manuscript on file, Office of State Archaeology, Division of Archives and History, Raleigh. Prepared originally under Division of Historic Sites and Museums, State Department of Archives and History, Raleigh. (Now site 31GF198**)

Smith, McKelden III
1978 Guilford County: The Architectural Traditions in an Exclusively Vernacular Landscape. *Carolina Dwelling. Towards Preservation of Place: In Celebration of the North Carolina Vernacular Landscape*, edited by Doug Swaim. The Student publication of the School of Design: Vol. 26, pp. 150–160. North Carolina State University, Raleigh.

South, Stanley
1999 *Historical Archaeology in Wachovia: Excavating Eighteenth-Century Bethabara and Moravian Pottery*. Kluwer Academic/Plenum Publishers, New York.

Southern, Kathleen Pepi
n.d. *Historic Preservation in Rural North Carolina: Problems and Potentials*, edited by Ernest Wood. The Historic Preservation Foundation of North Carolina (circa 1981). Prepared under a grant from the Heritage and Conservation Program, National Park Service.

Stewart-Abernathy, Leslie
1986 Urban Farmsteads: Household Responsibilities in the City. *Historical Archaeology* 20:5–15.

Stine, Linda
1985 Stratification in South Carolina Archaeological Society in 1900. In *Current Research in the Carolinas*. Chicora Foundation Research Series 4:88–102.

1989 *Raised Up In Hard Times: Factors Affecting Material Culture on Upland Piedmont Farmsteads, circa 1900–1940s*. Ph.D. Dissertation, Department of Anthropology, University of North Carolina at Chapel Hill. University Microfilms International, Bell and Howell Information Company, Ann Arbor, Michigan.

1990 Social Inequality and Turn-of-the-Century Farmsteads: Issues of Class, Status, Ethnicity, and Race. In *Plantation and Farm: Archaeological Approaches to Southern Agriculture*, edited by Charles Orser, Jr. *Historical Archaeology* 24:37–49.

1991 Twentieth Century Gender Roles: Perceptions from the Farm. In *The Archaeology of Gender–Proceedings of the 22nd Annual Chacmool Conference,* edited by Dale Walde and Noreen D. Willows, pp.496–501. University of Calgary, Alberta, Canada.

1992 Social Differentiation Down on the Farm. In *Exploring Archaeology and Gender–Proceedings from the Anthropology and Archaeology of Women Conference May 2–4, 1991*. Appalachian State University, Boone, NC, edited by Cheryl Claassen, pp. 103–109. Prehistory Press Monographs in World Archaeology 11.

1999 *Archaeological Investigations at Price Park, Guilford County, North Carolina*. Prepared for the Piedmont Land Conservancy and the City of Greensboro, NC.

2005 *Results of 2004 Archaeological Testing at Tannenbaum Historic Park 31GF413** Greensboro, NC*. Prepared for Tannenbaum Historic Park, City of Greensboro, NC.

2011 *Applied Archaeology at Blandwood Mansion Historic Site (31GF199**).* Prepared for Blandwood Mansion Historic Site.

Stine, Linda, and Will Adamson
2003 *Results of Monitoring and Shovel Tests, Tannenbaum Historic Park 31Gf413**, Greensboro, North Carolina*. Prepared for Tannenbaum Historic Park, City of Greensboro, NC by Archaeology Laboratory, University of North Carolina, Greensboro.

Stine, Linda, and Scott Madry
1986 *Archaeological Investigations at Ayr-Mount Plantation*. Prepared for Richard Jenrette, Hillsborough, NC. On file at the North Carolina Office of State Archaeology, Department of Cultural Resources, Raleigh.

Stine, Linda, and Kristen Selikoff
2000 *Landscape Archaeology at Tannenbaum Park, Greensboro, North Carolina (31Gf413**).* Prepared for the Tannenbaum-Sternburger Foundation, the Guilford Battleground Company, and Tannenbaum Historic Park.

Stine, Linda, and Roy Stine
1996 Migration and Community Down on the Farm. In *Snapshot of the Carolinas*, edited by Gordon Bennett, pp. 121–124. American Association of American Geographers.

2011 *Field Report Summary of Archaeological and Geophysical Research at Guilford Courthouse National Military Park (GUCO) (31GF44**), Greensboro, North Carolina.* Prepared for Charles Cranfield, Superintendent, Guilford Courthouse National Military Park, the Guilford Battleground Company, the Tannenbaum-Sternberger Foundation and the Southeastern Archaeological Center, National Park Service.

Stine, Linda, Thomas Hargrove, and Deborah Joy
1999 *An Archaeological Context for St. Mary's Road Corridor, Orange County, North Carolina*. Prepared for the Orange County Environment and Resource Conservation Department, Hillsborough, and the North Carolina Department of Cultural Resources, Division of Archives and History, Raleigh.

Trimble, Stanley W.
2008 *Man-Induced Soil Erosion on the Southern Piedmont: 1700–1970* (Enhanced 2nd Edition). Soil and Water Conservation Society, Ankeny, IA. [1974].

United States Bureau of the Census
1900 http://www.census.gov/prod/www/abs/decennial/1900.html. Accessed April 15, 2012.

1975 Historical Statistics of the United States. Colonial Times to 1970, Part 1. Pp. 457, Series K 1–16. US Department of Commerce. Government Printing Office, Washington, DC.

1987 Statistical Abstract of the United States 1987 (107th edition). Pp. 619, Table No. 1093. US Department of Commerce. Government Printing Office, Washington, D.C.

1998 http://search.census.gov/search?utf8=%E2%9C%93&affiliate=census&query=farm+population. Accessed October 23, 2012.

Wheaton, Tom, and Beth Reed
1987 *Archaeological and Historical Investigations of the Barrow Farmstead, Forsyth County, North Carolina* (Draft). Prepared for Waste Management of North America by Garrow and Associates, Atlanta.

Wilson, James
1990 We've Got Thousands of These! What Makes an Historic Farmstead Significant? *Historical Archaeology* (24):23–33.

APPENDIX 20-A

Regional NRHP and Study List Properties Derived from OSA files for Ten Eastern Piedmont Counties

County	Count	Property Description	On the NRHP or Study List Date
Alamance	n/a		
Caswell	n/a		
Chatham	1	Newkirk Site Prehistoric (31CH366)	NR 1983
”	1	Alston-Degraffenreid Plantation (31CH719**) (31CH657**)	NR 1993
”	1	Lockville Dam, Canal and Powerhouse (31CH360)	NR 1984
”	1	New Hope Rural Historical Archaeological District	NR 1985
Durham	1	Orange Factory archaeological remains (31DH625**)	DOE 1982 SL 1979
”	1	Little Creek Site <u>Prehistoric</u> (31DH351)	NR 1985
”	1	Bennehan-Cameron Plantation District (31DH191**–192**)	
”	1	Rolling View Archaeological District mixed prehistoric and historic	SL?
Guilford	1	David Caldwell Log College (and farmstead) (31GF196**)	NR 1982
”	1	McCulloch's Gold Mill (31GF191**)	NR 1979
Orange	1	Alexander Hogan Plantation (31OR296**)	NR 1996
”	1	Hillsborough Historic District Amendment: Fredricks Site (31OR231)	NR 1984
”	1	Hillsborough Historic District Amendment: Wall Site (31OR11)	NR 1979
”	1	St. Mary’s Road Corridor	SL 2001
”	1	Fews Ford Community, Eno River State Park	SL 1984

County	Count	Property Description	On the NRHP or Study List Date
Person	n/a		
Randolph	1	Thayer Farm (31RD10) prehistoric	NR 1986
”	1	Mt. Shepherd Pottery (31RD28**)	NR 1980
”	1	William Dennis Pottery Kiln and House Site (31RD981**)	SL 2009
Rockingham	1	Lower Sauratown late prehistoric (31RK1)	NR 1984
”	1	Troublesome Creek Ironworks, mill, plantation and cabin site complex (31RK135**)	NR 1972
”	1	Industrial, Dan River Navigation System complex (31RK54**, 31RD59**, 31RK136–140**)	NR 1984
Wake	1	Sandling Site mixed prehistoric, antebellum historic farmstead w/graves	SL 1984 DOE 1983
”	1	Rolling View mainly prehistoric with historic farmsteads	SL?
Total	23		