

The Archaeology of Virginia's First Peoples

Edited by:
Elizabeth A. Moore
Bernard K. Means





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Color My World: Black, Green, Red, and Blue in Virginia

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If you are an archaeologist studying Virginia's long history of human habitation, dating to the waning millennia of the last Ice Age, you will have on your shelf a colorful assortment of edited volumes created for the Council of Virginia Archaeologists (COVA) and published by the Archeological Society of Virginia (ASV). These colors and their corresponding volumes include:

Black: *Paleoindian Research in Virginia: A Synthesis* (1989), edited by J. Mark Wittkofski and Theodore R. Reinhart

Green: *Early and Middle Archaic Research in Virginia: A Synthesis* (1990), edited by Theodore R. Reinhart and Mary Ellen N. Hodges

Red: *Late Archaic and Early Woodland Research in Virginia: A Synthesis* (1991), edited by Theodore R. Reinhart and Mary Ellen N. Hodges

Blue: *Middle and Late Woodland Research in Virginia: A Synthesis* (1992), edited by Theodore R. Reinhart and Mary Ellen N. Hodges

As the subtitles of each volume indicate, these synthesized the extant information on what was known about the pre-Contact American Indians of the Commonwealth of Virginia, a state of the State, as it were. However, as we approach the 30th anniversary of the first volume in this series, it is not surprising that the information in all these volumes is a bit out of date. For example, we now can safely state that American Indians were in Virginia before the beginning of the Paleoindian period, a finding that was still somewhat tentative decades ago (Barber and Barfield 1989:55-56).

Archaeology is not a static field. COVA and ASV members, as well as other archaeologists, have dedicated considerable efforts to expanding investigations of sites examined by earlier generations of researchers, uncovering new sites, and applying new theories and new technologies to old and new sites alike. Cultural resource management (CRM) is responsible in large part for the increased number of sites excavated in the state, pointing to the importance of historic preservation legislation in protecting data from small and large sites alike, even if the sites themselves are lost to the inexorable march of "progress." To update the original colorful COVA volumes, a series of papers was published in the *Quarterly Bulletin of the Archeological Society of Virginia*, albeit in an abbreviated format (Barber 2003; Blanton 2003; Boyd 2003; Hodges 2004; Klein 2003; Tolley 2003).

In 2007, the senior author joined an effort led by then Virginia state archaeologist, Dr. Michael B. Barber, to develop a new state plan for the Commonwealth of Virginia. The State Plan Committee, as it was known, was a co-operative venture between the Virginia Department of Historic Resources, COVA, and the ASV. The main goals of the committee were twofold: update the state of knowledge of prehistoric and historic research in Virginia; and, provide methodological and theoretical guidelines for how subsequent research should be conducted in the state. At the ASV annual meeting the following year held at the Virginia Museum of Natural History in Martinsville, Virginia on October 9, 2007, several speakers discussed the state of research and the needs for future investigations for each major time period in Virginia's past, beginning now with the pre-Paleoindian period and continuing into the 20th century. Each participant in the symposium was then tasked with transforming their spoken words into a tangible format as part of an integrated Virginia State Plan.

The State Plan committee met for the next few years, but the effort to create an integrated state plan for Virginia fell by the wayside. Pressing commitments meant that some researchers were unable to complete their components of the Virginia state plan, as originally formulated, and it was decided that the Virginia state

plan itself would be cast aside, in favor of two volumes. The first, dedicated to historical archaeology in Virginia, was published in 2017 under the editorship of Dr. Clarence Geier and entitled *The Historical Archaeology of Virginia from Initial Settlement to the Present: Overview and New Directions*. In your hands, or, perhaps, through an electronic device the size of your palm, you have a volume on Virginia's pre-European Contact past.

This volume opens with a discussion of Virginia's physiographic regions by Dr. Christopher Egghart, whose dedication to the Commonwealth's past led him to author over a third of the chapters you see here. In Chapter 2, Egghart discusses the rivers and resources that divide and shape the lands that American Indians traveled across, exploited, and settled and sets the state for a chronological presentation of Virginia's pre-European Contact American Indian past. Chapter 3, by Dr. Clifford Boyd, emphasizes the Paleoindian period, but also more thoroughly explores the pre-Paleoindian period in a way not possible in 1989. Dr. Michael Barber then considers, in Chapter 4, the Early Archaic period, which same major transformations in climate, as the last major Ice Age ended, and Ice Age megafauna that fascinated Thomas Jefferson became extinct. The remainder of the Archaic period and the beginnings of the ceramic era, e.g. the Early Woodland, are considered by Egghart in Chapters 5 to 7. In addition to the introduction of ceramic technology, this span sees an environment that becomes more modern in its character and human settlements increased in size and duration. Dr. Carole Nash then considers the ambiguity that has long characterized the Middle Woodland period in Virginia, as is the case elsewhere in the Middle Atlantic region. This ambiguity vanishes to some degree during the Late Woodland period, which, because of a richer archaeological and ethnohistoric record, is considered in the remaining three chapters in this volume. Dr. Keith Egloff focuses on the Late Woodland cultures of southern Virginia, Drs. Christopher Shephard and Martin Gallivan look at eastern Virginia, and Drs. Bernard K. Means and Elizabeth Moore examine northern Virginia. Much more is known about the Late Woodland of eastern Virginia than the rest of the state, largely because it is here that American Indians and Europeans had the first and most sustained contact before native societies were disrupted—but not eradicated or vanquished as some have argued. In fact, by a happy coincidence, this volume comes out the same year that six American Indian tribes in Virginia received federal recognition: "…the Chickahominy, the Eastern Chickahominy, the Upper Mattaponi, the Rappahannock, the Monacan and the Nansemond tribes" (Portnoy 2018). Their recognition is just two years after the first Virginia tribe, the Pamunkey Indians, themselves were so recognized (National Park Service 2015). These are long overdue but ironic recognitions, given that the ancestors of these American Indian tribes lived in Virginia long before the first European even was aware of the rich tapestry of cultures that called Virginia their home. This volume helps tell the story of these American Indians, but is itself incomplete. Hopefully, future iterations of the story of Virginia's past will include the voices of the American Indians themselves.

Chapter 1

Physiographic and Environmental Overview of the Commonwealth

Christopher Egghart
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Introduction

Virginia's landscapes are varied and diverse, ranging from Atlantic barrier islands to the high summit ridge lines of the Allegheny Mountains. Intervening physiographic settings include the Chesapeake Bay estuary, an expansive Coastal Plain, rolling Piedmont hills, the Blue Ridge massif, the Great Valley and adjoining Ridge and Valley complexes, and the rugged hills and deep hollows of the Appalachian Plateau. Virginia's hydrology is equally complex. Surface drainages are as different as the great tidal rivers feeding Chesapeake Bay and rushing mountain streams of the Commonwealth's western highlands. Virginia also straddles the Eastern Continental Divide. As such, rivers flow not only to the Chesapeake Bay and Carolina Sounds, but also west to the mid-continent and ultimately the Mississippi River and Gulf of Mexico. Virginia is a comparatively large state and can be seen as bridging the Northeast and Southeast regions of the United States. Vegetative communities clearly reflect this transitional setting. The mixed pine/oak stands of the southern Piedmont and the maritime forests of far southeastern Virginia represent an extension of communities typical of the Carolinas and points south. By contrast, forests in the northernmost tier of Virginia counties and share much in common with those of the greater Northeast.

Virginia's diverse physiographic settings and waterways have helped shape human settlement and land use from earliest prehistoric times through present day. This section provides a broad overview of Virginia's physiographic features and environmental conditions as relevant to the archaeological study of the region's history and prehistory. Included is an accounting of the Commonwealth's physiographic provinces, topography, and geological features. This is followed by description of major rivers and watersheds. The hydrology section is followed by brief synopsis of settlement and land use history in Virginia as well as contemporary environmental conditions pertinent to archaeological research in the Commonwealth.

Physiographic Overview of Virginia

Virginia is divided into five primary physiographic provinces. These are: 1) Coastal Plain; 2) Piedmont; 3) Blue Ridge; 4) Ridge and Valley; and 5) Appalachian Plateau (Figure 1.1). Each region is distinct in terms of topography, hydrology, soils, and underlying geology. At the same time, a significant amount of variation is typically expressed within regions (Table 1.1).

Table 1.1. Basic characteristics of Virginia's physiographic provinces.

Province	Terrain
Coastal Plain	Mostly flat; increasing minor relief in western areas
Piedmont	Rolling hills; steady increase in elevations east to west
Blue Ridge	High ridgeline, increase in elevation north to south
Ridge and Valley	Repeating ridges and valleys. Elevations increase east to west
Appalachian Plateau	Rugged hills, heavily dissected

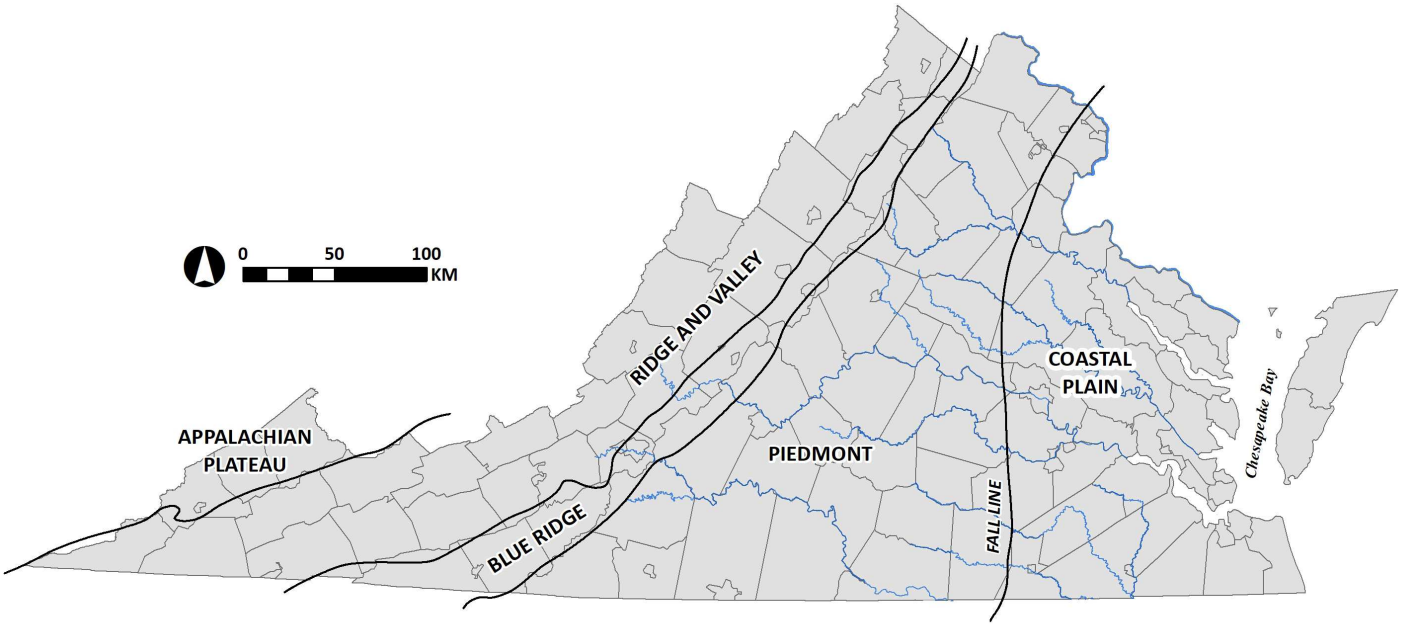

Figure 1.1. Virginia physiographic provinces.

This subsection presents a brief account of these physiographic regions. Rather than providing a detailed analysis of underlying geology and formative geophysical processes, the narrative is intended to give readers who may be unfamiliar with the Commonwealth a basic understanding of Virginia's physiographic makeup. Emphasis is placed on attributes directly relevant to human settlement and period lifeways. The basic geologic formational descriptions for the respective physiographic provinces were synopsized from the College of William and Mary's Department of Geology website Geology of Virginia, posted at: http://web.wm.edu/geology/virginia/?svr=www

The subdivisions of the physiographic provinces applied in the following discussion are not necessarily identical to those used by geologists. For example, geologists divide the Virginia Coastal Plain into the Upland Subprovince and Lowland Subprovince, with the former constituting the interfluvial uplands and the latter, major river valleys that finger inland. By contrast, archaeologists typically refer to the Inner Coastal Plain, Middle Coastal Plain, and Outer Coastal Plain sub-regions, with these divided into riverine and upland zones. This scheme better captures differing ecological conditions and landscape settings that had a significant influence on both prehistoric and historic settlement and lifeways across the greater Coastal Plain region.

Coastal Plain

As the name implies, the Coastal Plain consists of a broad, relatively level expanse fronting the Atlantic shore. It is comprised of a complex series of fluvial and marine terraces that have been extensively reworked by repeatedly transgressing and regressing sea levels. Near-surface geology is characterized by unconsolidated deposits, typically sands, gravels, clay beds, and marl. These overlie deep basement rock of ancient age.

The Virginia Coastal Plain varies significantly in width. It is widest along the North Carolina border, measuring approximately 90 miles west to east. Moving north from the Tidewater region, the Coastal Plain narrows considerably. In Northern Virginia, the province is squeezed between the Potomac River shore and adjacent Fall Line. Here the majority of the Atlantic Coastal Plain falls within Maryland, on the opposite side of the Potomac. This portion of the Atlantic Coastal Plain is roughly bisected by the ancient Susquehanna River valley, now flooded as the Chesapeake Bay. The Delmarva peninsula lies on the east site of the Chesapeake, with its far end bounded by the Delaware Bay and the Atlantic Ocean. The lower reaches of the Delmarva constitute a geographically separate part of the Commonwealth, referred to as the Eastern Shore of Virginia.

The tidal Potomac, Rappahannock, York and James rivers divide the Virginia Coastal Plain into three

peninsulas. The southernmost of these, known as the Virginia Peninsula (or simply the Peninsula) is defined by the James River on one side and the York River on the other. Land between the York and Rappahannock rivers is referred to as the Middle Peninsula. The Northern Neck of Virginia lies between the Rappahannock River and the Potomac shore.

The southern reaches of the Coastal Plain can be divided into three subsections, each with distinctive topographic characteristics. These are Inner Coastal Plain, the Middle Coastal Plain and Outer Coastal Plain. The Inner Lower James can defined as lying between the base of the Falls and the mouth of the Appomattox on the James River. Topography of this area is characterized by broad upland terraces that lie as much as 60 feet above mean sea level (amsl). Interior, interfluvial terraces are as high as 260 feet amsl. Relief is generally minimal except along down-cut drainages and river-front shores. The interface between the Inner Coastal Plain and the Middle Coastal Plain is partly subjective. In general, the Middle Coastal Plain corresponds with the mid-tidal drainage areas of the Lower James and Rappahannock rivers. Upland elevations are only slightly less than those of the Inner Coastal Plain. Relief can be surprisingly pronounced and most secondary drainages are deeply entrenched. By contrast, the Coastal Plain-Outer Coastal Plan interface is quite obvious. Elevation drops suddenly to around 10 feet and terrain becomes nearly table-top level. Large areas along the very eastern ends of both the Virginia Peninsula and the Middle Peninsula lie at 5 feet amsl or less.

On the Middle Peninsula, the Outer Coastal Plain is mostly limited to areas just east of Route 17 at Gloucester Point but does encompass most of low-lying Mathews County on the north side of Mobjack Bay. No Outer Coastal Plain occurs along the Northern Neck. These Coastal Plain subdivisions are not evident along the western shore of the Potomac. This area has a distinctive Fall Line character and the river channel parallels the nearby Piedmont interface. Terrain along the Potomac shore is relatively pronounced and substantial river-facing bluffs are common.

Topography of the Eastern Shore shares much in common with the greater Delmarva region. Relief is absolutely minimal with most uplands table-top flat. Occasional relief is provided by large Carolina bays that occur across much of the peninsula interior. These features, some of which measure more than a mile in diameter, consist of closed drainage depressions surrounded on one or more sides by dune-like ridges. Prior to historic clearing and ditching for agriculture, many of these Carolina bays were likely ponded or contained wetland soils. The Eastern Shore mainland does not front the Atlantic Ocean proper. Rather, Delmarva is flanked on its eastern side by a chain of low barrier islands. These islands are part of the greater Atlantic barrier island chain that extends from New Jersey to Georgia.

Much of far southeast Virginia is also characterized by very low and topographically differentiated terrain. A major feature is the Dismal Swamp, at the center of which lies Lake Drummond; one of only two natural lakes in the Commonwealth. The western edge of the Dismal Swamp terminates along an abrupt rise in elevation. This break, known as the Suffolk Scarp, is roughly analogous to the marked Middle Coastal Plain-Outer Coastal Plain transition expressed in the Yorktown area on the north side of the James. Soils of the Suffolk Scarp are well drained and fertile.

West of the Suffolk Scarp, terrain is mostly level. Discernible landform features include occasional Carolina bays. Also visible across the landscape are abandoned river/stream channel features that are relatively common in the vicinity of larger drainages. Many of these features take on the form of meander loops and oxbow cut offs. Further west and closer to the Fall Line, the Middle Coastal Plain south of the James is typified by extremely broad, essentially level upland terraces. These expansive landforms are only occasionally interrupted by swampy, low order drainages.

Piedmont

The Piedmont is by far the largest physiographic province in the Commonwealth. The region is bounded on the east by the Fall Line and on its western side by the Blue Ridge massif. The Fall Line is roughly followed by Interstate 95, and includes the town and cities of Emporia, Richmond, Petersburg, Fredericksburg and Washington DC. The Piedmont pinches out in far northern Virginia, with the crest of the Blue Ridge lying less than 40 miles from Washington DC. By contrast, the Piedmont stretches over 150 miles in width along the North Carolina–Virginia border.

Piedmont topography is typified by gently rolling

hills. Elevations center around 300 feet along the Fall Line, rising slowly east to west. The far western Piedmont lies around 1,000 feet amsl with minor summits rising to between 1,500 and 2,500 feet. Relief also becomes significantly more pronounced with proximity to the Blue Ridge.

The geology of the Piedmont is exceptionally complex. A wide variety of igneous and metamorphose rock underlie the region. Some near surface formations are of extreme ancient age, dating mostly from the Proterozoic to Paleozoic eras. These same formations also comprise the internal core of the nearby Appalachian Mountains. Also present and sometimes manifested on the surface are Triassic sedimentary rock, diabase dikes, and ancient basalt flows.

Piedmont soils have weathered in place over extremely long periods of time. As a result, they are clayey and mineral rich. Iron and other oxide compounds lend local soils their characteristic red/orange hue. These soils typically overlie a layer of saporlitic (degraded) bedrock, which can occur just under the surface. Stone outcrops are not common but have a widespread occurrence across the region. When present, they are often related to the localized occurrence of intrusive, more resistant rock.

The Piedmont is divided into three distinct sub-provinces. These are the Outer Piedmont, the Mesozoic Lowlands, and the Foothills. The Outer Piedmont is by far the largest of the three. The Outer Piedmont fronts the Fall Line, while its western limits follow a line roughly from Manassas southwest to Charlottesville, Lynchburg, and on to Martinsville. This area most typifies the gently rolling topography associated with the region. The Mesozoic Lowland, also referred to as Triassic Basin, occurs in two separate sections. The first extends from the Potomac River west of Washington DC, through Manassas and southwest to approximately Orange. The second falls in an area directly west of Richmond to just north of Farmville. Topography within Triassic Basin areas is typically fairly undifferentiated and soils are often moderately to poorly drained. However, occurrence of dikes and other intrusive formations within the basin can result in the occurrence of isolated cryptocrystalline lithic outcroppings. The Mesozoic Lowlands exhibit very modest relief, with elevations only between 200 and 400 feet. The Foothills subprovince occurs in a narrow band along the Blue Ridge margin. Terrain is hilly, with individual summits often exceeding 2,000 feet in elevation.

Blue Ridge

The Blue Ridge is a prominent physical feature and iconic Virginia landmark. In many locations, the Blue Ridge consists of single imposing ridge line that rises abruptly from the rolling Piedmont hills. This ridge line closely parallels the northeast-southwest orientation of the greater Allegheny mountain chain. The Blue Ridge has an ancient and complex geologic history. Mesoproterozoic crystalline rock lies at its core. The primary formational process of the Blue Ridge has been a thrusting over top the early Paleozoic rocks of the adjacent Ridge and Valley. Deformation events are evident in older igneous and metamorphic rock that occurs in the area, as well. The long geologic history of the Blue Ridge also includes the effect of multiple rifting episodes resulting in deformation, uplift, intrusion, and volcanism. Basalt, greenstone and rhyolite found in the region are associated with ancient volcanic activity. Heavily metamorphosed sedimentary rocks as well as other materials suited for prehistoric tool manufacture such as quartzites and ferruginous sandstone also occur.

The province is divided into the two very distinct sub-provinces, herein defined as the Northern Blue Ridge and the Southern Blue Ridge. The James River break provides a demarcation between the two Blue Ridge components. Elevations of the far Northern Blue Ridge near Washington DC are only around 1500 feet amsl, or 700-800 feet higher than the adjoining Piedmont terrain. Here, long sections of the Blue Ridge in the area consist of a single, well defined ridge line. Moving south, the Blue Ridge becomes progressively higher, wider, and topographically more complex. Elevations along the central Northern Blue Ridge reach 4,000 feet, with as much as 3000 feet in local relief on the Piedmont facing side. The Southern Blue Ridge exhibits a distinctively different topographic character. Instead of comprising a single ridge line, the Southern Blue Ridge consists of a broad, prominent escarpment. While local relief is less pronounced (with respect the adjoining Piedmont terrain) overall elevation are significantly higher than across most Northern Blue Ridge settings. At 5,729 feet above sea level, Mount Rogers, located in southwestern reaches of the Virginia Blue Ridge is the highest point in the Commonwealth.

Ridge and Valley

The Ridge and Valley Province is defined by a series of parallel running ridges and intervening valleys. The multiple series of ridges and elongated valleys are the result of differential weathering of linear belts of rock that have been subjected to repeated thrusting and folding. Valleys of the province are generally underlain by carbonate rock. Ridges are comprised of sandstone and metamorphosed sedimentary rock more resistant to weathering. As with most limestone regions, karst conditions dominate the valley portions of the province. Sinkholes, caverns, and subterranean drainages are common in many areas.

A major component of the Ridge and Valley Province is the expansive Great Valley, the middle and northern reaches of which are known as the Shenandoah Valley. The Great Valley extends from Hagerstown south to the full length of Virginia to Bristol and beyond. In Virginia, the middle reaches of the Great Valley has its widest point measuring in excess of 22 miles across. Relief varies somewhat, alternating between nearly flat terrain and low rolling hills. Soils are generally fertile although some valley floor areas exhibit limestone outcroppings and correspondingly eroded conditions. The Shenandoah Valley narrows and rises in elevation south of where the James River breaks through the Blue Ridge. South of this break is locally referred to as the Roanoke Valley. The valley floor again rises in elevation in the area of Christiansburg, after which terrain falls toward the New River. North of Roanoke, the valley floor is generally between 1,000 and 1,500 feet in elevation. South of Roanoke elevations range between 1,200 and 2,300 feet.

The east side of the Great Valley is defined by the Blue Ridge massif. On the west side of the Great Valley lie a series of parallel ridge lines and valleys that collectively lend the province its name. Valleys become more narrow and increase in elevation behind each succeeding ridge line. Peak ridge line summits are around 4,000 feet along the West Virginia border. Valley floors are underlain by limestone and soils are normally fertile. Though narrow, valley floors in most locations are relatively level. Ridge lines can be quite pronounced, with steep side slopes and narrow summits.

Massanutten Mountain is the third Ridge and Valley component. The Massanutten Mountain sub-province consists of a long, linear ridge that rises from the center of the northern Shenandoah Valley, splitting it in two. The Massanutten Mountain ridge is very pronounced, abruptly rising as much as 3000 feet from the Great Valley floor.

Appalachian Plateau

Only a small portion of the Appalachian Plateau lies within Virginia. The far southwest counties of Buchanan, Dickerson, and Wise fall almost entirely within the Appalachian Plateau. Only the very western margins of Tazewell, Russell and Lee counties encompass the Appalachian Plateau topography. The interface between the Appalachian Plateau and the Ridge and Valley is obvious and pronounced. This interface is perhaps most dramatic on the western edge of Lee County, the southwestern most county in the Commonwealth. Here, an imposing ridge line known as Cumberland Mountain rises from the adjoining broad and gently undulating limestone valley floor. Further north this interface is known as the Allegheny structural front.

There are no sub-provinces within the Virginia Appalachian Plateau, although topography can vary considerably. Elevations typically range between 1,000 and 3,000 feet. High Knob is the highest point in the province, cresting at just over 4,200 feet.

Although some portions of the province have low relief and exhibit a plateau-like topography, most of the Appalachian Plateau is extremely rugged. Ancient erosion and downcutting have resulted in extremely uneven terrain featuring steep short hills, deep hollows, and narrow, entrenched drainages. Coal beds are common in the region and its extraction has featured prominently in the developmental history and economy in this portion of the Commonwealth. The underlying formational geological processes of the Appalachian Plateau are not fundamentally different than that of the adjacent Ridge and Valley province, namely regional scale folds that formed in response to thrusts faults.

The rugged topography of Appalachian Plateau stands in marked contrast to the broad valleys and long ridgeline of the adjoining province. Drainage patterns are also very different between the two provinces. While Ridge and Valley streams and rivers meander across wide valley floors and are bounded by expansive, sometimes nearly level floodplains, Appalachian Plateau drainages are usually deeply entrenched and lack stable, attendant

floodplains. Given the severe nature of the local topography and prevalence of narrow, entrenched stream courses, storm flows within the drainages tend to be high energy and subject to extreme events following heavy precipitation. The Appalachian Plateau lacks the deep and complex caves typical of the adjoining Ridge and Valley karst lands. However, rock shelters and shallow overhangs suitable for prehistoric use are relatively common in some areas.

Surface Hydrology of Virginia

Regional Watersheds

Virginia has four regional watersheds. These are: 1) the Chesapeake Bay drainage; 2) the Carolina Sounds drainage; 3) the Ohio drainage; and 4) the Tennessee drainage (Table 1.2). Major rivers in the eastern and northern halves of the Commonwealth feed directly into the Chesapeake Bay. These include the Potomac, Rappahannock, York, and James. Rivers in the southern tier of Virginia counties empty into the Albemarle, Pamlico and Currituck sounds, collectively referred to as the Carolina Sounds. The Roanoke River and Dan River are relatively significant drainages within the Carolina Sounds watershed, though each is considerably smaller than the Potomac or even the James. Far southeastern Virginia is drained by the Nottoway, Meherrin, and Blackwater rivers, all relatively modest in size. The Clinch, Powell and Holston rivers comprise the Tennessee headwaters in far Southwestern Virginia. The fourth regional watershed is a portion of the Ohio River drainage. The Big Sandy River is a direct Ohio tributary. While the main stem of the Big Sandy lies outside Virginia, its various headwater tributaries drain much of the Appalachian Plateau portion in the Commonwealth. The New River also empties into the Ohio, by way of the Kanawha. From its origins along the North Carolina/Tennessee/Virginia border region, the New River flows northwest, draining a significant portion of Virginia's west-central Ridge and Valley. The Tennessee also ultimately meets the Ohio before the combined rivers join the Mississippi at Cairo, Illinois.

Table 1.2. regional watersheds in Virginia and their major river components.

Regional Watersheds	Major Component Rivers
Chesapeake Bay	Potomac, Rappahannock, York, James
Carolina Sounds	Dan, Roanoke, Nottoway, Meherrin, Blackwater
Tennessee Headwlkkaters	Clinch, Powell, Holston
Upper Ohio	Big Sandy, New

Major Virginia Rivers/Watersheds

Virginia's waterways have helped shape settlement and lifeways from earliest prehistory through historic times (Table 1.3). The great tidal rivers and natural harbors of the Chesapeake were a focal point of early English settlements in North America. As avenues for commerce, the same waterways connected Virginia to the other colonies, to England, and the rest of the world. These rivers continued play a major role in the growth and development of the newly independent United States. Inland river systems also facilitated early exploration, channeled settlement, served as transportation arteries, and were of critical strategic importance during our nation's conflicts. The prehistoric cultures of the Chesapeake region share many traits thanks in part to the physical connectivity provided by the region's waterways. Regional drainage basins as well as individual river watersheds often delineate limits of archaeologically expressed prehistoric cultures. For these reasons, a characterization of Virginia's river systems, including physiographic setting, connectivity within the greater watershed, attendant floodplain landforms, as well as an assessment of associated potential local resource base is of critical importance in placing archaeological research into its full and proper context

Table 1.3. Summary of the major river watersheds in the Commonwealth. These are the further described in the following subsection. Source: Virginia Department of Conservation and Recreation

River/ Watershed	Area (sq mi)	Major Tributaries
Potomac	5,702	North Fork Shenandoah, South Fork Shenandoah
Rappahannock	2,577	Rapidan River, Hazel River
York	2,669	Mattoponi River, Pamunkey River
James	10,236	Jackson River, Rivanna River, Appomattox River
Chesapeake Coastal	2,577	Dragon Run/ Piankatank River
Atlantic Coastal	580	Chincoteague Bay, Hog Island Bay
Albemarle Coastal	577	Dismal Swamp, North River, Back Bay
Chowan Basin	3,675	Nottoway River, Meherrin River, Blackwater River
Yadkin	188	Ararat headwaters
Roanoke	6,274	Dan River, Bannister River
New	3,068	Little River, Walker Creek
Holston	1,322	North Fork, Middle Fork, South Fork Holston River
Clinch/Powell	1,811	Guest River
Big Sandy	999	Levisa Fork, Russel Fork, Tug Fork

Potomac River

While smaller than the Hudson, Susquehanna, or Delaware, the Potomac is nonetheless one of the larger rivers on the Atlantic Seaboard. Only a relatively limited portion of the Potomac's expansive watershed falls within the Commonwealth. In Virginia, the Potomac watershed forms a crescent that extends from the West Virginia line in Highland County to include the central Shenandoah Valley, east along Virginia's northern tier of counties to the Washington DC Metro area, with a thin ribbon extending southeast toward the Chesapeake Bay and Point Lookout. Total area is 5,702 square miles. The major Virginia tributaries to the Potomac are the South Fork and the North Fork of the Shenandoah. The North Fork and South Fork drain the Shenandoah Valley with the respective branches separated by Massanutten Mountain. The North Fork and South Fork meet at Front Royal. The Shenandoah River proper then continues northeast along the western flank of the Blue Ridge before meeting the Potomac at Harpers Ferry. Here, the combined rivers pass through the Blue Ridge. Expansive floodplains border long sections of the Piedmont Potomac. In other locations, upland bluffs line the river. Prominent features also include large mid-river islands, particularly near the Fall Line. A major topographic feature along the Piedmont Potomac is Catoctin Mountain. This pronounced and isolated ridge line closely parallels the nearby Blue Ridge as it cuts across the Piedmont landscape. The Potomac passes through this peculiar formation at Point of Rocks. Most tributaries in the Piedmont consist of short, low order streams that originate in the nearby uplands. An exception is Catoctin Creek which follows the orientation of Catoctin Mountain. Goose Creek constitutes another mid-order tributary and is the largest stream to meet the Potomac between Point of Rocks and the Fall Line.

The Potomac River enters the Coastal Plain over Great Falls, just above Washington DC. Below Alexandria, the river immediately widens into a broad freshwater tidal estuary. Here the embayed Potomac roughly parallels the north-south orientation of the nearby Fall Line. Numerous intermediate drainages originating at or near the Fall line feed into the Potomac below Alexandria. The mouths of these tributaries form pronounced bays, flanked by neck lands extending well into the river. The largest of these tributaries is the Occoquan River. Others

include Hunting Creek, Douge Creek, Accotink Creek, Quantico Creek, Chopawamsic Creek, and Aquia Creek. South of Quantico, the Virginia shoreline is typically characterized by bluffs or relatively pronounced upland slopes. The Lower Potomac turns sharply northeast near Fredericksburg. At this point, the river is brackish year-round. At Dahlgren, the Potomac turns southeast and widens into a major arm of the Chesapeake Bay. Tributary drainages in this area are all low order streams that penetrate but a few miles inland. Large sections of these streams are fully embayed forming productive brackish tidal backwaters. Side arms of the Potomac in this area include Nomini Creek, Yeocomico Creek, the Coan/Glebe rivers, and the Little Wicomico River. The main body of the Potomac reaches eight miles in width near its juncture with the Chesapeake Bay between Point Lookout, Maryland and Smith Point, Virginia.

Rappahannock River

Unlike the Potomac, the Rappahannock River originates east of the Blue Ridge. The Rappahannock watershed is relatively compact and orientated northwest-southeast. Total area is 2,669 square miles. From its headwaters at the foot of the Blue Ridge, the Rappahannock flows primarily through rural farmland. Floodplains in these areas are relatively modest in size. The Rapidan and the Hazel rivers are the main Piedmont tributaries. Remaining tributaries are comprised of relatively short, low order streams that originate in the adjoining uplands. The Rappahannock crosses the Falls at Fredericksburg.

East of Fredericksburg, the river is freshwater tidal and follows a relatively narrow channel. At Port Royal, the river broadens into a wide estuary. In contrast to the nearby Potomac shores, the lower Rappahannock is typically bordered by expansive wetlands. These occur along the inside of (partially inundated) meander loops and around the mouths of tributary streams. Low, broad terraces containing prime farmland also line the middle reaches of the Rappahannock estuary. Waters transition to brackish below Tappahannock where the river broadens considerably. Tributary streams in this area are also broadly embayed. The largest of these is the Corratoman River. The tidal Rappahannock meets the main body of the Chesapeake Bay between Windmill Point and Stingray Point.

York River

The York River is formed by the confluence of the Mattaponi and the Pamunkey rivers at West Point. As such, the main stem of the York falls entirely within the Coastal Plain physiographic province. From West Point, the York estuary trends a straight northwest-southeast orientation. Much of the York shore is relatively straight, with moderately high terraces flanking the river. Marsh areas are mostly limited to the mouths of tributary streams. Gloucester Point is a prominent feature along the York. This peninsula extends from the north bank opposite Yorktown, forming constriction in the river. Below Yorktown, the river opens to meet the mouth of Mobjack Bay and Poquoson Flats; large, shallow bays along the Chesapeake's western shore.

Upstream of West Point, the Mattaponi and Pamunkey wind through the west-central coastal plain. Both rivers are characterized by sinuous main channels flanked by extensive and ecologically productive marshes and wetlands. Partially flooded meander loops and oxbows are present in many locations. Neither the Pamunkey nor Mattaponi are presently encroached upon by development and large areas of both watersheds remain wooded. The North Anna and South Anna rivers are major Piedmont tributaries to the Pamunkey. In an apparent case of geographical wordplay, the Mattaponi's headwater branches are known as the Matta, the Po and the Ni. The uppermost reaches of the greater York watershed fall in the central Piedmont, well east of the Blue Ridge slope.

James River

The James River watershed is contained entirely within the Commonwealth, and is therefore sometimes referred to as Virginia's River. From its headwaters in the western mountains, the James River flows approximately 330 miles across Virginia to meld with the Atlantic waters near the mouth of the Chesapeake Bay. Collectively, the river and its tributaries drain approximately 10,000 square miles, making the James the largest tributary to the Chesapeake Bay other than the main stem of the Susquehanna and the Potomac. The James River can be divided into three segments based on the physiographic province. These are: 1) the Mountain Headwaters; 2) the Piedmont Section; and 3) the Lower James.

The upper reaches of the Mountain Headwaters lie

in the western Ridge and Valley along the Virginia-West Virginia border. The James River proper is formed by the confluence of the Jackson River and the Cowpasture River just below Clifton Forge. From Clifton Forge, the James flows eastward, breaking through the Blue Ridge near Glasgow. East of the Blue Ridge, the river meanders within a broad floodplain flanked by rolling uplands. The Rivanna River and the Rockfish River are the major Piedmont tributaries. Extensive floodplain borders much of the Piedmont Section. The James crosses the Fall Line in Richmond, cascading down a series of rapids and drop-offs, much of it within the city limits.

Below the Falls, the James River is under tidal influence. Major Lower James tributaries are the Appomattox and the Chickahominy. East of Hopewell, the James widens into an expansive tidal estuary. This area also marks the beginning of fresh-brackish water transition zone. East of the Appomattox confluence, the James River widens further. Some relief is present where minor bluffs occur along the outside of major river bends. From its headwaters at the Fall Line around Richmond, the Chickahominy flows due east, bisecting the Virginia Peninsula lengthwise before turning south and meeting the James a few miles upstream from Jamestown Island.

Most tributary drainages are embayed a considerable distance inland, and tidal wetlands are common along all but the lowest order streams. Salinity levels in the Lower James vary strongly with season. Normally restricted to sections below Williamsburg, brackish water extends upstream as far as the Appomattox during summer droughts. On the north side of the river, the Virginia Peninsula narrows to less than ten miles. This area is drained by sluggish low order streams. The Nansemond River and Elizabeth River are major James tributaries on the south side. Virtually the entire lengths of both these rivers are embayed, and their interior headwater branches border the Great Dismal Swamp.

Chesapeake Coastal Drainage

Drainage within relatively small portions of eastern Virginia is directly into the Chesapeake Bay. These areas are mostly limited to the ends of the Northern Neck, the Middle Peninsula, the Virginia Peninsula, and Cape Henry. Most streams in these areas consist of very short tidal creeks, with only the uppermost reaches containing any fresh water. An exception is the Piankatank River. The Piankatank roughly splits the Middle Peninsula. The Piankatank estuary extends approximately 12 miles inland from the Chesapeake Bay to the town of Saluda. Above Saluda, the drainage is freshwater and known as Dragon Run. Dragon Run is bordered by rich marshlands and extensive cypress swamps. Also part of the Chesapeake Coastal drainage area is Eastern Shore's western flank or bayside. The Eastern Shore bayside contains numerous, significant tidal creeks that penetrate well inland. Only the very interior sections of the mostly embayed drainages contain any freshwater.

Atlantic Coastal Drainage

Atlantic Coastal drainage is essentially limited to the ocean side of the Eastern Shore. Areas east of Route 13 generally drain to the Atlantic by way of short, ephemeral streams than empty directly the broad shallow bays on the landward side of Virginia Barrier islands. A very small portion of Virginia Beach can be considered Atlantic drainage as well, with this area limited to the immediate Rudee Inlet drainage.

Albemarle Coastal Watershed

Most of far southeast Virginia falls within the Albemarle Coastal watershed. The two larger watercourses in the area, North Landing River and Northwest Rivers empty into Currituck Sound. Other, mostly minor drainages in this area, enter Back Bay, which can be regarded as the northernmost extension of the Carolina Sounds complex. Connection to the Atlantic is by way of inlets along the North Carolina Outer Banks, the location of which shift over time. The Northwest River is the primary outflow for the Great Dismal Swamp. The Northwest River, as well as the North Landing River, are sluggish and typically bordered by expansive wetland areas.

Chowan Watershed

The Chowan watershed is defined by the three main Coastal Plain drainages south of the James watershed. Collectively, the Nottoway, Meherrin, and Blackwater rivers drain an area measuring 3,675 square miles. The three rivers converge to form the Chowan in the North Carolina-Virginia border area. All three rivers are similar in size and character. They are fed mostly by minor, low order tributaries. Along the upper reaches of the

watershed, these minor tributaries are associated with wetlands. The main stems of the rivers are all sluggish and are often bordered by expansive gum and cypress swamps. Oxbows and backwater channels are common along the lower reaches of all three rivers.

Yadkin River

A very small portion of the Yadkin River drainage extends into Virginia. This watershed is limited to the south facing Blue Ridge slopes and foothills along the North Carolina line where Carroll and Patrick counties border. The area is drained by the Ararat River, a minor Yadkin tributary. Total area of the watershed within Virginia is 188 square miles. The Yadkin meets the Pee Dee River which flows south to empty into the Atlantic at Winyah Bay, South Carolina.

Roanoke River

Though smaller than the major Chesapeake tributaries, the Roanoke is one of the largest rivers in the Southeast. It originates at the foot of the Alleghenies near Roanoke, and follows an east/southeasterly course across the southern Virginia and North Carolina Piedmont. The Piedmont sections of the Roanoke are typically flanked by moderate-sized floodplains. In Virginia and in North Carolina, large sections of the river's middle reaches are flooded by the Kerr Reservoir and Lake Gaston impoundments. Below Roanoke Rapids, North Carolina, the river is under tidal influence. As a tidal estuary, the Coastal Plain portions of the Roanoke eventually form the main stem of the Albemarle Sound at Batchelor Bay. Major tributaries of the Roanoke are the Dan River and the Bannister River. The Dan is a significant waterway and is sometime referred to as the South Branch of the Roanoke. The Roanoke River and its major tributaries tend to have very dynamic flows, which can be attributed to the hilly nature of the catchment area and numerous floodplains associated with of the local Piedmont topography. Prior to construction of the massive Kerr and Gaston impoundments, the middle reaches of the Roanoke River were subject to frequent damaging floods.

New River

The New River is anomalous on several counts. It is the only major river in the United States, and one of the few in the world that flows south to north. It is also purportedly one of the oldest active rivers on earth. The New River originates along the North Carolina-Tennessee border just below the Virginia line. It winds in a northeast orientation traversing through undulating Ridge and Valley terrain. Tributaries in this area consist almost entirely of low order streams that originate in the immediately adjacent uplands. In the Radford area, the New River turns northwest. Extremely broad floodplains are present in this area. These expansive floodplain settings contain numerous very substantial Late Woodland period settlements. The New River cuts through the Appalachian Plateau by way of the New River Gorge before meeting the Kanawha River, a major Ohio tributary.

Holston River

The Holston comprises one of the Tennessee River's primary headwater branches while draining the northeast-southwest trending valleys of far Southwest Virginia. Parallel running ridge lines separate the Holston into the North Fork, the Middle Fork and the South Fork. These respective valleys exhibit characteristics typical of the limestone regions of Southwestern Virginia. Tributary streams are not common, as much of the secondary drainage is subterranean. The river is typically bordered by narrow, frequent floodplains contained within slightly higher, extremely broad, and level floodplain terraces. The Holston forks merge to flow southwest through east Tennessee. The Holston eventually meets the French Broad River in downtown Knoxville, with this confluence regarded as the beginning of the Tennessee River proper.

Clinch/Powell Rivers

The Clinch and Powell Rivers share numerous attributes with the Holston forks. The two rivers follow as near identical orientation dictated by the southwest-northeast trending mountains of the Ridge and Valley. Floodplains tend to be broad and level. As with most limestone areas of Virginia, sinkholes are common across the adjacent uplands. The Powell River is the western of the two rivers. It follows a very wide, nearly level valley floor that fronts the rather dramatic interface between the limestone Ridge and Valley region of Southwest Virginia and the Appalachian Plateau. The Clinch and Powell merge in northeast Tennessee. The combined rivers, together with the Holston and the French Broad

can be thought of the as the headwater branches of the greater Tennessee River.

Big Sandy River

The Big Sandy itself lies outside Virginia. Major headwater tributaries to the Big Sandy within the Commonwealth include Levisa Fork, Tug Fork and Russel Fork. These streams drain the extremely rugged terrain of the Appalachian Plateau. Stream valleys are deeply entrenched and generally lack stable, floodplain landforms suitable for prehistoric occupation. Terrain is pronounced and stream beds typically scoured by high energy water flow. In an upstream direction, the headwater reaches of the Big Sandy tributaries finger out into minor drainages, terminating at the pronounced scarp marking the interface between the Appalachian Plateau and Ridge and Valley.

Settlement, Land Use, and Contemporary Environmental Conditions

Coastal Plain Province

As previously discussed, the Virginia Coastal Plain is physically diverse and contains a wide variety of topographic settings with divergent environmental conditions. In the broadest sense, the most prominent feature of the Coastal Plain is the greater Chesapeake estuary. This setting includes not only the main body of the Bay, but also the tidal reaches of the major tributary rivers up to the Fall Line. The Chesapeake Bay estuary provided Native Americans with a wide range of resource opportunities. In addition to rich marine resources, principally shellfish, the salt water marshes ringing in the bay and the extensive freshwater tidal wetlands bordering tributary rivers offered Native groups a variety of plant resources. These same areas contain rich game habitat. Seasonally available migrating/wintering waterfowl and spawning anadromous fish of the Chesapeake were of an abundance perhaps unparalleled in North America.

From a prehistoric hunter forager perspective, a prominent aspect of the Virginia Coastal Plain would have been a highly uneven occurrence of ecologically productive settings. Resource rich areas of the Coastal Plain were often concentrated geographically. Not surprisingly, these locations appear as settlement hot spots in the archaeological record. A prominent such hot spot is the western margin of the Dismal Swamp. Here, a topographic feature known as the Suffolk Scarp rises from the nearly undifferentiated wetland expanses bordering Lake Drummond. Numerous low order streams feeding Lake Drummond cut into the well drained, fertile-soil terraces of the Suffolk Scarp. The tidal reaches of the Nansemond and Elizabeth rivers also lie in proximity. Collectively, this complex of expansive wetlands, fertile uplands, low order streams and tidal rivers constituted an exceptionally favorable environmental setting for Native American hunter forager groups. The Lynnhaven River and Broad Bay along the mouth of the Chesapeake were another apparent focal point of prehistoric settlement within the Outer Coastal Plain. By contrast, the interior, low lying uplands of the contemporary Tidewater region appear to have been very sparsely settled for much of prehistory.

The mid-drainage zones of the major tidal rivers are also recognized as having been a favored location for prehistoric use. This could be attributed as co-occurrence of somewhat divergent ecological settings and, by extension, varied prehistoric resource opportunities within a relatively restricted area. The mid-drainage areas of second tier rivers, including the Chickahominy, Pamunkey and Mattaponi rivers, clearly contain diverse and ecologically productive local environments. These settings were extensively settled, particularly during the Woodland subperiods. Portions of the Northern Neck of Virginia also experienced extensive Native American settlement and use. This phenomenon can be attributed to the localized co-occurrence of fertile soils, freshwater streams, tidal creeks and marshes, and greater Chesapeake estuary waters across much of the Northern Neck, particularly the Potomac facing side.

The Lower James River was the initial focal point of early English settlement in North America. Within a few years of Jamestown's founding, English settlements extended along James River shores almost to the Fall Line. Select areas of the lower Eastern Shore were first settled around the same time. By the 1630s, English settlement began to extend south along the Nansemond and Elizabeth rivers and took hold on along the south side of the York. Following the final defeat of the Powhatan Indians, settlements pushed into the interior of the Middle Peninsula and up the Rappahannock and Potomac rivers. Much of the Potomac shoreline was settled by the end of 1650s.

By the early 18th century, the major land holding along the James had grown into the large estates that

formed the underpinnings of the Tidewater Plantation system. These plantations were the center point of power and wealth in the colony through the American Revolution. Holdings in the interior portions of the Coastal Plain were generally more modest. The wealth and power of the Tidewater plantations waned following Independence.

By the early 19th century, the deep water port of Hampton Roads and the rising industrial concerns along the Falls eclipsed the Tidewater plantations as the main economic drivers in Virginia. By the eve of the American Civil War, tobacco cultivation had shifted to the southern Piedmont, while in the Shenandoah Valley, the central and northern Piedmont served as the region's breadbasket. Grain and other cereal crops were moved by canal to Richmond where they were milled and shipped worldwide.

Contemporary rural land use varies across the Coastal Plain. South of the James River large areas are in pine monoculture. Some areas also produce peanuts, cotton and soybean. The Virginia Peninsula is heavily forested, although prime farmland continues to be cultivated along the James River terraces. Landscape of the Middle Peninsula is characterized by a mix of forest and agricultural uses. Prime farmland occurs along the York and Rappahannock terraces. Some of the best agricultural lands in the Commonwealth are located across the Northern Neck. Large portions of this area remain under cultivation, producing corn, soybean, sorghum, and other row crops.

Piedmont Province

The geologically complex and diverse nature of the Piedmont region itself has direct implications for both the prehistoric and historic use of the area. High quality cryptocrystalline stone can sometimes be found in association with intrusive dikes and similar geologic features. Where present, such stone outcroppings would have been a significant draw for prehistoric peoples. Much more common is the occurrence of low to moderate quality vein quartz. This material is found across innumerable Piedmont hill tops. Its presence can be attributed to the resilient nature of quartz; it remains extant while the matrix rock has degraded away.

This residual quartz was apparently often tested for suitability for tool making or opportunistically utilized as such by Native Americans camping in or passing through the area. As a result, prehistoric sites consisting of quartz debitage scatters are exceedingly common across parts of the Piedmont, particularly the southern reaches. The Virginia Piedmont also contains numerous steatite outcrops. Steatite vessels from these sources are found on archaeological sites throughout Virginia and beyond.

The Virginia Piedmont is crossed by numerous large rivers. Principal among these are the Dan, the James, the Rappahannock and the Potomac. Piedmont sections of these rivers are typically flanked by broad expansive floodplains. Major tributary streams often have attendant floodplains, well suited for prehistoric occupation. These Piedmont floodplain settings were clearly a focus of prehistoric settlement, particularly during the Woodland sub-periods.

The Fall Line marked the western limits of English expansion during the 17th century. It was not until the turn of the 18th century that Piedmont portions of the James River watershed were first settled. Initial settlement was along the major river valleys as prime agricultural land was cleared and cultivated. The expansive Piedmont uplands were settled soon thereafter. During the early19th century, the central and northern Piedmont was intensively farmed, producing wheat, corn, and other crops. Tobacco cultivation also shifted from the Tidewater region to the southern Piedmont where its production underpinned the local economy through much of the 20th century.

The Fall Line had a significant influence on the settlement and development history of Virginia. The falls of rivers remained the westernmost limit of English settlement for the duration of the 17th century. Following settlement of the Piedmont during the first half of the 18th century, major towns became established along the falls. As the limits of navigation, these locations served as transshipment points for material and goods moving to and from the interior of the colony. Water power harnessed along the Falls helped drive 19th century industrialization, particularly in the Richmond and Petersburg areas.

In addition to being intensively farmed, the central Piedmont was a center of mining activity during the 19th century. The Midlothian coal mines west of Richmond were some of the earliest coals mined in US. An extensive system of tramways constructed to move coal for loading onto James River boats and canal barges represent some of the oldest railway infrastructure in North America. During the late 19th century, gold mining briefly

flourished across parts of the Piedmont. Pyrite and other minerals were exploited as well. Arvonia slate was extensively utilized for roofing material from the mid-19th century onwards. The Arvonia quarries continue to produce high quality roofing slate for historic structures across Virginia and throughout the country.

Contemporary rural land use in the Piedmont region is a mix of agriculture and forestry. Portions of the northwest and north central Piedmont produce hay, corn, and other cereal crops as well as beef cattle. The middle reaches of the Piedmont are largely forested in a mix of pine and hardwood species. Most of this forest land is in private, individual or corporate ownership. The southern Piedmont, also known as Southside Virginia, continues to produce tobacco, albeit in far lesser quantities than during the 20th century. Abandoned tobacco farms and land are a defining element of the contemporary Southside landscape. Forests are a mix of pine and hardwoods, with pine species increasingly prevalent east and south.

Blue Ridge Province

Little, if any, long term prehistoric settlement occurred within the Blue Ridge Highlands. However, the mountain complex was rich in seasonal resources and these were extensively utilized for much of the prehistoric period. The marked and abrupt elevation differences characteristic of the region resulted in differing eco-zones offering varying seasonal resources. The foothills and toe slopes likely supported oak, hickory and other mast bearing species. American chestnut was undoubtedly an important resource and a major draw for prehistoric peoples. Intermediate elevation ridge lines and benches were the preferred habitat for the chestnut. The high elevation ridges and summits were also extensively visited by Native Americans. Of particular importance were likely high elevation bogs, fens, or alpine meadow areas. The Big Meadows locality in the Shenandoah National Park is perhaps the best known of these types of settings. Game resources would have been seasonally abundant and hunting forays into the Blue Ridge from surrounding areas was likely a major component of the areas prehistoric use.

The Blue Ridge's complex geology also offered Native Americans a wide range of available lithic materials for tool manufacture, some of which are not commonly found in other regions. Outcroppings of material include a variety of high grade quartzite, ferruginous sandstone, and basalts. High quality vein quartz occurs in many areas as do cryptocrystalline materials. Catoctin Mountain, a northern Blue Ridge outlier, was a major source of rhyolite that was extensively traded across much of the Middle Atlantic region during the Middle Woodland period.

The Blue Ridge constituted an imposing physical barrier to early historic settlement. For much of the 18th century, this mountain chain formed the western limits of the Virginia colony. It was not until after Independence that settlement pushed into the western reaches of Virginia. Initial settlement of western Virginia did not occur along the Blue Ridge Mountains, but rather spread quickly north to south down the fertile Shenandoah Valley. Most of this settlement originated in Maryland and Pennsylvania. The northern Blue Ridge Province was extensively settled during the nineteenth century. Many of these mountain farmers lived at the edge of subsistence. During the creation of the Shenandoah National Park, remaining farmsteads taken over by the federal government forcibly relocated inhabitants. While these mountain farmers along the northern Blue Ridge lived in proximity to the population centers and markets of the Washington DC area, inhabitants of the southern Blue Ridge remained isolated well into the 20th century by distance, terrain, and lack of reliable transportation.

Gaps in the Blue Ridge steered historic settlement and development in the area. The strategic town of Harpers Ferry was established where the Potomac and Shenandoah break through the Blue Ridge. The town became an important rail junction during the mid 19th century. Roanoke, the largest city in Southwest Virginia, owes its existence to initial railway development which took advantage of a low pass in nearby Blue Ridge.

A large majority of the Blue Ridge is under federal ownership. This includes the Shenandoah National Park and the George Washington & Jefferson National Forests. Collectively, these federal holdings span nearly the full length of the Virginia Blue Ridge from Front Royal to Bristol. These lands are almost uniformly forested. Limited timbering occurs in the National Forest area, with the Shenandoah National Park lands under full conservation.

Ridge and Valley Province

The physical attributes of the Ridge and Valley Province had a significant effect on human settlement during prehistoric times. The Ridge and Valley area

of Southwest Virginia appeared to have supported very dense Native American populations, particularly during the Late Woodland period. This can partially be attributed to the natural fertility of limestone derived soils that made them apparently well suited to emergent horticulture. This natural fertility of limestone valley soils likely accounts for the occurrence of Late Woodland period village settlements outside of floodplain settings; a trait common in Southwest Virginia but rare or absent throughout other portions of the Commonwealth. The multitudes of caves that occur across the limestone regions of Southwest Virginia were extensively used during prehistoric times. In addition to providing shelter, some cave locations were used for mortuary purposes. It is also likely that some of larger and deeper caves were utilized for ceremonial purposes and mineral extraction. An intensity of prehistoric settlement in the Southwest Virginia Ridge and Valley was not limited to the Woodland. Archaic period sites, particularly those dating to the Late Archaic are well represented in the archaeological record.

The Shenandoah Valley is the prominent feature within the Ridge and Valley region. Prehistoric settlement along the Shenandoah Valley floor appears to be more strongly oriented to stream/river settings than in Southwest Virginia. This traditional river/floodplain focus is more pronounced in the northern Valley where the forks of the Shenandoah's attendant floodplains are significant in size. The Valley floor is relatively dry due to the rain shadow effect of the adjoining mountains, and on account to the subterranean drainage characteristic of the underlying limestone formations. Surface water can be at a premium and active spring locations appear to have been a settlement draw. Breaks in the mountain front offering easy passage to the west; adjoining ridge and valley complexes also appear to be settlement hot spots, particularly if surface water is present as well.

Initial European settlement of the Shenandoah Valley was by way of Pennsylvania and western Maryland rather than from Virginia. These settlement origins remain manifested in the region's architecture, dialect, religious affiliations, and historic material culture. The Shenandoah Valley has long been prime agricultural land. The region traditionally produced large quantities of wheat and other cereal crops. Partly due to its rich agricultural production, control of the Shenandoah Valley remained of strategic importance during the Civil War. The more narrow valleys of Southwest Virginia typically supported small scale farms. Historically, many high elevation areas of the Ridge and Valley were inhabited by mountain folk eking out a living by subsistence farming, hunting/foraging, and timber cutting.

Today, the Shenandoah Valley and other portions of the Ridge and Valley remain in agricultural use. Corn and soybeans have supplanted wheat as the most important crops in the region. Hay and beef cattle production are also prominent. In contrast to large portions of the Coastal Plain and Piedmont, very little forest occurs anywhere on the valley floors with tree cover often limited to immediate riparian corridors.

Appalachian Plateau Province

The dominant physical characteristic of the Appalachian Plateau is extremely rugged terrain. Streamside and larger floodplain settings suitable for prehistoric settlement are rare. Rock overhangs and shallow caves occur across many upland areas and when present, these features are likely to have been utilized for shelter and/or habitation throughout the prehistoric period.

The Appalachian Plateau areas of Virginia were sparsely settled throughout the most of the 19th century. Land areas suitable for farming are very limited and local soils often naturally eroded and thin. Population of the area increased dramatically with the arrival of railways and the commercial exploitation of coal seam deposits. Railroad construction was pushed into the area specifically to facilitate transport of newly discovered coal to Eastern markets. Connection to rail heads also allowed for the wholesale timbering of local forests. Coal mining quickly came to dominate the economy of the region. In many locations, rudimentary company towns were established house large numbers of workers need to work the mines and supporting industries.

Coal mining related industry continues to be the economic main stay of economic area. Historically, most mine operations were underground. Today, a large percentage of coal is recovered through surface mines in a process known as mountain top removal. These operations permanently alter the face of the local mountain landscape. The area remains relatively densely populated with numerous modest dwelling nestled between numerous small towns and unincorporated settlements. Upland areas in corporate ownership are typically thinly forested while the mountainous areas under auspices of the US National Forest are managed for timber and watershed protection.

Chapter 2

Paleoclimate and Prehistoric Environmental Context

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Introduction

The following paleoclimate and environmental reconstruction provides an overview of past conditions in Virginia, as best they are currently understood. The narrative is intended to help place archaeological findings in the Commonwealth into environmental context. No attempt is made to directly correlate archaeologically observed cultural shifts with environment changes, nor to imply that such causal connections must exist. Cultural responses to external stimuli such as climate change can be varied and faceted, and therefore not easily predicted or categorized. Further, results of climate studies cited herein do not always complement each other, and, in some cases, seem contradictory. The field of paleoclimatology is rapidly evolving. Ongoing and future paleoclimate studies are sure to yield additional knowledge, some of which will likely undermine current conceptions. Nonetheless, reconstructing past climate and environments is essential to fully understanding prehistoric lifeways and cultural processes. Changing environmental conditions clearly had a direct influence on prehistoric subsistence, settlement, migration, population dynamics, and, by extension, social and political organization and development. Past environmental conditions also have a strong bearing on the integrity and visibility of archaeological site locations.

The field of paleoclimatology has advanced significantly in just the past decade. Reconstructions of eastern North American climate formerly relied on preserved pollen assemblages, typically recovered from lake/pond bottoms or other wet environments. Unfortunately, these deposits are subject to limitations typical of archaeological contexts, including differential preservation and post depositional disturbance. Researchers can now draw on a variety of proxy data sources. An expanding dendrochronological data base on both sides of the Atlantic has been shown to be relevant to climate reconstructions in the eastern United States. Of particular utility are ice core studies in Greenland and other Arctic locations. These have yielded extremely fine-grained climate data applicable to Atlantic coastal areas (Anderson 2001). Ice core stratigraphy can precisely measure annual snowfall amounts, while isotope ratio and other chemical analyses can be used to establish past temperature regimes on a relatively fine temporal scale. Variation in atmospheric C14 has been recognized as an effective proxy for changes in radiant solar output and by extension, climate condition (Van Geel et al. 1999). Also of relevance to understanding prehistoric North Atlantic climate are primary source accounts of historical European weather phenomena and conditions from the High Middle Ages through the seventeenth century (Fagan 2000).

Archaeological data from site excavations are also of significant utility in climate/environmental reconstructions. For one, precipitation trends can be expressed through floodplain morphologies and depositional patterns during the second half of the Holocene (Knox 1983; Schuldenrein 1996; Vento et al. 2008). Additionally, species level identification and absolute dating of macrobotanicals from archaeological contexts can be robust indicators of site area-specific environmental conditions.

Major climate variations such as the Wisconsin

glaciations or past global warm episodes are linked to eccentricities in the earth's orbital characteristics, specifically variation in hemispheric solar exposure due to a slight wobble in the earth's axial spin. The causes of lesser, more short term climate shifts experienced by prehistoric populations remain somewhat elusive. Changes in the amount of radiation produced by the sun likely effected past climate in a process known as solar forcing (Bond et al. 2001; Haigh 2001). Climate scientists are also increasingly focusing on the sudden, catastrophic releases of continental glacial melt water into the North Atlantic as the trigger for several dramatic cold events that occurred during the first half of the Holocene (Hu et al. 1999; Yu and Eicher 1998; Teller et al. 2002). The last major release appears related to what is referred to as the 8.2k Cold Event or the 8,200 Climate Event. Several more recent short term cold episodes documented in the dendrochronological record may have been precipitated by major volcanic eruptions (Braillie 1988). Whatever the initial triggers may have been, it seems certain that periodic fluctuations in climate were further driven by changes in atmospheric, and more importantly, ocean water circulation patterns. As with most climate change phenomena, ocean basin-level, hemispheric, or even global-scale feedback mechanisms can be presumed to have been operative.

The continental scale releases of glacial melt water and resultant climate shifts represent perhaps the last major impact of the last Ice Age. However, Holocene climate seems to have experienced pronounced cool episodes fully independent of glacial-interglacial cycles produced by orbital variations. Named Bond Events after their discoverer, these episodic cool downs of the North Atlantic climate are signaled by ice rafted sediment/debris on the sea floor. Bond Events recurred on a 1500 +/- 500 year interval throughout much of the Holocene (Bond et al. 1997). The underlying cause(s) of these climate events is not firmly established. Bond et al. (1997) concluded that solar forcing was an unlikely impetus and suggested that the driving mechanisms lay in the atmosphere-ocean system. Van Geel et al. (1999) counter that solar variations were the primary drivers in Holocene climate changes. It is further argued that atmospheric-based feedback mechanisms possibly involving the role of solar UV radiation and cosmic rays/solar wind could explain how relatively small variation in solar activity can result significant climate shifts (Van Geel et al. 1999). A possible interaction between cosmic rays and the generation of clouds in the atmosphere is a poorly understood complication in climate studies (Svensmark et al. 2016). The solar forcing model for Holocene climate variation (per Bond Events) is supported by studies of stable oxygen isotope ratios of plant cellulose in Chinese peat bogs (Hong et al. 2002). In this study, solar activity calibrated by tree ring data and atmospheric C14 concentrations aligned with historically documented phenomenon such as the Little Ice Age and Medieval Warm Period, with these episodes also reflected in the isotope ratios (Hong et al. 2002).

In addition to several sharp reversals to colder conditions, there appear to have been several warming trends post-dating the Pleistocene-Holocene transition. The most pronounced of these roughly correlates with the second half of the Middle Archaic and is often referred to as the Hypsithermal (Sandweiss et al. 1999). In addition to the Medieval Warm period historically documented in Europe, other warming episodes include what is sometimes referred to as the Roman Optimum (ca 250 B.C. to 400AD) a brief but sharp warming of the North American climate around 1200 BC (Willemse and Tornqvist 1999) Until relatively recently, both archaeologists and climate scientists have worked under the paradigm that past changes had been relatively gradual. In this context "gradual" can be thought of as occurring beyond individual human time scale. A significant body of research now indicates otherwise. It seems that major climate changes, even global scale shifts such as the Pleistocene-Holocene transition were so sudden and dramatic that their effects could have been readily noticeable by humans living at the time (Anderson 2001). Shorter term oscillations such as periodic cool downs of the North American climate apparently triggered by glacial melt water releases may have been even more abrupt (Yu and Eicher 1998; Hu et al. 1999). These mega floods dramatically influenced ocean water circulation and as such, climate effects would have been recognizable not on a decadal scale but perhaps on an annum basis. A realization as to the swiftness with which some past climate change occurred has significant implications not only for assessing prehistoric conditions but also in regard to the challenges that contemporary societies may face in the near and immediate term future.

Conditions which likely precipitated major cold episodes during the first half of the Holocene no

longer exist. Similarly, McWeeney and Kellogg (2001) aptly point out that the warm/dry episodes of the early to mid-Holocene also have no modern analogs. In contrast to early to mid-Holocene times, contemporary conditions feature significantly higher sea levels. Further, the Northern hemisphere is no longer subject to the atmospheric influence of the remnant Laurentide ice sheet and continental glacial lakes, or the potentially disruptive impact of sudden melt water releases. Calculation of past annual mean temperatures can also be misleading when considering resultant impacts to human populations. Citing broad based and diverse paleoenvironmental evidence including Greenland ice core data, Anderson (2001) maintains that early-mid Holocene warm episodes were characterized as much by greater seasonal extremes as overall higher temperatures. This position fits well with contemporary climate change predictions which emphasize that projected increases in global warmth will result in greater seasonal fluctuations and more numerous extreme weather events rather than being expressed as an incremental rise in mean temperatures.

Sea Level Rise and Climate Change

Sea level rise and climate change acted in concert to shape prehistoric environments in Virginia, and the remainder of this section is organized accordingly. The first sub-section summarizes sea level rise as it pertains to prehistoric environmental conditions and physiographic settings in Virginia. Included is a brief summation of changing dynamics of inland river systems and floodplain depositional patterns. This information is synthesized within the succeeding paleoclimate overview. The goal is to arrive at an interpretive reconstruction of past environmental conditions relevant to prehistoric archaeological research in Virginia. The final section broadly discusses past climate and environmental conditions in prehistoric cultural context.

Sea Level Rise and Fluvial Dynamics of Inland River Systems

Direct environmental influences of sea level rise were obviously limited to areas east of the Fall Line. Holocene inundation of the coastal plain Susquehanna River and its tributaries created the world's largest and arguably the most ecologically productive estuary. Rising sea levels also fostered the development of expansive wetlands bordering Chesapeake tributaries as well as an extensive complex of interior fresh water tidal systems. Development of the Chesapeake estuary was largely complete by the end of the Late Archaic. As such, prehistoric adaptations to formative environmental changes related to sea level rise can be assumed to predate the Archaic- Woodland transition.

During the last glacial maximum, so much of the earth's water was tied up in polar ice caps and continental glaciers that sea levels were as much as 130 meters lower than today (Edwards and Merrill 1977). Sea levels, which had been dropping since the onset of the Wisconsin glacial episode approximately 40,000 years ago, reached a low point between 18,000 and 14,000 years ago (Edwards and Merrill 1977). With global warming that precipitated the end of the final Wisconsin glacial episode, oceans began a rapid rise, reaching a rate of 1.60 m per century between 10,000 and 6,000 BP (Milliman and Emory 1968). This resulted in the inundation of the gently sloping portions of the continental shelf, actively pushing the Atlantic coastline westwards. It is estimated that for every 0.30 m rise in sea level, the coastline of the time would move 510 horizontal meters. Approximately 5,000 years ago, the rate of sea level rise slowed to approximately 0.20 m per century (Milliman and Emory 1968).

Sea level rise on the eastern seaboard is calculated in relative rather than absolute terms. This is necessitated due to the physical distortion of the earth's surface caused by the weight of the continental ice sheets. These ice sheets, which reached 3,500 to 4,000 meters in thickness, caused the earth's crust in the North American interior to sag while the underwater continental shelf rose up. With the ice sheets melted away, the continental interior lifted up in a process known as isostatic rebound or isostatic adjustment (Middleton and Wilcock 1994). Continental shelf areas slowly subside in response. These adjustments continue through present day, essentially compounding the ocean's rise in relation to the local land surface (Colman et al. 1991).

Holocene period relative sea level curves generated by Kraft (1977) for the Delaware Bay have been used in reconstructions of the Middle Atlantic Coastal Plain settings. More recently, Colman et al. (1991) provided data specific to the Chesapeake and its tributaries. In summary, their analyses show that rising ocean waters

reached the present day mouth of the Chesapeake around 10,000 BP. Ongoing, relatively rapid rise in sea level resulted in waters backing into the massive ancestral Susquehanna River, eventually overtopping the channel edges to form the Chesapeake Bay. This process was well underway by 6000 BP. By 4500 BP, rising waters had pushed well up the Susquehanna River and its major tributaries of the Potomac, Rappahannock and the James. Sedimentological data from streambed cores point to the embayment of the Lower James River just below the Falls by around 5000 BP (Johnson and Peebles 1983). Full tidal influence likely extended to the base of the Falls during the following millennium. By 3000 BP, the entire Chesapeake estuary system had essentially reached its modern day configuration (Colman et al. 1991). More recently, US Geological Survey studies have placed earlier parameters on the development of the modern Chesapeake Bay (Bratton et al. 2003). In this work, core lithologies derived from both shallow and deep water environments along the main stem Chesapeake were assessed for fossil oyster shell and dated using accelerated mass spectrometry. Total organic carbon and carbon isotopes were also analyzed, as were values for the trace element rhenium as markers of developing estuarine sedimentary environments (Bratton et al. 2003). Results place fresh-brackish transition in the northern Chesapeake Bay to between 7.4 and 8.2 cal ka or 5400 BC and 6200 BC. Bratton et al. (2003) also concluded that the full development of Chesapeake estuary was temporally non-linear. This was attributed to either a sudden jump in the rate of sea level rise or to the stepped physical configuration of the Chesapeake basin. The latter would account for a physical threshold that once overcome, would facilitate the rapid up-basin development of estuarine conditions. Either way the researchers concluded that the ultimate development of the main stem Chesapeake Bay estuary was relatively rapid.

Cronin et al. (2007) document two distinct periods of rapid sea level rise expressed by episodic drowning of marsh environments as identified by coring data from the Chesapeake Bay floor.The later rise, constrained to between 8.2 cal ka and 7.6 cal ka appears related to the 8.2k climate event triggered by the catastrophic release of the Lake Agassiz-Ojibway glacial melt waters into the North Atlantic. The coring data indicate sea level rise of at least 12 mm per annum or 1.2 meters per century. This rate of rise was faster than accretion typical on salt marsh surfaces, resulting in their inundation. The North American melt water release can account for only a portion of this sea level rise. Cronin et al. (2007) posit that following the 8.2k cooling caused by the melt water interruption of the Atlantic meridional overturning circulation (AMOC), a vigorous resumption of the AMOC then resulted in pronounced inter-hemisphere warming and accelerated decay of the Antarctic ice sheet.

For inland Coastal Plain river systems, significant physical and environmental changes preceded actual tidal intrusion. These changes, directly related to rising sea levels included enhanced meandering, channel braiding and widening, and the wetting of existing floodplain soils. Such developing conditions would have fostered incrementally more productive and diverse local ecological conditions well in advance of full tidal influence. Sea level rise also appeared to have resulted in aeolian soil activity along some riverine settings. During the mid-Holocene, Atlantic Coastal Plain rivers responded to the sea level rise-induced reduction of gradient by meandering and cutting multiple braided channels (Schuldenrein 1996; Brooks et al. 1998). This resulted in the creation of point bars along the inside of bends, and sloughing and calving of banks along the outside of the channel cuts. During time of low water and dry weather, fresh sediments would be desiccated and made available for local aeolian transport. This aeolian activity would have largely ceased with further reduction in river gradient as floodplains became characterized by low-energy, fine textured deposition, after which they became fully inundated and the drainages embayed (Brooks et al. 1998).

As a direct result of this sea level rise, Coastal Plain Chesapeake tributaries were transformed from flowing rivers contained within a narrow channel, to broad tidal estuaries. Accompanying this physical transformation were significant environmental changes, including the expansion of attendant wetlands and interior freshwater tidal reaches. The development of these highly productive environments presented Native American peoples with new resource opportunities, setting the stage for significant changes in prehistoric life ways (Dent 1995; Mouer 1990, 1991; Potter 1993).

From an archaeological perspective, rising sea levels and the development of the Chesapeake Bay was a highly destructive process. Not only are former coastal sites now inundated, wave/tidal action along transgressive

shorelines likely severely compromised the integrity of the archaeological deposits. Archaeological sites lost along the greater Chesapeake Bay and Atlantic barrier islands include not just the sum of coastal occupations from the Paleoindian through the Middle Archaic but also major prime locations for Late Archaic settlement. Some low lying Woodland period site locations may have been compromised as well.

Archaeological researchers have frequently posited that the decrease in the rate of sea level rise between 7000 and 5000 years ago allowed estuaries to stabilize and helped foster the development of shellfish beds and other estuarine resources important to prehistoric groups from the Late Archaic onwards. This author would maintain that the timing of prime shellfish bed establishment would have less to do with any change in the rate of sea level rise than the actual physical development of appropriate habitat conditions. The majority of the Chesapeake Bay and its major tributary arms are between 10 and 20 feet in depth. Near shore areas and large portions of the bay's eastern flank such as Tangier Sound and Pocomoke Sound average approximately half that, or between 5 and 10 feet. Deeper areas are mostly restricted to the ancient river channels that lie preserved on the bottom of the bay's main stem and major tributaries. During the Chesapeake Bay's development, rising ocean waters first filled in these river channel areas. Once waters overtopped the channel edges and began to inundate the surrounding, nearly level terraces, estuarine genesis would have been relatively sudden, even with a greatly reduced rate of sea level rise. Oyster beds would have appeared as soon as waters reached sufficient depths for suitable temperature and dissolved oxygen regimes to develop, providing appropriate salinity was present as well. It should be emphasized that the recent studies by Bratton et al. (2003) Cronin et al. (2007) indicate a rapid increase in sea level rise associated with development of the modern Chesapeake Bay, with the onset of these conditions predating the Late Archaic by several millennia.

For inland areas, researchers working west of the Fall Line have noted that Holocene floodplain depositional patterns were dynamic. Periods of apparent floodplain stability seem punctuated with active deposition and possibly surface erosion (Schuldenrein 1996; Vento et al. 2008). Floodplain surface stability, which is suggestive of steady precipitation patterns and few overbank flooding events, is expressed through development of thick (now buried) A horizons. Periods of higher, more uneven precipitation with more numerous major flood events would result in greater alluvial deposition (seen as weak B horizons) and/or surface erosion, both of which would inhibit buried A horizon development. Deposition of coarse grained sediment (C horizons) could be seen not just as the result of a high energy flood event but also as evidence that vegetation cover within the watershed may have been compromised, leading to greater erosion and sediment transport (Schuldenrein 1996; Vento et al. 2008).

Vento et al. (2008) have proposed that elements of these sequences can potentially be linked across multiple river basins while integrating paleoclimate data. In their analysis, specific paloesols recognizable across major Pennsylvania drainage systems (and thus potentially indicative of regional conditions) are referred to as allogenic units. The challenge in such analyses lies in factoring out large numbers of highly locally-derived paleosols known as autogenic units (Vento et al. 2008). Preliminary efforts towards an inter-basin chronostratigraphic framework elucidated regional characteristics relevant both to prehistoric settlement activity and the potential condition of archaeological site locations. In broadest terms, their analyses underscore trends in floodplain morphologies previously noted in the Middle Atlantic region. A prominent element in this appears to be an extended period of floodplain stability between 3000 BP and 2000 BP or during the Early Woodland. The preceding Late Archaic (4500 BP and 3000 BP) appears to have been more dynamic with alluviation dominant along larger drainages and some instability evident on smaller tributaries. The Middle Archaic can be broadly categorized as a period with slow, continuous floodplain aggradation. Under these accretionary conditions, a series of weak B horizons and perhaps stacked, incipient A horizons could be expected. A period of floodplain stability was noted in some locations and during the latter part of the Middle Woodland. Alluviation is again evident during the Late Woodland (Vento et al. 2008). Sedimentation rates and/or localized floodplain scouring can be expected to have increased dramatically following early historic period land clearing.

Paleoclimate and Environment Conditions

Paleoclimate studies in the Eastern United States have

traditionally relied on pollen profiles. These data have the corollary benefit of helping reconstruct vegetative communities and by extension, elements of the local prehistoric resource base. However, pollen data can be subject to significant limitations as a result of differential preservation, pedological discontinuities, and post depositional disturbance. In addition, analyzed sequences are mostly limited to species that rely on wind pollination. Nonetheless, pollen preserved in wet environments has been invaluable in helping to understand past ecological conditions. Archaeologists working in Virginia have long cited the synthetic work of Carbone (1976) based on pollen core studies in the Shenandoah Valley and other regional locales. A basic characterization of the climate regime arrived at by Carbone is summarized in Table 2.1.

In the time since Carbone's work was completed, paleoclimate research applicable to the Middle Atlantic has grown appreciably, with basic reconstructions of regional climate and vegetation histories relatively well established through additional pollen assemblage studies (e.g. Delcourt and Delcourt 1985; Jacobson et al. 1987; Watts 1979, 1980; Webb et al. 1987; Gaudreau 1988). Recent advances in the field of paleoclimatology, including analysis of Greenland ice cores, and a burgeoning dendrochronological database on both sides of the Atlantic have provided a wealth of additional information applicable to Middle Atlantic climate reconstructions. Table 2.2 presents a more refined categorization of paleoclimate regimes derived from recent studies and syntheses, with major episodes correlated with prehistoric cultural periods. The following subsections briefly discuss these divisions as well as results of local and regional studies relevant to reconstructing past climate regimes and environmental conditions in the Commonwealth.

Paleoindian (11,500-8000 BC)
Inter-Allerod Younger Dryas

Virginia escaped the landscape-scouring effects of glaciations typically seen from New York northwards. Nonetheless, Paleoindians that roamed Virginia experienced a climate and environmental conditions very different than any other time in North American human history. While areas near the retreating ice front to the north experienced periglacial conditions with limited vegetation, forests that covered much of Virginia likely resembled those of contemporary northern Maine and parts of Canada. Areas east of the Blue Ridge were dominated by spruce, hemlock, and white pine. The mid-to high elevations of Blue Ridge and points west likely experienced tundra like conditions, with snow pack present for significant portions of the year.

The Inter-Allerod period was characterized by significantly higher temperatures in relation to the glacial times. Nonetheless, mean temperatures were between 5 and 10 degrees centigrade cooler than today (Edwards and Merrill 1977). Precipitation levels are somewhat unclear. During the Mid-Glacial Period, eastern North America was not just significantly cooler but also much drier than today (Watts and Stuiver 1980). With ongoing warming and subsequent retreat of the ice front, massive glacial melt water runoff likely suppressed coastal sea

Table 2.1. Generalized Climate History for the Middle Atlantic

Period	Years BP	Conditions
Late Glacial	15,000-13,000	Cold and wet. Tundra-like along the ice front to the north. Spruce, fir, and sedges further south
Pre-Boreal	13,000-10,700	Cold and wet. Grasslands and boreal forest. Spruce and cold climate pine dominate.
Boreal	10,700- 9200	Significant warming. Spruce and fir diminish rapidly and hardwoods expand.
Atlantic	9200-6600	Development of modern climate conditions, expanding hardwood forests.
Sub-Boreal	6,600-2,000	Warming and drying of climate. Oak-hickory forests dominate. Some expansion of grasslands
Subatlantic	2,000-present	A general and progressive cooling trend. Significant and abrupt shifts in precipitation during mid-period.

Source: Carbone (1976)

Table 2.2. Working PaleoClimate Division with Applicability to Virginia Prehistoric Research

Cultural Period	Date BC AD	Climatic Period/Conditions
Paleoindian	11,500 – 10,900 BC	Inter-Allerod: Post Glacial: cool but w/ warming trend
Late Paleo Transition	10,900 – 8000 BC	Younger Dryas: sharp reversal in warming; cold, very rapid warming at end Younger Dryas
Early Archaic	8000 – 6500 BC	Boreal: significant warming; dry episodes
Middle Archaic	6500 – 2500 BC	Atlantic: initial cooling with 8.2k Event, then Hypsithermal peak in warm/dry conditions
Late Archaic	2500 – 1100 BC	Sub-boreal; some amelioration with periodic instability; strong warming at end of period
Early Woodland	1100 BC – AD 250	Sub-boreal to Subatlantic: initial warm, then sharp cooling with shifts in precipitation later in period.
Middle Woodland	AD 250 – 900	Subatlantic: continued moderately cool and moist, variable precipitation at times, cold episodes late
Late Woodland	AD 900 – 1650	Medieval Warm Period: slight warming with generally more stable conditions, Little Ice Age
Proto/Early Historic	_ _ _ _ _ _ _ _ _	Little Ice Age: cool with severe droughts and variable precipitation

Source: Adapted in part from Anderson 2001
Note: Figure 2.2 lists two additional cultural sub- periods (Late Paleo/Transition; Protohistoric/Historic). This is done solely to accommodate two distinct, major climate episodes (Younger Dryas and Little Ice Age) and is not intended as a deviation from the cultural/temporal divisions used throughout this document.

temperatures with corresponding changes in circulation patterns. One result may have been persistent cloud cover along some coastal areas and near the retreating glacial mass. In ecological context, annual precipitation totals would not be directly analogous to contemporary values due to a shorter growing season, lower mean temperatures, longer snow pack, and possibly greater cloud cover— all factors that reduce evapotranspiration rates and totals.

Based on macrobotanicals recovered from the Cactus Hill site, white pine appears to have been well established in southeastern Virginia by 15,000 BP. White pine is relatively warm adapted in comparison to Late Glacial species, suggesting that a transition to a more temperate forest community was underway prior to Clovis times (McWeeney and Kellogg 2001).

Whitehead's (1972, 1981) pollen analysis for the Dismal Swamp cores provides a fine-grained view of vegetative communities in southeastern Virginia for the period 10,600-8200 BP. During the early Holocene approximately 10,600 years ago, forests in southeastern Virginia were comprised of beech, hemlock, and birch. This composition is interpreted by Whitehead (1972) as likely representing a transition stage between the white pine-spruce forests of the later Pleistocene and oak-hickory association that would come to be fully dominant by 8200 BP.

Ongoing warming of the period was followed by a sharp reversal around 12,900 BP. This abrupt cooling and drying of the climate, once thought to have been limited to Northern Europe, is known as the Younger Dryas. The Younger Dryas cooling was indeed most pronounced on the eastern side of the Atlantic but its effects were felt strongly across the Northern Hemisphere. The cold conditions ended extremely abruptly around 11,500 years ago.

There is converging consensus among climate scientists that change in the North Atlantic thermohaline circulation was a principal driver in the climate reversal. One scenario has the dammed up glacial melt water

of Lake Agassiz diverted from the Gulf of Mexico drainage, east into the St. Lawrence valley and the Atlantic, with resultant changes in water temperature/density/salinity impacting ocean circulation (Teller et al. 2002). However, other studies suggest that the Lake Agassiz's eastern outlet remained blocked until well into the Younger Dryas (Lowell et al. 2009). The nature of the forcing mechanism that acted on the North Atlantic thermohaline circulation remains debated, with atmospheric (jet stream) based models and comet impact/air bust scenarios being proposed by various researchers (Carlson 2010).

Whatever the underlying trigger(s) for the Younger Dryas, the climate reversal is increasingly seen as a salient event in the transition from Late Glacial to Holocene times in terms of cultural adaptations and development. For one, the relatively short but sharp reversal in Northern Hemisphere warming appears to have been coeval with the final megafauna extinction phase, as well as the replacement of the essentially continental wide Clovis culture with more diverse, regional traditions (Anderson 2001).

Early Archaic (8000-6500 BC) Boreal

Following the Younger Dryas, temperatures in Eastern North America warmed dramatically. This fostered the renewed and apparently rapid spread of warm adapted tree species out of the Southeast; principally oak and hickories as indicated by a broad suite of regional pollen assemblages (Whitehead 1972; Watts 1979; Delcourt and Delcourt 1985; Webb et al. 1987; Gaudreau 1988). An increase in temperatures appears to have been accompanied by significant and long term reduction in precipitation. Evidence for this drying includes a reduction in lake levels and inferred hiatuses in lake bed sediment accumulations at various New England locations (McWeeney and Kellogg 2001). Closer to Virginia, studies of "bay/basin" Carolina bays in the Delaware Coastal Plain document significant drop in or even absence of water in these features during a broadly bracketed time frame of 11,000 BP to 6000 BP (Newby et al. 1994). Whitehead (1972, 1981) notes a similar, pronounced drop in water levels around 10,000 BP at both the Dismal Swamp locations and the Rockyhock Bay depression in North Carolina, with corresponding breaks in identifiable pollen deposition sequences. At Browns Pond in Augusta County, Kneller and Peteet (1994) similarly note a depositional hiatus zone dated to between circa 9200 to 7900 BP.

The timing of the transition from a cold adapted pine-spruce forest to one dominated by oak and hickory was also dependent on latitude as well as elevation. In essence, the geographic limits of the cold adapted forest species retreated steadily northwards in response to ongoing Holocene warming. In the South Carolina Coastal Plain, the change from a boreal to a deciduous hardwood forest appears to have been underway some 13,000 years ago (Watts 1980). By around 9000 years ago, this transition was occurring in southeastern Virginia as demonstrated by Whitehead (1972). At the Indian Creek site in Prince George's County, Maryland, LeeDecker and Koldehoff (1991) obtained one of the more complete Early to Middle Holocene pollen sequences for the region. These samples show an increase in birch over pine and spruce at around 7600 BP. Oak species as well as hazelnut and alder began to dominate the site about 5000 years ago. Pollen analysis of pond cores in New Castle County, Delaware, suggests that oak-hickory forest conditions were fully established in that location by 5800 BP, with this date marking the recent limits of a sedimentary discontinuity associated with the aforementioned drop in bay/basin water levels (Newby et al. 1994). A similar temporal progression in forest make up can be expected moving from the Virginia Coastal Plain west across the Piedmont and into the mountain regions. Today, spruce and hemlock stands can still found be within sheltered coves of the higher Appalachian summits.

To review, environments of the Early Archaic were not so much at transition stage between cool/moist Post-Glacial and the Mid-Holocene peak in warmth and aridity, as has sometimes been portrayed in the regional archaeological literature. Rather, as a cultural period, the Early Archaic experienced some of the most pronounced climate differences in North American prehistory. The Early Archaic is bracketed on one side by the extreme cold of the Younger Dryas and on the latter end by conditions leading to the peak in post glacial warm/dry conditions. The bulk of the Early Archaic appears to have been a period of significant and sustained warmth and dryness (Anderson 2001). Vegetative changes in response to these extremes were rather profound. Forests of the very late Paleoindian period were likely similar to terminal glacial times, with white pine prevalent in

the Coastal Plain uplands and remnant boreal forests of spruce and fir covering higher elevations west of the Fall Line. By the mid-point of the Early Archaic, forests across much of Virginia east of the Blue Ridge likely mirrored contemporary conditions with oak hickory dominating the uplands and modern hydrophilic communities along floodplains and other low/poorly drained areas.

Middle Archaic (6500-2500 BC) Atlantic

The Mid-Holocene peak in warmth/dryness is essentially coeval with the Middle Archaic cultural period (Anderson 2001). The episode, variously referred to as the Hypsithermal, Antithermal, Atlantic Optimum, or Climatic Optimum (Sandweiss et al.1999) significantly predates the purported warm/dry peak that Custer (1984,1989, 1994) and others portrayed as having played a significant role in shaping later Archaic period lifeways in the region.

A Middle Archaic peak in warmth/dryness is supported by numerous pollen studies. Delcourt and Delcourt (1985) place the period of maximum post-glacial warmth and aridity from 7500-5000 BP, while noting that these dates are in agreement with climate reconstructions for the Great Plains and near Midwest. At Browns Pond in Augusta County, Zone BR-4, which post- dates circa 7900 BP contained significant amounts of charcoal. The deposit also contained an increasing percentage of pine pollen from the bottom of the zone upwards (Kneller and Peteet 1994), further suggesting frequent fires and persistence of late succession stage forest communities.

Across the Southeast, warm adapted pine species expanded dramatically, replacing oak forest (Jacobson et al. 1987; Watts et al. 1996). Conditions may have been extreme enough to sufficiently stress upland vegetation resulting in increased run off, and surface erosion and aggrading of floodplains (Knox 1983; Schuldenrein 1996).

Anderson (2001) cites ice core data in positing that the Middle Archaic Hypsithermal was not so much a peak in mean temperatures as a time of seasonal extremes with warmer summers and colder winters. Regardless, either condition would result in some stress to regional forest environments. An increase in the frequency and intensity of wild fires should also be expected under Hypsithermal conditions. The spread of pine in the Southeast (Jacobson et al. 1987; Watts et al. 1996) is likely linked to increasing wild fires as most warm climate pine species are both fire adapted and a major component of late succession communities. At the Indian Creek Site LeeDecker (1991) reports goldenrod and cinnamon fern, with the latter as the dominant herbaceous species for contexts bracketed between ca. 7660 and 5000 BP. Goldenrod requires open environs while cinnamon fern is a reliable indicator of fire (Brush 1994). In addition to the creation and possible maintenance of open areas due to frequent fires, some naturally precipitation-poor locations such as portions of the Shenandoah Valley floor may have supported open grasslands (Carbone 1976). Dry conditions appear to have eased around 6000 BP as a quantitative increase in moisture can be inferred based on rising lake levels and/or resumed ponding at various regional locations (McWeeney and Kellogg 2001; Newby et al. 1994; Whitehead 1972, 1981).

Dynamism of the Mid-Holocene climate is underscored by a significant cool down at the start of the Middle Archaic, just prior to the Hypsithermal. An initial drop in mean temperatures at the beginning of the Middle Archaic was followed by a sudden and severe cold period between 8400 and 8000 BP (Barber et al. 1999). This episode, referred to as the 8.2k Cold Event has been linked to the final melting the of remnant Laurentide Ice Sheet and a catastrophically sudden draining of the massive Agassiz and Ojibway glacial lakes (Hu et al. 1999; Teller et al. 2001).

The cool down was short lived and the balance of Middle Archaic was appears to have been characterized by Hypsithermal conditions across eastern North America (Anderson 2001).

Late Archaic (2500-1000 BC) Sub-boreal

Late Archaic climate appears to have ameliorated somewhat in comparison to Middle Archaic. An increase in lake levels and re-occurrence of ponding near the end of the Middle Archaic appears to have been sustained regionally (McWeeney and Kellogg 2001). Forest communities would have been dominated by oak/hickory in the uplands with white oak, gum, maple, tupelo, beech and other hydrophilic species found in low lying areas. Nash (2008, 2009) cites palynological evidence that chestnut groves, typically located along mid-to high elevation benches and ridge lines, became well established in the northern Blue Ridge by 3500

BP. Spruce, fir, and hemlock likely continued to thrive along the higher elevations of the western mountain regions. Southeast Virginia and parts of the expansive southern Piedmont region would have supported mixed pine and hardwood forests. This is in contrast to the pine-dominant conditions of today which are closely associated with historic land uses and contemporary forestry management practices.

Researchers working in the Middle Atlantic Coastal Plain have also long noted the presence of aeolian soils over prehistoric site surfaces dating to around 4500 BP to 3000 BP, particularly in the Delmarva region (Curry 1980; Curry and Ebright 1989; Heite and Blume 1995). Custer (1989) presents the occurrence of these aeolian soils as evidence for a very warm and drought prone period within the Sub-boreal period, which he termed the mid-post-glacial xerothermic. Many researchers now attribute this aeolian soil phenomenon as being more closely linked to the changing sedimentary environments and hydrological regime of adjacent stream and river beds, and possibly localized anthropogenic disturbance, rather than to extreme climate conditions (Mouer 1990; Stevens 1991; Brooks et at. 1996; Brooks et al. 1998).

One climatological aspect of the Late Archaic may have been greater variability in precipitation and more frequent high energy flood events. Evidence for such dynamic conditions appears to be expressed in the unstable nature of floodplain surfaces across the Middle Atlantic region (Klein and Klatka 1991; Klein 2003; Vento et al. 2008). Gunn (1997) characterizes the climate for the period 4400 to 2600 BP as subject to significant fluctuations on a century scale. The end of the Late Archaic may have witnessed a brief period of significant warming. Greenland ice core data indicate that the North Atlantic climate around 1200 BC was warmer than any time since 7500 BC. This was followed by a sudden and dramatic drop of 2 degree C by ca. 1000 BC (Willemse and Tornqvist 1999).

Early Woodland (1100 BC–AD 250)
Sub-boreal to Subatlantic

Carbone (1976) framed the Subatlantic as a shift from warm/dry to cool/moist conditions. Others, notably Vento et al. (2008) present the Subatlantic onset around 3000 BP as a shift to a warm/moist regime. Observations of floodplain morphologies also lend to divergent interpretations. Schuldenrein (1996) reports increased sedimentation on Delaware River site locations for the period 3200-2500 BP. By contrast, Vento et al. (2008) present the several centuries following 3000 BP as a period of extended floodplain stability based on multiple studies across the Delaware watershed. This latter conclusion is in line with observations of Early Woodland floodplain surface stability along the Potomac drainage and other Virginia locations (Klein and Klatka 1991; McLearen 1991a, 1991b).

Climate reconstructions of the Woodland period have the benefit of dendrochronological data. Once largely limited to the Southwest United States, recent studies have established fairly robust sequences applicable to East Coast locations. Quality data has been obtained from bald cypress along the Nottoway River in southeast Virginia (Stahl et al. 1998) and white cedars in Ontario (Kelly et al. 1994). More broadly applicable are Irish oak and other comprehensive sequences for continental Northern Europe (Braillie 1988).

The sudden cooling of the climate around 1000 BC appears to have been one of several such episodes during the Early Woodland (Fiedel 2001). Fiedel (2001) further cites correlative Greenland ice core and European tree ring data that point to several pronounced but relatively short term cooling events during the Early Woodland. These begin at 1159 BC and 850 BC respectively.

Numerous researchers have noted a flattening, or plateau in the radiocarbon curve between cal 800 BC and 400 cal BC, suggesting elevated atmospheric radioactive carbon during that time frame. A flattening of the radiocarbon curve would be caused by increased level of C14 in the atmosphere. Such increases in C14 are linked to reduced uptake of CO2 (and by extension C14) by ocean waters during a cooler climate (Stocker and Wright 1996). The period around 800 BC may have experienced a Grand Solar Minimum event (Martin-Puertas et al. 2012). Such periodic decreases in solar output, or Solar Minimums were very limited in absolute terms yet may have a pronounced effect on climate, with feedback driven changes in atmospheric circulation patterns the primary driver (Martin-Puertas et al. 2012). In sum, the Early Woodland seems to have experienced significant cooling, perhaps as a result of multiple causal factors.

In general, the Early Woodland would appear to have experienced a somewhat cooler and moister climate than the preceding Late Archaic. Archaeological data suggest

floodplain stability and by extension, relatively moderate precipitation patterns with fewer extreme events. One result of moister and more stable meteorological conditions would have been a reduction of pine in many Virginia locations, and a corresponding entrenchment of climax forest conditions. Any remnant grasslands or broken forest persisting from Hypsithermal times would have quickly filled in under prevailing moister, more stable weather patterns.

Middle Woodland (AD 250–900)
Subatlantic; Scandic Phase

The climate of the Middle Woodland appears to have been a continuation of the relatively moderate Subatlantic conditions of the Early Woodland (Anderson 2001). One change appears to have been an increase and/or greater variability in precipitation as expressed in floodplain morphologies. Vento et al. (2008) note an absence of A horizon soil development within floodplain profiles of the time, indicating increasing frequencies of overbank flooding events. This more dynamic nature of regional floodplain conditions are further linked to the cooler/moister Scandic Phase within the Subatlantic extending from 1750 BP to 1200 BP (Vento et al. 2008).

The Subatlantic climate period appears to have had two distinct components, roughly corresponding to the first and second half of the Middle Woodland. The first half of the Middle Woodland seems to have been characterized by relatively stable and mild conditions. The period can perhaps been linked to what is referred to as the Roman Optimum on the east side of the Atlantic. The second half of the Middle Woodland experienced several dramatic cool events that may be related to a broad, global cooling trend of the period (Braillie 1988). Irish oak growth rings show a radical narrowing at AD 536. The decades following AD 536 were the most restricted in the 6000 year sequence (Braille 1988). This Scandic phase of the Subatlantic transitioned rapidly to what is known as the Medieval Warm Period beginning around AD 800 (Anderson 2001).

Late Woodland/Early Historic (AD 900 –1650)
Medieval Warm Period, Little Ice Age

The Medieval Warm Period lasted almost 500 years. In Europe, this extended period of mild weather and predictable precipitation is closely tied to the cultural developments of High Middle Ages; an era which witnessed rapid population growth, increased agricultural production, relative prosperity, and social and political advances that facilitated construction of monumental cathedral architecture and other civic achievements. On the western side of the Atlantic, precipitation patterns may have been somewhat more erratic. Tree ring data from bald cypress along the Nottoway River indicate substantial inter-annual and decadal variance of growing season moisture was typical for the period from AD 1185 leading up to ca. AD 1585. Significant multi-year dry periods are regularly interspersed between wetter cycles of similar intensity and duration (Stahl et al. 1998). Floodplain morphologies in the Delaware watershed suggest a continuation of the active fluvial conditions of the preceding Scandic Phase coeval with latter half of the Middle Woodland (Vento et al. 2008).

The Little Ice Age began around AD 1300. Anecdotal evidence for cooling of the European and North Atlantic climate has long included the collapse of Norse settlement in Greenland, descriptions by William Shakespeare and contemporary writers of a snow and ice bound London, and numerous period genre paintings of frozen rivers and canals in Flanders as well as other European locations which only infrequently experience similarly harsh conditions today. Other lines of evidence charting the Little Ice Age in Europe include historical accounts detailing variations of the sea temperature-sensitive, late medieval North Atlantic cod fishery, accounts of persistent crop failure and spiking grain prices, and monastery records chronicling the date of first snowfall, commencement of spring planting, or other weather related seasonal events (Fagan 2000). More recently, analysis of Greenland ice cores and dendrochronological sequences in Northern Europe have placed quantitative parameters on the Little Ice Age climate episode with the 14th century AD calculated to have the coldest conditions in 700 years (Fagan 2000).

There seems to be some uncertainty to what extent the Little Ice Age conditions well documented historically in Western Europe had analogs in eastern North America. Written accounts of early English settlement in Virginia do refer to harsh winters and generally difficult conditions. A primary feature of the climate period may have been recurring and severe drought. The dendrochronological sequences derived by Stahl et al. (1998) along the Nottoway River confirm that

initial English settlement of North America coincided with periods of severe moisture stress. Specifically, their reconstructions demonstrated that the Roanoke Island colonial venture of 1585 had the misfortune of experiencing the worst drought conditions in 800 years. In addition, the founding of Jamestown in 1607 coincided with a seven-year drought (1606-1612) that was almost equal in severity. Both colonies were located around swampland. The drought conditions likely made obtaining suitable drinking water even more difficult and may have been a factor in the Roanoke Island colony's demise, and in the appalling death rates experienced at Jamestown (Stahl et al. 1998). These severe droughts likely affected Native American populations as well. Not only would the extended droughts have caused maize harvests to fail, they were likely severe enough to impact wild plant food resources, and perhaps game populations as well.

Environmental Change in Cultural Context

Paleoindians that roamed Virginia experienced a climate and ecological conditions very different than today. Local forests likely resembled those of northern Maine, while major rivers of the Coastal Plain flowed in narrow channels toward an Atlantic shoreline that lay as much as 100 miles further east. The environmental changes from Paleoindian times through the Early Archaic were clearly profound. This period was first characterized by post glacial, albeit warming conditions followed a sharp reversal to a cold climate. Subsequent, rapid warming brought about dramatic shifts in vegetative communities. No other time in prehistory experienced such dynamic conditions. Cultural changes of the time entailed the fade out Paleoindian lifeways and the rise of numerous and diverse Archaic period traditions.

From a prehistoric food resource perspective, a major event was the development of a highly productive greater Chesapeake Bay. Establishment of the massive estuary, including freshwater tidal embayment of its major tributary rivers up to the Fall Line, was largely complete by the end of the Archaic. The newly developed estuarine environments offered Native Americans unprecedented resource opportunities. These included rich shellfish beds, enhanced anadromous fish runs, and flocks of wintering/migrating waterfowl. The greater Chesapeake estuary waters also supported bountiful resident fish and game populations. Expansive inland freshwater tidal wetlands offered rich and diverse plant food sources and game habitat. Most of these food resources had been available earlier in prehistory. However, their relative local abundance increased dramatically with the development of the modern Chesapeake Bay.

Other climate/environmental changes probably had more limited impact on prehistoric hunter forager populations. Pronounced climatic episodes such as the warm and drought prone Hypsithermal or the centuries long 8.2k Cold Event, while certainly ecologically stressing at the time in which they occurred, are unlikely to have significantly altered the overall forest make up in the long term. This can be attributed to the resilient nature of temperate, mixed forests characteristic of the Middle Atlantic region. One condition directly linked to changing climate would have been an increase in wildfires during warm/dry periods. Ongoing fire events would result in greater forest diversity with the patchy occurrence of succession communities. An increase in pine can also be presumed under these conditions.

With a possible exception of the Younger Dryas, cultural responses to periodic climate shifts would also likely also have been muted, at least prior to the Late Archaic. Early Archaic and Middle Archaic populations were relatively small and mobile. A generalized hunting and foraging subsistence economy would have allowed for flexible and layered responses to environmental stressors. On the other hand, Woodland cultures with their larger populations, semi-sedentary settlement, and an increasing reliance on cultigens likely made them more susceptible to climate shifts.

Late Archaic climate, while not as warm/dry as that of the Hypsithermal, appears to have been subject to considerable variation. Cultural trends of the time included population growth, increasing sedentism, and an intensification of wild food resource exploitation. A settlement focus on geographically restricted, resource rich environmental zones is also expressed archaeologically. This likely made Late Archaic peoples more sensitive to environmental changes than preceding Archaic cultures, whose lesser numbers, dispersed settlement, and pure hunting/foraging lifeway could provide a hedge against climate-induced stress and accompanying resource shortfalls.

The apparent stable nature of floodplain surfaces during Early Woodland may have made riverine settings

attractive locations for settlement. On the other hand, floodplain stability together with moister conditions of the Subatlantic period would have resulted in the closing of the forest and an entrenchment of climax conditions. This may have made floodplains less bio-diverse than during the Late Archaic, when more dynamic fluvial activity coupled with warmer/dryer conditions and more frequent natural and perhaps cultural fires likely helped maintain succession communities. One could perhaps view the cool, moderating conditions of the Early Woodland as an impetus for active floodplain clearing, either for promoting successional wild plant food species or in context of increasingly more formal horticultural practices.

Climate during the first half of the Middle Woodland appears conducive to horticultural production. The impacts of the sudden cold episode beginning in the 6th century are unknown but were probably not inconsequential, particularly for groups with a developing dependence on cultigens. Population growth and territorial claims/distinctions arising from developing social complexity and tribal identities are also factors to be considered when weighing possible Woodland period cultural responses to variation in climate and resource availability.

Late Woodland societies may have been susceptible to even modest climate changes. The adoption of maize horticulture during this time allowed Native American groups to produce high quality food stores but also came with significant potential liabilities. Maize requires a specific number of frost free days in order to mature. In northern areas of the Middle Atlantic and along higher elevations, even slight changes in weather patterns can result in a significantly reduced frost free season. Total crop failure due to drought was also a perennial risk faced by Late Woodland peoples. For these reasons, maize remained but a component of many groups' resource base with wild plant foods continuing to meet a large percentage of dietary needs.

Finally, it should be emphasized that not only did environmental conditions affect Native American hunter foragers and horticulturalists but these same people exerted direct influence over the local environment on which they depended. Native American groups are increasingly regarded as having altered large areas of floodplain and bottomland through fire and perhaps other means. The purpose of this activity was presumably to clear forest and to promote and maintain economically valuable early succession communities. Regionally, Chapman et al. (1989) and Delcourt et al. (1986) provide data that suggest the floodplains of the Little Tennessee River were largely cleared by at least 4000 BP. This assessment is based on a dramatic increase in the use of cedar and pine for fuel on archaeological sites dating to the period. Use of these fuels over deciduous hardwood species suggests that the local forests were in less than climax state. Also noted by Chapman et al. (1989) and Delcourt et al. (1986) is a sharp increase in charcoal contained in river sediment cores dating to the period.

For the Chesapeake Bay and its tributaries, Brush (1986) notes significant increases in metals present in bottom sediments over the last 4,000 years, Brush attributes these increases to extensive burning that released metals from soils/vegetation to be incorporated in the tidal river bottoms. While a dramatic increase in naturally occurring fires due to a drying climate or severe deficits in seasonal rainfall could conceivably account for this phenomenon, extant palynological and geomorphological data for the period do not support this scenario (Brush 1994, Stevens 1991). Synthesizing broad regional data, Stevens (1991) argues that human intervention, particularly the burning and clearing of floodplains is reflected in the geomorphologic record to include increased stream sedimentation, and localized aeolian soil deposition.

Bruce D. Smith (1989, 1991) has convincingly argued that the promotion of certain pioneering, indigenous seed bearing species was undertaken in Eastern North America to the extent that the region should be recognized as one many loci for independent plant domestication. Smith postulates that the intensive exploitation of indigenous seed-bearing plants such as *Chenopodium sp*. and *Iva annua* developed into nascent horticultural practices long before the introduction of true cultigens. The propagation of these pioneering species depends on the physical ground disturbance well as interruption of the forest canopy. Smith (1989,1992) suggests that seasonal flooding along the rivers in Eastern North America originally provided this disturbance, and that an exploitive focus of these settings developed into nascent horticultural practices a millennium or more prior to the acceptance of tropical cultigens and development of fully horticultural lifeways.

The burning and or otherwise modifying of forests appear to have increased around AD 0. Vento et al. (2008)

note the marked presence of grass and chenopodium remains in Delaware watershed alluvial deposits younger than 2000 years. These findings strongly suggest ongoing anthropogenic disruption of local floodplain environments. In Delmarva, Brush's (1994) analysis of St. Jones River sediment cores just downstream from Dover, Delaware show a dramatic, 400 percent spike in charcoal for samples dating between 2000 and 1500 years. This spike in charcoal and the stratigraphically congruent pollen profiles are interpreted by Brush as evidence of frequent fires but with these events occurring within an overall moisture regime not significantly different than today's (Brush 1994:90-91). In fact, the four-fold increase in charcoal documented for the St Jones River sediments closely corresponds with the cooler/wetter Scandic Phase of the Subatlantic. This further suggests that cultural factors rather than pure natural events precipitated the significant increase in burn frequencies evidenced on the St Jones River and elsewhere.

Summary Remarks

The field of paleoclimatology is rapidly advancing. Future climate studies on both sides of the Atlantic as well as the Arctic region are sure to yield additional data of significant interest and benefit to North American archaeologists. Results from recent studies have highlighted aspects of Holocene climate that had previously not been fully understood or acknowledged. Holocene climate in eastern North America was clearly dynamic, particularly during the end of Paleoindian times and the first half the Archaic. Not only did Native American cultures have to contend with relatively dramatic shifts in temperature, precipitation, and seasonal extremes, some of these changes appeared to have occurred relatively suddenly; instantaneously in fact when viewed in archaeological time scale. Some climate changes and resultant environmental effects would have clearly been observed and recognized by individuals living at the time.

These events are sure to have affected Native American populations. However, cultural responses to climate shifts and resultant environmental change were likely varied. Archaic period cultural adaptations are sure to have differed from those of Woodland times. Varying cultural responses can also be expected across different physiographic regions and corresponding environmental settings. Therefore, extreme care needs to be taken when interpretively linking specific climate/environmental change with specific cultural developments. In addition, when evaluating palynological as well as geomorphological data, researchers should remain cognizant that Native Americans did not just live within parameters set by prevailing conditions, but that many groups actively modified the environment, at least on a highly localized scale.

Chapter 3

A Review of Paleoindian Research in Virginia and a View Towards The Future

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A state archaeological plan and research design for the earliest period of human occupation in North America and Virginia - the Paleoindian Period (ca. 16,000 - 10,000 BP) is proposed in this chapter. This general time span encompasses Pre-Clovis, Clovis, Mid-Paleo, and Late Paleoindian (Hardaway/Dalton) occupations in Virginia during the Late/Terminal Pleistocene epoch. The following sections briefly summarize the temporal context in greater detail, the environmental setting, and previous significant research. Then, relevant themes related to specific aspects of the Paleoindian occupation are discussed in terms of their data needs. Finally, research and management plans are presented to direct future Paleoindian Period studies in Virginia.

Temporal Period

Researchers have presented Paleoindian dates in different ways, and it is important to recognize these different methods of presentation to avoid confusion and misinterpretation (Boyd 2003). First, there is the traditional BC ("Before Christ") designation along with the BP (before present) designation. AD 1950 is considered "the present" for radiocarbon dates and is therefore used to calculate BP dates. BP dates are also referred to as 14C yr BP in many publications, since they represent uncorrected radiocarbon dates. Cal BP dates are calibrated radiocarbon dates which reflect calendar years before present and are therefore older than their uncorrected 14C counterparts. Also, the "ka" designation (thousands of years) is used for Optically Stimulated Luminescence (OSL) dates for sites like Cactus Hill (McAvoy et al. 2004; McAvoy and McAvoy 2015). The traditional beginning date for Clovis of 11,500 BP is actually 13,500 cal BP, or calendar years before present, when calibrated. The error increases with time so that a C- 14 date of 15,000 BP is 3,000 years too young and a date of 20,000 BP is approximately 3,500 years too young. These earlier true dates for Clovis and other Paleoindian manifestations provide a longer time frame for evolutionary genetic changes and linguistic changes to have occurred in early migrants to the New World.

The earliest Paleoindian dates in Virginia come from the pre-Clovis blade component features at the Cactus Hill site (44SX202), which have produced dates of 15,070 +/- 70 and 14,180 +/- 80 14C yr BP. When calibrated to calendar years, these dates average 17,650 cal BP with a range of 18,700-16,500 cal BP (McAvoy and McAvoy 2015:380). Several OSL dates of the pre-Clovis level average to 17.6 ka BP with a range of 20.5 –14.6 ka (McAvoy et al. 2004; McAvoy and McAvoy 2015:381). These combined dates support a pre-Clovis site occupation beginning as early as 18,500 calendar years BP (McAvoy and McAvoy 2015: 601). Cactus Hill has also produced a date on a Clovis hearth of 10,920 +/- 250 14C yr BP. A recent reevaluation of Clovis dates suggests that the Clovis time range —traditionally placed at 11,500–10, 900 14C yr BP—is much narrower, ranging from 11,050–10,800 l4C yr BP. Calibrations of these dates produce a minimum range of 13,125–12,925 cal BP (Waters and Stafford 2007), making Clovis a 200-year long "horizon" that rapidly spread across North America. The Cactus Hill date fits within this narrow range.

A Late Paleoindian—Early Archaic site with radiocarbon dates in Virginia is Brook Run (44CU122) in Culpepper County. This jasper quarry produced an early date of 11,670 +/- 330 14C yr BP which may reflect Paleoindian use, although no temporally diagnostic projectile points are in association with the dated contexts. In neighboring North Carolina, the Late Paleoindian Hardaway - Dalton Complex ranges between 10,500 - 9900 BP (Ward and Davis 1999). So the Paleoindian Period in Virginia - including pre-Clovis through Late Paleoindian - ranges from 18,500 - 11,500 calendar years B. P. (or 16,000 - 10,000 14C yrs BP).

Environmental Setting

Virginia today contains a variety of physiographic provinces including (from east to west) the Atlantic Coastal Plain, the Piedmont Uplands and Lowlands, the Blue Ridge, the Ridge and Valley Province and, in the extreme southwestern corner, portions of the Appalachian Plateau and the Cumberland Mountains (Fenneman 1938; Williams and Stoltman 1965*)*. Although Virginia remained unglaciated, because of its proximity to the Late Wisconsin Laurentide Ice Sheet, a permafrost zone extended into northern Virginia and affected the environment of its physiographic provinces in a variety of ways. With the post- 20,000 years BP retreat of the ice sheet, fairly rapid changes (geologically speaking) occurred in the environment which surely influenced the state's earliest human occupants.

Based on the evidence from the geological examination and dating of end moraines of the ice sheets, Late Wisconsin glacial ice entered the present continental United States from Canada before 23,000 BP, reached its maximum extent between 21,000 - 19,000 BP, and was completely gone from the U. S. by 9500 BP (Mickelson et al. 1983:29-30). Major ice lobes and sublobes were created along the southern margin of the Laurentide ice sheets as a result of the shape of the underlying terrain. The lobes directly to the north of Virginia which had the greatest effect on its environment were the Lake Erie and Lake Champlain-Hudson River lobes (Mickelson et al. 1983:4).

During the Wisconsin maximum, strong winds of cold, dry arctic air swept down from the ice sheets across Virginia to the Polar Frontal Zone 290 km south of the Virginia-North Carolina border (Conners 1986:5*)*. This cold air, converging with warm, moist air from the Gulf of Mexico, produced higher levels of precipitation along this zone. However, rainfall in Virginia during this period may have been 20-50 percent less than today.

In Virginia, glacial-stage temperatures were possibly 10 - 15 degrees Celsius colder overall than today, although seasonal differences may have been less extreme (Conners 1986:6; Kelly and Todd 1988:232). North of Virginia, a belt of treeless tundra as much as 150 km wide may have been seasonally occupied by human groups hunting tundra musk ox and caribou and exploiting the region's lakes and meltwater streams (Martin et al. 1985:18).

Another factor affecting the geomorphology of Virginia during the Late Wisconsin glacial stage was the existence of periglacial environments in the higher elevations of the Appalachians (Conners 1986:5-6; Pe'we' 1983:17), particularly in the permafrost zone in northern Virginia noted above. Periglacial environments exist in cold, unglaciated areas with intense frost action. With the demonstration of the former existence of permafrost in a region, a periglacial environment can be assumed: "Permafrost is defined as a thickness of soil or other superficial deposits, or even bedrock, that has been colder than 0 degrees C for two years or longer… "(Pe'we' 1983:157). Northern Virginia and the northern Appalachians were certainly areas of continuous or discontinuous permafrost (Pe'we' 1983:169). Other periglacial features of Wisconsin age such as rock streams in the Blue Ridge of Virginia, patterned ground, and block fields along the West Virginia - Virginia border suggest the existence of permafrost in the central Appalachians at higher elevations (Conners 1986; Pe'we' 1983:179). Vegetation studies (Woodward and Ruska 1986) also indicate a tundra environment certainly existed at high elevations in the Appalachians of Virginia during the Late Wisconsin.

In terms of the Late Wisconsin fluvial environment, there were generally large, fast- flowing rivers immediately south of the glaciers, which would be subject to seasonal flooding as a result of meltwater from the glacial front (Martin et al. 1985:18). Haynes (2000) has divided hydrologic changes into broad stratigraphic units for North America, noting a period of lake and stream shrinkage and erosion with the retreat of the glaciers ca. 16,000 - 13,000 BP. From 13,000 - 10,000 BP there is a transition from stream valley erosion to aggradation, reaching a peak of sedimentation between 11,000 -

10,000 BP. There is a brief erosional episode dating between 10,000 - 9000 BP, then the modern (Holocene) fluvial regime of alternating cycles of cutting and filling of streambeds becomes dominant.

One of the more dramatic geomorphological effects of the advance of the ice sheets was the lowering of sea levels due to the entrapment of water by the glaciers. At the height of the Wisconsin stage, worldwide sea levels dropped, on average, approximately 121 meters, and exposed much of the Atlantic continental shelf (Bloom 1983; Conners 1986; Curray 1965; Edwards and Emery 1977). During this time, the Chesapeake Bay would have been a large river valley (Bloom 1983; Martin et al. 1985). Along the Virginia coast, a sea level drop of only 6080 meters may have occurred, due to the depression of the earth's crust by the weight of the Laurentide ice sheet to the north (Bloom 1983; Conners 1986:17). The melting of this ice sheet produced variable effects on the Atlantic coastal shorelines from north to south, particularly between 16,000 - 10,000 BP. As a result of isostatic rebound of the earth's crust from the removal of the weight of the glacier, the coastal areas of New Jersey and Virginia rose during this time period, only to be gradually submerged again over the past 10,000 years to their present level (Bloom 1983).

The exposed continental shelf was likely a poorly drained, featureless plain with lagoons, estuaries, barrier islands, and a generally uniform environment (Conners 1986:17; Martin et al. 1985:16-17). Because of the lack of ecological diversity, the faunal population may also have been more uniform than that of the inland areas.

Although cold temperatures at higher elevations may have inhibited human occupation of parts of the Blue Ridge province, exposure of the continental shelf during the Late Wisconsin glacial stage and reduced seasonal variation in temperatures would have provided unique opportunities for Paleoindians. As Kelly and Todd (1988:232) state: "The Late Pleistocene [inland] environments of North America *lack modern counterparts* (emphasis mine)." The plant and animal communities of the Late Pleistocene were very diverse and complex, and several species whose present-day natural ranges do not overlap coexisted during the Late Wisconsin stage. These differences between past and present environments and resources underscore the difficulties in reconstructing Paleoindian lifeways.

Starting with the Late Wisconsin glacial maximum, a belt of tundra characterized by 25 percent herb pollen, along with birch, alder, willow and spruce, bordered the southern boundary of the Laurentide glacier, and "extended south along the crests of the Appalachians to the Great Smoky Mountains" (Delcourt and Delcourt 1981:145). Virginia, as well as much of the eastern United States down to Georgia, was dominated by a boreal forest including jack pine, spruce and fir species common to central and eastern Canada today. There were, however, open parkland areas in the region with various shrubs, grasses and herbs, but few deciduous trees (Guilday 1984). Thus, at the glacial maximum, boreal forests extended over 1000 km south of their modern distributions (Whitehead 1973). Along the Gulf and lower Atlantic Coast, a warm- temperate forest of oak, hickory, and southern pine existed.

Climatic change began as early as 16,500 BP, but at 14,000 BP, Virginia's vegetation was still dominated by boreal species. The mixed conifer-northern hardwood forest, containing oak, maple, and birch as well as pine and spruce, was moving northward with the retreat of the ice and may have been established in the Ridge and Valley of Virginia by 12,500 BP (Delcourt and Delcourt 1986). By 10,000 - 9000 BP in many areas boreal species had been replaced by mixed conifer-northern hardwood forest, or by a closed canopy deciduous forest characterized by oak, chestnut, and hickory. Hemlock appears to have been a dominant species in the Southwest Virginia Ridge and Valley and Blue Ridge, starting at 10,000 BP. Relict populations of spruce and fir continued (and still continue) to exist in the Appalachians at high elevations (Delcourt and Delcourt 1981; Whitehead 1973; Woodward and Ruska 1986). Not all deciduous trees expanded northward at the same rate, however; hickory, for example, did not expand into Virginia until about 9000 years BP (Watts 1983:305-306). Paleoindian peoples, particularly between 12,000 -10,000 BP would have been experiencing an evolving floral environment characterized by "…vegetational disequilibrium and dynamically changing landscapes..." (Delcourt and Delcourt 1986:33).

As noted above and as several other researchers (Graham and Lundelius 1984:224) have stressed, the Late Wisconsin floral environment was not strictly comparable to the modern boreal forest, and had a much greater diversity of plant species. Similar complexity of animal species in this ice age environment has also been

proposed, with both extinct and modern forms coexisting, and the sympatric distribution (or coexistence) of animals which are allopatric (or geographically separated) today (Graham and Lundelius 1984; Kelly and Todd 1988). Thus, changes in the animals of the Eastern Woodlands, as well as changes in the plants were significant in terms of their impacts on early hunter-gatherers.

Certainly the most significant and controversial changes in the faunal species across all of North America occurred at the Late Wisconsin to Holocene transition 12,000 - 10,000 BP. During this period, 33 to 35 large animal species became extinct (McDonald 1984:415). Although the radiocarbon record is biased, an analysis of over 300 dates and their associated fossils from 163 sites by Meltzer and Mead (1985), and extensive geomorphological and climatological studies by Haynes (1984), clearly document the extinction between 11,000 –10,000 BP of several large herbivores, including the mastodon, wooly mammoth, horse, camelids, and ground sloth, as well as carnivores such as the short-faced bear and dire wolf. None of these creatures survived into the Holocene in Virginia.

There is no disagreement about when this mass extinction occurred. The major controversy among paleozoologists concerns the cause of this demise of Ice Age animals. Since the early 1800s (Grayson 1984a), paleontologists and archaeologists have debated causes of this extinction, and are still debating them today. The two current major ideas proposed are the human overkill hypothesis and the climatic change hypothesis (Grayson 1984b). While the types of evidence and arguments used have changed over the past decades, the two basic positions can be stated as follows:

1. Overkill hypothesis - the primary cause of the extinction of Late Wisconsin megafauna was the intensive, specialized exploitation of these animals by Paleoindian hunters (see the articles by Agenbroad, Haynes, Martin and McDonald, which generally support this thesis, in Martin and Klein 1984).

2. Climatic Change Hypothesis - the primary cause of the extinction was a combination of rapidly changing environmental factors, including rising temperatures, sea level, and zonation of plant species at the Late Wisconsin to Holocene transition (see the articles by Graham and Lundelius, and Guilday in Martin and Klein 1984).

A recent reanalysis of Clovis radiocarbon dates as well as current geomorphological studies at several sites support a predominantly climatic change explanation, possibly due to an extraterrestrial event (Bever 2006; Firestone et al. 2007; Waters and Stafford 2007). Radiocarbon evidence suggests that "the extinction of mammoth and mastodon coincides with the main florescence of Clovis" (Waters and Stafford 2007:1124) around 10,900 14C yr BP (12,900 cal BP) However, this is also the beginning date for the Younger Dryas Glacial Event, which lasted from 13,000 to 11,600 cal BP. This was a "1,400 year-long cold spell that reversed the warming trend of the terminal Pleistocene" (Bever 2006:612). The effects of this event on human populations in Alaska, for example, were dramatic, leading to a major reduction in occupation or even regional abandonment (Bever 2006). More recent analyses indicate that the Younger Dryas actually coincided with the end of the Clovis Horizon (Anderson and Sassaman 2012: 56), thus suggesting environmental factors as important forces in cultural transformation.

One possible explanation for why the Younger Dryas occurred is the explosion of a comet above the Laurentide ice sheet north of the Great Lakes (Firestone et al. 2006). Ongoing research has identified several Clovis-era sites with lenses of extraterrestrial impact debris that separate Clovis from later occupations. So, the termination of Clovis and the Pleistocene megafauna might be coterminus due to this catastrophic climatological event. Recently, however, this hypothesis has been contested and is controversial (Surovell et al. 2009). Regardless of the cause of the Younger Dryas, when it ends warming and glacial melting begin again, leading into the Holocene (modern) geological epoch, which continues to the present.

In summary, the Paleoindian (especially Clovis) period of occupation in Virginia was one which experienced environmental changes in temperature, plant and animal expansion and extinction, and sea level. The Virginia Paleoindian peoples occupied was quite different in many respects from its modern environmental form.

Previous Research In Virginia

Paleoindian Research in Virginia up to 1989

Serious consideration of Paleoindian manifestations in Virginia began in the 1930s and 1940s, notably through the efforts of avocational archaeologist Dr. Ben

McCary who, in the 1940s, began a survey of fluted point finds in Virginia, publishing a description of his first recorded points in the *Quarterly Bulletin of the Archeological Society of Virginia* in 1947 (McCary 1947). Subsequent volumes of the *Quarterly Bulletin* continue to describe additions to this survey. McCary (1951) also introduced the larger professional archaeological community to the Williamson site in a significant *American Antiquity* publication. Another major milestone was the publication of *Paleoindian Research in Virginia: A Synthesis* in 1989 by the Council of Virginia Archaeologists (COVA) (Wittkofski and Reinhart 1989), which summarized major professional research on the Paleoindian Period to that point.

A brief review of the 1989 COVA Paleoindian volume and its comparison to more recent research illustrates some of the new directions Paleoindian studies have taken. In 1989, the major source for our understanding of the Paleoindian occupation of Virginia was the research conducted by William Gardner on sites like Thunderbird and Fifty of the Flint Run Paleoindian Complex (also known as the Thunderbird Archaeological District) near Front Royal in Warren County, northern Virginia (Gardner 1989).

Gardner (1989) proposed a chronology for the Paleoindian and Early Archaic subperiods, although, at the time, no Paleoindian contexts had been radiocarbon dated in Virginia (Barber and Barfield 1989). The Clovis fluted point tradition was considered the base culture, followed by a "mid-Paleoindian" manifestation characterized by a thinner, smaller projectile points with deeper basal concavities. Evidence for the selection of high-quality crypto-crystalline raw materials for projectile point manufacture—such as jasper from the Flint Run area and chert and chalcedony at the Williamson site in Dinwiddie County—led Gardner (1989) to propose a "lithic determinism" model to explain Paleoindian settlement patterns. Because of their preference for high quality stone, Paleoindians established quarry-related base camps (such as Thunderbird) from which more specialized task groups engaged in quarrying or food procurement would range. Sites produced by these specialized groups were smaller with lower artifact diversity than the base camps. Large sites like Williamson were likely areas of "macroband coalescence" (Johnson 1996:209) due to their biotic diversity *and* proximity to sources of high quality lithic material. Gardner (1989:39-40) considered the transition between his Paleoindian III and Early Archaic I phases to be characterized not only by a technological change to notched projectile points but by a major population increase as well.

In discussing settlement patterns, Turner (1989:79) noted two macroclusters of fluted point concentrations centered in Dinwiddie County on the Coastal Plain and in Mecklenburg County in the Piedmont, with lesser concentrations in Smyth County (related to Saltville) and the Flint Run area. As noted previously, there is a strong correlation between these areas and known outcrops of jasper, chert and chalcedony and the presence of ecotones and other environments rich in biota and other natural resources. Turner (1989:85) estimated at least three macrobands of 175 - 475 individuals were operating in Virginia by the end of the Paleoindian period. Turner (1989:82) summarized his view of Paleoindian settlement by stating that "in reviewing the limited data on Paleoindian settlement patterning and population distribution in Virginia, the recurring emphasis on high quality lithic resources suggests a strategy of tethered nomadism…with greater focus on foraging than collecting *(sensu* Binford 1980)."

In reviewing Paleoindian material culture, Johnson (1989) focused on lithic technology, since little else (except for the mid-Paleoindian structure postmolds at Thunderbird) was preserved or available for study. Johnson noted that the available evidence supported a biface and core-centered technology for Clovis with little evidence for blade production. Although he, too, emphasized the intentional selection of high quality stone for tool production, Johnson (1989:121-123) stressed "lithic influentialism" - where stone resources are important, but not always the primary consideration in settlement location - as characterizing many Paleoindian sites. For example, there is a significant percentage of fluted points made of locally available quartz and quartzite from the Piedmont and Tidewater regions, even when higher quality chert resources were available. Since 1989, most significant research on Paleoindian cultures has been focused on the eastern part of the state. Sites such as Cactus Hill (see below) have not only produced information that is important at the state level, but at the national and international levels of research as well.

Major Research Since 1989

Nottoway River Survey. McAvoy's (1992) description of Paleoindian raw material use and settlement patterns along the Nottoway River drainage in southeastern

Virginia provided important new information on this portion of Virginia. A restricted settlement pattern of quarry- based sites and small hunting camps along the river was identified, along with several microband territories averaging 70 x 40 miles in area (McAvoy 1992; Johnson 1996). Following Gardner (1989), the Williamson site was interpreted as a macroband interaction center due to the diversity of lithic raw materials the site has produced. These data further support an interpretation of Virginia Paleoindians as following a pattern of more restricted mobility, coupled with a diversified use of resources and periodic interaction and exchange with other groups of hunter- gatherers (Johnson 1996).

A recent (March, 2017) communication from Joseph McAvoy indicates that the Nottoway River Survey (NRS) is still active and has identified a quarry-related Clovis camp/manufacturing site in Brunswick County, Virginia, associated with the Brunswick County chert quarry referenced in their survey reports. They are preparing a detailed report on this site. McAvoy also notes that several research entities (including the Smithsonian) have expressed an interest in further analysis of the NRS collections, which are in storage and organized by site, excavation area, unit, and level.

Cactus Hill (44SX202). This internationally significant site, located in a sand dune adjacent to the Nottoway River in Sussex County in the Coastal Plain of southeastern Virginia, has been the focus of intensive excavations since 1993 (McAvoy and McAvoy 1997, 2015; McAvoy 2000; McAvoy et al. 2000). A major site report (McAvoy and McAvoy 1997) summarized the excavations between 1993 -1996. More recent work has been summarized in papers and in a report to the National Geographic Society (McAvoy et al. 2000; Parfit 2000) and in *The Nottoway River Survey Part II* (Boyd 2016; McAvoy and McAvoy 2015). Site Areas B, D, and A-B were the major areas of excavation by McAvoy, while Area A was excavated by Johnson (1997) and members of the Archeological Society of Virginia.

Cactus Hill is a multicomponent site with significant Early and Middle Archaic occupations. Areas A, A-B, and B also produced Paleoindian artifacts in correct stratigraphic position below the Early Archaic materials. A Clovis component, characterized by Clovis points of chert and quartz, as well as endscrapers, gravers, and other artifacts, was associated with a hearth in Area B (Unit 1/9, Level *5)* which produced a date of 10,920 +/- 250 BP from southern hard pine charcoal (McAvoy 2000). This was the first securely dated Clovis feature from any site in Virginia. A slightly later mid-Paleoindian occupation, identified in Areas A and B of the site, was characterized by fluted points with deeply concave bases made from non-local rhyolites, jasper, quartz crystal, and quartzite.

Beneath the Clovis layer, in Area B, Level 6, a hearth-like feature with a concentration of white pine charcoal in association with prismatic blades was dated to 15,070+/-70 BP (Hall 1996). A second date of 16,670 +/- 730 BP was obtained from another concentration of charcoal associated with a blade cluster in Area A-B, Level 10 (McAvoy and McAvoy 1997: Addendum). It is now estimated that there may be between three and five pre-Clovis occupations at Cactus Hill characterized by the production and use of prismatic blades and blade cores made from local fine-grained quartzite and local cherts (Joseph McAvoy, personal communication, 2000). Analysis and experimental replication of blades and cores has documented two types of cores; conical platform cores used in the production of blades or elongated flakes and circular cores (Callahan 2000). Cores were initially prepared as preforms elsewhere, then brought to the site for blade and flake production. Production was likely by simple direct percussion with a soft stone, wood, or antler billet (Callahan 2000). The blade technology and the predominant use of quartzite are quite different from the later Clovis lithic technology. There apparently are at least two pre-Clovis components of the Nottoway Blade Complex (McAvoy and McAvoy 2015): an earlier blade and core- producing component; and, a later component making smaller blades and thin, lanceolate unfluted points (McAvoy and McAvoy 1997, 2015), which may pre-date Clovis by 1000 - 2000 years. Some researchers (Tom Dillehay, personal communication, 2000) have noted a strong morphological similarity between these unfluted points from Cactus Hill and the Miller Lanceolate point from Stratum IIa at Meadowcroft Rockshelter, Pennsylvania, dating ca. 13,000 BP (Adovasio et al. 1978; Collins 2000).

Subsequent research in 1997 and 1998 at Cactus Hill has focused on independent confirmation of the previously discovered pre-Clovis data and geological trenching to (1) test for the possibility of charcoal contamination, (2) estimate when dune formation began, and (3) more fully document site integrity through pedological analysis

(McAvoy et al. 2000). Excavations of Area A-B in 1997 identified several clusters of prismatic blades and two possible hearths below Clovis materials. Both hearths were associated with blades and contained charcoal and calcined bone, and one contained a fragment of a burned bone awl or dart point (McAvoy 2000).

In 1998, two geological trenches (Trenches 1 and 2) were excavated in Area A-B and a third trench (Trench 3) cross cut Area B (McAvoy et al. 2000). Excavations in Trench 3, Level 14 (below the 15,070 BP level) recovered a few flakes and part of a wedge made from white quartz. Charcoal from Trench 1 (Area A-B) produced an AMS date of 16,940 +/- 50 BP; the charcoal was approximately one inch beneath the hearth with the burned bone tool fragment described above (McAvoy 2000). This date corroborated the previous date of 16,670 BP from the lowest blade levels in Area A-B (McAvoy and McAvoy 1997). More recent analysis, however, suggests that the 16,670 and 16,940 dates are from natural charcoal, and not hearths (McAvoy and McAvoy 2015: 380-381).

Optically stimulated luminescence (OSL) and infrared stimulated luminescence (IRSL) dates, as well as C-14 dates, all suggest initial dune development beginning ca. 25,000 - 30,000 cal BP, well before the earliest Clovis at 13,500 cal BP (Feathers et al. 2006; McAvoy et al. 2000:14). This is significant, in that it weakens the hypothesis proposed by C. Vance Haynes that older charcoal from natural fires could have been incorporated into eolian sand as the dune was forming ca. 11,500 BP, thus producing the older (pre-Clovis) dates (McAvoy et al. 2000:5).

Immunological analyses were conducted on 10 Clovis artifacts from Cactus Hill (Newman 1997). Three artifacts produced positive reactions to bovine antisera (suggesting processing of bison or musk ox), one to deer, one (a fluted point) to elk antisera, and two to rabbit antisera. One graver reacted positively to both bovine and rabbit antisera.

Microwear analysis of pre-Clovis blades and projectile points showed hafting traces on several blades as well as dry hide polish, suggesting their use as hafted scraping tools. The triangular projectile points were basally thinned and also showed hafting traces. One point had an impact fracture, indicating that it had indeed been used as a projectile (Kimball 2000).

The pre-Clovis components at Cactus Hill have been extremely well documented and have been subjected to multidisciplinary analyses by several highly qualified outside observers. There is clear recognition of this site by most researchers (with some exceptions – Fiedel (2013)) as verifying a pre-Clovis occupation of North America (Begley and Murr 1999; Dorfman 2000; Parfit 2000). More recent research (Macphail and McAvoy 2008; McAvoy et al.2004; McAvoy and McAvoy 2015; Wagner and McAvoy 2004) has produced a detailed reconstruction of geomorphological site development and micromorphological analysis of soil horizons. These studies, along with the average OSL date of 17.6 ka which is temporally comparable to the 15,070 +/- 70 and 14,180 +/- 80 14C yr BP dates from the pre-Clovis hearths at Cactus Hill, further support the existence of a pre-Clovis occupation. As McAvoy et al. (2004:13) state, "It is concluded that the Cactus Hill site was occupied before Clovis."

Joseph and Lynn McAvoy have recently published their *Nottoway River Survey Part II* (2015) volume, which summarizes the major work of the survey since 1979, with a focus on the nine excavated sites (most notably, Cactus Hill) and new information on these sites and other new discoveries, including the Little Rocky Creek Clovis base camp and quarry site in Hanover County. The report clearly defines the pre-Clovis Nottoway Blade Complex stratigraphically identified at Cactus Hill and dated to approximately 18,500 – 14,500 cal BP. In response to continued criticism about stratigraphic integrity (Fiedel 2013), the report documents in detail pedological and phosphorous content analyses and optical stimulated luminescence dating that provides strong support for the integrity of their pre-Clovis components. As noted above, the pre- Clovis components are now accepted by most researchers and the McAvoys' most recent report clearly documents and justifies this interpretation. It is nice to see that Cactus Hill is now recognized in more popular scientific literature as a pre-Clovis site (Morton 2017), something that was not regularly done in years past.

Williamson (44DW1). In early 1999, the Nottoway River Survey conducted a six - month survey and testing project on the Williamson site in Dinwiddie County in southeastern Virginia using funding from the VDHR Threatened Sites Program. The major goal of the project was to see if undisturbed deposits remained beneath the plow zone of the cultivated peanut fields on the site. Based on previous research, McAvoy selected eight areas in the plowed fields for auger and shovel testing (Hall 1999;

McAvoy and McAvoy 2003). Most of these locations produced evidence for undisturbed sub-plow zone contexts of probable Clovis age up to seven inches thick. Four of these areas (2, 3, 6, and 7) were selected for 100 square foot test excavations. Area 2 contained fragments of two fluted points made of non-local metavolcanic materials; Area 3 contained charcoal in association with prismatic blades, some of which were similar in form to the pre-Clovis blades from Cactus Hill. Areas 6 and 7 also produced many artifacts from the subsoil beneath the plow zone. No Clovis period radiocarbon dates were obtained from the charcoal samples. Even so, the testing showed that, in spite of modern agricultural disturbance, intact deposits remain beneath the plow zone at the Williamson site, "possibly the largest [covering 55-75 acres (Barber and Barfield 1989)] Clovis chert quarry and base camp in all of North America" (Hall 1999:11; see also McAvoy and McAvoy 2015).

Brook Run (44CU122). This jasper quarry site in Culpepper County, in the Piedmont of northern Virginia (southeast of Thunderbird), was discovered during the course of an archaeological survey for a Virginia Department of Transportation (VDOT) road-widening project (Monaghan et. al. 2004; Voigt 2001; Voigt et. al. 2004). Initial shovel tests and test units produced nearly 12,600 artifacts, most of which were made from locally available jasper. Data recovery excavations between May 2000 and March 2001 produced nearly 700,000 jasper artifacts from a jasper fault that was extensively mined by prehistoric flintknappers for raw material.

Possible Clovis use is suggested by recovery of a hafted end scraper made on a prismatic blade and chisel wedges comparable to those from other Clovis contexts (Voigt et. al. 2004). One date from white oak wood charcoal (Feature 3) of 11,670 +/- 330 BP also suggests possible late Paleoindian use of the site, although no temporally diagnostic Paleoindian projectile points have been identified in analyses (VDOT 2001; Voigt et. al. 2004).

A Late Paleoindian/Early Archaic component is noted, based on dates of 11,265 to 11,200 cal BP associated with two rock hearths. Two later Early Archaic components (Kirk Corner Notched and Kirk Stemmed) were also identified (Voigt et. al. 2004).

Initial analyses of wood charcoal and pollen suggest the site was surrounded by a mixed conifer/hardwood forest with some species, such as eastern hemlock, reflecting a transitional Pleistocene/Holocene vegetation, corroborating the C-14 dates. The majority of the dates and temporally diagnostic Early Archaic points indicate intensive mining by the early Holocene (ca. 10,000 BP), with prehistoric site occupants excavating pits into the jasper fault with bifaces and hammer stones (VDOT 2001; Voigt 2001; Voigt et. al. 2004). The site was apparently not quarried after the Early Archaic Period.

Other Paleoindian Research. Research has continued on other Paleoindian sites through the efforts of Mike Johnson, retired Fairfax County archaeologist (Michael Johnson, personal communication, 2007, 2009). Applying site location and geomorphological data from Cactus Hill, Johnson has tested a predictive model of site location and has found two additional sites with Clovis components along the Nottoway River in Sussex County. These sites—44SX327 (Blueberry Hill) and 44SX360 (Rubis - Pearsall)— produced buried Clovis artifacts from limited testing (Michael Johnson, personal communication, 2007, 2009). Johnson plans further work at both sites.

Stratified Paleoindian sites have also been documented along the upper Roanoke River in the Leesville/Smith Mountain Lake area (Childress and Blanton 1997; Gingerich 2016; Gingerich et al. 2015). These are currently being investigated not only for their well-defined Paleoindian to Early Archaic components but also to document variation in lithic resource use over time and environmental and climate change tied to the Younger Dryas and the Pleistocene/Holocene transition.

The controversial *Cinmar* site should also be mentioned. The "site" is actually a bi-pointed biface dredged up by the scallop trawler *Cinmar* in 1970 off the coast of Virginia (Stanford and Bradley 2012; Eren et al. 2015). Mastodon bones dated to 22,760 +/- 90 14C yrs. BP were also recovered in the same general location, but their association with the point is unknown. This discovery has been used as a major stimulus for the theory touting Solutrean origins for Clovis and the pre-Clovis migration of Upper Paleolithic populations from Europe across the Atlantic to North America (Stanford and Bradley 2012). This sensational idea is not supported by most North American archaeologists.

In summary, recent archaeological investigations of Paleoindian sites in Virginia have identified and substantiated a viable candidate for pre-Clovis occupation (Cactus Hill), developed a predictive model of site location using Cactus Hill, confirmed the

existence of intact Clovis-age deposits at the Williamson site, demonstrated further evidence of the importance of high quality lithic raw materials for mid-Paleoindian and Terminal Paleo/Early Archaic hunter- gatherers in Virginia, and produced a range of new radiocarbon dates. Current Paleoindian research has shifted from the Flint Run-Front Royal area to other regions of the Commonwealth, especially the southeastern Coastal Plain area and the upper Roanoke River. A private archaeological research entity, the Nottoway River Survey, has taken the lead in Paleoindian studies by its work at Cactus Hill, Williamson and other sites. No state or federal funding or university support is currently being explicitly used for Paleoindian research in Virginia.

Physiographic Provinces And Themes

While some physiographic regions of Virginia have experienced long-term, intensive investigation of Paleoindian (or purported Paleoindian) sites, other areas have only produced scattered fluted point finds from surface or disturbed contexts. As noted above, the physiographic regions for which we currently have the most information are the Coastal Plain (Cactus Hill, Williamson, the Nottoway River Survey), the northern Shenandoah Valley (Thunderbird and the Flint Run Paleoindian Complex), and the Valley and Ridge of Southwest Virginia (the late Pleistocene sites in Saltville).

For the major Virginia physiographic provinces, recent (fall, 2014) site data compiled by V-CRIS from the Virginia Department of Historic Resources site files list 18 recorded Paleoindian components in the Valley and Ridge Physiographic Province. Six of these sites are in Warren County and are associated with the Flint Run Paleoindian Complex. Thirty distinct Paleoindian components are recorded for the Piedmont Province. Thirty-three components, including Cactus Hill and several sites in Northampton, Sussex, and Prince George Counties, are recorded for the Coastal Plain Province. Three sites with Paleoindian components are recorded for the Blue Ridge and four coastal underwater sites are also recorded. So, the number of recorded sites (n=88) by physiographic province is relatively small. However, there are actually 240 separate sites with Paleoindian components recorded in Virginia; for the majority of these, the physiographic province was not listed on the site form. VDHR will attempt to rectify this problem for newer site forms (Thomas Klatka, personal communication, 2014). There are also now well over 1,000 fluted points recorded for the McCary Survey (Hranicky 2009). As of early 2017, no new Paleoindian sites have been recognized in Virginia beyond the 2014 numbers (Mike Barber, personal communication, 2017). However, there is a problem in gaining current site information. V-CRIS no longer includes "Time Period" as a search criterion (Tom Klatka, personal communication, 2017). This is surprising, and one recommendation that goes beyond this review of the Paleoindian Period is that the query screen for V-CRIS needs to be reconfigured so that recorded data for this very important descriptive variable and other pertinent information for sites is accessible, regardless of time period.

Even in the areas where Paleoindian components have been identified, the research themes of material culture/chronology, settlement patterns, economic organization, social/political organization, and religious organization can certainly be examined more fully.Given the time period and limited available physical evidence from most sites, this goal may not be possible. Even so, archaeologists should still strive to address these research themes, when available data allow. For this reason, I will discuss the research strengths, weaknesses and needs for each theme as broad statewide issues which crosscut all physiographic provinces and regions, while focusing on the few specific sites that do provide us with some potential.

Relevant Themes In Paleoindian Research In Virginia

Material Culture and Chronology

The McCary Fluted Point Survey (with well over 1000 specimens recorded) and the Nottoway River Survey data - particularly from Cactus Hill - provide extensive examples of Paleoindian projectile points and other lithic tool morphology (Boyd 2003). However, with one recent exception (Hranicky 2009), there has been no systematic synthesis of these data or metric analysis of projectile point morphology whereby morphological type clusters of artifacts can be distinguished and compared to each other and to other data (locational and chronological information, for example). Hranicky's (2009) assessment

of raw material frequencies of points and their spatial distribution, using the McCary Survey points, is an initial step which should be expanded. However, it should also be stressed that new points submitted for inclusion into the McCary Survey should be carefully vetted to avoid fraudulent recent reproductions being added to this important data base.

Since lithic artifacts are clearly the predominant material culture remnant of Paleoindian life preserved in Virginia, a suite of variables beyond raw material type should be analyzed in a more comprehensive and detailed manner. This includes not only statistical morphometric analysis of projectile points but also microwear analysis and, when possible, blood residue analysis (as was conducted on some Cactus Hill artifacts) to more precisely define artifact function. Artifact clusters from specific physiographic provinces and river drainages could be compared to possibly identify distinct groups (or "bands") based on subtle morphological as well as raw material variability. Joseph McAvoy (personal communication, 2016) has expressed a willingness for others to analyze the Nottoway River Survey data to address new questions using new analytical methods.

As always for such early temporal periods, additional radiocarbon and other (OSL) dates are necessary to more precisely define the transition between pre-Clovis, Clovis, and Late Paleoindian subperiods. An over-reliance on the data from Cactus Hill (as was the case 20 years ago with Thunderbird) will produce biased conclusions not reflective of other regions of Virginia. Although pre-Clovis activity at Saltville, Virginia (Fiedel 2013; McDonald 2000), for example, is controversial, there is better organic preservation in the karst environment of the Valley and Ridge of Southwest Virginia as opposed to the Tidewater region. Therefore, more intensive research should be focused in these areas likely to produce a more diverse material culture record and ecofacts suitable for dating.

Settlement Pattern

Identification of the single example of Paleoindian architecture—the structure (or overlapping structures) at Thunderbird—may never be duplicated, because of the assumed ephemeral, short-term patterns of Paleoindian site occupation. Turner's (1989) proposition of a "tethered nomadism" pattern, with foraging bands loosely tied to high quality lithic resources, does not easily lend itself to the discovery of occupation sites. A generalized foraging pattern for Paleoindians in the more diverse environment of the Southeastern United States (and consequent low site visibility) has also been supported by other researchers (Ward and Davis 1999). Exceptions are the Williamson site, where repeated occupation is more evident, and other quarry sites with high-quality stone resources. Exploration of the areas with undisturbed Clovis deposits at Williamson, as documented in McAvoy and McAvoy (2003), could possibly define more robust Paleoindian occupations, features, and site plans/organization.

While Turner's (1989) "tethered nomadism" settlement pattern and Gardner and Johnson's (1989) views of the importance of high-quality lithic resources and their influence on mobility are significant beginnings, they also reflect the "lithic bias" in Paleoindian evidence. More detailed studies of lithic sources could better define mobility by tracing the location of non-local raw materials (as was initiated by Nash [1998] for sites in Madison County). Joseph and Lynn McAvoy have also extensively used lithic raw material distribution to define population/band movements (McAvoy and McAvoy 2015). For example, they have noted variability in mobility patterns, indicating that some Clovis groups moved unidirectionally (from north to south) rather than cyclically in southeastern Virginia.

Mapping these mobility patterns against plant and animal resources likely available in different regions could provide a better understanding of the probable patterns of exploitation of non-lithic resources by Paleoindians, even without direct ecofact remains. An example of this type of research is Mike Johnson's (personal communication, 2007), who has developed a predictive model for site location along the Nottoway River using topographical data from Cactus Hill.

Finally, examining proposed Paleoindian settlement patterns in the greater Southeast can provide useful models for population movement and clustering in Virginia. Anderson and Sassaman (2012:50) stress a "place-oriented" model, based on the distribution of Clovis artifacts and sites. Populations favored areas along major rivers with rich plant and animal resources, as well as lithic raw materials, and used these as "staging areas." This hypothesis is comparable to Turner's "tethered nomadism" model noted above.

Economic Organization

It is assumed that Paleoindians relied on gift exchange or reciprocity as their form of economic exchange, as exemplified by band-level societies of the ethnographic present. Again, documenting artifact clusters of non-local lithic material at large sites (like Williamson) and the stages of manufacture of local and non-local lithics may provide insights about Paleoindian exchange. Are non-local raw materials always in the form of finished or "highly curated" (exhausted) tools, or are non-local materials being introduced in less-finished form? The former case appears to be the norm for many sites, but more detailed analyses of all artifacts (including debitage, cores, and blanks) and the various stages of manufacture they represent is needed to fully examine the question of trade or exchange between groups.

Another aspect of economic organization is subsistence. While direct subsistence evidence may be almost impossible to obtain, due to preservation difficulties, indirect evidence may be collected by microwear analyses of stone tools (Kimball 2000), as noted above.

Social Organization

Again, it is assumed that Paleoindian groups were organized as decentralized bands, with periodic "place oriented" (see above) macroband interaction evidenced at larger, more complex, sites (like Williamson). This is certainly a valid assumption, given the sparse evidence for Paleoindian occupation over much of the Commonwealth and the very short-term occupation of even well - documented sites like Cactus Hill (McAvoy et al. 2004). Defining specific macrobands and their distribution, as Turner (1989) attempted, will, by necessity, be based on detailed lithic analysis and sourcing of lithic materials. Such analysis has been initiated by the Nottoway River Survey (McAvoy and McAvoy 2015).

Religious Organization

This is clearly the most difficult theme to address for Paleoindians, as it is for other very ancient peoples. There would be a need to identify clear ceremonial features or burials through both extensive and intensive excavation to begin to address this theme. This would first require the identification of promising sites and then the solicitation of funding (through grants or governmental support) for excavation. Of course, if they are ever identified in Virginia, Paleoindian burials would be subject to the legal restrictions that apply to other unmarked graves.

Summary and Recommendations

While the Paleoindian record of Virginia is rich and internationally significant, no comprehensive state - or university - supported research program exists for the investigation of Paleoindian sites or material culture. Instead, private organizations and individuals using their own funds are the only entities actively researching the Paleoindian Period. The most active current research is in Sussex County and surrounding areas in southeastern Virginia and along the upper Roanoke River. Because of extreme age and the vagaries of preservation, Paleoindian material culture is almost entirely defined by lithic artifacts. Exceptions are charred ecofacts (specifically, burned wood) which can be identified as to species and radiocarbon-dated. Given the available data base, there are several research needs which can be more fully addressed. There are also several research goals which will require further field investigations. Research recommendations are listed below:

Current Research Needs and Possibilities

- Comprehensively evaluate the projectile points from the McCary Fluted Point Survey to assess data reliability and utility for more detailed metric and raw material analysis (more detailed recordation of points submitted to the survey has recently begun to be addressed; see http://mccary-survey.com); allow for the sharing of this data base with professional archaeologists for further research;
- Conduct a detailed multivariate metric analysis and raw material sourcing of artifacts from known sites and well-developed contexts (like Cactus Hill, Williamson, and other sites recently under investigation);
- Solicit funding (from private, state, or federal sources) for more radiocarbon and OSL dating of extant samples or known sites;
- Conduct more extensive microwear and blood residue analysis of Paleoindian tools from well-developed contexts to help determine artifact function and define site activities;

- Involve graduate students from the University of Virginia or The College of William and Mary in Paleoindian research projects for Master's theses or Doctoral dissertations. There is much work to be done on already existing collections, like those from southeastern Virginia (McAvoy and McAvoy 2015).
- At the state government level, the VDHR should be able to comment on CRM project designs (*not* just finished project reports) and require more stringent research methods from CRM firms conducting work in areas where there is a high probability of finding ephemeral Paleoindian sites. This means closer shovel test intervals and deep site testing (backhoe trenches, for example), especially along floodplains;
- Paleoindian field research—whether part of a CRM project or "pure" research—should involve an interdisciplinary team of scientists (especially geomorphologists, but also zooarchaeologists, paleobotanists, etc.) to fully and professionally evaluate all classes of data in the field and later in the laboratory.

Future Research Goals and Needs

- Enhance a program for funding research (possibly through external grants) at the state level (through VDHR);
- Develop university-based, long-term research programs on the Paleoindian Period, using the Sussex County research as justification and support for funding solicitation; Due to the post-glacial rise in sea level and the consequent flooding of potential Paleoindian occupation sites along coastal areas and the Chesapeake Bay, develop research plans and funding for an underwater archaeology survey for Paleoindian through Mid-Holocene sites (Blanton 1996; Turner 1990:160);
- Encourage preservation of known sites or potential site locations, such as sand quarry sites in Southeast Virginia and the Williamson site (where agricultural activities should be altered, as noted in McAvoy and McAvoy (2003));
- If some of the above sites or areas cannot be preserved, obtain landowners' permission to conduct extensive and intensive excavations of threatened site areas (using Threatened Site funds, university field schools, Archeological Society of Virginia chapters, the Archeological Technician Certification program, or other resources) to recover needed information on site plan and, possibly, artifacts and ecofacts that would address the themes noted above;
- On the part of the professional archaeological community, actively refute and discourage unfounded claims about Paleoindian sites and artifacts from "fringe" elements of the population (Boyd 2014; Hranicky 2014a, 2014b.).

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Chapter 4

Archaeology Of Virginia: The Early Archaic

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Period Summary

Chronology: 8000–6500 BC (Broyles 1971, Chapman 1977, Coe 1964, Egloff and McAvoy 1990, Gardner 1977, Geier 1990, McAvoy1992 and McAvoy and McAvoy 2015).

Diagnostics/Material Culture: The temporally diagnostic artifacts for the Early Archaic include a series of notched points as well as one stemmed type. The series begins with the Paleoindian transitional Hardaway side-notched and progresses through Charleston Corner-Notched, Palmer and Kirk, Amos, Warren, Big Sandy, Kessell, and terminating with Kirk Stemmed (Appendix I). The period ends with the development of the bifurcate tradition. Thumb-nosed scrapers, which first appeared in Paleoindian times, continue through the Early Archaic. Notable is the complete lack of ceramics.

Settlement Pattern: It has been suggested that the location of cryptocrystalline lithics was the central focus of the Early Archaic settlement pattern having a direct continuity with the earlier Paleoindian Period (Custer *et. al.* 1982; Daniel 1996; Gardner 1977, 1989). While the procurement of lithics was surely one of the needs during Early Archaic times, subsistence activities, the exchange of information, the search for mates, and other raw materials most likely out-weighed the quest for rocks. By Early Archaic times, the utilization system included all types of terrain, from the western mountains to the then terrestrial continental shelf. When mapping the distribution of Early Archaic sites on the landscape, two areas become the focus—the travelways of the Ridge and Valley and the Fall Line. Both areas provide an ecotonal situation where varied physiographic features could be exploited. Such a settlement pattern cross-cuts several major drainages as opposed to following river systems. Utilizing a collecting strategy, a series of base camps were served by smaller exploitive camps.

Economy: Foodways were based on hunting and gathering. Although we have little direct evidence of the species exploited (Wythe 1990), later time periods suggested, while a broad range of species were harvested, the prime species taken was *Odocoileus virginianus* (white-tailed deer). With the increased biotic production of the hardwood forests and warming trends, nuts and seed crops were likely to have been heavily exploited.

Exchange systems are not well-known for this period. With the primary artifact type being lithics, it appears that the trading of stone or stone tools was fairly limited with locally available rocks utilized.

Social/Political Patterns: Social organization was at the band level of society with groups of 25– 50 people operating as a unit. Settlement patterns followed a fusion/fission model with bands coming together during certain periods and then breaking up into the smaller micro-bands. The social system was egalitarian with some roles based on age or sex. Leadership was situational based on individual ability. Bands were exogamous and partrilocal with marriage partners selected from other bands and wives moving to the husband's band (Service, Sahlins 1972).

Important Sites: Thunderbird (44WR0011) (Gardner 1977, 1989), Cactus Hill (44SX0202) (McAvoy 1997; McAvoy and McAvoy 2015), Daughtery's Cave (44RU0015) (Benthall 1990), Deer Cave Rockshelter (44WS182) (Barber 2005), Pine Ridge Reduction Station (44SC0095) (Rogers and Barber 1992), Fraley Site (44WS121) (Barber 1994).

Introduction

American archaeology has moved well beyond the new archaeology and processual archaeology into post-processual hyper-relative approaches. While current majority rule may eschew both positivistic and environmental paradigms, many archaeologists (e.g., Trigger 1998, VanPool and VanPool 1999) have not rejected culture process, cultural ecology, or scientism as inconsistent with archaeological goals. As most of the work within the Commonwealth currently and in the recent past has remained within a processual framework, that approach will be used in this discussion.

Although a lot has occurred in American archaeology over the almost 20 years when *Early and Middle Archaic Research in Virginia: A Synthesis* (Reinhart and Hodges 1990) was compiled, the data has remained relatively consistent. There are no temporal upheavals as with the Paleoindian Period or a plethora of new studies as with the Contact Period. At the same time, however, the data can now be viewed within new infrastructures. In the 1970s and early 1980s, much time was spent in developing models. Through the late 1980s and 1990s, the models were used on an expansive basis and were and are widely accepted as the primary organizing approach. It may now be time to examine the models in-hand, evaluate their efficiency in exposing the past, and attempt to apply new strategies.

Chronology And Material Culture

The array of tool types which archaeologists normally associate with the Early Archaic of Virginia and, for that matter, the Middle Atlantic and Southeast, have been outlined by Egloff and McAvoy (1990) and Geier (1990). Projectile point typologies begin with the notched regimes (Egloff and McAvoy (1990:65) with small Hardaway side-notched and proceed temporally through Palmer, Kessell, Charleston, Amos, and Kirk notched with some overlap. Kirk stemmed is interpreted as transitional into the Middle Archaic with the bifurcates marking the onset of the Middle Archaic at about 6500 BC In southeastern Virginia, the most recent types include Decatur and Fort Nottoway.

The technology for the production of projectile point and most other tools is bifacial in nature with cores or large flakes reduced into functional tools by the removal of flakes from both sides. Although bipolar and flake-and-core techniques were know to be minor stone tool production techniques during the Archaic, bifacial reduction was generally followed with a sequence of hard hammer, soft hammer or baton, and pressure flaking. Hard hammer is a rock on rock technique where harder stones are used as "hammers" to shape more brittle stones into the general form of the tool. Waste flakes removed during this stage are usually broader than they are long. Dependent on material type, the outer rind or cortex may be present. Soft hammer or baton reduction utilizes a softer material such as antler or wood to strike the tool edges in order to thin the tool. Flakes removed in this manner or usually longer than they are broad and much thinner than primary flakes. Finally, pressure flaking with an antler tip is used to sharpen the tool and straighten the blade edge.

The chronology for Early Archaic points typologies built elsewhere (Coe 1964, Broyles 1971, Ritchie 1965, Chapman 1977), has been reinforced by the work of Gardner (1977, 1989) at the Flint Run Complex and Benthall (1990) at Daughtery Cave in the Ridge and Valley and that of McAvoy (1997) in Sussex County on the Coastal Plain (it should be noted that BP dates are calculated using January 1, 1950). While McAvoy (1997:181–184) adds some local variants and more refined time lines, the sequence remains intact. The chronology for projectile points as constructed by McAvoy on the Coastal Plain is as follows:

Hardaway Side-Notched	8450 – 7550 BC	(10,400 – 9500 BP)
Charleston Corner-Notched	7950 – 7450 BC	(9900 – 9400 BP)
Palmer/Kirk	7450 – 7050 BC	(9400 – 9000 BP)
Decatur	7300 – 7000 BC	(9250 – 8950 BP)
Fort Nottaway Side-Notched	7000 – 6800 BC	(8950–8750 BP)

The chronology and point typologies are further discussed by McAvoy and McAvoy (2015) in their more recent study of the Nottoway River Valley. In addition, Egghart (2016) discusses the implications of the surface collected Ogle collection for Virginia Southeast Region.

Gardner (1989:5-12) reconstructed the Early Archaic projectile point chronology for the Ridge and Valley as follows:

Early Archaic I (Palmer, Kirk, Amos)	8000 – 7500 BC	(9900 – 9450 BP)
Early Archaic II (Warren, Big Sandy, Kessell)	7500 – 7200 BC	(9450 – 9150 BP)
Early Archaic III (Kirk Stemmed, etc.	7200 – 6800 BC	(9150 – 8750 BP)

MacCorkle forms have also been identified in contexts west of the Blue Ridge. A radiocarbon date obtained from the Deer Cave Rockshelter in Wise County on the Appalachian Plateau reinforced the dating with an intercept of radiocarbon age with calibration curve of 8210 BC for the Palmer level (Barber 2005).

In his summary of projectile point and associate dates, Egloff (n.d.) presents the following chronology:

Big Sandy	9000 – 7500 BC	(7050 – 5550 BP)
Charlestown	8000 – 7500 BC	(6050 – 5550 BP)
Palmer	8000 – 7200 BC	(6050 – 5250 BP)
Kirk Corner-notched	7400 – 6500 BC	(5450 – 4550 BP)
Decatur	7200 – 7000 BC	(5250 – 5050 BP)
Fort Nottoway	7000 – 6700 BC	(5050 – 4750 BP)

Discrepancies within the typologies can be seen as regional differences based on local influences extending into North Carolina on the Coastal Plain and into the Midwest for the mountains. Broader than river drainage system, which the typologies seem to cross-cut, the regions may more readily adhere to physiographic provinces with interactions crossing zones in ecotonal situations after (Schiffer 1975) and in opposition to the riverine model of Anderson and Hanson (1988). Hantman (1990) had previously presented these as models to be tested; for Virginia, at least, a physiographic orientation seems to have prevailed. With regard to the Blue Ridge, for example, one site (44BE0259) at the Peaks of Otter shows material culture influences in the form of quartz from the Piedmont (Barber and Guercin 2008) while the Arnolds Valley area on the western slope, shows extensive Ridge and Valley influences (Barber 2008, Barber and Tolley 2005).

The overall tool kit provides for an overall hunting and gathering technology. In addition to the projectile points, end-scrapers continue to be produced as are spokeshaves, knives, gravers, drills, and undifferentiated bifaces. Scrapers, for the most part, are tear-drop in form and unifacially flaked on the working edge. Knives and drills follow the bifacial sequence with spokeshaves and gravers produced primarily from waste flakes, primary or secondary, with little regularization of form.

Lithic Resources

The settlement patterns for the Early Archaic Period have been presented by Gardner (1977, 1989) and Custer (1990) as an outgrowth of the Paleoindian Period. As such, it is interpreted as tied to lithic acquisition, a function of frequent return to the central jasper (or other cryptocrystalline) source. As the argument is presented, cryptocrystalline needs overwhelmed other needs relating to social interaction, food, information exchange, etc. Data from across the state does not seem to support this lithicocentrism as the recovered projectile points does not support an exclusiveness of material use during the Paleoindian Period in most areas and does not follow during the Early Archaic.

In order to consider the extension of the Paleoindian settlement model, as per Gardner (1977, 1989) into the Early Archaic, one would first have to substantiate that the model is valid for the earlier period. At the local level in the Shenandoah (not the Great) Valley, Gardner has made a convincing case that it does. While the concept of an overriding prime mover as a unilineal causal strategy has been more recently viewed as simplistic, the importance of lithic acquisition as an important factor in the settlement of the Flint Run area cannot be denied. It is, however, one contributing factor among many ecological attributes which make the area attractive to settlement (i.e. - well drained soils, river proximity, elevated terrain, environmental patchiness, game attractiveness). It could also be argued as is sometimes the case for later periods that a local material is utilized due to a constricted territory thus limiting access to better materials. The Flint Run jasper is certainly the only knappable material along this portion of the South

Fork of the Shenandoah River. The question, then relates to remaining portions of the state.

By and large, the above described model does not provide a good fit for the remaining regions of the Commonwealth. The exception may be the Brook Run Site in Culpepper County where an outcrop of jasper was utilized during the Early Archaic time period (Monaghan and Voigt 2004). In Johnson's (1996:205-207) discussion of Paleoindian points recorded for the Coastal Plain and Piedmont of southeastern Virginia, for example, 22.5% of the fluted points were either quartz or quartzite. With the presence of Williamson chert (which is really a silicated quartz) and riverine cryptocrystalline cobbles, this frequency would suggest an integration of lithic material use as opposed to particular "lithic determinism" or lithicocentricity. Johnson (1996:207) rejects the model in favor of a more Archaic pattern where other "imperatives" were apparently of more importance than the lithic quest. Hranicky (2009) pointed to the localized use of available stone across the state during the Paleoindian Period. If a pattern does not exist during an earlier period, it cannot continue into a later period. Hence, the Early Archaic use of lithics was of a more localized nature. There is however evidence to suggest that crytochrystallines were used more heavily in the early Early Archaic (Kirk and Palmer projectile points) but lost popularity by the end of the period (Kirk Stemmed, for example). This concept is supported by the work of Egghart and Manson (2016:72) in their analysis of the Ogle collection where locally available lithics were exploited, primarily quartzite.

In addition, the work of McAvoy (1997:182-183) suggests that the Early Archaic inhabitants along the Nottoway River were content to use locally available lithics. Although the lithic focus per projectile point typology varies through the Early Archaic, the variety of non-cryptocrystalline materials such as the local quartzites, rhyolite, and Uwharrie volcanics is impressive. While Hardaway tool-makers preferred non-local materials such as rhyolite, Palmer points were made primarily of local Nottoway quartzites.

The concept of cryptocrystalline lithicentricity also suffers in other parts of the state due to the high frequency of available cherts and chalcedony, particularly within the lower Great Valley. Due to the ubiquitous nature of these outcrops, the return to a single source would be unnecessary. Couple this with the apparent willingness of Early Archaic people to use quartz, quartzite, argillite, and rhyolite, the lithic central place proved not to be required during that period.

This is not to say that the lithic based models proposed by Gardner (1974, 1989) or Daniel (1996:84) are not positive alternatives in particular areas but that the model is of higher explanatory value when the crusade for lithics is reduced to one more functional need among many. When argued against the quest for food, as Daniel (1996:84) attempts, or other needs such as information, mates, or social interaction, the lithicocentric argue falls short. Scarcity of preferred material can be a Paleoindian factor but during the Early Archaic of Virginia, the interest in exclusive stone type use fades with population growth, the frequent use of new ecological niches, and the ever increasing use of non-cryptocrystalline materials. As Anderson and Sassman (1997:42) states for the southeast and is likely true for Virginia, "Tool replenishment is not.....thought to have been an overly critical factor influencing settlement."

Settlement Pattern

As stated by Lewis (1996:40), the Early Archaic Period can be described as an era of technological and social changes associated with the end of the Pleistocene. Following historic analogues (Binford 1978; Lee 1979; Johnson and Earle 1987; Lee and DeVore 1968, 1976), Early Archaic peoples were likely organized at the band level of society in groups made up of between 25 – 50 individuals (Fried 1967, Service 1964). Each group was exogamous and patrilineal. In order to seek out marriage partners, scarce goods, and information, the smaller groups came together to form macro-bands on a seasonal or ceremonial basis. This fission-fusion model would aggregate where resources were plentiful and adequate to support the larger group.

In his original model, Gardner (1988, 1989) recognizes the transition into the Early Archaic dating to the end of the Pleistocene and the beginning of the Holocene. He points to the increased use of other lithic materials at Flint Run even during its first phases and increasing throughout. He also recognizes an increase in population based on increased numbers of Early Archaic sites and raw numbers of reported points. It is possible that it is during this time period that the New World saw its first phenomenon of population pressure, moving

hunters and gatherers into new areas in higher density with a concomitant increase in the use of varied lithics. He further suggests that the move towards notched points was due to hunting innovations likely associated with the introduction of the atlatl. Whether this hunting break occurred at this point in time or earlier, it cannot be denied that lanceolate and/or fluted projectile points were no longer the technology *de jour* and that notched forms emerged. In addition, there is the addition of the chipped stone axe possibly in response to the evolving deciduous forest environment. Hence, we see a response to environmental change, a new form of projectile point manufacture and technology, an increased population, the increased use of varied lithics, a change in settlement patterns to better extensively use new areas, and the possible innovative hunting efficiency of the atlatl. Although a return to the Flint Run area for base camp quarry related activities may have continued, the changes which occurred during the Early Archaic can be interpreted as an evolution from the Paleoindian Period but not a part of it. Custer (1990:20-23) in particular, relies on a continuity of settlement pattern to underscore the Paleoindian/Early Archaic continuity. For a test of the data, he cites 11 papers, all written by or with Catholic University alumni (Custer 1990:26). For western Virginia, at least, his argument runs to a lack of use of the higher elevations. After 20 years of inventory on the National Forest holdings in the Blue Ridge and Alleghenies, numerous Early Archaic sites have been recorded at the higher elevations, particularly at highly productive sites such as the Peaks of Otter Complex (Barber and Guercin 2008, Bushnell 1940, Griffin and Reeves 1968). The frequency of this period, however, does not rival that of the Middle and Late Archaic but this can also be said for the lower elevations. It would seem that the meat of Custers's argument would be that the Paleoindian/Early Archaic settlement continuity rests with the Native American proclivity to frequently use highly productive environments. This can be said for the entirety of New World prehistory.

Custer also alludes to the return to the quarry with the jasper quarry at Flint Run as the prime example of settlement patterning for the period. For the Commonwealth, outcrops of jasper are few and far between. The Brook Run site (44CU122) in the Virginia Piedmont is an obvious example utilized during Early Archaic times as quarry and reduction station (Monaghan et. al 2004). The Forest Service has been studying 2 such outcrops in the Arnolds Valley area of Rockbridge County for more than a decade (Barber and Tolley 1999). While there is a hint of Paleoindian use, the major periods of mining and reduction relate to the Early, Middle and Late Archaic and Late Woodland. While a quarry / reduction station relationship between 44RB0016 and 44RB0323a (quarries) and 44RB0323b (reduction station) are obvious, the Early Archaic is but one of the periods of use. The continuities as presented by Gardner (1974, 1989) and petrified by Custer (1990) for the Early Archaic Subperiod inclusion in the Paleoindian Period may require revision back to the original scheme.

Geographic Distribution

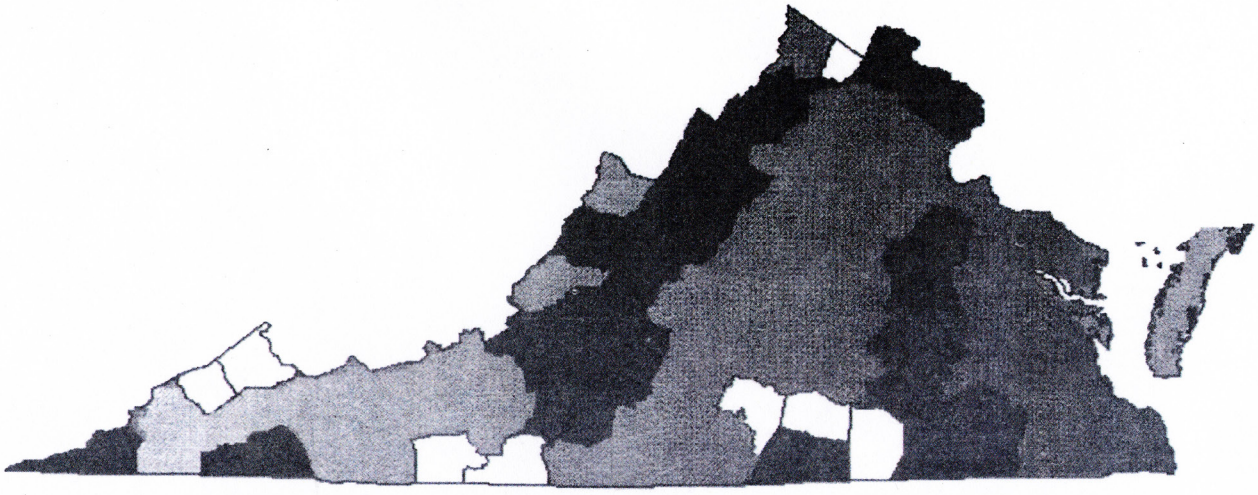
Department of Historic Resources site forms were queried. While it is recognized that the forms are not a statistically reliable database, it is the only database in existence on the statewide level (Barber 2003). In order to compile the information, the Department of Historic Resources site forms were queried with a search for those sites recorded as "Early Archaic" on the computerized system. The distribution of the 671 Early Archaic sites is of interest. An approach similar to that of Anderson and Sassaman (1996) in their review of the Paleoindian and Early Archaic for South Carolina was followed where the pure number of sites was transferred to a map of the Commonwealth (Figure 4.1). A basic tiered sorting was implemented with an arbitrary cut-off of 10 employed with a category of sites per county below 10 (grey) and a second category above 10 (black). Counties with no sites were also designated (white). Although anomalies exist, such as Lee, Washington, Amherst, Mecklenburg, and Loudoun Counties, the distribution of Early Archaic sites form two clusters: one following the Ridge and Valley Province basically from just north of Blacksburg to just south of Winchester and the second following the Fall Line from Emporia through Richmond to Fairfax. In a regional sense, these areas provide access to varied physiographic provinces, in the first the Blue Ridge and Ridge and Valley and in the second the Piedmont and Inner Coastal Plain. In a broad context this distribution increased environmental patchiness and added econiche exploitation possibilities. The Coastal Plain, Piedmont, the lower Great Valley of Virginia, and Appalachian Plateaus do not seem to have been as heavily exploited.

Granted, the Coastal Plain frequencies may be masked by sea level rise but exposed areas do seem to demonstrate a low frequency.

The distribution of sites is also of interest with regard to travelways. Within the Ridge and Valley, favoring the valley at the expense of the ridge conserves energy. While forages into the higher elevations were taking place with a fair amount of frequency, these were likely limited to resource exploitation with minimum over-the-mountain travel. Anyone who has walked up the side of the Blue Ridge or Allegheny mountain can well appreciate this strategy. The Fall Line travelway is less obvious in terms of energy management and the site distribution is perhaps more tightly tied to resource exploitation. In any case, it is interesting to note that the 2 major interstate highways within the state (I-95 and I-81) follow the same routes.

In viewing the distribution of Early Archaic sites in Virginia, the settlement pattern seems to run more-or-less north / south cross-cutting drainages as opposed to following them as per models for drainage-based band-macroband patterns proposed for the Atlantic slope in the southeast by Anderson and Hanson (1988). In this sense, the eco-niche availability is also enhanced, traveling over a number of drainages and intermediate zones. For the Great Valley, the Roanoke, James, and Shenandoah Rivers are traversed; for the Fall Line, the Meherrin, Nottoway, James, York, Rappahannock, and Potomac. While the resources would be many and varied, their distribution would be repetitive to high degree with major variance due to differences in latitude. In this sense, the resource base can be viewed as somewhat homogeneous. This would be less so at the Fall Line where both the Inner Coastal Plain and the eastern Piedmont could be utilized. An alternative hypothesis would hold that, at least by late Early Archaic times, each drainage system became a separate territory due to population increase.

Binford (1980) outlined an ecological approach to modeling based in part on the differential demographic mobility of foragers versus collectors. In this model, as summarized by Cable (1996:113-116), foragers are seen as operating within a homogeneous environment with little need for mobility settling in base camps with resources returned on a daily base to the major camp. Gaining subsistence from a small area, however, required frequent camp movement due to resource depletion. Collectors, on the other hand, were exploiting coarser



Grey shaded counties contain 1-9 recorded sites.
Black shaded counties contain 10 or more recorded sites.
White shaded counties contain no recorded sites.

Figure 4.1. Early Archaic state map

grained environments where resources were variable and of uneven distribution. Resources were transported back to the base camp from field camps (or extraction camps) and some stored for future use. Territories were larger and mobility of the major camp reduced. Foraging was seen as more operational in warmer environments and collecting, due to storage requirements, more frequent in cold environments. For the Early Archaic along the Haw River in North Carolina, Cable (1996) sees a trend from collector to forager based on artifact distributions. If the two exploitation strategies are placed on a continuum, the two clusters for the Commonwealth are perceived as lying closer to the foraging end of spectrum.

The models for the Early Archaic (Gardner 1977, 1989; Custer 1990) for the Commonwealth can be placed within the forager / collector argument. In the model presented during the COVA symposium in 1988, site types included quarry, quarry reduction station, base camp, the base camp maintenance stations, and the hunting stations. As the base camp maintenance stations were defined by Custer (1990:23) as:

> located near rich gathering locations or game-attractive hunting settings, such as bogs and swamps, these sites are resource procurement sites periodically revisited by groups living at nearby base camps. For the most part, these sites are located within 10 to 15 km of base camps.

With no long term occupation of the base camp maintenance station, quarry, quarry reduction station, nor hunting (and gathering) station, the model would be defined by Binford as characteristic of foragers. With the argument that a foraging strategy is more operable in warmer climes and collecting in colder ones, the foraging trend fits both the model proposed by Binford (1980) as interpreted by Cable (1996) and the data for site density as per the VDHR site files.

The model as developed for the Thunderbird and Fifty sites may be in need of some reinterpretation with the former as a base camp and the latter as a base camp maintenance station. The Fifty site is located 0.60 miles from Thunderbird. At a normal walking rate of 3 miles per hour, one could move from one site to the other in ca. 12 minutes. While this lies well within the 10-15 kilometers as proposed by Custer, one wonders as to the need for a maintenance site in such proximity to the base camp. It may be that the Fifty site is also a base camp with a number of activities taking place there. As such, its location in an area with access to a number of productive environments is logical. The Thunderbird site may have been more frequently used but not revisited at each return interval due to human associated environment degradation, depletion of fire wood, etc. An alternative explanation would follow the band-macroband model as formulated by Anderson and Hanson (1988) and alluded to by Gardner (1989). First developed for the southern Atlantic slope, the Early Archaic settlement model is based on environmental structure (seasonality and food availability), biological interaction (mating networks), information exchange, and demographic structure (population density and spacing) (Anderson 1997:39-41). Bands are seen as operating within a definable territory and numbering from 50 to 150 people. Periodically, a number of bands would come together at a regional macro-band level with circa 500 to 1500 participants at aggregation loci. The difference here between the Anderson-Hanson model and that of Gardner (1989) and Custer (1990) is one of magnitude with the addition of a regional macro-band. While the Flint Run models use the term "macro-band," it is a lower level population making up the local, not regional band. If one opts for a regional meeting of the bands, one locus might be the Thunderbird site.

Foodways / Economic Pattern

Deferring to Custer (1990:6) in stating, "Because the Paleoindian/Early Archaic transition is believed to be linked to the Pleistocene/Holocene transition, it is necessary to consider the paleoenvironemental record for both the Paleoindian and Archaic Periods." Dismissing the grasslands, deciduous forest, and boreal woodlands as proposed by others (Boyd 1989, Gardner 1989), Custer holds that the transition into a spruce-dominated boreal forest with a variety of hardwood species present had already occurred 1000 years prior to fluted point times (ca. 9200 BC). In wending our way into the Early Archaic, the warming trend and forest development would have an additional 1,500 years of ecological adaption. It is the contention here that the deciduous forest was well on its way to climax by 8000 BC Although it is proposed that hardwood forest would have advanced a mere 350 meters per one hundred years, it must be remembered that the ecological change cannot be characterized by an army of oaks standing shoulder

to shoulder and marching ever northward. Rather, the boreal forest of the past containing a variety of hardwood species with a broad series of epicenters from which to spread.

As Whyte (1990:119-120) stated, archaeologists in Virginia usually referred to the people of the Early Archaic (and Middle Archaic) as "hunters and gatherers" although there existed little archaeological evidence on which to base this conclusion. Almost completely devoid of archaeofauna and/or ethnobotanical data within the Commonwealth, the broadly accepted hypothesis is based on stone tools of the period coupled with the lack of horticultural implements and the highly unlikely scenario that Virginia was one of the few cradles of civilization found at the global level during this time period.

One of the few excavations to produce faunal material of the Early Archaic was Daughtey's Cave (Benthall 1990) where 5 species were present: skimmer, woodrat, chipmunk, woodchuck, and white-tailed deer. As Whyte (1990:124) pointed out, the rock shelter/cave setting would have allowed for a plethora of taphonomic processes to be in operation in addition to human activity.

In view of a lack of hard evidence, various authors have proposed deer and elk (Gardner 1980:21); caribou, elk, moose, deer, bear, fruits, and nuts (Egloff and Woodward 1992:12); deer, elk, moose, and beaver (Geier and Boyer 1982:55); deer, black bear, elk, grey fox, opossum, cottontail rabbit, raccoon, squirrel, beaver, woodchuck, turkey, passenger pigeon, turtles, suckers, freshwater drumfish, catfish, freshwater mussels, and gastropods in east Tennessee (Chapman 1994:43-44); acorns, hickory nuts, chestnuts, fruits, berries, white-tailed deer,, bear, turkey, small mammals, fish, turtles, mollusks, and flocks of migratory waterfowl for North Carolina (Ward and Davis 1999), and white-tailed deer, elk, beaver, bird, and turtle for Kentucky (Jeffries 1996:45, Cowan *et. al.* 1981:73-74). It may well be that a combination of these animals and plants were harvested in different regional settings. If one accepts continuity with later aboriginal use of local faunas, the white-tailed deer was by far the most important species utilized. Animals which likely should be removed from the list are the caribou and moose as neither climatic evidence nor paleontological remains support their presence in Virginia during the Early Archaic time period. Given the lack of evidence, the crucial criteria relate to environmental setting and species availability. If indeed, the hardwoods forest evolved quickly, modern species would be present. It would follow that the broadly prolific white-tailed deer would have a major component of the warming environment. Granted, the white-tailed deer can be characterized as an edge species but natural events such as fire, flooding, insect infestations, etc. coupled with the ecological effects of the increasing human population, deciduous forest edge would be present in high frequency.

Conclusion

Many lines of inquiry remain for the future of Virginia's Early Archaic. Beyond the doubtful nature of the applicability of the North Shenandoah lithic model for the rest of the Commonwealth, the overall nature of easily defined site typologies is in need of revision. The function of sites needs to be based on the function of sites. A lot of undefined this and a bunch of poorly defined that will lead to a subjective concept of what goes on at a site. Parker in 1990 lamented the fact that site modeling lacked precise numerical references which might allow testing. A closely controlled analysis with tightly defined artifact definitions can lead to an understanding of site function. In addition, a recognition that there may be a series of activities associated with each site could lead to a better understanding of human, not artifact, behavior. This will require a finer grained view of flake tools in addition to the more formal tools. Function is not always as formalized, symmetric, or of the high craftsmanship we would all like to believe was guiding on-site activities.

Due to the limited number of known sites, limited number of excavations, low population, a focus on a particular tool type (i.e. - fluted point), and a perceived consistent environment, the Paleoindian Period and Early Archaic Periods have primarily been considered on a broad level with little regional variation. Although Dincauze (1996:421-422) points out that environmental modeling at this level is fraught with simplistic dangers and that archaeologists should be looking at neighborhoods as opposed to wide zones, approaches have remained expansive. With a more fine grained understanding of the Early Archaic Period and the beginnings of the Holocene (ca. 8000 BC - 6500 BC), the emergence of lower level regions with apparently differing cultural responses can be isolated. While recognizing that all archaeology (and prehistory) is local, the regionalization of Virginia

remains at a higher level of abstraction. At a minimum, discussion concerning the differential cultural responses on the Coastal Plain, the Piedmont, the Shenandoah Valley, the lower Great Valley, and Appalachian Plateaus will require differential environmental reconstructions.

With regard to the study of stratified Early Archaic sites in Virginia, the landscape is bleak. With the major contributions of Gardner (1974, 1989), McAvoy (1997), and McAvoy and McAvoy (2016) aside, excavations of this time period are scarce (Reinhart 1979, Blanton and Linbaugh 1997). A regional approach organized around a concrete research design is needed. While we may have an understanding of the Northern Shenandoah Valley and the Coastal Plain, there remains the Appalachian Plateau, the southern Ridge and Valley, the northern and southern Piedmont, if not the northern Coastal Plain.

Chapter 5

State Plan and Research Design Middle Archaic (6500 BC – 2500 BC)

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Introduction

The Middle Archaic in Virginia presents researchers with both challenges and opportunities. A significant challenge is a scarcity of data from systematic excavations. Middle Archaic sites often occur in plowed and/or eroded conditions. The generally unfavorable preservation characteristics of Virginia soils leave most sites with little or no identifiable organic remains. Similarly, definition of pit features is nearly impossible on open air sites. At the same time, archaeological study of the Middle Archaic is rich with opportunities. Virginia's temperate climate and diverse and productive natural environment were well suited to supporting a hunter-gatherer life way. Middle Archaic populations appeared to have been robust and period sites components are relatively common. The key to better understanding the period lies in finding, isolating, and fully studying intact archaeological site components.

Chapter Organization

The chapter is organized along specific research themes. A general description of the Middle Archaic period is first provided. Environmental context is outlined in the ***Middle Archaic Climate and Environmental Conditions*** section. The ***Chronology and Material Culture*** section reviews artifact trends, projectile point types, and radiocarbon dates of the period. The ***Economic Pattern*** focuses largely on Middle Archaic subsistence practices, as best they can be extrapolated from existing data. *Social/Political/Community Patterns* are framed in the context of internal and inter-group dynamics presumably operative during the period. The final section posits specific research questions to help guide future study of the Middle Archaic in Virginia.

General Description of Middle Archaic in Virginia

Middle Archaic peoples of Virginia have traditionally been portrayed as small groups of highly mobile hunter-gathers intricately adapted to the upland forests blanketing the region. Although small upland sites dating to the Middle Archaic Period are relatively common, a range of environmental settings and associated resources likely sustained the Native Americans of the period. In this work, the appearance of the LeCroy point is seen as marking the beginning of the Middle Archaic. Other material culture trends of the period include increased occurrence of ground stone tools, greater use of cobble tools, and a shift to local lithic materials in projectile point manufacture. Also evident is a significant decrease in formal, edged tools, with a commensurate increase in flake tools and other expedient cutting implements. Morrow Mountain and Guilford are the most common Middle Archaic point types. These are replaced by a suite of side-notched/expanding stem types towards the end of the period. The appearance of Savannah River point in Virginia around 2500 BC provides a logical terminus for the period. Site components dating to the Middle Archaic become more numerous in relation to the preceding era, suggesting population growth. Subsistence ways are difficult to reconstruct. However, one observable trend seems to be a greater use of mast as a food source around the beginning of the period. The Middle Archaic climate experienced a peak in post-glacial warmth and dryness. This warmth was punctuated by several reversals to colder and/or more unstable

conditions, particularly at the beginning and toward the end of the period. Extended warm/dry conditions likely resulted in spread of oak/hickory species. At the same time, more frequent fires would have promoted pine and the maintenance of succession stage forest communities in upland areas. Other important environmental trends would have included the ongoing development of the greater Chesapeake Bay estuary system.

Previous Synthetic Works

The earliest effort at synthesizing state-wide archaeological data pertaining to Middle Archaic was a Council of Virginia Archaeologists (COVA) symposium, published jointly by COVA and the ASV. The eight articles in *Early and Middle Archaic Research in Virginia: A Synthesis* (Reinhart and Hodges 1990) comprise an important reference work for the period. However, significant new information has come to light in the more than quarter century since the volume was published. This includes findings at Cactus Hill and the Slade Farm Complex (McAvoy and McAvoy 1997, 2015). Other important sites excavated outside of Virginia are relevant to the study of the Middle Archaic in regional context. Just as importantly, the field of paleoclimatology has made significant advances in recent decades, providing archaeologists with a clearer view into past conditions (see Chapter 2, *Paleoclimate and Environment*). The COVA synthesis was intended to be periodically updated as additional data become available. The first Archaic chapter updates were published in the ASV's *Quarterly Bulletin of the Archeological Society of Virginia* in 2003. Barber (2003) provided a synthetic review of the Early Archaic while Tolley (2003) discussed advances in Middle Archaic research in the state.

Environmental Setting

Middle Archaic Climate and Environmental Conditions

The Middle Archaic witnessed a prolonged, post-glacial peak in warm/dry conditions along with the establishment of essentially modern forest communities across Virginia. While the Middle Archaic did not experience the climate rapid shifts that characterized the late Pleistocene-early Holocene transition, conditions throughout the era may still have been relatively dynamic.

Regionally, the establishment of modern forest conditions was dependent on latitude and elevation. In the Southeast, the transition to modern oak/hickory and mixed hardwood forests occurred well before the Middle Archaic began (Delcourt et al. 1986; Delcourt and Delcourt 1985). Early in the period, continued warmth and dryness across the Southeast resulted in the northward spread of pine components in mixed forest communities (Jacobson et al. 1987; Watts et al. 1996). Mixed oak-pine communities also appear to have become established in some typically drier areas of Virginia, including the Ridge and Valley province (Kneller and Peteet 1994). In the northern Middle Atlantic, pollen profiles of pond cores in New Castle County, Delaware, suggest that oak-hickory forest conditions were fully established in that location by 5800 BP. Spruce, white pine and other cold-adapted species steadily retreated to the highest elevations of the Appalachians, where relic communities can be found to this day.

The Mid-Holocene peak in warm conditions essentially coeval with the Middle Archaic is variously referred to as the Hypsithermal, Antithermal, Atlantic Optimum or Climatic Optimum (Sandweiss et al.1999). Anderson (2001) cites ice core data in positing that the Hypsithermal was not so much a peak in mean temperatures as a time of seasonal extremes with warmer summers and colder winters. A significant cooling of the North American climate preceded the Hypsithermal around the beginning of the Middle Archaic. This episode, referred to as the 8.2k Cold Event, is linked to the final melting the of remnant Laurentide Ice Sheet and catastrophic draining of the massive Agassiz and Ojibway glacial lakes (Hu et al. 1999; Teller et al. 2002). The cool down was relatively short lived and the balance of Middle Archaic appears to have been characterized by Hypsithermal conditions across eastern North America (Anderson 2001).

The Mid-Holocene peak in warmth appears to have been accompanied by persistent dry conditions. Specifically, long term dryness is suggested by the presence of depositional discontinuities in lake bottoms and wetlands across a wide geographic area. In the Delaware Coastal Plain, a significant drop in or even absence of water in bay/basin landscape features is broadly bracketed between 11,000 BP to 6000 BP (Newby et al. 1994). Whitehead (1972, 1981) notes a similar, pronounced drop in water levels around 10,000 BP at the Dismal Swamp and the Rockyhock Bay depression in North Carolina, with corresponding breaks

in identifiable pollen deposition sequences. At Browns Pond in Augusta County, Kneller and Peteet (1994) note a depositional hiatus zone dated to between circa 9200 to 7900 BP. Zone BR-4, which post-dates circa 7900 BP contained significant amounts of charcoal. The deposit also contained an increasing percentage of pine pollen from the bottom of the zone upwards (Kneller and Peteet 1994), further suggesting frequent fires and persistence of late succession stage forest communities.

At the Indian Creek V Site just outside of Washington DC, LeeDecker and Koldehoff (1991) obtained sediment core samples from an abandoned stream channel. The Zone 3 pollen assemblages from the Indian Creek V coring are relevant to the Middle Archaic. They indicate oak, hazel, and alder as the dominant arboreal species between circa 7700 BP and 5000 BP. Hydrophilic bottomland species, including black gum and beech are also indicated for this wetland setting. LeeDecker et al. (1991) attribute the pollen assemblage in Zone 3 to the moist/warm conditions. This is in contrast to the dry conditions suggested by the depositional hiatus observed in regional pond/wetlands. Cinnamon fern (*Osmunda*) is the dominant herbaceous species in Zone 3. Cinnamon fern is a reliable indicator of frequent fire (Brush 1994), and its prevalence would suggest uneven precipitation and periodic dryness.

In addition to the development of essentially modern forest communities within a generally warm and dry climate, a third factor shaping environmental conditions of eastern Virginia was the ongoing expansion of the greater Chesapeake Bay estuary. United States Geological Survey studies have placed earlier parameters on the development of the modern Chesapeake Bay (Bratton et al. 2003) than have traditionally been cited in the regional archaeological literature. Core lithologies derived from both shallow and deep water environments along the main stem Chesapeake were assessed for fossil oyster shell and dated using accelerator mass spectrometry. Total organic carbon and carbon isotopes were also analyzed, as were values for the trace element rhenium as markers of developing estuarine sedimentary environments (Bratton et al. 2003). Results place the fresh-brackish transition in the northern Chesapeake Bay to between 8.2 and 7.4 cal ka or 6200 cal BC and 5400 cal BC. Bratton et al. (2003) also concluded that the full development of the Chesapeake estuary was temporally non-linear. This was attributed to either a sudden jump in the rate of sea level rise or to the stepped configuration of the Chesapeake basin. The latter would account for a physical threshold that, once overcome, would facilitate the rapid up-basin extension of estuarine conditions. Whatever the mechanism, the researchers concluded that the ultimate development of the main stem Chesapeake Bay estuary was relatively rapid. It should be noted that physical and ecological changes to river systems of eastern Virginia would have been manifested far ahead of actual tidal embayment. These changes would have included the wetting of floodplain soils and development of extensive riparian marshland. Implications for Archaic period settlement and subsistence associated with these changes would have been significant. Further, the archaeological impact stemming from the loss of coastal and floodplain sites in eastern Virginia cannot be overstated.

Physical Regions of the Commonwealth

Specific material culture traits of the Middle Archaic occur across large geographic areas, seemingly unimpeded by major watershed divides or even physiographic regions. Discussion of the Middle Archaic in Virginia can therefore be addressed within relatively gross geographic units comprised of: 1) Blue Ridge and West; 2) Piedmont/Fall Line; and 3) Coastal Plain and coastal zones. These divisions are significantly coarser than would be appropriate for the discussion of later sub-periods.

Summary of Middle Archaic Research to Date

The following summary of Middle Archaic research to date focuses on findings published since the original COVA volume in 1990. Survey projects and systematic site excavations are summarized separately.

Major Survey Projects with Relevant Middle Archaic Findings

Synthetic Review of C.G. Holland Collections (Parker 1990)

Parker (1990) produced a synthetic analysis of major survey projects in support of this master's thesis. The bulk of site data was gleaned from the collections of C.G. Holland (1970) from surveys in Albemarle County. Also studied were collections from Bath County Pump Storage Facility surveys (Geier et al.1978, Geier et al. 1982) and assemblages from sites investigated by the Laboratory of Archaeology, University of Virginia (Hantman 1985; Van Dyke et al. 1984). Among other attributes, Parker ranked

Early Archaic and Middle Archaic site components by size and diversity of artifact types. A notable finding was that no appreciable difference in artifact diversity was expressed between floodplain and upland settings within the study area. While floodplain sites tended to be somewhat larger than upland sites, some of this difference could be attributed to the spatially limiting nature of many upland landforms.

Madison County Survey and Settlement Analyses (Nash 2009)

Nash's study of Madison County synthesizes previously recorded site data, survey results, and information drawn from local artifact collections for which reasonable provenance could be established. As a study area, Madison County encompasses from east to west: Piedmont Mesozoic Basin lowlands; headwater riverine settings; Inner Piedmont uplands; low elevation Blue Ridge settings (foothills, toe slopes, incised headwater streams); and the high elevation Blue Ridge, including peaks and summit ridgelines. A total of 233 site locations was included in the multi-scale settlement pattern analysis. Nash noted a dramatic rise in site components dating the Middle Archaic. This increase in settlement was documented across physiographic provinces, hydrologic units, and physical settings. Initial Middle Archaic settlement, as indicated by LeCroy points, was focused on higher order stream terraces and floodplains. The Morrow Mountain phase marked the beginning of intensive settlement of the high Blue Ridge and summit areas.

Arnold Valley Survey (Barber 2010)

Arnold Valley is situated along the Blue Ridge slope near the James River's entrance to the Piedmont. The topographically diverse valley which extends from the James River towards the Blue Ridge summit was extensively settled throughout much of prehistory. Of the 152 sites identified and/or reviewed by Barber, a total of 63 had discernible temporal components. Several trends pertaining to Middle Archaic settlement were evident from the site distributions defined in the study. Barber noted an increase in the overall number of Middle Archaic components (n=15) in relation to the Early Archaic (n=9). However, site selection by landform was similar between the two periods. One notable difference was that site size increases substantially during the Middle Archaic.

The Arnold Valley findings are similar to observations gleaned from wide-ranging surveys conducted by US Forest Service staff across the Blue Ridge and Ridge and Valley highlands. These surveys indicated that use of high-elevation settings began during the Early Archaic as represented by corner notched traditions and that settlement intensity increased steadily throughout the Archaic (Barber 2003).

Analysis of the Robert Ogle Collection (Egghart and Manson 2016)

The Robert Ogle Collection was assembled from surface sites along the Nottoway River Fall Zone in and around its confluence with Stony Creek. Mr. Ogle carefully recorded the locations in which the points were found and segregated the finds accordingly. Analysis of Middle Archaic point distributions across the sites thus provided significant insights. A marked shift in settlement preference was noted between the Early Archaic points and LeCroy bifurcates. Occurrence of Early Archaic corner-notched points was strongly oriented to the confluence setting, while LeCroy distributions suggested more generalized settlement, less focused on a particular location. Kirk Serrated points showed an anomalous peak occurrence along Stony Creek, well upstream of the river confluence. This location fronted gravelly shallows in the otherwise sluggish stream channel and is seen as an ideal location to intercept anadromous fish. Clear differences were noted in settlement preference expressed through the occurrence of Morrow Mountain and Guilford points. The Morrow Mountain (and Stanly) points exhibited a confluence-centric settlement typical of the Early Archaic. By contrast, Guilford points occurred with nearly equal frequency across different site settings, suggesting more generalized settlement. Gross counts of all Archaic Period points in the Ogle Collection were also used as proxies for relative population. Results are discussed in a following section.

Major Middle Archaic Site Excavations

Relatively few Middle Archaic site components have been systematically investigated in Virginia. The existing body of data is dominated by findings along the Nottoway River Fall Line as derived from the extensive work by Joseph McAvoy and the Nottoway River Survey (NRS) group. The Indian Creek V Site (LeeDecker et al. 1991) was located in the Northern Virginia/Washington, D.C.

Metro area. Further afield, the extensive and detailed Middle Archaic findings at Dust Cave, Alabama, are relevant to the Middle Archaic in far Southwest Virginia.

Daugherty's Cave (Benthall 1990)

Daugherty's Cave (44RU14) is located along the Clinch River in the Ridge and Valley portion of Southwest Virginia. The cave site contained stratified deposits, including a Middle Archaic occupation floor. Several rock hearths were identified in the Middle Archaic level which contained Cedar Creek points. One of the hearths yielded an uncalibrated radiocarbon date of 5690 ± 260 BP. The Middle Archaic level also yielded a wide variety of small mammal and avian faunal remains, in addition to deer and possibly fish. However, it was unclear to what extent the faunal material in Daugherty's Cave represented actual human subsistence remains (Whyte 1990).

Cactus Hill (McAvoy and McAvoy 1997, 2015)

The Cactus Hill Site (44SX202) is located along the Nottoway River Fall Zone in Sussex County, Virginia. Best known for its Paleoindian and apparent pre-Clovis occupations, the site was also extensively settled during much of the Middle Archaic. Ongoing aeolian deposition resulted in shallowly stacked Archaic floors. The LeCroy level yielded slab mortars, hammerstones, pitted cobble tools, and carbonized hickory shell. A similar assemblage occurred in association with Kirk Serrated points. Also found in association with Kirk Serrated points were cobble net sinkers. The greatest Middle Archaic site use was associated with Morrow Mountain points. Guilford points were also well represented in the Cactus Hill assemblage. Morrow Mountain and Guilford contexts included chipped stone axes, core choppers and abrading stones. Pit features were recognized originating in the Halifax level. The Cactus Hill investigations also yielded robust radiocarbon dates from Halifax, Guilford, and Morrow Mountain I contexts.

Slade Farm Complex and Nottoway River Survey Sites (McAvoy and McAvoy 2015)

The Slade Farm Complex sites (44SX6, 44SX7, 44SX98 and 44SX162) are located on a high terrace along the Nottoway River Fall Line. The individual site loci roughly corresponded with minor aeolian landforms. Several of these locations contained Archaic period surfaces shallowly separated by aeolian sands. Middle Archaic occupations included LeCroy, Kirk Serrated, Stanly, Morrow Mountain I, Morrow Mountain II, Guilford, Rowan, and Halifax. These occupations were interpreted as a series of repeatedly visited hunting camps. A possible human cremation was identified in Middle Archaic context. The pit contained a Morrow Mountain II point and charcoal from the fill yielded an uncalibrated radiocarbon date of 6470 ± 90 BP (McAvoy and McAvoy 2015:203). Middle Archaic contexts also yielded carbonized hickory shell and traces of mammal bone.

More limited excavations were carried out by the McAvoys and members of the NRS group on nearby sites with intact Middle Archaic components. These include the Fannin Site (44SX14), which primarily had a quarry function, and the Nay Site (44SX80). Excavations at the Nay Site identified four fire-cracked rock features in Morrow Mountain context. A total of 13 Morrow Mountain I points were recovered within, or around one of the fire-cracked rock features. These findings are particularly significant as the points were likely associated with a single site visit. Eleven of the 13 Morrow Mountain I points were manufactured on cryptocrystalline material rather than the local quartzite that was heavily favored in the production of Morrow Mountain II points in the area (McAvoy and McAvoy 2015).

Indian Creek V 44PR94 (LeeDecker et al. 1991)

The Indian Creek Site was located in Prince Georges County, Maryland, just outside of Washington, D.C. The site was situated along an interior Coastal Plain stream very near the Fall Line. Though located outside of Virginia, the site setting is analogous to Coastal Plain and Fall Line locations throughout the northern and eastern part of the Commonwealth. A wetland complex was located adjacent to the site. Core samples from these wetlands yielded a relatively complete pollen record beginning in the terminal Pleistocene.

Occupation of the Indian Creek V Site (LeeDecker et al. 1991) was interpreted as a gathering camp/processing camp repeatedly visited for short periods to exploit seasonally available plant resources throughout much of the Archaic. The Middle Archaic is well represented by Morrow Mountain II, Brewerton/Otter Creek, and Vernon/Halifax. The greatest site use appeared to be related to the late Middle Archaic Halifax occupations.

Flotation recovery of botanical remains suggested that the Archaic groups visiting the site utilized a very broad range of floodplain/wetland plant resources available in the vicinity. Represented in the botanical assemblages were no less than 63 taxa, many of which are known to have contributed to prehistoric diets or were otherwise of economic utility.

Dust Cave, Alabama (Sherwood et al. 2004)

Dust Cave is a karstic vestibule located in the middle Tennessee River Valley of northern Alabama. The limestone cave setting was subject to periodic alluviation, resulting in intact occupation stratigraphy. The limestone soils coupled with intensive human use resulted in excellent organic preservation. Though located outside the Middle Atlantic region, findings at this important site are directly relevant to the western region of Virginia, particularly limestone areas of the Ridge and Valley and the Tennessee Valley drainage in general. The most intensive occupations were during the Middle Archaic and 14 radiocarbon dates were obtained for that component alone. The cave showed evidence of deliberate modifications that may represent prepared living or sleeping spaces. Pit features and clay floors were common in the Middle Archaic levels. Also recorded in the cave were Middle Archaic burials. All were adult, and seven individuals appeared to have succumbed to violent trauma based on the presence of projectile points and/or cranial fractures (Carmody 2009). Of the 16 Dust Cave individuals who could be sexed, 11 were female and five were male. Average age of adult males was 24.7 years, while the adult female average was 44.3 years (Davis 2004, Hogue 1994).

Research Themes

Chronology and Material Culture

Projectile Points

LeCroy (Broyles 1971)

Bifurcate points have traditionally been regarded as Early Archaic. This chapter views the appearance of the LeCroy point as a logical demarcation for the beginning of the Middle Archaic. This is based on the increased frequency with which LeCroy points occur across a variety of site settings, together with a preference for local material in manufacture, which sets LeCroy apart from Early Archaic types. LeCroy was formally described by Broyles (1971) at the St Albans site in West Virginia. It is easily recognized by a small, trianguloid blade with a pronounced, bifurcated base. Blade edges are often serrated. McAvoy and McAvoy (1997) reported a date of 8300 ± 110 BP for the type at the Slade Farm Complex. This comports well with the LeCroy dates originally obtained by Broyles at the St. Albans site as well as by Chapman (1977) along the Little Tennessee River.

Kirk Serrated (Coe 1964)

Kirk Serrated also dates to the early Middle Archaic. Some confusion seems to surround the type in the regional literature. As originally described by Coe (1964), Kirk Serrated has a relatively straight stem, along with an elongated blade, the edges of which often exhibit shallow serrations. The squared stem configuration of Kirk Serrated appears to have led some researchers, including Broyles (1971), to refer to the form as "Kirk Stemmed." The Kirk Stemmed type as originally described by Coe (1964) appears to have shoulders removed during manufacture creating wide notches and/or a flaring stem. At the Hardaway Site, in North Carolina, Coe noted the occurrence of Kirk Serrated points stratigraphically above Kirk Stemmed. Based on regional radiocarbon dates and stratigraphic contexts along the Nottoway River, Egloff (2016) places Kirk Serrated to around 6000 BC.

Stanly (Coe 1964)

The Stanly Point was first described by Coe (1964) based on specimens recovered from the deepest levels at the Doerschuk Site in the North Carolina Piedmont. Although Stanly is clearly Middle Archaic, the type can be thought of as a continuation of the bifurcate tradition. However, bifurcation of the base is much less pronounced than in earlier points and Stanly points tend to be significantly larger than LeCroy. McAvoy and McAvoy (1997) describe a Small Stanly subtype along the Nottoway River Fall Line. At the Slade Farm Complex McAvoy and McAvoy (2015) obtained an uncalibrated radiocarbon date of 7420 ± 160 BP from Stanly contexts. Egloff (2016) places Stanly to between 6200 BC and 5000 BC based on stratigraphic contexts and radiocarbon dates from sites along the Little Tennessee River (Chapman 1977).

Cedar Creek (Benthall 1990)

Cedar Creek is not commonly referenced in the regional literature. This point was described by Benthall based on findings at Daugherty's Cave. The points are relatively small, with triangular-to-lanceolate blades. Stem configuration is variable, ranging from straight to expanding to exhibiting a rounded, bulb-like base. Similar stemmed and broadly side-notched to corner-removed points occur sporadically across much of Virginia west of the Fall Line (McLearen 1991a). The exact nature of these forms is uncertain but they may be representative of a generalized, long standing manufacturing tradition spanning the middle part of the Archaic. At Daugherty's Cave, Benthall (1990) reported a date 5690 ± 260 BP from Cedar Creek contexts. Johnson (1968) illustrated two specimens from the Jeffrey Harris Rock Shelter site that closely align with Benthall's Cedar Creek description. The points were recovered from a sealed level with an uncalibrated radiocarbon date of 5120 ± 160 BP.

Morrow Mountain I (Coe 1964)

The typical Morrow Mountain I point has a distinctive triangular blade with a vestigial contracting stem. Points vary in dimension with some specimens as small as thumbnail size. In most cases the points range from 30 mm to 70 mm in length with mean of 45 mm (Egloff 2016). The Late Archaic Cattle Run Savannah River variant is sometimes misidentified as Morrow Mountain I. The Cattle Run point is much larger than Morrow Mountain I, ranging from 50 mm to 175 mm in length (Egloff 2016). The Cattle Run blade is also typically lanceolate rather than triangular. Flaking technique and a clear preference for quartzite seen in Cattle Run manufacture also mirror Savannah River. By contrast, a variety of lithic materials including cryptocrystalline and metavolcanic stone were typically used in the manufacture of Morrow Mountain I points. Egloff (2016) places Morrow Mountain I in Virginia to between 5100 BC and 4700 BC. At Cactus Hill, McAvoy and McAvoy (2015) reported a date of 6700 ± 130 BP for the type.

Morrow Mountain II (Coe 1964)

The Morrow Mountain II point is very similar to Morrow Mountain I. The main distinguishing characteristic is the more pronounced, but still strongly contracting stem exhibited by Morrow Mountain II. Size of Morrow Mountain II points vary significantly. Overall they tend to be larger than Morrow Mountain I. The Morrow Mountain II type can be distinguished from other contracting stemmed points by its triangular blade, pronounced shoulders and distinctive, pointed stem. When resharpened, Morrow Mountain II shoulders become even more pronounced, often exhibiting a tang on one or both sides. Most researchers, including Egloff (2016), consider Morrow Mountain II to be slightly younger than the short stemmed Morrow Mountain I form. At the Slade Farm Complex, an uncalibrated date of 6470 ± 90 BP was obtained for Morrow Mountain II (McAvoy and McAvoy 2015).

Guilford (Coe 1964)

With its long, spike-like form and characteristically thick cross section, Guilford is easy to recognize. The type is relatively common across Virginia but seems to be most abundant in the southern half of the state. Coe (1964) originally described four distinct varieties of Guilford using stem configurations. Egloff (2016) illustrates these as: Concave Base, Straight Base, Round Base and Shouldered varieties. Egloff places Guilford point between 4200 and 3500 BC. The only firm radiocarbon return for the Guilford suite is from Cactus Hill, where an uncalibrated radiocarbon date of 4980 ± 170 BP was obtained in association with a Shouldered variety (McAvoy and McAvoy 2015).

Halifax (Coe 1964)

Halifax has a slender blade, is thick in cross section, with wide, shallow side notching. Notches and the basal areas typically exhibit heavy grinding. In the Piedmont, Halifax is typically manufactured on milky quartz. Quartzite Halifax specimens are not uncommon across the Coastal Plain. These tend to be larger than those made on quartz. Egloff (2016) notes that Halifax points are usually made from a core rather than a large flake and that this accounts for their characteristic thickness. Halifax is one of the youngest Middle Archaic point types, perhaps extending into the Late Archaic era. Uncalibrated radiocarbon dates of 4850 ± 80 BP and 5180 ± 60 BP were obtained from Halifax contexts at Cactus Hill (McAvoy and McAvoy 2015). This comports

with the circa 3450 BC date originally reported at the Gaston Site (Coe 1964).

The Middle Archaic Side-Notched Cluster

Halifax is just one of several side-notched point types described for the Middle Atlantic and the greater Northeast region. Collectively, these can be referred to the Middle Archaic Side-Notched Cluster. Along with Halifax, formally described types in this cluster include Clagett, Rowan, Otter Creek, and Vernon.

Clagett was originally described by Stevenson (1963) based on findings at the Accokeek Creek site. Egloff (2016) noted that Clagett points are very similar to Halifax, with the only significant differences being a longer, slenderer blade. As originally described and illustrated by Stevenson, the side notches on Clagett points are set close to the base, giving it a distinctive flare.

A similar form is Rowan. The Rowan term is adapted from a type name commonly used by collectors and avocational archaeologists in North Carolina. At Cactus Hill, McAvoy and McAvoy (1997) applied the name Rowan to a Halifax-like point with deep notches and a squared base. These latter two attributes set the type apart from Halifax as described by Coe. A strong similarity to Ritchie's (1971) Otter Creek type is evident for Rowan.

Vernon was first described by Stevenson and Ferguson (1963) who proposed an Early Woodland association based on the findings at the Accokeek Creek site. However, no reliable radiocarbon dates are reported for the type. Some contemporary researchers place Vernon in late Middle Archaic, citing its strong similarity to Halifax. With wide side notches, thick cross section, and strong preference for quartz, Vernon seems set apart from Halifax only by its smaller size. In Virginia, Egloff (2016) as well as Nash (2009) ascribe an Early Woodland date to the type. Frequency distribution of Vernon points across the Ogle sites closely follows that of Piscataway, perhaps indicative of an Early Woodland association (Egghart 2016). It is possible that the physical similarity between Halifax and Vernon is coincidental and the types are fully unrelated.

The Brewerton Cluster (Ritchie 1971)

As first defined by Ritchie (1971) at sites in New York State, the Brewerton Cluster consists of four recognizable forms: 1) Brewerton Corner-Notched; 2) Brewerton Eared Notched; 3) Brewerton Eared Triangle and: 4) Brewerton Side-Notched. The Brewerton traditions originate in the latter Middle Archaic and continue on into the Late Archaic. Most researchers consider the four varieties to be roughly contemporaneous, though Ritchie originally proposed the Side-Notched type to be the oldest form. Brewertons have sparse and uneven occurrence across Virginia. They seem to be most common along the upper Potomac drainage, which is not surprising given the tradition's apparent Northeast origins. They are only rarely found in the James River environs but been reported in collections as far south as and the Nottoway River Fall Line (Egghart and Manson 2016). Brewertons occur west of the Blue Ridge where they may be mistaken for Early Archaic corner-notched and side-notched types. In most instances, Brewertons can be discriminated by their larger size, thick cross section, and less precise flaking in relation to most Early Archaic corner-notched points.

Chipped Stone Tools

Several trends in chipped stone tool manufacture are recognizable around the beginning of the Middle Archaic period. These include an increase in the utilization of local lithics. Also noted is greater use of expedient cutting tools with minimal effort at curation.

These shifts, first noted by Broyles (1971) and Chapman (1977), were clearly documented at Cactus Hill and the Slade Farm Complex beginning with the LeCroy occupations (McAvoy and McAvoy 2015). Core choppers and roughly flaked axes also begin to occur in Middle Archaic levels at the Nottoway River sites, mirroring observations by McLearen (1991a) and others in statewide context.

Ground Stone and Cobble Tools

Findings at Cactus Hill and the Slade Farm Complex (McAvoy and McAvoy 2015) underscore an increase in the occurrence of ground stone tools and cobble tools in Middle Archaic levels. Small slab mortars, manos, and pitted cobble tools first appear in the LeCroy levels. Ground stone implements documented in Middle Archaic contexts along the Nottoway River include bannerstones, plummets and tabular abrading implements.

Features

Middle Archaic features identified on Virginia sites consist almost entirely of fire- cracked rock clusters. In

southwest Virginia, Egghart (2003) reported two fire-cracked rock features in the Middle Archaic levels at the Edd's Mill Site (44LE99). At Daugherty's Cave, three fire-cracked rock clusters were identified in association with Cedar Creek points. Along the Nottoway River, McAvoy and McAvoy (2015) reported small fire-cracked rock clusters beginning with the LeCroy deposits at both Cactus Hill and the Slade Farm Complex. The Cactus Hill hearth appeared to represent a fractured stone cooking slab. Both sites also contained more substantial fire-cracked rock clusters in Morrow Mountain association. At the Deep Bottom Site Complex (44HE7/HE38) along the Lower James River, substantial fire-cracked rock clusters were also encountered in Morrow Mountain context (Egghart 2014a). The only Middle Archaic pits reported in Virginia were probable Halifax period features recognized intruding into earlier levels at the Cactus Hill Site (McAvoy and McAvoy 2015). A Halifax artifact cache was reported by Livesay and Livesay (2004) at the Nay Site (44SX80), also along the Nottoway Fall Zone. The find consisted of seven finished Halifax points and 22 bifaces. The blades appeared to represent Halifax preforms, though several showed evidence of use before being interred in what was likely a shallow pit. Clay hearth linings or prepared clay living floors have not been reported in Virginia.

Settlement Pattern

Site findings at Cactus Hill, the other NRS sites, as well as the analysis of the Ogle Collection, underscore active riverine settlement the during Middle Archaic. This is in keeping with data from the seminal site excavations on which definitions of regional cultural sequences are based. These include the Hardaway Site on the Roanoke River (Coe 1964), the St Albans Site on the Kanawha River (Broyles 1971), and Ice House Bottom

Table 5.1. lists the major Middle Archaic point types relevant to the Middle Archaic in Virginia.

Type	Distribution	Notes
Brewerton Cluster	Mostly North?	late Middle Archaic to Late Archaic
Vernon	North and East?	late Middle Archaic? Early Woodland?
Clagett	North and East?	late Middle Archaic?
Rowan	South and Southeast?	late Middle Archaic
Halifax	Mostly East of Blue Ridge	late Middle Archaic
Guilford	Statewide	Middle Archaic
Morrow Mountain II	Statewide	Middle Archaic
Morrow Mountain I	Statewide	Middle Archaic
Cedar Creek	Mostly West and Central?	Middle Archaic
Stanly	Statewide	Middle Archaic
Kanawha	Statewide but mostly West	early Middle Archaic
Kirk Serrated	Statewide	early Middle Archaic
LeCroy	Statewide	early Middle Archaic
St Albans	Statewide	late Early Archaic
McCorkle	Mostly West?	late Early Archaic

Table 5.2. Radiocarbon Dates Relevant to the Middle Archaic in Virginia

Assoc. Points	Date	Site	Reference
Halifax	**4850 ± 80 BP** (cal 2 sigma BC 3510 to 3770)	Cactus Hill (44SX202)	McAvoy and McAvoy 2015 (Beta-80184)
Halifax	**5180 ±60 BP** (cal 2 sigma BC 3810 to 4220)	Cactus Hill (44SX202)	McAvoy and McAvoy 2015 (Beta-83012)
Guilford	**4980 ± 170 BP** (cal 2 sigma BC 3370 to 4230)	Cactus Hill (44SX202)	McAvoy and McAvoy 2015 (Beta-80183)
Cedar Creek-like	**5120 ± 160 BP** (cal 2 sigma BC 4324 to 3638)	Jeffrey Harris (44LD17)	Johnson 1968 (SI-363)
Cedar Creek	**5690 ± 260 BP** (cal 2 sigma BC 5208 to 3993)	Daugherty's Cave (44RU14)	Benthall 1990 (FSU-329)
Morrow Mountain II	**4980 ± 50 BP** (cal 2 sigma BC 3941 to 3652)	(44IW148)	Traver 1995 (Beta-82468)
Morrow Mountain II	**5380 ± 140 BP** (cal 2 sigma BC 4519 to 3824)	Peaks of Otter (44BE1)	Griffin & Reeves 1968 (I-1680)
Morrow Mountain II	**6470 ± 90 BP**	Slade Complex (multiple)	McAvoy and McAvoy 2015 (Beta-22838)
Morrow Mountain I	**6700 ± 130 BP** (cal 2 sigma BC 5880 to 5379)	Cactus Hill (44SX202)	McAvoy and McAvoy 1997(Beta-98363)
Stanly	**7420 ± 160 BP** (cal 2 sigma BC 6590 to 6003)	Slade Complex (multiple)	McAvoy and McAvoy 1997 (Beta-24427)
Kirk Serrated	**7730 ± 50 BP** (cal 2 sigma BC 6643 to 6468)	Echols Farm (44RB462)	Fiedel et al. 2008 (Beta-231438)
LeCroy	**8300 ± 110 BP** (cal 2 sigma BC 7543 to 7073)	Slade Complex (multiple)	McAvoy and McAvoy 1997 (Beta-16255)

Site (Chapman 1977) on the Little Tennessee River.

While floodplain settings were extensively visited, Middle Archaic settlement encompassed a wide variety of physical settings. Middle Archaic point finds are common across upland areas of the southern Virginia Piedmont. Extensive Middle Archaic settlement of the central Piedmont uplands is also documented (Parker 1990). The northern, central, and southern Blue Ridge, as well as the higher elevations of the Ridge and Valley also saw significant Middle Archaic use (Barber 2003, 2010; Nash 2009; Tolley 2003).

The generally accepted paradigm for Middle Archaic settlement holds that people were highly mobile, frequently moving between encampments. Further, these groups periodically dispersed into smaller units or coalesced depending on seasonal distribution and availability of resources. Gardner (1974) first proposed such fission-fusion settlement scheme based on three main site types: macro-band social base camps, micro-band social base camps, and special procurement camps. Custer (1980) outlined a similar settlement hierarchy predicated on seasonal aggregation on floodplains and other productive environments, with dispersal to small camps during the winter months. Hoffman and Foss (1980) further elaborated on the concept by proposing a five-tiered settlement system specific to the Blue Ridge region. Such hierarchical systems based on group fission-fusion models have become somewhat ingrained in descriptions of Early Archaic and Middle Archaic period settlement. Parker (1990) aptly notes, however, that none of these oft cited models have been validated archaeologically. In addition, most if not all intensively studied Middle Archaic site components in the Middle Atlantic region have been interpreted as

relatively short-term settlements occupied by a limited number of individuals. Findings at Cactus Hill, Slade Farm Complex, and at other NRS site excavations are particularly compelling in this regard. These sites were all located in highly productive settings along the Nottoway River Fall Zone, yet systematic and intensive excavation of intact Middle Archaic components indicate they represent simple encampment type occupations. The Stony Creek 3 site in the Ogle Collection was strategically located at a drainage confluence near the mid-point of the Nottoway Fall Zone. Although Ogle recovered impressive numbers of Middle Archaic points (Morrow Mountain II = 122 and Guilford =100), these finds were reportedly very widely dispersed across the circa 27-acre site complex, lending the impression of frequent yet relatively minor individual occupations undertaken over a long period of time (Egghart and Manson 2016).

In light of numerous archaeological observations suggesting limited variability in Middle Archaic site function and use, the paradigmatic base camp-procurement camp dichotomy should perhaps be reexamined. While it would seem reasonable that Middle Archaic people periodically coalesced into larger groups for economic and/or social purposes, the following settlement model de-emphasizes the Archaic base camp concept. Rather, it is proposed that the primary settlement mode of the period is represented by generalized encampments occupied by relatively small groups for relatively limited periods of time. This model is further explored in the Social/Political Pattern section.

Economic Pattern

Given the existing site data, analysis of Middle Archaic economic patterns is largely restricted to observations of lithic sourcing and inferences on period subsistence based site locations and stone tool assemblages. With respect to lithics, the Middle Archaic saw a shift toward locally available materials in the manufacture of chipped stone tools. Evidence for long distance procurement and/or trade is limited or absent altogether. Projectile points are usually manufactured on stone commonly found in the site vicinity: typically this consists of quartz and quartzite in the Coastal Plain; quartz and metavolcanic stone in the Piedmont; and mid-grade chert in the Ridge and Valley. An apparent exception is Morrow Mountain I. In Coastal Plain and Fall Line areas, Morrow Mountain I points are often made on a variety of lithic materials, including those that could only have been procured in the Piedmont region. This is clearly expressed in the Morrow Mountain I assemblages from the Cactus Hill and Nay sites (McAvoy and McAvoy 2015), the Ogle Collection sites (Egghart and Manson 2016), and the Deep Bottom Site Complex (Egghart 2014a). Such use of extra-local material may suggest that a geographically broader settlement range and/or the maintenance of outside trade relations by Morrow Mountain I groups.

Subsistence remains are mostly absent from Middle Archaic sites across the Commonwealth. Poor organic preservation also leaves researchers with a fundamentally compromised view of period material culture. In essence, artifacts available for study on Middle Archaic sites consist of fire-cracked rock, lithic tools, and chipping debris. Preservation of wood, leather, bone, bark, fiber and shell that may relate to non-hunting subsistence activities is essentially non-existent on open air sites.

A variety of small mammal, deer, and avian faunal remains were recovered from the Middle Archaic level at Daugherty's Cave (Benthall 1990). However, it is undetermined to what degree the material represents subsistence remains rather than having been deposited by non-cultural mechanisms. Faunal remains in the Middle Archaic levels at the Slade Farm Complex were limited to traces of unidentified large mammal, probably deer (McAvoy and McAvoy 2015).

At Cactus Hill, McAvoy and McAvoy (1997) reported notched cobble net–sinkers in association with Kirk Serrated points. Similar observations were noted at the Howard Site along the Little Tennessee River (Chapman 1977). These finds represent some of the earliest evidence for fishing on Archaic period sites in the greater region. A peak occurrence of Kirk Serrated points within the Ogle Collection in a tributary setting may also indicate anadromous fish exploitation (Egghart and Manson 2016).

At the Slade Farm Complex, small amounts of carbonized hickory shell were recovered in Middle Archaic contexts beginning in the LeCroy levels (McAvoy and McAvoy 2015). Also occurring in LeCroy contexts at Cactus Hill were small slab mortars and pitted cobble tools. These findings may point to an increasing use of hickory as a food source during the beginning of the period. A robust Archaic utilization of wild plant food is suggested at the Indian Creek V site (LeeDecker et al.

1991). It is noteworthy that a significant percentage of edible plant remains identified in archaeological contexts or in the wetland cores at Indian Creek V locality thrive on recently disturbed or cleared areas as components of early succession communities. This raises the specter that Archaic peoples occupying the Indian Creek V site actively manipulated the local environment through fire and/or other means in subsistence context.

Additional direct or indirect evidence of Middle Archaic subsistence practices in Virginia remains elusive, leading one to look outside the region for possible analogs. At Dust Cave, in Alabama, the limestone cave environment together with a highly intensive cultural site use resulted in organic preservation typically not encountered in humid climates (Sherwood et al. 2004). Ethnobotanical findings at Dust Cave are particularly noteworthy in that extensive use of nut, edible seed, and fruit resources is indicated beginning the late Paleoindian levels (Carmody 2009). Faunal remains were also well preserved within the cave contexts. The late Paleoindian occupations yielded evidence for the exploitation of aquatic resources, principally fish and waterfowl. By Middle Archaic times, a shift toward terrestrial animal species is indicated. This is accompanied by an increasing reliance on mast resources, principally hickory and oak. This trend mirrors findings along the Nottoway River in southeastern Virginia. The Dust Cave findings indicate that fruit continues to be consumed during the Middle Archaic, including hackberry, persimmon, sumac and grape. However, utilization of these resources diminished towards the end of the period (Carmody 2009).

Social/Political Pattern

Middle Archaic peoples in Virginia are generally assumed to have been mobile hunter-gathers with an egalitarian social structure. More nuanced aspects of the Middle Archaic social organization are open to interpretation. In the following model, Middle Archaic social patterns are predicated on a highly mobile life way in which relatively small groups of individuals followed a fairly regular, seasonally determined settlement round. The model is underpinned not so much by a finely tuned knowledge of locally available resources that sustained Middle Archaic peoples, but rather by a web of relations with nearby groups reinforced through extended kinship, reciprocal obligation, and social interconnections. This social interaction-based model draws heavily from Parker's (1990) discussion of Early Archaic and Middle Archaic settlement and demography published in the original COVA synthesis. Parker invokes Weissner's (1977) ethnographic studies of the !Kung San Bushmen. Living in the extremely challenging and unpredictable Kalahari Desert environment, the !Kung practice an elaborate system of exchange called *hxaro*. Weissner frames this exchange system and the reciprocal obligations that undergird it as a mechanism for pooling risk and thus providing a hedge against periodic, local resource shortfalls.

Even though the !Kung live in one of the most marginal environments on earth, their group interactions could have had analogs in Middle Archaic societies. The resource rich environment of Virginia would have supported hunter-gatherer populations many times that of the Kalahari. This would result in frequent contact between neighboring Archaic groups that can be viewed as competing for a common set of resources. Further, the prehistoric resource base of Middle Archaic Virginia, while undoubtedly rich, was geographically uneven. It would also not have been without significant episodic shortfalls. Poor mast years were likely particularly stressing to local populations. Not only would these events result in the loss of an important seasonal plant food resource, poor mast crops would have had a strong negative impact on deer, turkey and other important game species that depend on this critical resource to survive the winter. In the event of mast failure or other short-term stressors, small and highly mobile groups could draw on a web of standing social relationships to negotiate access to resources within other, obliging groups' territory. Such relationships between neighboring groups would not only serve as a hedge against periodic resource shortfalls but would also limit the potential for territorial conflict. Any socially bound system of exchange and cooperation would have would have complemented the primary risk reduction strategy manifested in the Middle Archaic settlement itself—namely a reliance on dispersed, transient encampments seasonally occupied by relatively small groups. This type of settlement mode would have enabled a flexible set of responses in the face of periodic resource shortfalls and similar challenges.

The relatively small social units proposed for this model, perhaps consisting of a few extended families, could not be fully self-sustaining. Regular interaction

with a sphere of neighboring groups would have been undertaken in order to maintain extended kin relations, facilitate mate selection for eligible group members, and exchange information on resource opportunities or external threats. These social interactions would have been fluid and geographically varied. Near simultaneous contact would have been maintained with multiple nearby groups, each of which would have fostered similar relationships with groups further afield. The result would have been an extended, interlocking web of social relationships tuned to and in support of a semi-transient, economically diverse hunter-gatherer life way.

Such a model of social and economic organization is fully consistent with the archaeological data pertaining to Middle Archaic group size, occupation term, and site use. It can also potentially help put into context other cultural aspects of the Middle Archaic. These include the temporal persistence of projectile point styles as well as the uniformity with which these styles are expressed across very large geographic areas. Some Middle Archaic projectile point types appear to have been in use for a millennium or more. Further, these types occur across very wide areas. LeCroy and similar bifurcate stemmed points are found from the southeastern states coastal plain, throughout the Appalachians and into the middle Ohio Valley, across the entire Middle Atlantic and into southern New England.

Egghart (2014b) notes that in order for projectile point types to persist across both space and time, powerful forces must have been in place to enforce orthodoxy. In this context, recognizable projectile point styles were not just the material culture expressions of highly traditional societies but would also have been intended as powerful, internally and externally directed emblems of group identity. Such emblems would have been central to the interconnected network of social contacts and economic cooperation between small, semi-autonomous groups. The substance of these interactions would have been manifested beyond the immediate parties involved. In essence, ongoing contacts would have fostered a self-perpetuating, far reaching affirmation of cultural identity. Consequently, peoples living in locations as different and distant from another as the South Carolina Piedmont and the Delaware Valley each manufactured and used nearly identical projectile point points for centuries without ever having been in direct contact.

The above model is predicated on cultural commonality. However, the cultural composition of the Middle Archaic was likely far from homogenous. Population pressure and migration would have made hostile contact between culturally disparate groups inevitable. The raiding and warfare that characterized many Late Woodland societies cannot be expected to have developed just prior to European contact. Inter-group conflict likely spans much of North American prehistory including the Middle Archaic. At Dust Cave, skeletal injuries (Carmody 2009) and demographic distortions (Davis 2004, Hogue 1994) exhibited in Middle Archaic burials point to endemic conflict. At the Mulberry Creek site, also in Alabama, Webb and DeJarnette (1942) reported multiple burials with Morrow Mountain points in perimortal association, including one individual with seven Morrow Mountain points inside the body cavity or imbedded in the skeletal structure. These finds leave relatively little doubt that violent conflict was part of Middle Archaic life among some groups.

The Middle Archaic also appears to have been a time of population growth. This would have had significant implications for settlement and both intra-group and inter-group relations. Evidence of population growth is expressed by an increase in Middle Archaic site components over the preceding period, as well as the larger number of Middle Archaic points in collections and excavated site assemblages. Egghart (2016) utilized time weighted point counts from the Ogle Collection sites to formulate estimates of relative population. In this study, point counts are tallied as Points per Hundred Years of Potential Occupation (Points/100yrs). Findings are shown in Table 5.3.

The Points/100 yrs Index strongly suggests that population was dynamic throughout the Archaic Period. A 38 percent decline in time weighted point counts is expressed for the first part of the Middle Archaic. This was followed by an explosive 426 percent rise in counts during the second half of the period, represented primarily by Morrow Mountain II and Guilford.

Time-weighted projectile point counts were also calculated for a comparative assemblage consisting of 8,338 points obtained during surveys in North Carolina before 1980 (Davis and Daniels 1990). These Paleoindian through Early Woodland points curated by the North Carolina Department of Cultural Resources were recovered from over 1,000 sites statewide. Results closely follow those of the Ogle sites. A 65 percent decline

Table 5.3. Time Weighted Point Frequency by Sub-Period Ogle Collection

Period	Point Types	Years	Points	Points/ 100 Yrs	Percent Change
Paleoindian 9200 BC – 8000 BC	Paleo Fluted, Hardaway Dalton, Hardaway Side Notched	1,200	6 6	0.5	0.n5/a
Early Archaic 8000 BC – 6500 BC	Palmer, Kirk Corner, Kirk Stemmed, Fort Nottoway, Decatur, MacCorkle, St. Albans	1,500	260	17.3	* Plus 3360 %
Middle Archaic-1 6500 BC – 4500 BC	LeCroy, Kirk Serrated, Kanawha, Stanly	2,000	214	10.7	Minus 38 %
Middle Archaic-2 4500 BC – 2500 BC	Morrow Mountain I and II, Guilford, Cedar Creek, Halifax/MA SN	2,000	1,125	56.3	Plus 426 %
Late Archaic 2500 BC – 1100 BC	Late Archaic Stemmed, All Broadspears	1,400	1,317	94.1	Plus 67%
Early Woodland 1100 BC – 400 BC	Early Woodland Group	600	216	36.0	Minus 62 %

Source: Egghart 2016
* Likely inflated due to under-representation of Paleo points in surface contexts

is noted for the first half of the Middle Archaic and a 655 percent increase for the second half of the period. Figure 5.1 graphically portrays the relative frequency of projectile points in the Ogle Collection and the comparative North Carolina assemblage. Frequencies by sub-period are expressed as the percent of the collection totals, allowing for direct comparisons.

Conclusion

Summary Review

Our understanding of the Middle Archaic era is far from complete. Nonetheless, an appreciable body of archaeological data pertaining to the period has been garnered. The field of paleoclimatology has made rapid strides in recent decades. Studies suggest that the Middle Archaic climate was more dynamic than many archaeological researchers previously considered. As a cultural period, the Middle Archaic was coeval with the peak in post-glacial warmth and dryness. This climate phase may have been characterized not so much by warm, stable condition but by extreme seasonal swings. The first centuries of the Middle Archaic would have experienced residual effects of the continental glaciation. Remnant Laurentide ice at high latitudes likely continued to influence atmospheric circulation patterns in ways that have no modern analogs. The North Atlantic basin was also subject to at least one final, catastrophic input of glacial melt water from the Agassiz and Ojibway glacial lakes, which disrupted hemispheric climate on a multi-century time scale.

As defined in most regional chronologies, the Middle Archaic period spans four millennia, and a wide range of projectile point types are known for the period. In this Plan, the appearance of bifurcate points, specifically LeCroy, marks a logical start date for the period. Halifax and apparently related side-notched forms are seen as the youngest Middle Archaic tradition, perhaps continuing on through the arrival of Savannah River in Virginia. It is also acknowledged that the occurrence of various

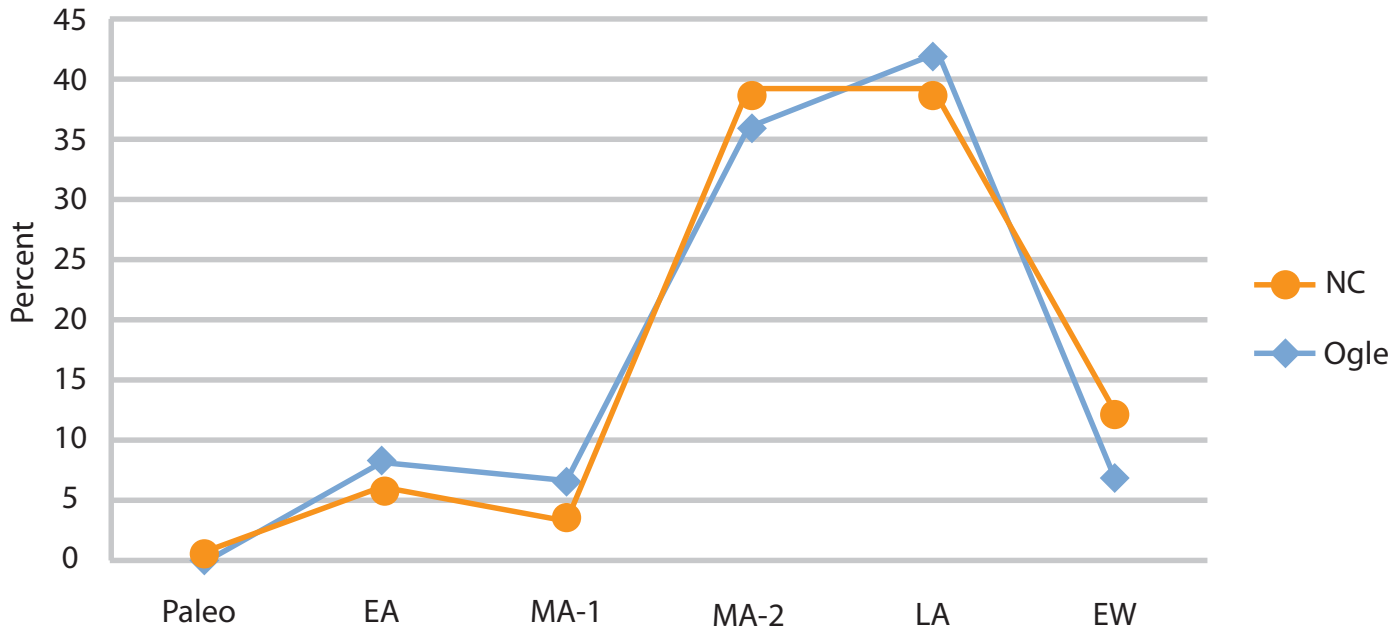

Figure 5.1. Relative Frequency of Points by Subperiod Ogle Sites and North Carolina

stemmed and side-notched forms such as the Brewerton and Lamoka extend into the Late Archaic era as well.

The beginning of the Middle Archaic is marked by several distinct material culture trends. These include a shift toward the use of local lithics for bifacial tool manufacture and of informal flake tools as cutting implements. Pitted cobble tools and crude chipped stone axes also begin to appear in Middle Archaic site contexts.

Subsistence data is sparse. Hunting of terrestrial game undoubtedly continued to be of major importance. The beginning of the period may have seen an increased utilization of mast resources. Along the Nottoway River, carbonized hickory remains begin to occur in LeCroy contexts, along with pitted cobble tools and slab mortars thought to be associated with nut processing. Isolated occurrence of net sinkers in association with Kirk Serrated points suggests that some fishing was undertaken.

Occupation span and functional activities on Middle Archaic sites seems to have been very similar across physiographic settings and landscape position. Period sites are described as representing relatively short term visits by a limited number of individuals. This chapter proposes a model of Middle Archaic social organization that accommodates these broad-based observations of settlement and site use. The proposed scheme draws on, and in some regard is an extension of the socially bound system articulated by Parker (1990) in the original COVA synthesis. In the current model, the concept of Middle Archaic base camps as well as group fission - fusion cycles are deemphasized. Instead of multi-tiered settlement schemes, it is proposed small, seasonally determined encampments geared to the exploitation a diverse set of local resources were the primary settlement mode. This would have required relatively frequent moves within what could be considered a semi-nomadic, territorially prescribed settlement round. Small groups intensively foraging within the productive environments of Middle Archaic Virginia could have supported themselves within a relatively limited home range. At the same time, frequent contacts with neighboring groups in all directions would have been the norm. These ongoing interactions would have been shaped by and continuously reinforced through extended kinship and other social ties.

Implicit in such relations would be a system of reciprocal obligation and material cooperation. The result would have been an interlocking web of social relations between small groups of efficient foragers well adapted to exploiting the rich but variable resources of Middle Archaic forest environments. Such a network of interconnecting social relations would also have continually reinforced a common cultural identity, archaeologically expressed though the persistence of specific projectile point forms across both space and time.

Strengths and Weaknesses of Existing Data

There are both strengths and weaknesses in the existing data pertaining to the Middle Archaic in

Virginia. A primary weakness is the paucity of excavated sites with intact contexts. Also challenging researchers is general lack of organic preservation. The archaeological record is also clouded by the loss of coastal zone and Coastal Plain riverine sites to rising sea levels. West of the Fall Line, many floodplain sites are likely buried and/or unevenly preserved.

There are significant strengths in the existing data as well. Middle Archaic populations across Virginia appeared to have been relatively substantial, and site components are relatively common. McAvoy and McAvoy's (2015) exhaustive summary of work along the Nottoway River Fall Line demonstrated that fairly modest Middle Archaic occupations can provide high quality archaeological data. The identification of intact occupation floors and features with viable radiocarbon materials on these sites was an archaeological breakthrough. Prior to publication of the Nottoway River site excavations at the Slade Complex and Cactus Hill, our understanding of the period was based largely on studies undertaken outside Virginia. At present, the quantity and quality of the archaeological information obtained along the Nottoway River environs overshadows what has been gleaned from all other parts of the Commonwealth. Researchers should remain cognizant that the wealth of data from this corner of Virginia may provide a regionally biased picture of the Middle Archaic in state-wide context.

Directions for Future Research

At present, our understanding of Middle Archaic material culture, chronology, subsistence, and social organization seems fragmented and incomplete. There also remains much to be learned with respect to the climate and environmental conditions under which Middle Archaic peoples lived. Future work should be tailored to address these basic research aims common to all prehistoric investigations

The best Middle Archaic archaeological contexts identified in Virginia are associated with minor aeolian landforms in the southeastern part of the state. It should be noted that few, if any stratified floodplain sites have been excavated. Such sites are sure to be present in many parts of the Commonwealth, most notably the Piedmont sections of the Potomac, James and Roanoke rivers, the South Fork of the Shenandoah, and the New River. Investigation of intact floodplain sites would help to geographically even out the existing data. West of the Blue Ridge, cave and rock shelter sites are likely to hold intact Middle Archaic sites. Systematic investigation in these settings should yield important archaeological information. In the Appalachian Plateau, rock shelters may contain archaeological deposits unlikely to have survived in the region's rugged open air settings. Limestone caves and vestibules of the Ridge and Valley may also contain important sites. The more favorable preservation characteristics of cave environments, particularly in limestone regions, significantly add to the research potential of such settings.

The following specific questions are intended to frame future in Middle Archaic research. These research questions include:

What was the nature of Middle Archaic subsistence practices and how may these have differed from those of the Early Archaic period?

Given the extreme scarcity of organic preservation on Middle Archaic sites, what other lines of evidence can be pursued in the reconstruction of period diet and food ways?

As an increasing utilization of mast is one of the few clearly recognizable subsistence trends of the period, what are the implications of this shift? Is the greater use of mast attributable to that resource's new abundance due to climate-driven changes in regional forest make up? Alternately, could other factors be at play to include population growth and a need for readily storable food sources?

How might the poor organic preservation characteristics on most Middle Archaic sites distort or mask subsistence evidence, particularly in regard to the utilization of plant food resources?

Does the sharp, multi-fold increase in projectile point counts observed for the second half of the Middle Archaic accurately reflect population numbers?

What other lines of evidence can be pursued in addressing the question of Middle Archaic populations. What would be the full cultural implications for such a rapidly increasing population? What may have triggered and/or supported such rapid growth and what might have been its consequences?

To what extent does the wide variety of Middle Archaic point types represent in situ cultural development and ethnogenesis?

Conversely, which point types may have originated outside the region and to what degree does their occurrence reflect in-migration?

What may have been root causes for any in-migration? Alternately, could the occurrence of certain point styles

known to have originated outside of present day Virginia be the product of the slow diffusion of material culture traits across space and time?

In the case of in-migration, what kind of social and cultural dynamics may have accompanied contact between local groups and new arrivals?

How were Middle Archaic groups organized in terms of size, settlement strategy, and internal and external social relations?

In light of the fact that long standing models of hierarchical settlement type based on group fusion-fission have not been validated, what alternate constructs should be considered?

How might Middle Archaic climate and environmental conditions have influenced cultural developments of the period?

Could the pronounced climate reversal of the 8.2k Cold Event have been a driver in the material culture changes and other shifts that seem to define the Early Archaic to Middle Archaic transition?

How might the subsequent period of post-glacial warmth that extends through much of the Middle Archaic have influenced or even shaped period life ways?

Was the era of post-glacial warmth or Hypsithermal characterized by warm, stable conditions, or was it a time of short-term climate swings and seasonal extremes. In the latter case, how may hunter-gather populations of the time responded to meet the challenges of an unstable climate and associated resource short falls?

Alternately, if Middle Archaic climate was relatively stable, could the warm, dry conditions of the Hypsithermal have fostered an extended period of cultural continuity as apparently suggested by the temporal persistence of specific point types.

Chapter 6

State Plan and Research Design Late Archaic (2500 BC–1100 BC)

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Introduction

Archaeological study of the Late Archaic presents researchers with distinct challenges. Despite the large number of sites known in the Commonwealth and the prevalence of clear material culture markers, the Late Archaic can be regarded as one of the more complex and difficult to understand eras in prehistory. Not long ago, our knowledge of the Late Archaic was fragmented and reconstructions of period lifeways seemingly based around studies undertaken outside the Commonwealth. Over the past quarter century, archaeological knowledge has increased significantly thanks to Section 106 compliance investigations, academic endeavors, as well as efforts by a dedicated avocational community. This chapter synthesizes this new and previously garnered archaeological data in the context of developing a framework for continuing research and understanding of this critical period in regional prehistory.

Chapter Organization

First provided is a general description of the Late Archaic in Virginia. The second sub-section reviews the basic chronology and material culture hallmarks of the Late Archaic. Environmental factors are then discussed in relative detail, as these had a significant influence on prehistoric cultural changes over time. A summary overview of Late Archaic research to date is then given. Following this summary, the primary research themes of *Chronology and Material Culture*, *Settlement Pattern,* and *Economic Pattern* are discussed by physiographic region. By contrast, the fourth theme of *Social/Political Patterns* is addressed in a Virginia-wide context. The final section assesses the strengths and weaknesses of the existing body of archaeological data. Also provided are specific questions posited to guide future research.

General Description of Late Archaic in Virginia

Several factors make archaeological study of the Late Archaic both challenging and rewarding. Foremost is that the Late Archaic represents a time of pronounced cultural developments. In contrast to the apparently relatively stable life ways of the Middle Archaic, the Late Archaic witnessed the adoption of novel technologies, shifts in subsistence ways and settlement, and the advent of long distance trade/exchange networks. Further, these shifts in lifeways did not occur uniformly across space and time, thus amplifying an ongoing process of cultural regionalization. Nascent socio-political complexity can also be inferred, representing a break with the egalitarian order presumed to have been the norm since humans first arrived in the Western Hemisphere. In addition, analysis of the Late Archaic cultural dynamics must account for population growth and resultant direct and indirect effects to include resource competition migration, and conflict. While these same forces had likely been operative on some level during the preceding millennia, they do not appear to have had a significant role in shaping the cultural systems of earlier times. Environmental change and attendant human adaptations have traditionally been emphasized in the reconstruction of Late Archaic life ways. Environmental factors considered to have helped

shape the Late Archaic include: 1) the full development of the Chesapeake Bay estuary; 2) expansion of inland swamps/wetland areas; and 3) the stabilization of inland river floodplain systems. In addition to taking advantage of the rich resources offered by these newly developed or enhanced ecological settings, Late Archaic peoples also appear to have begun to deliberately manipulate the local environment through the use of fire and other means. At this point, it may be useful to review traditional perceptions of the Late Archaic. These could be summarized in the following generalized narrative:

> Hallmarks of the Late Archaic include increasing degrees of sedentism, the advent of long distance trade networks, and an intensification of food resource exploitation. Also characteristic of the time was a riverine settlement focus. A marked increase in site frequency suggests both population growth and movements into new environmental zones. An intensive seasonal exploitation of anadromous fish and shellfish beds is regarded as having played a significant role in subsistence. Postulated for the Late Archaic is the Big Man model of social organization. Certain individuals or Big Men rose to prominence through force of personality, achievement, and largesse, allowing them coordinate communal activities and exert influence on group decision making. Recognized archaeological features include large platform hearths and storage pits for accommodating minor food surpluses at extended term, base camp-type sites located in and around resource rich zones.

While few archaeologists would argue against the broadest tenets outlined above, the danger is that these and similar statements overly generalize Late Archaic trends and obscure what are likely to have been complex and layered cultural shifts. More importantly perhaps, traditional perceptions may be colored by findings on large riverine sites to include "classic" sites excavated by pioneering archaeologists. In that regard, the above statements reflect, in part, long held conceptions of the Late Archaic that may not be fully accurate. The generalizations also do not accurately capture Late Archaic life ways across Virginia's diverse physiographic settings and environmental zones, particularly the western regions. Nonetheless, Late Archaic cultural trends were pronounced, and are readily observable across broad geographic areas. Most archaeologists recognize considerable variation in the timings and the extent to which societies that inhabited what is now Virginia participated in these trends. Thus, Late Archaic life ways can perhaps best be thought as a patchwork or mosaic that when viewed against the backdrop of both significant ecological changes and cultural adaptations to those changes help to define the period.

Environmental Setting

Environmental factors have traditionally been seen as closely linked to Late Archaic cultural change. However, the role that environmental shifts, particularly climate change played in the cultural developments of the period may well have been overemphasized, with some archaeologists seemingly espousing environmental determinism. On the other hand, environmental change leading up to the Late Archaic was indeed profound, particularly east of the Fall Line, with human adaptations following suit. Nonetheless, when delving into the underlying currents of Late Archaic cultural change, research would be well served by de-emphasizing pure environmental drivers while giving appropriate consideration to cultural stimuli and responses.

In essence, two major physical forces acted in concert to shape the mid-Holocene environment of what is now Virginia. In grossest terms these were: 1) a warming and drying of the climate; and 2) ongoing sea level rise with resultant expansion of coastal estuaries and inland swamp settings. The full role that climate may have had in shaping Late Archaic life ways has long been debated, however what is certain to have had a direct influence on period lifeways was the full development of the highly productive Chesapeake estuary system. The interrelated environmental themes of climate shift and sea level rise, as well as their potential influence on Late Archaic cultural dynamics are discussed in the following respective subsections.

Late Archaic Climate

Holocene warming and drying of the North American climate fostered the northward spread of deciduous hardwoods as well as southern pine species, resulting in the establishment of essentially modern forest conditions during the Archaic period. Considerably less certain is the exact nature of subsequent and shorter term oscillations in climate, and the effect these shifts

might have had in terms of human adaptations. Some researchers, and Custer (1984, 1986, 1989) in particular, have argued that a peak in warm/dry conditions was coeval with the beginning of the Late Archaic. Custer further maintains that this occurrence, which he refers to as the xerothermic, played a significant role in cultural changes of the period including, at least to some extent, the development of the Broadspear tradition and rise of long distance exchange networks. The argument for a Late Archaic warm/dry peak was based in measure on the aeolian and alluvial soil discontinuities recorded during archaeological investigations. Particular attention was placed on the occurrence of aeolian soils capping period occupation floors (see Curry 1980, 1992; Curry and Ebright 1989; Heite and Blume 1995). While the presence of aeolian soils in association with Late Archaic archaeological contexts is not in dispute, many researchers now see the phenomenon as more closely linked to the changing hydrological regimes of adjacent waterways, and possibly highly localized anthropogenic factors (Brooks et at. 1996; Brooks et al. 1998; Mouer 1985; Stevens 1991) rather than being suggestive of broad climatologically determined conditions. Blanton (2003) succinctly summarizes this debate on the mid-Holocene warm/dry peak or Hypsithermal while endorsing an emphasis on local-scale analysis of both fluvial and aeolian depositional patterns. Mouer (1985) first presented the occurrence of aeolian deposition over archaeological surfaces on Coastal Plain James River terraces as a highly localized phenomenon related to the movement of sediment originating in denuded channels, point bars and shore line colluvial slumps or calving of bluff faces. Such occurrences and the aforementioned changes in riverine sedimentary environments as related to aeolian soil transport are closely linked to rapidly rising sea levels. In general, Atlantic Coastal Plain rivers responded to mid-Holocene sea level rise-induced reduction in gradient by meandering and cutting multiple braided channels (Brooks et al. 1998; Schuldenrein 1996). This resulted in the creation of point bars along the inside of bends, and sloughing and calving of banks along the outside of the channel cuts. During time of low water and dry weather, fresh sediments would be desiccated and made available for aeolian transport. This aeolian activity would have largely ceased with further reduction in river gradient as floodplains became characterized by low-energy, fine textured deposition, after which they became fully inundated and the drainages embayed. In South Carolina, Brooks et al. (1998) present the onset of aeolian activity in the Wateree River to Big Bay sand sheet, and its subsequent cessation as being fully independent of climate factors. Brooks et al. (1998) cite the sea level rise-induced transformation of the Wateree River from a braided and choked floodplain, to one characterized by the low-energy, overbank deposition of fine sediment by around 3000 BP. This latter condition resulted in emergence of dense floodplain vegetation and together these developments essentially shut off the river as a source of sediment available for aeolian transport (Brooks et al. 1998:57). Data from the Coastal Plain Savannah River indicate similar transformations in local environments around 4000-3000 BP which closed off the riverbed and floodplain as a source of aeolian sediment (Brooks et al. 1998:57).

In addition to aeolian soil deposition not necessarily being directly linked to long term dryness, other studies firmly place the Hypsithermal well prior to the Late Archaic. Joyce (1988) presented convincing arguments for the earlier (8500 BP to 4500 BP) peak based on palynological studies. Delcourt and Delcourt (1985) similarly put the period of maximum post-glacial warmth and aridity from 7500 BP-5000 BP while noting that these dates are in agreement with climate reconstructions for the Great Plains and near Midwest regions. In reviewing a range of paleoclimate data and studies relevant to Eastern North America, Anderson (2001) characterizes the Hypsithermal as essentially coeval with the Middle Archaic cultural period. The conclusions of all these synthetic analyses have the peak of warm-dry conditions preceding the beginning of the Late Archaic by significant margin. While Carbone's (1976) groundbreaking work defined a general mid-Holocene climatic shift to warm/dry conditions, a direct linkage of any peak in these conditions to the development of Late Archaic life ways per se is unsupported on a purely chronological basis.

The field of paleoclimatology is rapidly evolving. Ongoing and future work is sure to benefit understanding of prehistoric environments and the archaeological study of hunter-gatherer cultures that operated in those environments. With respect to the second half of the Archaic period, it is perhaps important to note that underlying drivers of climate conditions were similar to that of contemporary times. By the Late Archaic, factors that likely strongly influenced Early Holocene to Mid

Holocene climate of North America, to include lower sea levels, presence of the remnant Laurentide Ice Sheet, and episodic releases of continental glacial melt waters into the North Atlantic (Yu and Eicher 1998; Hu et al. 1999) were no longer operative. The exact nature of the Late Archaic climate is uncertain. However, a body of archaeological data suggest significant short to mid-term oscillations in precipitation patterns as expressed through by the apparent unstable nature of Middle Atlantic floodplain surfaces during the period (Klein and Klatka 1991; Klein 2003; Vento et al. 2008). Aeolain soil deposition on regional Late Archaic occupation surfaces discussed by Custer (1989) and others could be seen as related to the combined effects of recurring, episodic dryness and anthropogenic factors. Gunn (1997) characterizes the climate for the period 4400 to 2600 BP as subject to significant fluctuations on a century scale. This extended period of variable conditions would appear to have would have been bookended by the preceding Hypsithermal and a brief but intense warming at the end of the Late Archaic. Greenland ice core data indicate that the North Atlantic climate at the end of the Late Archaic around 1200 BC was warmer than any time since 7500 BC. This was followed by a sudden and dramatic drop of two degrees C by ca. 1000 BC (Willemse and Tornqvist 1999). Additional discussion of Late Archaic climate appears in the Paleoclimate and Environment chapter of the chapter.

Blanton (2003) argues that climate factors alone had relatively little effect on hunter-gatherer adaptations of the mid-Holocene, at least on pan-regional scale. More local-scale factors may have had some impact. For example, during times of recurring drought or short-term drying of the climate, areas with exceedingly well drained soils may have been particularly susceptible to devegetation and aeolian soil loss, particularly if coupled with cultural and/or natural source fire events. In that regard, it should be noted that most archaeological sites at which aeolian discontinuities have been noted lie in northern Delmarva. Surface soils in this region are typically underlain by fluvial deposited/reworked sands and gravels known as the Columbia Formation (Groot and Jordan 1999). Consequently, upland terraces are often very well or exceedingly well drained. The unconsolidated nature the Columbia Formation stands in sharp contrast to substrate across much of the Virginia Coastal Plain, which is normally characterized by a well-developed B horizon, often underlain by marine clays. These latter subsoil/substrate types possess greater moisture retaining characteristic than the sandy and unconsolidated sediments of the Columbia formation. In this regard, observations of Late Archaic aeolian activity in Delaware and associated inferences on local climate may not relate directly to conditions on the Virginia Coastal Plain west of the Chesapeake, but may have some bearing on the Virginia portions of the Delmarva Peninsula.

Highly local scale variation in precipitation may also have had a direct effect on the Late Archaic forest cover and other vegetative communities, perhaps more so in the western regions of the Commonwealth where high mountain ridges can significantly influence meteorological conditions. Contemporary precipitation totals are remarkably consistent across Virginia east of the Blue Ridge. Virtually the entire Piedmont and Coastal Plain average between 40 and 45 inches of rain per year, with most locations falling near the mid-point of this range. By contrast, portions of the west facing Blue Ridge and the Allegheny highlands average between 46 and 58 inches (United States Department of Agriculture 1991). Similarly, the mountains of far Southwest Virginia average around 60 inches of precipitation (Hayden and Michaels 2000). This difference is attributable to orographic lift, by which moisture-rich air masses are cooled as they rise over high terrain, triggering precipitation (Abrams 2008). The same phenomenon results in reduced precipitation along the adjoining valley floor in what is commonly referred to as a rain shadow. Due to this rain shadow effect, much of the Shenandoah Valley averages only around 36 inches of precipitation per year. Isolated areas in Rockingham County receive 33 inches or less (Southeast Regional Climate Center 2009) which is near the threshold at which forest cover thins and grasslands begin to occur (Knox 1983). A similar, though less pronounced rain shadow effect is expressed in precipitation totals along the middle reaches of the New River Valley. However, reductions in precipitation are not evident in the higher elevation, and narrower valley floors of far Southwest Virginia (United States Department of Agriculture 2007). In times of prolonged drought or short term climatological dryness, the valley rain shadow effect and its impact on vegetative cover is likely to have been pronounced. Dryness would further have been exacerbated by the subterranean drainage

characteristics of the limestone valley floors. Locally, these conditions could have steered human foraging and settlement rounds towards higher elevations to exploit mast bearing hardwoods and game species heavily dependent on this resource. As such, mid-Holocene warmth/dryness may actually have played a greater role in shaping human adaptations across the mountainous western regions of the Commonwealth rather than in coastal/estuarine zones.

Sea Level Rise

While the degree to which climate may have influenced Late Archaic lifeways remains open to debate, it is beyond dispute that the cultural period roughly corresponds with the final development of the greater Chesapeake estuary system. Further, the rich and highly productive resources associated with new or enhanced estuarine environments undoubtedly played some role in cultural changes of the time. In addition, sea level rise also fostered the expansion of non-tidal wetlands and the stabilization of inland Coastal Plain river systems, also resulting in the development of highly productive environmental settings. However, it should again be emphasized that areas west of the Fall Line remained largely unaffected by these changes.

Holocene period relative sea level curves generated by Kraft (1977) for the Delaware Bay have been used in reconstructions of the Middle Atlantic Coastal Plain settings. More recently, Colman et al. (1991) provided data specific to the Chesapeake and its tributaries. In summary, their analyses show that rising ocean waters reached the present day mouth of the Chesapeake around 10,000 BP. Ongoing, relatively rapid rise in sea level resulted in waters backing into the massive ancestral Susquehanna River, eventually overtopping the channel edges to form the Chesapeake Bay. This process was well underway by 6000 BP. By 4500 years ago, rising waters had pushed well up the Susquehanna River and its major tributaries of the Potomac, Rappahannock, and the James. Sedimentological data from streambed cores point to the embayment of the Lower James River as far upstream as the mouth of Baileys Creek in eastern Henrico County by around 5000 BP. (Johnson and Peebles 1983). Full tidal influence likely extended to the base of the Falls during the following millennium. By 3000 BP, the entire Chesapeake estuary system had essentially reached its modern day configuration (Colman et al. 1991). More recent studies (Bratton et al. 2003) have placed earlier parameters on the development of the main stem Chesapeake. Core lithologies were assessed for fossil oyster shell and dated using accelerated mass spectrometry. Total organic carbon and carbon isotopes were also analyzed, as were values for the trace element rhenium as markers of developing estuarine bottom conditions. Results constrain the fresh-brackish transition in the northern main stem Chesapeake Bay to between 7.4 and 8.2 cal ka (Bratton et al. 2003).

Highly productive settings associated with the developing estuarine and freshwater tidal riverine systems clearly offered Late Archaic peoples diverse and abundant food resources. A focused orientation to these newly expanded environments can be seen as a significant element in the intensification of resource exploitation characteristic of the period. Estuarine resources such as shellfish, anadromous fish, and migrating waterfowl, while seasonally abundant, are highly localized in availability. A focused and intensive exploitation of these localized resources likely helped shape period subsistence practices but may also have had an influence on the division and organization of labor. This organization of labor and the production and management of surpluses has significant implications for developing social organization. Correspondingly reduced residential mobility would also have an effect on fecundity and population dynamics. All these factors can be presumed to have operated within a reinforcing feedback system. The intensification of food resource exploitation would not have been limited to the Coastal Plain zones. Intensive foraging and wild food harvesting is equally likely to have been a component of developing Late Archaic subsistence regimes from the Piedmont river floodplains and across the Appalachian highlands, possibly in conjunction with localized modification of the forest cover. These subsistence aspects are discussed in detail under the *Economic Pattern* section.

Rising sea levels have also had a direct and profound impact on the preservation of archaeological site locations. Given the sharp reduction in the rate of relative sea level rise between 6000 BP and 3000 BP (Colman et al. 1991), the Late Archaic represents the last prehistoric era for which a significant portion of site locations have been lost to rising ocean waters. It is certain that significant Late Archaic occupation sites lie on the floor of the Chesapeake Bay (Blanton 1996, 2003), particularly along the shallowly inundated terraces overlooking the

major river channel confluences. This condition leaves us with a compromised archaeological view of period settlement. The role that these now submerged settings played in the overall settlement and subsistence practices of the Late Archaic may never be fully known.

From an ecological perspective, changes to Coastal Plain rivers in response to sea level rise has clear implications for development of Late Archaic life ways. In addition to the ultimate creation of the Chesapeake Bay, the strongly meandering tributary river channels physically set the stage for the development of the highly productive inland freshwater tidal systems. This physical transformation is perhaps most vividly expressed on the Chickahominy River and its associated swampy floodplain (McLearen 1987; Schuldenrein and Blanton 1997) but was operative along all the major drainages east of the Fall Line. Meander loops and abandoned channels and low lying floodplain of these drainages were transformed by rising waters into highly productive aquatic environments. Rising waters also extended the reach of developing wetlands up the adjacent tributary streams and also wetted former low lying coastal uplands, fostering the development of interior, non-riverine wetlands. As an example of the latter, Blanton (2003) cites the transformation of the Dismal Swamp from an area interspersed by low scarps and a web of stream valleys, into a single expansive wetland. During the Late Archaic, this area was in an intermediate stage of the process, characterized by a diverse and ecologically productive mix of low uplands and sluggish stream courses/developing wetlands. Not surprisingly, this stage in the Dismal Swamp area's physical transformation was coeval with its greatest prehistoric use (Blanton 2003).

Channel and floodplain stability has strong implications for the preservation and archaeological visibility of site locations outside the Coastal Plain as well, albeit independent of sea level rise. Researchers working in the Middle Atlantic have noted that Holocene floodplain depositional patterns were dynamic. Periods of apparent floodplain stability seem punctuated with active deposition and possibly surface erosion. These conditions could serve to mask Late Archaic floodplain occupations through site burial or alternately result in scour damage of period occupation surfaces. The Late Archaic-Early Woodland transition appears to have been a time of floodplain stability, which had been preceded by more dynamic conditions (Klein and Klatka 1991; Klein 2003). Floodplain stability is archaeologically expressed through the existence of buried surface (Ab) horizons. By contrast, intervening accretionary deposits consisting of weakly developed B-horizons (Bw) and/or episodic, coarse-textured flood deposits (C-horizons) can be viewed as markers of climatological/fluvial instability. Also of relevance is the observation that Late Archaic floodplain surfaces are characterized by extensive lateral channel migration on smaller tributary streams and relatively rapid alluviation along the larger drainages (Vento et al. 2008). This active (and perhaps unstable) nature of Late Archaic floodplain surfaces across northern Middle Atlantic watersheds mirrors broad-based archaeological observations in Virginia (See Klein and Klatka 1991; Klein 2003) and has significant implication for the condition and archaeological visibility of Late Archaic site components in fluvial settings west of the Fall Line.

Material Culture Overview of The Late Archaic

The chronological span of the Late Archaic in Virginia is herein defined as 2500 BC to 1000 BC. As with the other prehistoric subdivisions used by Middle Atlantic archeologists, these dates are meant to provide an organization framework for research discussion rather than absolute demarcations. However, the temporal categorization of the Late Archaic sub-period carries additional challenges. For one, the Late Archaic is characterized by increasing cultural diversity and regionalization compared with preceding times. In addition, the timings and scope of these cultural changes seemed to have been variable, further complicating the material culture record.

The Savannah River point tradition represents a logical demarcation for the beginning of the Late Archaic in Virginia. Archaeologists working in states north of the Commonwealth typically include somewhat earlier, narrow-bladed points within the period. These types include Lamoka, Bare Island, and Poplar Island. Dent (1995) sees these forms as analogous to the more southern Halifax tradition. In Virginia, Halifax is usually included in the latter portion of Middle Archaic. By contrast, Poplar Island has association with stone vessels in the Northeast (Ritchie 1971). Temporal placement of the Bare Island type is uncertain, however most researchers ascribe a Late Archaic association. Defining the end of the Late Archaic is even more problematic than establishing

the beginning of the period. Traditionally, the onset of the Woodland Period was defined by the adoption of fired clay vessel manufacture. The documented co-occurrence of early ceramics with late period point types such as Orient Fishtail and Small Savannah River-like forms clouds this distinction. Other cultural traits also appear to span the traditional Late Archaic to Early Woodland demarcation. As such, it is important to view the transition between the two periods as a gradual one.

In addition to defining the onset of the Late Archaic in Virginia, the Savannah River tradition stands as a dominant material culture trait of the period. In its morphology, size, and technique of manufacture, the Savannah River point and its derivatives are unlike any other hafted tool known for the Middle Atlantic region. Also largely unique to Savannah River is a strong orientation towards tough and highly durable materials; a factor which should be seen as having significant functional and behavioral implications. In its classic form described by Coe (1964), Savannah River points feature a lanceolate blade, well-pronounced shoulders, and a very slightly tapered stem with a concave base. Two major variants of Savannah River are recognized. One is a narrow blade version of the classic form sometimes referred to as the Holmes point (McNett n.d.; Dent 1995). Found across the eastern and northern halves of Virginia, the narrow blade variant seems to most commonly occur in the Potomac drainage. It occurs in numbers along the Coastal Plain James River and the Carolina Sounds drainages as well. Along the Nottoway River, McAvoy and McAvoy (1997) note that the narrow blade and wide blade varieties are generally not found together in fire-cracked rock (FCR) feature associations. In the Inner Piedmont and Blue Ridge sections of Northern Virginia, Nash (2009) views the narrow blade or Holmes point as late Savannah River manifestation. However, at the Slade Site, McAvoy and McAvoy (1997) report an uncalibrated radiocarbon date of 4070 +/-80 BP obtained from carbonized hickory nut recovered from an FCR feature in association with narrow blade Savannah River variants. McAvoy and McAvoy (1997) also cite stratigraphic evidence from other Nottoway River sites that collectively hint toward the narrow-blade variant dating slightly earlier than the classic form, at least in southeastern Virginia.

The second Savannah River variant has the wide blade typical of the classic form but exhibits more weakly defined shoulders and a short, strongly contracting stem. This form was first described by Claflin (1931) at Stallings Island, Georgia and is archaeologically well documented across much of Virginia (McLearen 1991a). Geier (1996) applied the name Cattle Run to better define this strongly contracting stem Savannah River form. Unfortunately, the variant is often erroneously attributed to the Morrow Mountain tradition (Blanton 2003; McLearen 1991a) despite its clear link to Savannah River by way of similarity in manufacture, size, lithic preference, associated material culture, and other attributes.

Findings on single component Late Archaic encampment sites in the James River Coastal Plain (Stuck et al. 1997; Pullins and Blanton 2000) as well as the northern Piedmont (Jones 2000) suggest that the respective Savannah River variants do not represent functionally different tools within the same kit, nor do their form appear to be reflective of idiosyncratic preferences in style. The same conclusion was arrived at by Egghart and Manson (2016) based on analysis of site assemblages along the Nottoway River Fall Line. Rather, the three main varieties appear to be distinct elements within the greater Savannah River tradition.

Another variant is Small Savannah River, formally described by Oliver (1981) and elaborated on by Gleach (1987). However, many archaeologists consider Small Savannah River a fully separate type. Other than a reduced size, Small Savannah River shares numerous attributes with the classic form. One clear difference, however, seems to be a squatter, more squared stem. A shift toward non-quartzite material (often quartz) is also apparent. McAvoy and McAvoy (1997) place Small Savannah River towards the end of the Late Archaic based on stratigraphic positions recorded along the Nottoway drainage. An association with early ceramic wares has been reported for the type (Mouer 1991).

In addition to Savannah River and its variants, a number of other Late Archaic point types are found across Virginia. Most of these are associated with the material culture sequences of the northern Middle Atlantic and the Northeast. These include the aforementioned Lamoka, Bare Island, and Poplar Island types as well as Brewerton. Also found are Susquehanna and Perkiomen, as well as the equally distinctive Fishtail point and apparent derivations such as Dry Brook.

Though not abundant finds, Fishtails seem to have a relatively even distribution across Virginia. Perkiomen

points are found mostly within the Potomac drainage, with a curious and notable concentration of occurrence known for the western Dismal Swamp margins (Blanton 2002). Susquehanna points are also common only in the Potomac drainage. However, both Susquehanna and Perkiomen types are occasionally found along the Coastal Plain James River (Mouer 1984) and as far afield as extreme Southwest Virginia (Egghart 1991; Jones 2001). Also in Southwest Virginia, McLearen (1991a) details the occurrence of small, somewhat crudely flaked stemmed and side notched points on sites with Late Archaic occupations. The stemmed varieties are similar to Chapman's (1981) Iddins type for the lower Tennessee Valley. Voigt (2000), on the other hand places these side notched varieties within the greater Lamoka tradition, which has a distinct Northeastern association. Crudely stemmed and side notched points also occur in possible Late Archaic contexts in the Shenandoah Valley (Boyer 1982; McLearen 1991a) and along the Piedmont Potomac River (Gardner 2000).

The Slade point also warrants mention. This type has been formally described by McAvoy and McAvoy (1997) in the Carolina Sounds drainage. It is very similar to Broyle's (1976) Buffalo Expanding Stem for the Appalachian region, Mouer's (1986a) State Farm type, and the Lobate Point as described by Knepper (1995) for Northern Virginia. The type has not been firmly dated. Along the Nottoway River, Slade points have been recovered from stratigraphic contexts above Halifax but below Savannah River (Egloff and McAvoy 1990). Temporal placement of the Slade/Lobate Point is uncertain but the type may also fall within the latter portion of the Middle Archaic. Fishtails can be thought of as spanning the traditional Archaic-Woodland break, as perhaps do Small Savannah River as well.

Table 6.1 summarizes the major point types relevant to the study of the Late Archaic together with their broadly accepted temporal affiliation. This scheme differs slightly from the classifications typically used by archaeologists working north of the Potomac River.

In Virginia, steatite vessels are most closely associated with the Savannah River tradition (McLearen 1991a), albeit as a late manifestation. This stands in contrast to areas north of the Potomac where steatite is largely associated with Perkiomen points (Witthoft 1953) and Susquehanna and Fishtail varieties (Ritchie 1965, 1971). The degree to which steatite vessels were obtained and used in Virginia outside of the Savannah River realm

Table 6.1: Point Types Relevant to the Late Archaic

Type	Distribution	Notes
Calvert	Common only in Potomac drainage	Early Woodland
Fishtail	Statewide	Early Woodland Transition
Piscataway	Primarily N and E	Late Archaic?/Early Woodland
Perkiomen	Statewide; rare; cluster in SE, NE	Isolated occurrence elsewhere
Susquehanna	Common only in Potomac drainage	Isolated occurrence elsewhere
Small Savannah River	Statewide	Archaic to Woodland transition
Cattle Run	Mostly South	Later variant?
Savannah River	Statewide	Dominant in all areas but SW
Savannah River Narrow	East of Blue Ridge, most common N.	Temporal range unclear
Poplar Island	SE; Intermittent north of James	Temporal/geo. range unclear
Bare Island	SE; Intermittent north of James	Temporal/geo. range unclear
Iddins-like	SW, Great Valley?	Temporal/geo. range unclear
Lamoka	Statewide	"Lamoka-like" often applied
Slade/Lobate	Cluster in SE and N Piedmont	Middle Archaic Transition?
Halifax	Statewide	late Middle Archaic
Brewerton Cluster	Statewide?; rare outside N VA	late Middle Archaic

is uncertain but would be important to establish. The procurement and use of steatite vessels carries with it some rather obvious implications. Principal among these is the likelihood that the heavy and bulky items were transported from distant quarry sources by boat. Prior, direct or indirect evidence for the use of water craft is generally absent throughout the Middle Atlantic region. The use of steatite vessels also has broad implications in regard to settlement and food resource utilization. Stone vessels allow for efficiencies in food preparation, particularly through slow cooking methods that help retain fat and other nutrients. The vessels would also be of particular utility in rendering bone and the processing oil-rich seeds and similar resources. In short, the adoption of steatite vessels would have had a self-reinforcing influence on settlement and the intensification of food resource utilization. Further, the need or desire to obtain steatite from distant and fixed quarry locations would have been a powerful stimulus for interaction between geographically disparate groups by way of trade and/or long distance procurement journeys. Their non-economic role as prestige items must also be considered.

Groundstone tools in the form of grooved axes also first appear during the Late Archaic (McLearen 1991a). The term "axe" should be regarded in terms of the artifact's form rather than function. It seems highly unlikely that the items could withstand being used for chopping wood in the modern sense. Rather, they may have been used in fire-dugout boat building, the splitting of large bones, and perhaps principally, as grubbing implements. In all these cases, the groundstone axes represent a technological improvement over the chipped stone axes of the Middle Archaic period. Wear pattern and residue analysis of Late Archaic groundstone tools as well as replicative studies would likely yield relevant information pertaining to these items' use.

Another class of lithic artifact first appearing in the Late Archaic consists of slate gorgets or pendants. These often exhibit drilled holes. Some specimens have incised cross hatching on the face while notching along the edges is typically observed. The function of the items is unknown. It is reasonable to assume that the drilled holes were used to fasten the item to clothing or otherwise held straps. Edge notching could represent the tracking of time or counting events, although this is purely speculative. The items are typically recovered in fragmentary form. It is unknown if they may have been deliberately broken before being discarded. Even though the artifacts have a clear Late Archaic association, they seem to equally occur in Early Woodland contexts, and can be found in later Woodland contexts as well. Egloff (personal communication 2011) observes that two hole pendants often date from the Late Archaic through the Middle Woodland while one hole pendants seem to have a Late Woodland association.

Temporal categorization of the Late Archaic material culture often includes the terms "Transitional" and "Terminal". Unfortunately, these names are inconsistently applied by researchers working in Virginia. It is hereby suggested that the compounding terms "Transitional" and "Terminal" not be used in favor of the generic "Late Archaic." Site findings can best be further defined in terms of morphological tool traditions -e.g. "A Late Archaic occupation with Savannah River and Perkiomen components," as per Gardner (Gardner et al. 2000). Use of the term "component" in this manner would not necessarily mean that the researcher accepts that the respective morphological tool forms must be temporally and/or culturally distinct. What this usage does provide is a unified way of characterizing period site findings. In many cases, the exact temporal/cultural interrelationships between defined morphological traditions are unclear and the archaeological definition of such should remain a research priority.

In this regard, a central question in Late Archaic research is the relationship between the archaeologically dominant Savannah River and other traditions that appear to overlap in both space and time. It is hereby suggested the narrow blade tradition-broad blade tradition dichotomy used by Dent (1995) not be engaged in formulating a commonwealth-wide material culture framework for the Late Archaic. As Blanton (2003) succinctly points out, Dent's application of the narrow blade-broad blade distinction was tailored to the Chesapeake region, the uppermost reaches of which essentially fall within the physiographic/cultural realm of the Northeast. The use of the narrow blade-broad blade distinction also becomes unwieldy or even unworkable outside the immediate Chesapeake basin. Further, at the risk of stating the obvious, the well known occurrence of narrow-blade variants of what are still sometimes collectively referred to as Broadspears does little to ease the task of new researchers mastering the basic material culture sequences of Virginia or to otherwise prevent

confusion in the matter.

In contrast to the Woodland era, projectile point styles rather than ceramics are the primary material culture markers of Archaic period. It is therefore critically important to review both the strengths and the potential liabilities of relying on recognizable morphological traditions as temporal guides. Traditionally, archaeologists have regarded specific point forms as chronologically diagnostic, meaning their presence fixes an occupation in time. Given less emphasis (and sometimes overlooked all together) is the role of point styles as cultural markers. In essence, in order for a particular style topersist across generations, let alone centuries or a millennium or more, powerful cultural forces must have been in place to enforce orthodoxy. In this context, it is difficult to imagine that temporally persistent point styles were anything less than both the product and the expression of group identity in the same manner as language, religion, social customs, and other cultural traits. This is not to deny that the techno-functional considerations may have driven some point morphologies. It can also be accepted that different point styles could have been in use simultaneously, potentially even within the same group under certain circumstances. By and large, however, in order for temporally diagnostic tool traditions to be recognizable at all through the imperfect lens that is archaeology, then the adherence to such traditions over time and across space must have been even more doctrinaire than most archaeologists typically consider.

Archaeological study of the Late Archaic must squarely address the full meaning and implication of recognizable morphological tool traditions. For one, the period is characterized by an accelerated process of regionalization as expressed through variations in material culture. This diversity stands in contrast to earliest prehistoric times when specific elements of lithic tool technology and style are archaeologically recognizable on a near continental scale. In the absence of most other material culture markers, particularly ceramics and perishable items, projectile point form may be the only way of charting increasing cultural diversity.

A detraction from the debate concerning the cultural meaning of projectile point types are a minority of researchers who have come to reject the concept that projectile point morphologies even have a specific temporal affiliation, at least beginning with Late Archaic times and leading up the adoption of the bow and arrow/ triangle point. Custer (1989) in particular, formulated a non-traditional classification scheme which dispensed with what some have coined the Coe Axiom, meaning that limited morphological variability in projectile point form is chronologically specific. While Custer states that Archaic point sequences presented by Broyles (1971) in West Virginia and Chapman (1977) along the Tennessee River as well as other published sequences are valid, he maintains this validity pertains only to the period prior to 5000 B.C. According to Custer (1989:146), "after 5000 B.C., the appearance of numerous stemmed points confounds the situation"; apparently to the degree that traditional classification schemes should be disregarded. It should be noted that most data cited in support of this position seems to have been garnered from unstratified, multi-component sites repeatedly occupied over long periods. Further, a very large body of archaeological data clearly demonstrates that morphologically defined point styles have distinct chronological associations throughout prehistory.

On the other hand, Middle Atlantic researchers are confronted with a seemingly confusing array of contracting stemmed points, the manufacture of which begin in the Middle Archaic and extend into the Middle Woodland. The long sequence of contracting stemmed points includes, among others: Morrow Mountain, Cattle Run, Savannah River Variant, Poplar Island, Piscataway, and Rossville. The temporally ill-defined Chesapeake Diamond point, as well as the occasional occurrence of Adena points, and specimens similar to Koens-Crispin/Lehigh/Snook Kill types characteristic of the Northeast further complicate the picture. There likely exists some cultural/temporal relationship between point traditions such as Piscataway—Rossville or Savannah River— Koens-Crispin. However, any direct, meaningful connection between Morrow Mountain and Rossville can effectively be discounted given that several millennia separate the traditions.

The temporal span of the morphologically similar Chesapeake Diamond, Piscataway, and Rossville points is subject to disagreement among researchers. The Chesapeake Diamond point was formally described by Hranicky and Painter (1989) who postulated a general Archaic temporal affiliation. Egloff (personal communication 2011) prefers to place Chesapeake Diamond points in the late Middle Archaic to Late Archaic period, while noting a predilection towards rhyolite and quartzite manufacture. Significant disagreement centers on the Piscataway point with

numerous researchers ascribing Late Archaic date for the type (Dent 1995, Grow and Sharpe 2010). Piscataway has clear Early Woodland contextual associations in Virginia and the type is discussed in detail in the Early Woodland chapter of this volume. Egloff (personal communication 2011) views the extremely long-lived, contracting stem style of point manufacture represented by Morrow Mountain—Chesapeake Diamond—Savannah River Variant—Piscataway—Rossville (and others) as being related to the hafting approach; possibly reflective of the widespread use of bone handles/foreshafts. In that regard, a contracting stem point may be seen not so much as a culturally determined style, but rather as emblematic of a deeply engrained technological mode. Egloff offers that a broad analogy might be the atlatl, which appears to have been in use from Paleoindian times though at least the first half of the Woodland. Many of these societies shared little in common other than a continued use of this highly successful weapon technology which likely underwent relatively little change over a very long period of time.

With so much uncertainty, what is clear is that much has yet to be learned concerning Late Archaic through Early Woodland material culture sequences and additional investigations are sure to yield unexpected results. As confusing as the amalgamation of Middle Archaic to early Middle Woodland stemmed projectile point traditions seem, researchers may find consulting the original descriptions and illustrations in the "classic" or "type site" publications to be instructive. It is also important consider the full range of attributes (e.g. size, flaking technique, lithic preference, patterns of use and rejuvenation) as well as context and material culture associations and not just straight morphology when attempting to ascribe a point to a particular tradition. Efforts at better understanding the long and varied contracting stemmed point traditions would also be well served by carefully and critically assessing the context/association of oft referenced diagnostic artifact finds in their original site publications rather than relying on secondary sources and summary works.

Summary of Late Archaic Archaeological Research To Date

The basic manifestations of what we call the Late Archaic were first documented by pioneering regional archaeologists to include Coe (1964), Kinsey (1959), Ritchie (1965), Witthoft (1953) and others. These early works clearly differentiated the Late Archaic from preceding times in terms of period material culture and the behavioral implications thereof. This distinctive material signature of the Late Archaic was investigated by the late 19th archaeologists William Henry Holmes, Gerard Fowke, and others. Their works, including Fowke's (1894) surveys in the James and Potomac drainages and Holmes' (1890) investigation of the Late Archaic Piney Branch Quarry site in Washington DC stand as some of the earliest formal archaeological endeavors undertaken in the United States. Prior to the passage of the National Historic Preservation Act and its Section 106 mandates, relatively little had been published on the Late Archaic in Virginia. Efforts by the avocational community were largely concentrated on ceramic bearing sites, particularly those dating to the Late Woodland or Contact periods. Of notable exception were the Archaeological Society of Virginia (ASV) excavations at Daugherty's Cave (Benthall 1975) in Southwest Virginia and investigations at the Deep Bottom Site Complex along the tidal James below Richmond (Buchannan 1969, 1974; Egghart 2014). McCary (1974, 1975, 1977) produced numerous ASV Quarterly Bulletin articles relevant to the study of the Late Archaic, including a piece drawing attention to the presence of the Perkiomen tradition and other apparent Late Archaic manifestations along the western margins of the Dismal Swamp (McCary 1972). Luckenbach et al. (1975) provided a ground breaking study on the movement of Piedmont steatite vessels utilizing neutron activation in trace element analysis. Prior, Holland's (1970) survey of Southwest Virginia underscored the plethora of Archaic period site locations for that region.

The volume of archaeological data pertaining to the Late Archaic increased exponentially with the implementation of Section 106 mandates. Early Cultural Resource Management-generated data began to shed additional light on Late Archaic use of upland areas across the Commonwealth, including the Blue Ridge and Allegheny highlands. Of particular relevance were wide ranging surveys on National Forest Service lands by Michael Barber and George Tolley, as well as efforts by Paul Inashima in the Shenandoah National Park. William Gardner and staff of the Thunderbird organization provided new data from the Shenandoah Valley and surrounding areas. Other university-based public archaeology organizations also executed a large number of Section 106 projects that contributed greatly to the burgeoning information base on prehistoric Virginia.

These included the archaeological research centers at James Madison University, Virginia Commonwealth University, and the College of William and Mary. The establishment of the Fairfax County Heritage Resource Branch was also a significant plus for the budding field of public archaeology in Virginia. Notable contributions to the understanding of the Late Archaic were also made by staff of the Virginia Landmarks Commission (now the Department of Historic Resources). The execution of several dissertation research projects including Potter's (1982) and Wasselkov's (1982) excavations along the lower Potomac provided a detailed view of Late Archaic settlement and subsistence trends along the Chesapeake Bay. Significant contributions were also made through the efforts the avocational groups and individuals.

Much of this new information was published only in compliance reports or presented at meetings with subsequent limited circulation of the papers. As a result, the body of data generated at public expense was fragmented and difficult to access. In that regard, the archaeological community and interested public alike benefitted significantly from the 1991 publication of the Council of Virginia Archaeologists (COVA) *Late Archaic and Early Woodland Research in Virginia: A Synthesis* edited by Reinhart and Hodges. In this volume, McLearen provided a succinct review of Late Archaic material culture. Mouer discussed the formative trends that define the periods. Demographic analyses were presented by Klein and Klatka. Stevens elucidated fresh perspectives on paleoecology and cultural ecology, while subsistence patterns and settlement implications were discussed by Barber. Hodges framed these issues within a broader regional and extra-regional context. These studies were augmented by the publication of *Chesapeake Prehistory* by Dent (1995) and other synthetic works, including Blanton's (2003) *Late Archaic: An Updated Overview*, which was intended to update research first presented in the 1991 COVA volume. Blanton's update provided fresh synthesis of archaeological data as well as articulating perspectives on environmental conditions and cultural dynamics of the period using the southeastern Coastal Plain as a case example.

The ten-year period from 1990 to 2000 saw an unprecedented increase in published Late Archaic site data. Much of this was a direct result of Section 106 compliance by the Virginia Department of Transportation which sponsored no less than nine Phase III Data Recoveries on sites with major Late Archaic components. These included projects along the Coastal Plain Appomattox (Stuck et al. 1997), the Piedmont James River (Fiedel and Baliki 1997; Pullins and Monroe 2000); the north-central Piedmont uplands (Jones 2000) and in far Southwest Virginia (Egghart 1991; McLearen 1990; Pullins 1999; Voigt 2000). The same timeframe saw the publication of the ASVs work in Daugherty's Cave (Benthall 1990), McAvoy's research at the Slade Site and along the Nottoway River (Egloff and McAvoy 1990, McAvoy and McAvoy 2105), and the final report on Cactus Hill (McAvoy and McAvoy 1997) with its extensive Archaic occupation sequence.

Despite significant numbers of Late Archaic site excavations, research coverage is highly uneven across the Commonwealth. The more heavily developed areas of Northern Virginia, and the greater Richmond and Tidewater regions have generally received the most archaeological attention in terms of survey level effort. The mountainous western reaches of the Commonwealth have also witnessed a significant amount of archaeological work within Jefferson and George Washington National Forest. The western region also saw several large Section 106 undertakings. Most notable among these was the Gathright Dam project (Geier 1982). By contrast, relatively little work has been executed across the expansive southern Piedmont. Interestingly, the absolute greatest concentration of intensively investigated Late Archaic sites falls not in the developed northern/eastern portion of Virginia but in the remote far southwestern tip of the Commonwealth. Here, the Virginia Department of Transportation sponsored extensive archaeological work associated with the reconstruction of the Route 58 in Lee County. These undertakings included a large numbers of prehistoric Phase II test excavations (McLearen 1994; Pullins 1997), and Phase III Data Recovery on four sites with major Late Archaic components: Station Creek (44LE211), Chadwell (44LE214), and Parkley No. 3 (44LE217) (Voigt 2000) and 44LE165 (Pullins 1999). Rural secondary road bridge replacement projects also resulted in the data recoveries on two additional Late Archaic sites in far Southwest Virginia: the "656" Elk Garden Site (44RU61) in Russell County (McLearen 1990) and Edd's Mill (44LE99) in Lee County (Egghart 1991). On account of these collective works, the rural southwest corner of Virginia ranks as perhaps the most archaeologically studied region of the Commonwealth in respect to the Late Archaic.

Where investigations have been undertaken,

researchers were often faced with limitations typical of Archaic site contexts. These include a paucity of intact/stratified deposits, poor organic preservation, and extreme difficulty in recognizing non-lithic features. Nonetheless, the collective execution of wide area survey, test excavations, data recoveries, and the publication of synthetic works has generated an impressive body of archaeological information. This data is analyzed and discussed in the context of specific Research Themes by physiographic region of the Commonwealth.

Physical Regions of the Commonwealth

In order to effectively characterize Late Archaic research finding across Virginia, its diverse physical regions are best subdivided into smaller geographic areas. The appropriate level of division would be the smallest unit at which archaeologically discernible differences in Late Archaic cultural patterning may be evident. For the Coastal Plain, subdivision is logically driven by the major river/estuary systems. The Eastern Shore stands as an obvious outlier in this scheme. It should be noted that the Virginia Coastal Plain becomes progressively wider as one moves south from the Potomac. The Coastal Plain's greatest width is along the North Carolina border where it measures nearly 90 miles east to west. North of Fredericksburg the Coastal Plain is essentially limited to a narrow strip wedged between the tidal Potomac shore and the Fall Line, with the latter roughly delineated by the Interstate 95 right of way.

Given its very large size, the Piedmont can effectively be split into Northern and Southern sections, with the James River providing a logical demarcation. The James River watershed can also be seen a sub-unit in this scheme as well. The Blue Ridge is similarly divided. Of the physical regions of the Commonwealth, the Ridge and Valley is the most expansive, covering an area from the very northern tip of Virginia, south and west to Cumberland Gap, Tennessee. The James River watershed logically defines the middle reaches of the Ridge and Valley, and the drainage can be thought of as separating northern areas of the Ridge and Valley from Southwest Virginia. While technically part of the greater Ridge and Valley, Southwest Virginia should be regarded as a distinct cultural region, perhaps sharing more in common with the Tennessee River basin than the Middle Atlantic. By contrast, the Potomac drainage has long been recognized as having close prehistoric cultural connections to the Northeast.

Analysis of Late Archaic cultural patterns in the Appalachian Plateau is essentially precluded by a near total lack of recorded period sites/components. In Virginia, the Appalachian Plateau falls mostly in Buchanan County, Dickerson County, and portions of Scott County. Buchanan and Dickerson lie entirely within the province. Known Late Archaic site components are essentially lacking in the Appalachian Plateau portions of both counties (Blanton 2003). Prehistoric sites of all time periods are relatively rare across the remainder of Virginia's Appalachian Plateau. The rugged landscape of this region stands in sharp contrast to the fertile limestone valley floors, meandering stream courses, sinkholes, and rolling uplands of the adjacent southwestern Virginia Ridge and Valley. Stream courses in the Virginia portion of the Appalachian Plateau also tend to be deeply incised and generally lack stable attendant landforms suited for habitation. Given the extreme paucity of known Late Archaic site locations, the Appalachian Plateau is not included in the following discussion of Research Themes by Physical Region. Prospects for Late Archaic site locations in the Appalachian Plateau are evaluated in the *Future Research* section.

A breakdown of research themes by physical region of the Commonwealth is presented to the degree appropriate

Table 6.2: Physical Regions of the Commonwealth Coastal Plain

Potomac River Drainage	Middle Peninsula—Rappahannock/York Drainage
	James River Drainage
	Carolina Sounds/Dismal Swamp/Atlantic Drainages
	Eastern Shore
Piedmont	Northern Piedmont
	James River
	Southern Piedmont
Blue Ridge	Northern Blue Ridge
	Southern Blue Ridge
Ridge and Valley	Northern Ridge and Valley—Potomac/Shenandoah Drainage
	Central Ridge and Valley—James Drainage
	Southwest Virginia—New River and Tennessee River Headwaters
Appalachian Plateau	Undifferentiated

and feasible. For example, significant differences in material culture and settlement patterning may be archaeological discernible between the Potomac River environs of the northern Coastal Plain and the Carolina Sounds drainage of southeastern Virginia. In other cases, the physiographic province as a whole may be the finest geographic unit in which to address Late Archaic research. The research theme *Social/Political Patterning* is best discussed on a Commonwealth-wide basis.

Research Themes By Physical Region

Chronology and Material Culture

As previously noted the Savannah River tradition marks the beginning of the Late Archaic cultural/temporal subdivision in Virginia. Other hallmarks include the occurrence of the aforementioned Broadspear complexes characteristic of the Northeast. Additional material culture traits include the manufacture and use of steatite vessels.

In the original COVA volume *Late Archaic and Early Woodland Research in Virginia: A Synthesis*, McLearen (1991a) provides an excellent material culture overview for the Late Archaic. The following subsection draws extensively from this overview while discussing additional findings and data gleaned since the publication of that volume.

McLearen (1991a:91) lists generally recognized Later Archaic trends common to all areas of Virginia to include:

1. the use of a number of stemmed and notched projectile point and knife forms which vary on a regional basis at the beginning and end of the period;
2. in contrast to the above, a temporally overlapping proliferation of the Savannah River Broadspear and its related large biface industry;
3. localized manifestations of tools and points identical to those of the other Broadspear complexes of the Northeast;
4. some regional preference in lithic types;
5. use of some groundstone and the first use of the ground stone grooved ax;
6. use of large, heavy tools, usually quartzite; numerous expedient tools on flakes, and the apparent addition of a few more formalized tools than in earlier times;
7. the quarrying of soapstone, the manufacture of stone vessels and the distribution of these vessels statewide and beyond; and
8. on most intensively occupied sites, larger and more numerous hearths, and in general, slightly more variety in feature type as opposed to earlier periods.

McLearen's above summary statements pertain to the Late Archaic period in general, which is characterized by multiple hafted tool traditions. Of these traditions, Savannah River is dominant throughout the Commonwealth. However, it is perhaps most prevalent in the Coastal Plain. Savannah River components seem to be particularly common along the Lower James River. Use of local quartzite is ubiquitous in this area. Much of this material seems to have been opportunistically procured from stream beds and river shore lines adjacent to occupation loci. Although somewhat rare, Perkiomen and Susquehanna types occur within the Lower James River environs as well (Gleach 1987; Mouer 1984). In the Carolina Sounds drainage, a Perkiomen point was recovered at Cactus Hill (McAvoy and McAvoy 1997). Far greater numbers of Perkiomen are known for the western Dismal Swamp margins (McCary 1972; Blanton 2003) and for extreme southeast Virginia (Painter 1988). Steatite vessel use in the Coastal Plain is most closely associated with Savannah River (McLearen 1991a). However, steatite is not particularly abundant, and vessel fragments are generally recovered from only a minority of site locations with Late Archaic components. The exact temporal span of steatite use and its relationship with the various Late Archaic point traditions is unclear but would be important to establish.

Significantly less is known about the Late Archaic within the Rappahannock drainage and across the Middle Peninsula, primarily due to a scarcity of archaeologically investigated sites. Perhaps the best temporal definition of the Late Archaic along the Lower Potomac River comes from Potter's (1982) work at the Plum Nelly Site in Northumberland County. Here Savannah River contexts yielded radiocarbon dates of 3905+/-95 and 4105+/-85 BP. A similar Savannah River date of 4070+/-80 BP was also obtained from the Slade site (McAvoy and McAvoy 1997). These Coastal Plain dates are remarkably consistent, and largely in agreement with Savannah River dates from other physiographic regions. A much later Savannah River date of 3260 +/-90 BP was reported by McLearen (1987) at Pony Pasture (44HE313) along the Chickahominy River. The date was obtained from

a FCR feature that had two Savannah River variants in tight spatial association. One specimen was a fractured and fire-reddened quartzite Cattle Run point wedged into the rock cluster; the other a quartz Small Savannah River lying adjacent to the feature. McLearen (1987) viewed the finding as possible evidence Small Savannah River and the strongly contracting stem form were in use together. However, given the radiocarbon result is the youngest, generally accepted date among the 47 Savannah River assays compiled and cited by Inashima (2008), it is plausible that the broken Cattle Run represents a scavenged item, subsequently discarded as a hearth element. If such were the case, the above date would to fit well with Small Savannah River's suspected late temporal association.

Clusters of fire-cracked rock are the most common feature type found on Coastal Plain sites. Some of these are quite large and morphologically conform to "platform hearths" in the broader regional literature. Post features are not reported for Coastal Plain sites. This is likely due to the poor preservation characteristics of sandy, acidic coastal soils which makes identification of Archaic age, cultural ground disturbances extremely problematic.

The material culture record of the Piedmont does not appear to be markedly different from that of the Coastal Plain. The Savannah River tradition is dominant along the James River drainage and across the southern Piedmont as a whole. Quartzite seems to be the favored material although a variety of other lithic types are used in Savannah River manufacture. These include rhyolite and felsitic materials as well as other metamorphosed volcanic rocks (McLearen 1991). McLearen also notes that lithic tool assemblages, both formal and expedient, differ relatively little from those of the Middle Archaic. Chipped and ground stone axes are known for Late Archaic site locations along the Piedmont sections of the James River (McLearen 1991a). Steatite procurement appears to have been exclusive to the Piedmont. Quarry sites occur along the western Piedmont from Northern Virginia, south to Grayson County. However, they are concentrated along a line extending from Charlottesville to Lynchburg (Luckenbach et al. 1975). Not surprisingly, steatite vessel use seems most prominent in the Piedmont region (McLearen 1991a).

Relatively little Late Archaic site excavation has been undertaken in the Piedmont, with the exception of James River floodplain locations (Mouer 1990, 1991; Fiedel and Balicki 1997; Pullins and Monroe 2004). Sites with Late Archaic components are most commonly recorded in upland areas where the bulk of Section 106 survey work has been performed. The eroded and deflated condition of most Piedmont upland settings makes obtaining a clear picture of Late Archaic difficult, at least in terms of feature types and patterning.

A significant amount of survey level archaeological work has been undertaken across the mountainous west and west-central areas of the Commonwealth, providing a reasonable archaeological view of the Late Archaic material culture along the Blue Ridge and the northern and central (James River) the Ridge and Valley. The Savannah River tradition is extremely prevalent along the James River headwaters. Also of note is a cluster of Perkiomen components in the northern Shenandoah Valley. Perkiomen points are known for the southern Ridge and Valley, as well (McLearen 1991a). McLearen also cites the occurrence of hitherto unnamed crudely stemmed and side notched tradition for the Ridge and Valley. Savannah River components are well documented along the high elevations of both the Ridge and Valley (Barber and Tolley 1984) and the southern and central Blue Ridge (Barber 1985) as well as the Shenandoah Mountains of the Northern Virginia Blue Ridge (Nash 2009). Local quartzite varieties appear to be the favored lithic material for Savannah River production in these areas. Rhyolite and ferruginous sandstone were also utilized (McLearen 1991a).

In Southwest Virginia, both Savannah River and a variety of points typical of the Tennessee Valley Archaic are found. These include Ledbetter and Otarre Stemmed (Pullins 1999; Voigt 2000). Some of these seem to overlap morphologically with local Savannah River forms, particularly when the latter specimens are manufactured on chert. Quartzite is common but not the dominant lithic used in Savannah River production across Southwest Virginia. As noted above, chert was often utilized in the manufacture of both Savannah River and other Late Archaic point types typical of the region. At Daugherty's Cave, a reduction Savannah River size is seen over time (Benthal 1990), mirroring similar observations made in the Coastal Plain (McLearen 1991a; McAvoy and McAvoy 1997). Though rare, Perkiomen and Susquehanna points are reported across far Southwestern Virginia (Egghart 1991; Jones 2001; McLearen 1994). Thought not a common find, steatite appears to have had a geographically widespread use (Egghart 1991; McLearen 1990; McGuire and Geier

1984). Interestingly, surface clusters of FCRs are not documented. The most common features are small, basin-shaped pits interpreted by McLearen (1990, 1991a) as hearths. At Edd's Mill, numerous small FCR filled pits, similar to features reported by Chapman (1981) for the Lower Tennessee Valley, were recorded in probable Late Archaic context (Egghart 1991).

In concluding the Material Culture and Chronology section, the indistinct nature of the Late Archaic to Early Woodland transition should again be emphasized. A growing body of data demonstrates that early ceramics co-occur with point forms such as Small Savannah River traditionally thought to date to the later portion of the Late Archaic. Oliver (1981) and Mouer (1991) have cited the occurrence of Savannah River-like point forms with early ceramics. These findings follow on even earlier, Late Archaic ceramic associations well-known for the Southeast (Sassaman 1993). Absolute dates recently obtained from Middle Atlantic excavations have pushed adoption of ceramic technology well past the 1000 BC, the date that which has typically been used to mark the onset of the Early Woodland era.

Settlement Patterns

Late Archaic settlement is inextricably tied to environmental shifts, intensifying subsistence regimes, and technological developments. In further characterizing Late Archaic settlement patterning, several additional gross observations can be made. Principal among these is site occurrence in a wide range of physiographic and environmental settings. Late Archaic occupations are commonly found on the Chesapeake Bay shores, along the inland tidal rivers and wetland systems, across the Piedmont uplands and intervening drainages, and through much of the western mountains to include peak elevations of the Blue Ridge and the Allegheny highlands. It should be noted that in coastal areas, many prime occupation settings have been inundated by sea level rise and thus settlement data is likely distorted.

While Late Archaic sites are relatively common, Blanton (2003) aptly notes that their overall distribution is uneven across Virginia, with well-known settlement "hotspots" occurring in specific areas. These concentrations, particularly for Savannah River, include James River environs below Richmond, the western Dismal Swamp margins, the greater Fall Line zone, and also the west-central (James River) Ridge and Valley, and portions of the southern Blue Ridge (Blanton 2003:186). Many researchers working along the James River and its tributaries below Richmond have noted the large number of Savannah River components in this area. Impressive Late Archaic artifact collections are also documented for Piedmont James River floodplains above Richmond (Mouer 1990; McLearen 1991a). In charting known Late Archaic components by Virginia county, Blanton (2003), McLearen (1991a) and Mouer (1991), all note that the James River's western headwaters contain markedly high number of period site components. This can lead one to perhaps view the James River as the "Savannah River Heartland" of the Commonwealth. The presence of major steatite quarries along the Piedmont sections of the watershed reinforces this impression. Some of the variation in site distribution can be attributed to differential survey coverage and/or visibility factors. Nonetheless, it is clear that some portions the Commonwealth were more heavily settled than others during the Late Archaic period.

In Virginia and elsewhere, Savannah River settlement has traditionally been linked to the expanding estuarine settings of the Coastal Plain. Changes in Late Archaic life ways have been viewed as driven in part by a focused orientation toward the rich, newly developed or enhanced estuarine environments of the Chesapeake Bay and its tidal tributaries. This view is in keeping with an overall riverine settlement focus for Transitional or Broadspear cultures in the Northeast as articulated by Witthoft (1953) Kinsey (1972), Funk (1976), and others. In the greater Richmond area (encompassing the James River Outer Piedmont, Fall Line, and Inner Coastal Plain), an overall riverine focus for Savannah River is evidenced by a dramatic increase in both site components and gross numbers of recovered diagnostics (Mouer 1991). Results of excavations at Plum Nelly (Potter 1982) and White Oak Point (Wasselkov 1982) along the tidal Potomac shores clearly suggest an intensive focus on estuarine settings and resources. However, more modest, encampment type occupations are also documented along the Lower James River estuary (Pullins and Blanton 2000). In addition, interior non-tidal stream settings also appear to have been extensively utilized for encampments during the Late Archaic (Egghart 2004; Hunter et al. 1993; McLearen 1987; Mouer 1986a, 1986b). Intensively occupied base camp type settlements are documented in locations strategically situated with respect to estuarine resources. These settings include the mouths of lower James River tributaries such as the Deep Bottom Site

Table 6.3: Late Archaic Radiocarbon dates in Virginia

Assoc. Material	Date	Site	Reference
Coastal Plain			
Savannah River*	**3260 ± 90 BP** (cal 2 sigma BC 1754 to 1317)	Pony Pasture (44HE313)	McLearen1987 (Beta-12458)
Savannah River	**3905 ± 95 BP** (cal 2 sigma BC 2832 to 2048)	Plum Nelly (44NB128)	Potter 1982 (SI-4229)
Savannah River	**4105 ± -85** BP (cal 2 sigma BC 2881 to 2478)	Plum Nelly (44NB128)	Potter 1982 (SI-4228)
Savannah River	**4070 ± 80 BP** (cal 2 sigma BC 2882 to 2461)	Slade (44SX6)	McAvoy 1997 (Beta-22156)
Steatite	**3500 ± 75 BP** (cal 2 sigma BC 2024 to 1634)	White Oak Point (44WM0119)	Wasselkov 1982 (DIC-1771)
Steatite	**3380 ± 50 BP** (cal 2 sigma BC 1870 to 1525)	David (44FX2634)	Inashima 2006 (Beta-177178)
Steatite	**3550 ± 90 BP** (cal 2 sigma BC 2139 to 1664)	David (44FX2634)	Inashima 2006 (Beta-190741)
Chesapeake Diamond	**4150 ± 50 BP** (cal 2 sigma BC 2910 to 2470)	Magnolia (44SK155)	Blanton 2002 (Beta-153847)
Piedmont/Fall Line			
Savannah River	**4280 ± 60 BP** (cal 2 sigma BC 3088 to 2674)	Tuckahoe (44HE713/714)	Fiedel & Belicki 1997 (Beta-97722)
Savannah River	**4380 ± 60 BP** (cal 2 sigma BC 3327 to 2891)	44PO81	Pullins & Monroe 2004 (Beta-160614)
Ridge and Valley (including SW VA)			
Savannah River	**3600 ± 70 BP** (cal 2 sigma BC 2140 to 1752)	Daugherty Cave (44RU14)	Benthall 1990 (Beta-19278)
Savannah River	**3800 ± 70 BP** (cal 2 sigma BC 2463 to 2035)	Daugherty Cave (44RU14)	Benthall 1990 (Beta-19279)
Savannah River	**4300 ± 80 BP** (cal 2 sigma BC 3321 to 2633)	Daugherty Cave (44RU14)	Benthall 1990 (Beta-19280)
Savannah River	**4690 ± 70 BP** (cal 2 sigma BC 3636 to 3355)	Daugherty Cave (44RU14)	Benthall 1990 (Beta-19281)
Steatite/Post	**3570 ± 70 BP** (cal 2 sigma BC 2133 to 1739)	Edd's Mill (44LE99)	Egghart 1991 (Beta-42691)
Human Burial	**4860+/-40 BP**	Chadwell (44LE124)	Voigt et al. 2000
Post Feature	**4390 ± 40 BP**	44LE165	Pullins 1999 (Beta-12455)
Shallow pit	**3580 ± 110 BP** (cal 2 sigma BC 2276 to 1635)	656 Elk Garden (44RU61)	McLearen 1990 (Beta- 29911)
Shallow pit	**3990 ± 70 BP** (cal 2 sigma BC 2854 to 2290)	656 Elk Garden (44RU61)	McLearen 1990 (Beta-29910)
Shallow pit	**4090 ± 120 BP** (cal 2 sigma BC 2913 to 2297)	656 Elk Garden (44RU61)	McLearen 1990 (Beta-29912)

* Savannah River and Small Savannah River in direct spatial association w/rock hearth

Complex (Buchanan 1969, 1974; Mouer 1984; Egghart 2014a). Sassafras Springs (Reinhart 1979), and the middle Chickahominy terraces (McLearen 1987). Other similar site locations include 44PG381 near the mouth of the Appomattox (Stuck et al. 1997) and the David Site (44FX2634) on Mason's Neck, a broad peninsula that protrudes into the tidal Potomac near Mount Vernon (Inashima 2006). Substantial Middle Archaic (Morrow Mountain, Guilford, Halifax,) components were present at both Deep Bottom and Sassafras Springs (Egghart 2014a). A juxtaposition of Halifax and Savannah River occupations was also noted by McLearen (1987) along the Chickahominy River. This same phenomenon was documented on the Slade site (Egloff and McAvoy 1990, McAvoy and McAvoy 2015) and at Cactus Hill (McAvoy and McAvoy 1997). The findings clearly suggest that the increasing prehistoric use of expanding estuarine environs and stabilizing riverine settings of the Virginia Coastal Plain was underway prior to Savannah River times. These observations mirror Middle Archaic to Late Archaic settlement trends cited by Catlin et al. (1982) for the northern Middle Atlantic and the Northeast regions. In addition to riverine settlement, the intensive Late Archaic use is documented for the western Dismal Swamp margins (Blanton 2002, 2003). Evidence for this settlement focus includes large numbers of Perkiomen points (McCary 1972) as well as bannerstones, semi-lunar knives, gorgets and other exotic items (Blanton 2003; McCary 1974, 1975a, 1975b 1977). Collectively, these findings clearly demonstrate a period emphasis on ecologically productive, interior wetland settings. It should be reiterated that any comprehensive analysis of Late Archaic Coastal Plain settlement must attempt to account for site locations lost to sea level rise.

In the Piedmont, survey level evidence for Savannah River settlement has been noted for the expansive James River floodplains (McLearen 1991a; Mouer 1990, 1991). These same archaeological locations first caught the attention of Gerard Fowke during his late 19th century surveys of the James and Potomac river basins (Fowke's1894). However, actual excavation on Piedmont James River sites has been limited. Two Late Archaic data recovery excavations were undertaken the just above the Falls in association with the Route 288 river crossing. At 44PO81, Pullins and Monroe (2004) report a small pit feature, limited debitage, two cobble tools, and a Savannah River point in deeply buried contexts. Fiedel and Belicki's (1997) excavations at Tuckahoe Island (44HE713 and 4HE714) identified a buried Late Archaic level containing a Savannah River point, a steatite sherd, and a scatter of FCR. Charcoal flecks recovered from a corresponding depth yielded a radiocarbon date of 4280+/-60 BP. At 44PO81, hickory nut shell recovered from stratigraphic context corresponding to the Late Archaic occupation yielded radiocarbon date of 4380+/-60 BP (Pullins and Monroe 2004:78). Findings from the excavated portions of both sites point toward a limited, short term occupation. The intensive, long term Piedmont James River floodplain settlement described by Mouer (1990, 1991) appears to primarily have been an Early Woodland manifestation. Late Archaic components identified in the James River Survey, while numerous, were typically represented by limited numbers of Savannah River bifaces, very modest debitage scatters, and the occurrence of pitted cobble tools (Mouer 1991). Apparently, more substantial Late Archaic settlement was documented along the Piedmont Potomac floodplain between the mouth of Goose Creek and Selden Island (Gardner et al. 2000). Trench excavation resulted in the identification of Fishtail, Drybook, Susquehanna, and Savannah River components. Also documented were multiple, extensive Halifax occupations.

Upland and non-riverine settings of the Piedmont appear to have seen considerable Late Archaic use as well. In Stafford County, Barber et al. (1995) note a roughly even split between site locations along ephemeral drainages versus riverine settings. Klein and Klatka's (1991) synthesis of multiple county-wide Phase I surveys in the central Piedmont show a similar physiographic breakdown between Middle Archaic and Late Archaic components. Their data show that a clear Late Archaic favoring of riverine settings is not apparent, at least as evidenced by component totals. However, the authors concede that survey efforts may have been skewed toward upland settings, and results perhaps further biased by greater archaeological visibility of upland sites compared to floodplain locations at which the scouring and/or alluvial burial of period living surfaces could be expected. Regardless, wide ranging Late Archaic upland settlement is clearly demonstrated by the Piedmont survey data (Klein and Klatka 1991). Further west, Holland (1978) noted the prevalence of larger, more complex general Archaic period occupations along the Blue Ridge foothills. Aceramic sites are relatively common across the greater Piedmont region. Some of these likely contain Late Archaic components not recognized at survey

level. In Fauquier County, a single component upland Savannah River encampment (44FQ161) was identified and subjected to data recovery (Jones 2000). Excavations at the 44FQ161 demonstrated that seemingly ephemeral, surface sites can retain internal structure and thus yield valuable information.

Of particular note is Nash's (2009) dissertation study of prehistoric settlement in Madison County. The work is novel on several counts. Nash takes a scaled, landscape-based approach in analyzing prehistoric settlement while utilizing sophisticated geodatabase systems. The study is also groundbreaking in that it synthesizes previously recorded site data, survey results, and information drawn from local artifact collections for which reasonable provenance could be established. As a study area, Madison County encompasses from east to west: the Piedmont Mesozoic Basin lowlands, headwater riverine settings, Inner Piedmont uplands, low elevation Blue Ridge settings (foothills, toe slopes, incised headwater streams), and the high elevation Blue Ridge, including peaks and summit ridgelines. A total 233 site locations were included in the multi-scale settlement pattern analysis. Fully half these sites (118) exhibited evidence for Late Archaic occupation. Nash (2009) notes that Savannah River is the overwhelming dominant Late Archaic point type in the Madison County study area. Perkiomen, Susquehanna, Lamoka and Bare Island types represent a small minority of finds, as do Brewerton. In the Big Meadow locality, steatite vessels fragments were recovered in a mountain top setting (Nash 2009). While human use of particular sections of the study area varied through prehistory, Late Archaic settlement was consistently documented across the full range of the diverse topographic/ecological settings found in Madison County (Nash 2009). The same phenomenon is reported by Barber (2010) in the Arnold Valley survey. Arnold Valley is nestled between the west slope of the Blue Ridge and the James, near where the river breaks through to the Piedmont. Barber reports that Late Archaic was both the most common component identified (39.7% percent of known total), and that these sites occupied the widest variety of landforms and elevations within the topographically diverse study area.

In the Ridge and Valley province, Klein and Klatka's (1991) synthetic analysis of site location with respect to stream rank demonstrates that the apparent Middle Archaic to Late Archaic settlement continuum seen in the Coastal Plain also occurred west of the Blue Ridge. However, the data do show a modest increase in Late Archaic settlement along major drainages, with this trend intensifying significantly during the Early Woodland. A preponderance of Savannah River components has been noted along the James River's western headwater branches (Geier 1982; Nash, personal communication 2008). Late Archaic components, particularly Savannah River, are prevalent in upland areas of western Virginia as well, including the high elevations of the Northern and Southern Blue Ridge (Barber and Tolley 1984; Nash 2009). At the Horse Heaven Road Site in Wythe County, extensive quarrying and reduction of quartzite for Savannah River production was noted (Barber 1985). More generalized subsistence-orientated activities were also indicated at this high elevation site.

Far Southwest Virginia has yielded evidence for intensive Late Archaic settlement essentially unmatched in the other regions of the Commonwealth. Numerous Late Archaic sites excavated along the Indian Creek/Powell River environs in Lee County contained evidence for extensive and prolonged settlement. At the Graham Site (44LE71), located along the Powell River, McGuire and Geier (1984) report intact hearth and midden features, and possible evidence of steatite bowl manufacture. A suite of sites was excavated along Route 58 adjacent to Indian Creek, a substantial intermediate order tributary to the Powell River. These locations also yielded evidence for intensive Late Archaic settlement. At 44LE165, a cluster of post molds and a hearth feature was identified (Pullins 1999). One of the post features yielded a radiocarbon date of 4390+/- 40 BP. A human burial radiocarbon dated 4860+/-40 BP was excavated at the Chadwell Site (44LE124). This site also contained a number of pit features thought to be associated with a rather substantial Late Archaic occupation (Voigt 2000). At the 656 Elk Garden Site, three shallow pit features yielded Late Archaic radiocarbon dates (McLearen 1990). A very large Late Archaic post feature was uncovered at the nearby Edd's Mill Site (44LE99), located along a minor Powell River tributary (Egghart 1991, 2003). The base of the post feature yielded a steatite vessel fragment and mass of carbonized hickory nut shells dated 3570 +/-70 BP.

These findings point to intensive Late Archaic settlement in a variety of physical settings across far southwestern Virginia. These include the Indian Creek locality, a broad limestone valley fronting the Appalachian Plateau (Pullins 1999; Voigt 2000), the

Powell River terraces (McGuire and Geier 1984), as well as higher elevation, interior valleys (Egghart 1991, 2003). Architectural remains, pit features, and a human burial point towards long term occupations. Extensive survey and test excavation for the federal penitentiary at Pennington Gap (Green and Pendleton 1998) demonstrated that Late Archaic settlement was also prevalent across the broad limestone uplands in eastern Lee County. The co-occurrence of Middle Archaic and Late Archaic components seen elsewhere in Virginia was not noted on the Indian Creek Valley sites (Pullins 1999; Voigt 2000). As an explanation, Voigt (2000:86) posits that with increased moisture and climatic amelioration following the Hypsithermal, the limestone bottoms and sinkhole locations along the Indian Creek valley may have become attractive locations for Late Archaic people, following these settings' abandonment to human settlement during the preceding millennia.

In terms of overall function, there seems to be relatively little difference in the Late Archaic occupations across the Commonwealth outside of the far Southwest region. Investigated sites tend to be interpreted as short term encampments or less commonly, as seasonal base camp settlements. The latter conclusion is usually supported by the presence of features and/or steatite vessels. In Southwest Virginia, the presence of architectural remains may be suggestive of extended term occupations. Alternatively, the archaeological identification of both post and pit feature in this region may simply be attributable to the favorable preservation characteristics of the local limestone derived soils. Procurement of lithic raw material seems to have been a focus of select site occupations across the Commonwealth, although these show evidence of other activities as well. True specialized sites may have been limited to steatite quarry locations. Fishing/processing stations may have been located along the Falls, although this has yet to be conclusively demonstrated. Direct evidence for Late Archaic food storage is scant in all regions. With the possible exception of some of the Southwest Virginia locations, semi-sedentary occupations do not seem to be indicated.

Economic Pattern

Economic patterning of the Late Archaic can be cast in two primary themes: 1) an intensification of subsistence practices relying on wild food resources; and 2) the movement of material culture items across large distances through trade and other means. This intensification of food resource exploitation can, and should, be seen as central to the cultural changes that define the Late Archaic. Intensifying subsistence practices are interrelated with technological innovation, shifting settlement strategies, and social and political development. Evolving Late Archaic subsistence practices can be considered to have been interrelated with population growth and resultant feedback sensitive responses to include territoriality, conflict and outmigration. Long distance trade, much of it centered on probable prestige items such as exotic lithics, can be seen as intertwined with, but not necessarily predicated on social and political advancements. A third aspect of Late Archaic economic patterning is related to specialized lithic procurement and processing. Specifically, this entailed the focused utilization of quartzite and other tough material for the production of Savannah River/related hafted biface forms, as well as the manufacture, movement, and use of steatite vessels.

Steatite Vessel Manufacture and Use

Steatite vessels have relevance that extends well beyond material culture. Not only do steatite vessels represent a novel technology unique to the Late Archaic, their adoption and use has bearing on changing subsistence ways and settlement practices, the establishment of trade/exchange systems and increased group interaction, and even developing social and political complexity. Additional considerations include the timing of and perhaps differential adoption of steatite, as well as its role as a precursor to ceramic technology. The adoption of stone container technology has implications for increased nutritional efficiencies in food preparation but also has some bearing on site occupation span, potential use of watercraft, increased long distance social/economic interaction. Therefore, the adoption of stone vessel technology cross cuts the research themes of Material Culture and Chronology, Settlement Pattern, Economic Pattern, and Social and Political Patterns.

Use of stone containers would have resulted significant economic benefits, particularly in terms of food processing and cooking. Steatite vessels were likely utilized in a variety of cooking activities including but not limited to rendering of oils, slow stewing meat and bone, and the processing of seeds and acorns. Prior to the adoption of durable vessel technology, these functions would have been carried out in lined pits or hide bags using indirect heating techniques. Steatite vessels can be

seen as an efficiency improvement over these activities both in terms of labor input and resulting nutritional yield. On the other hand, the procurement, manufacture, and transport of steatite vessels required considerable initial investment in time and effort. Apparently, Late Archaic groups addressed this tradeoff differently, as steatite use seems to have varied both geographically and through time. Further, its adoption may have been less than universal. Some groups may have resisted adopting the new technology simply out of traditionalism or unwillingness to change, particularly when indirect cooking/processing technologies had served well for millennia.

Differential occurrence could also be attributed to non-utilitarian factors. Steatite vessels may well have been prestige items and their use or ownership by certain groups and/or individuals would have been meant to confer or express status. This would have made them valued trade currency that extended beyond their economic function. The prominence of steatite vessels in the Poverty Point realm would seem to support this. Truncer (2004, 2006) studied the age and occurrence of steatite across temperate Eastern North America. Truncer's extra-regional study confirmed that steatite occurs in a wide variety of settings and not just riverine environments. However, its temporal span and geographic distribution is uneven. Truncer's review of published radiocarbon data indicates that steatite vessels were used for a significant period of time. In essence, the appearance of steatite which has traditionally been viewed as a "horizon marker" actually represents a peak within a much longer temporal span. The radiocarbon data also do not support previously postulated models for a Southeast to Northeast spread in steatite vessel manufacture and use.

Truncer (2006) correlates steatite occurrence with mast producing forests environments and argues that the vessels were primarily used in mast exploitation. Sassaman (2006) critiques this as simplistic. He suggests that processes which might account for temporal and spatial patterns of steatite adoption and use must be considered in comprehensive social, economic, and ideological contexts, and not just in terms of a single resource type. Hart et al. (2008) put Truncer's mast processing hypothesis to test by analyzing microbotanical remains, including phytoliths and fatty acids residue from vessels recovered from the Hunter's Home site in New York. Their reanalysis of residues, including some used in Truncer's original work definitively indicate that the vessels on Hunter's Home site were used to process/cook a variety of plant materials as well as animal flesh.

The work of Hart et al. (2008) supports a common sense assessment of steatite vessel adoption and functional use. Namely, given the investment made in procuring and transporting the heavy items, and steatite's durability and excellent thermal properties, one would expect maximum utilization by hunter-gatherers who clearly relied on a diverse subsistence base to survive. Nonetheless, Truncer makes several observations that remain highly relevant. A correlation of steatite occurrence and mast rich areas is noteworthy. More importantly, his distributional analyses mirror a broad trend also observed in Virginia whereby steatite vessel fragments occur in a variety of settings and on different site types and not just in presumed base camp locations as one would perhaps intuitively expect.

Sassaman (2006) emphasizes that we should anticipate a variety of sub-regional causes and histories of steatite manufacture and use. One should not, and perhaps cannot, expect a single, region-wide explanation for the steatite phenomenon. In summary, the root cultural process or processes that produced the steatite vessel innovation, facilitated its spread throughout the Eastern Seaboard, as well as factors pertaining to the ultimate abandonment of the technology should continue to be an important research focus and topic of intellectual debate.

Subsistence Intensification

Developing Late Archaic subsistence patterns have been framed in terms an increasing emphasis on collective or communal resource exploitation. An adoption of communal exploitation strategies has significant implications for the organization and mobilization of labor, and for managing resulting food surpluses. However, direct archaeological evidence for such activities is scant at best. Even though some communal scale resource exploitation was likely integral to Late Archaic subsistence to some degree, broad-based archaeological data point towards the maintenance of generalized hunting and foraging practices by relatively small, mobile groups of individuals. In light of this, it is reasonable to conclude that focused, communal exploitation strategies were only very selectively engaged and/or that some Late Archaic peoples essentially retained diffuse settlement/subsistence ways more characteristic

of earlier Archaic times.

The organized harvesting and processing of anadromous fish and shellfish has long been held as an important aspect of the Late Archaic subsistence regime. Anadromous fish would have been available only at limited locations, even within the Coastal Plain. Nonetheless, this resource is likely to have been of significant importance, particularly around the Falls of major rivers and the head of tide on some tributary streams. As Dent (1995) points out, a collective harvesting and proper processing of this seasonally timely resource would have required coordination of effort and organization of labor. However, if successfully executed, the potential gain in terms of an extremely nutritious, short term-storable resource would have been significant. An early school of thought held that some Broadspear points represent specialized fishing implements and that large platform hearths functioned for drying/smoking the catch. This view is now discounted by many archaeologists. While there continues to be some disagreement as to whether Late Archaic tool forms served specific functional roles, most researchers recognize that most, if not all Archaic point forms likely had diverse uses ranging from projectile tips to cutting or prying implements. Large fire-cracked rock (FCR) features continue to be interpreted as associated with the drying and/or smoking fish. However, these features are documented in a variety of settings and not just suitable fishing spots. It is thus likely they supported diverse cooking/processing functions. Deposits of FCR can also be seen as possibly associated with indirect heating activities such as stone boiling or use in earth ovens. Reconstructing behaviors that resulted in the formation of FCR clusters should be considered an important, site-specific research objective.

Mast likely constituted another resource focus. Hickory and some oak species would have been available statewide. Chestnut was undoubtedly a very important resource throughout the western, mountain regions. Nash (2009) cites palynological evidence that chestnut groves, typically located along mid-to high elevation benches and ridge lines, became well established in the northern Blue Ridge by 3500 BP. Holland (1978) suggests the east facing Blue Ridge side slopes and foot hills would have been an important draw for central Virginia groups, as these settings typically host richer mast producing forest communities than most Piedmont uplands. Mast's abundance, reasonably high nutritional value, and ease of preservation lend itself to intensification efforts aimed at the production and storage of surplus. Carbonized hickory shell is by far the most common ethnobotanical remains recovered from Late Archaic contexts in Virginia. The thick, hard shell of the hickory likely aids its preservation. Unlike acorns, hickory nuts can also be processed and consumed without need to leach out tannins. Quantities of hickory shells generated by nut crop processing could have provided a convenient fuel source. Hickory shells burn hot/clean and would thus have been ideal for small fires inside shelters, in similar fashion to a modern pellet stove. Both these factors could have a bearing on hickory's prevalence in archaeological contexts, which may be somewhat disproportional to its actual importance as a food source.

Ethnobotanical remains other than hickory nut and acorn shell appear to be scarce in Late Archaic contexts in Virginia. This can be attributed to the generally poor preservation typical of open air sites in the Commonwealth. An exception appears to be the southwest Virginia Ridge and Valley with its limestone derived soils. At the 656 Elk Garden Site in Russell County, McLearen (1990) reported *Polygonum* (smartweed) and *Brassica* (mustard) remains from Late Archaic pit features. Also recovered from the same contexts were *Legumiosae*, *Hibiscus*, and *Imponoea* (morning glory). *Polygonum* and *Brassica* are well known to have contributed to prehistoric diets. All five of the represented genus require open environs. Hickory was not present in the Late Archaic pits on the site.

Even though the production of minor food surpluses is considered a characteristic of the Late Archaic, direct archaeological evidence for storage is largely absent in Virginia. An exception may be at the Magnolia Site located near the Dismal Swamp. Here Blanton (2002) reported a very large pit approximately 2.5 meters in greatest dimension. The pit yielded large amounts of carbonized hickory shell resulting in a radiocarbon date of 4150+/-50 BP. Blanton (2002:45) suggests that the pit was used for short term storage of nut crops. The lack of other documented storage facilities can be attributed to an inherent difficulty in discerning pit-type features of Late Archaic age. However, in Southwest Virginia where soil characteristics seem favorable for preservation, feature findings consist of post holes and small, shallow pits better suited in size and form to have been used in cooking rather than for storage.

Additional intensification efforts could have included the modification of forest cover to enhance the output of

edible seed bearing plants and other wild food resources that typically thrive as components of early succession communities. Regionally, a significant and growing body of indirect evidence suggests that Late Archaic peoples indeed purposely altered the local environment though the selective use of fire and other means. This evidence includes increased levels of charcoal and trace metals in tidal river sediments (Brush 1986, 1994), charcoal findings and other ethnobotanical data (Chapman et al. 1989; Delcourt et al. 1986; Stevens 1991), and perhaps the occurrence of aeolian soil deposition on period archaeological site surfaces (this volume). The purpose of these localized environmental modifications may have been to expand clear areas and forest fringe zones to promote and maintain economically valuable succession plant communities (Egghart 2005; Mouer 1990, 1991; Stevens 1991). In broader context, Smith (1989, 1991) convincingly argues that such active promotion of certain pioneering, indigenous seed bearing species was undertaken in Eastern North America to the extent that the entire region should be considered a locus for independent plant domestication. Smith postulates that the intensive exploitation of indigenous seed-bearing plants such as *Chenopodium sp*. and *Iva annua* developed into nascent horticultural practices. The propagation of these and other pioneering plant species depends on physical ground disturbance, well as opening the forest canopy. Smith (1989, 1991) further suggests that seasonal flooding along the rivers in Eastern North America originally provided this ground disturbance/canopy opening, and that an exploitive focus of these settings developed into nascent horticultural practices long before the acceptance of tropical cultigens and development of fully horticultural life ways. A Late Archaic modification of local vegetative cover can be viewed in this context. Multi-disciplinary studies directed toward possible prehistoric environmental modification could potentially shed additional light on this hitherto somewhat overlooked aspect of pre-horticultural subsistence regimes.

Trade/Exchange

The establishment and maintenance of long distance trade networks is an oft cited formative characteristic of the Late Archaic. Long distance movement of Late Archaic material culture is clearly demonstrated by the dispersal of steatite vessels far from their quarry sources, presumably utilizing boat transport. Trace analyses, including neutron activation have produced some robust results in terms of pinpointing specific steatite quarry sources (Luckenbach et al. 1975). Future research in this area would be sure to yield additional dividends. However, establishing quarry point sources does not necessarily address the degree to which the movement of steatite occurred via trade versus long distance procurement. Less prominent in the archaeological record is the movement of certain lithic materials and finished and unfinished groundstone artifacts (Blanton 2003). Some of these more exotic items appear to have moved significant distances from their source locations. The exact nature and full extent of Late Archaic exchange networks are far from understood. Future research into Late Archaic trade and exchange would benefit significantly from additional site excavations both in Virginia and the broader region, as well as more sourcing studies. A broader question is how trade and exchange may have been interrelated with increasing social complexity.

The western Dismal Swamp margin has been recognized not only as a hot spot for Late Archaic settlement, but also for the occurrence of exotic lithics and other obvious trade items (Blanton 2003) In *Archaic in Virginia: An Updated Overview*, Blanton addresses the Dismal Swamp settlement phenomenon by integrating ecologically driven subsistence/settlement factors and related group dynamics (to include territoriality and competition) with observed patterns of trade and exchange. Central to Blanton's analysis is recognition of the exceptionally rich resources that the Dismal Swamp and surrounding areas offered Late Archaic peoples. This highly productive ecological setting likely encompassed the adjacent Nansemond River and Elizabeth River environs, and perhaps portions of the nearby Lower James River estuary. While this near co-occurrence of ecologically highly rich settings is arguably unique in the Commonwealth, the economic and social/political dynamics expressed in local settlement and observed pattern of trade and exchange were likely operative in other areas, albeit at a less intensive level. For this reason, the Dismal Swamp findings have broad relevance to Late Archaic life ways in general throughout Virginia and beyond.

Blanton (2003) suggests that some Dismal Swamp trade was primarily utilitarian. Local resident groups would have benefited from exchange with other groups having access to Piedmont resources. These benefits included obtaining steatite for cooking and ground

stone tools for boat manufacture and other heavy work. Outside groups would have benefited by being granted access to subsistence resources considered to be within the local resident group's territory. As with most prehistoric exchange systems, Blanton stresses that an underlying theme of mutual reciprocity can be presumed, resulting in benefits that transcend immediate gain derived from the transaction. Trade relationships between groups may have served to reduce risk, as the participants in the system would have been expected to share food in times of localized shortage.

Exotic trade items known for this area include banded bannerstones and semi-lunar knives. Such items likely found their way to southeastern Virginia through more complex series of cultural interactions. The bannerstones originated at least 650 km away and were likely obtained for status rather than functional purposes (Blanton 2003:197). Given the distance that these items traveled, it seems reasonable that they were handed down linear trade connections by numerous parties rather than being exchanged directly, as may have been the case with the nearby Piedmont resources. The occurrence of semi-lunar knives or "ulus" is enigmatic. The items are rare finds in the Middle Atlantic and seem to have an affiliation with Northeast cultures. Blanton (2003:197) proposes the "absorption of dislocated groups ranging south from the Northeast" as a possible explanation for the artifacts' presence. Semi-lunar knives have clear functional uses. In Arctic Inuit culture, ulus are associated with women's work such as the processing of fish and skins. It is unknown if this gender connection holds true for the Late Archaic Northeast. However, non-game food processing was typically a female labor throughout Native North America. Though highly speculative, this raises the intriguing prospect that captured or bartered brides could in part account for the occurrence of the curious tool form in southeastern Virginia.

Social/Political Pattern

Archaeological reconstruction of Late Archaic social and political patterns has broad anthropological relevance that extends far beyond Virginia. The Late Archaic offers opportunity to archaeologically study how hunting and gathering societies organize and operate in diverse and highly productive, temperate zone environments. The period represents the critical juncture at which at least some groups began to transition from an egalitarian order to incipient social ranking. In addition to the possible evolution of social ranking, other issues relevant to the understanding of social/political patterning include the role that group migration versus in-situ ethnogenesis played in shaping local life ways. Group competition and territoriality must also be addressed in this context. In addition, increasing mortuary complexity as documented outside the Commonwealth has direct relevance to understanding local Late Archaic cultural development.

A fundamental research question is the degree to which shifts in life ways expressed in the archaeological record are attributable to diffusive spread of cultural traits, or if migration was a primary driver of change. One can easily view the in-migration of distinct cultural groups as directly manifested in local material culture typologies. In Virginia, it is difficult not to regard the occurrence of Perkiomen points in geographic isolation as evidence for the in-migration of distinct cultural groups from their core areas to the north. On the other hand, it should be clear that cultural processes far more complex than straight group movement were operative in shaping the Late Archaic material culture record.

Formative Late Archaic cultural development has been framed by two basic schools of thought; one favoring migration as a significant driver and the other emphasizing local ethnogenesis. Mouer et al. (1981) elaborated on the traditional migration theme with an adaptive radiation model for Late Archaic cultural change. Stated in simple terms, this model presents the spread of Savannah River material culture through a focused orientation toward estuarine/riverine resources. Late Archaic cultural shifts would have been coeval with, and facilitated by the development and expansion of tidal estuaries and the stabilization of inland floodplain environments. This model accommodates but is not necessarily predicated on a south to north and coast to inland movement of people/life ways/material culture traits. Catlin et al. (1982) responded by articulating a model for Late Archaic cultural development that stressed indigenous population growth, environmental change, and trade over migration per se. Both models have strengths and weaknesses. However, they should not necessarily be viewed as mutually exclusive. Inherent to the adaptive radiation model are some intriguing aspects that warrant elaboration. Specifically, the model proposes that Savannah River groups and indigenous late Middle Archaic groups coexisted in time, perhaps with the older cultures retaining a more sylvan focus, versus the riverine orientation brought by the newcomers (Mouer 1981,

1990, 1991). It is open to debate whether this is supported by the archaeological record. However, the prospect of what has traditionally been regarded as distinct groups (as defined by material culture traits) overlapping in space and time should be given consideration. Archaeologists have tended to conceptualize the prehistoric record in a straight linear progression, with fluted points on one end and small triangles on the other. The human condition is never so simple. In the broadest temporal context, a simple linear progression holds true. On a more refined time scale, calibrated in centuries rather than millennia, some overlap of archaeologically expressed cultural traditions can, and should be expected. Another interesting aspect of Mouer's adaptive radiation model is that it may ultimately be testable through absolute dating. The model holds that "daughter groups" moved west along Virginia's major river valleys, taking Savannah River material culture and life ways inland with them. In contrast to "migration" which can be regarded as near instantaneous in archaeological time scale, "adaptive radiation" as Mouer proposes was operative, by definition would have been a slower, ongoing process. As such, later absolute dates could be expected with distance inland. The limited number of Savannah River dates obtained in Virginia at least hint at such a temporal progression. Table 6.4 splits the Savannah River radiocarbon dates as cited in Table 6.3 into an eastern (Coastal Plain/Fall Line/Outer Piedmont) zone and western (west of Blue Ridge) zone. Note that generally acceptable Savannah River dates are lacking for the expansive Piedmont region other than from near the Fall Line in the vicinity of Richmond.

These values showing early dates for Coastal Plain/Fall Line areas are derived from a very limited number of assays. They nonetheless raise an interesting prospect. Additional radiocarbon dates are clearly needed before any conclusions concerning temporal progression of Savannah River settlement can be made. What seems certain, however, is that simple migration played at least some role in shaping the Late Archaic period. This assessment is predicated on the fact that out-migration in response to local stress is an extremely common phenomenon and one as old as human culture itself. Late Archaic population growth and a geographically focused intensification of wild food resource exploitation would clearly give rise to competition and social/economic pressures on both local and regional scales. Further, competition would be exacerbated by the highly uneven distribution of resources across the landscape, particularly in the Coastal Plain. As a result, strategically important places such as Fall Line locations suitable for harvesting/processing anadromous fish, prime brackish/saltwater shellfish beds (now likely deeply submerged), and highly productive areas of ecological diversity such as the western Dismal Swamp margins and the mid-drainage zone of coastal rivers would have been subject to territorial claims of some degree. As with most aspects of Late Archaic cultural dynamics, intensifying resource exploitation, geographically focused settlement, and population growth would have been subject to feedback reinforcement. Under such conditions, out-migration can be expected to have been a natural response. Further, it would be naïve to think that migrating groups were always welcomed, or even tolerated by peoples into whose territories they moved.

Table 6.4: Virginia Savannah River Radiocarbon Dates by Region

Coastal Plain/Fall Line/Outer Piedmont N=5		
Mean 4150 RCYBP	Median 4200 RCYBP	Range 475 RCYBP
West of Blue Ridge N=7		
Mean 3920 RCYBP	Median 3700 RCYBP	Range 1120 RCYBP

Note: Eastern group does not include Pony Pasture (McLearen 1987); Small Savannah River association. Western dates include Edd's Mill (Egghart 1991); steatite in feature context on site with Savannah River dominant among multiple Late Archaic components

Sassaman (2008) critiques a straight migration explanation for material culture patterning by pointing out that arriving groups, as well as people already living in the area cannot be imagined to have been self-contained, internally homogenous units. Rather, large scale movement of Late Archaic peoples is likely to have been facilitated by and even predicated on existing social connections (Sassaman 2008:7). Pagoulatos (2010) is even more critical of migration as a driver of Late Archaic cultural change. Citing his testing of migration-based theories against archaeological data collected across major Middle Atlantic and Northeast watersheds, Pagoulatos maintains that transmission of Late Archaic material culture traits, and broad blade bifaces in particular, was primarily through diffusion based processes. He further argues that to facilitate this, territorial boundaries would have to have porous and individual groups open to new

ideas and cultural concepts (Pagoulatos 2010).

This author would offer that as diversity in Late Archaic life ways and cultural systems appears to have been the norm, intra-group and inter-group dynamics likely were equally varied. In other words, a full range of cultural interactions and responses could be expected. One extreme may have entailed the direct migration of highly distinct cultural groups into territories where they were regarded as unwanted competitors or even hostile invaders. Other, and perhaps more common cultural relations may have been typified by the flow (albeit in socially regulated fashion) of material goods, information, and mates across fluid group boundaries that shifted over space and time. Both these scenarios may be reflected in what is clearly a complicated archaeological record.

The concept of Late Archaic territoriality can perhaps also be applied to include stretches of expansive and productive Piedmont floodplain, or physically defined entities such as individual watersheds or mountain ridge and valley complexes. With respect to the latter, Nash (2008, 2009) proposes that prime chestnut groves may have been subject to territorial claim by Late Archaic hunter-gatherers. Nash further posits that given their obvious economic importance, these chestnut groves may have been actively promoted and maintained. At Big Meadows, possible evidence for such manipulation of the local forest community included a spike in chestnut pollen together with a spike in *chenopodium* and *amaranthaceae*; starchy seed producing early succession plants that thrive in disturbed areas and are also widely known to have contributed to prehistoric subsistence. In addition, charcoal lenses were documented in stratigraphic association with Late Archaic diagnostics. Radiocarbon dates on bulk charcoal from these contexts averaged 3600 B.P. (Nash 2009:231-232).

Steatite vessel fragments were also recovered at Big Meadows. Rather than viewing these items in pure economic terms (i.e. efficient cooking technology), Nash frames their occurrence in a mountaintop context as markers of interaction and regional exchange, possibly linked to socially charged feasting during times of seasonal abundance. Big Meadows' ecologically diverse and productive environment (perhaps enhanced by human use of fire and other means) would have been an appropriate location for ritual activity and inter-group social interaction. Its location straddling the Blue Ridge makes Big Meadows a logical meeting place for culturally linked groups inhabiting the Piedmont and Great Valley, respectively. The Big Meadows locality, while possessing some singular attributes, is unlikely to have been fully unique. Other ecologically productive, central place settings could similarly have functioned as inter-group meeting points at which social/ritual activities were carried out by Late Archaic peoples.

A key but unanswered question in the study of Late Archaic is the degree to which groups may have experienced socio-political development. The need to organize communal labor and manage resultant food surplus can be seen as fostering incipient complexity. Presumably, certain individuals who may have risen to prominence through individual achievement or force of personality used their positions to influence group decision making or help manage communal tasks. These "Big Men" (or perhaps women) may have enjoyed preferred access to coveted trade goods thereby reinforcing their prestige within the group. Unfortunately, researchers in Virginia have little archaeological evidence through which to address these fundamental questions. Without direct evidence of large scale communal economic endeavors or extensive storage facilities, a direct link between the organization of labor/generation of food surplus and developing social complexity remains hypothetical. On the other hand, activities such as the harvesting/processing of anadromous fish and the burning of forest stands or otherwise manipulating local vegetative communities would clearly have required significant organizational efforts in terms of planning, scheduling, and marshalling of labor and other resources.

Also mostly lacking in Virginia is substantive data on Late Archaic mortuary behavior. Possible exceptions are reported findings of Perkiomen points in southeastern Virginia that appear to have been purposely broken or heat shattered before being placed in the ground (McLearen 1991a:105). Researchers in Virginia must look to the Northeast where mortuary complexity in the form of elaborate burial treatments and the presence of funerary objects is documented. However, it is unclear the degree to which Late Archaic cultural practices archaeologically expressed in the Northeast may be analogous to Virginia. Pagoulatos (2009) conducted an exhaustive compilation and analysis of Late Archaic mortuary sites throughout the Northeast, the results of which may have broad relevance to Virginia research. His analysis indicates a marked increase in mortuary complexity in riverine

settings. Pagoulatos further views the study's finding as evidence that base camps occupied during the autumn season were favored for ritual activities to include deferred (secondary) burial and other complex mortuary behaviors. Among other explanations, Pagoulatos posits that ritual complexity in these ecologically rich settings can be seen as a reaffirmation of that group's connection to a specific place, or core territory. This scenario has clear implications for the Dismal Swamp findings reviewed by Blanton (2003) and discussed in preceding subsection. Most if not all of the Dismal Swamp exotics appear to have been recovered from surface contexts. However, by the very nature of the items some ceremonial association can be assumed. Should exotic items be documented in actual mortuary context, their inclusion could perhaps be viewed as an expression of group identity or collective connection to place, rather than a sign of individual status, as was likely the case in many Woodland period societies.

Conclusion

Summary Remarks

In reviewing the body of archaeological data by research theme of *Chronology and Material Culture*, *Settlement Pattern,* and *Economic Pattern* and *Social/Political Patterns,* a common thread seems to be diversity and variability. Late Archaic site occupations are found throughout the full range of physical settings in the Commonwealth. Further, the intensity/duration of Late Archaic occupation seems to vary somewhat even within similar settings. In addition, the occurrence of Late Archaic components is highly uneven across the Virginia, with distinctive settlement hot spots known for specific sub-regions. Given the variability expressed in Late Archaic site data, it is reasonable to postulate that culturally distinct Late Archaic groups existed, perhaps overlapping in place and time. Differences may not have been limited to material culture and subsistence but may have included varying degrees of social organization and complexity. Alternately, groups that outwardly share material culture attributes such Savannah River manufacture and steatite vessel use, may actually have had divergent economic practices and degree of social organization. This would have resulted in a varied "cultural landscape" of the Late Archaic. Using the Coastal Plain as an example, Blanton (2003) proposes that this Late Archaic landscape was characterized by "a mosaic of multiple territories occupied by different to groups functioning under a range of socio-economic strategies." These groups' life ways would have varied significantly in terms of home ranges, degrees of residential stability, subsistence, and social complexity and organization. Under such conditions, caution would have to be taken when applying data and interpretations from a single archaeological site when attempting to characterize Late Archaic life ways in general, even within the same physiographic region.

Strengths and Weakness in Existing Late Archaic Data

Inherent in the existing archaeological database are significant strengths as well as weaknesses. A clear strength is the relatively large number of known site locations and the presence of clear material culture markers. Late Archaic diagnostics such as Savannah River, Perkiomen, and Susquehanna points, or steatite vessel fragments are highly distinctive and unlikely to be mistaken for artifacts associated with other periods. In addition, a significant number of radiocarbon dates has been recorded for the above diagnostics types, effectively placing them in good chronological context. The large number of identified components allows for landscape-scale evaluation of settlement trends in addition to site specific functional interpretations. Other archaeological attributes can assist researchers in reconstructing both site specific behaviors and regionally based Late Archaic cultural developments. These include the occurrence of large FCR features, an apparent predilection by some groups toward specific lithic material, the use and transport of steatite vessels, and to some extent the movement of exotic trade items over large distances.

At the same time, significant gaps exist in our archaeological understanding of the Late Archaic. As discussed in the *Chronology and Material Culture Patterns* subsection, Late Archaic material cultures sequences are not fully defined, both in terms of morphological types and the temporal association of these forms; nor is there full agreement among researchers in regard to these sequences. This situation can be attributed to the rarity of good stratified contexts. No alluvially stratified Late Archaic sites have been extensively excavated in the

Commonwealth. The best stratigraphic Late Archaic contexts in Virginia come not from floodplain settings but from within aeolian deposits in the southeast Coastal Plain (Egloff and McAvoy 1990; McAvoy and McAvoy 1997) and from cave context in Southwest Virginia (Benthal 1990). However, these deposits tend to be relatively thin and compressed, making the discrimination of individual Late Archaic occupations problematic. The James River Piedmont locations that have been subject to data recovery, though buried, were also not finely stratified (Fiedel and Balicki 1997; Pullins and Monroe 2004).

Another challenge facing researchers is the paucity of organic preservation and the extreme difficulty in recognizing pits or post features of Late Archaic age. In many settings, such features can be assumed to have completely leached out, effectively making them invisible. When cross cut by unit excavation, diagnostic artifacts recovered from within such leached pits can easily lead to incorrect contextual conclusions.

A glaring weakness in the body of Late Archaic data is the highly uneven geographic distribution of investigated sites. The overwhelming majority of Late Archaic investigation has been carried out on federal lands and/or by Section 106 driven actions. As a result, data for some portions of the Commonwealth is limited. Site data for the expansive southern Piedmont region is essentially lacking all together. If one includes all lands south of the James River between the Blue Ridge and the Fall Line, the southern Piedmont encompasses an area roughly the size of New Jersey. Further, the region is drained by the Roanoke River system, the lower reaches of which are generally considered to fall within the Southeast. The relationship between the Savannah River tradition in Virginia and the period cultures of the Southeast is a critical to understanding the Late Archaic as a whole. This makes the lack of data from the greater Roanoke drainage an even more pressing concern. Late Archaic site data is also essentially absent from the Appalachian Plateau of Virginia. By contrast, small areas such as the far southwestern Virginia Ridge and Valley have been extensively studied. Given the uneven nature of archaeological coverage, it remains unclear if the intensive settlement phenomenon as documented in the Indian Creek locality and other parts of far southwestern Virginia is representative of the Late Archaic in broader geographic context. In addition, any meaningful reconstruction of settlement patterning in eastern Virginia must take into account coastal site locations lost to rising sea levels. For areas west of the fall line, alluvial burial and/or truncation of Late Archaic floodplain surfaces may be a factor in site condition and visibility.

Other conditions make obtaining a clear picture of Late Archaic material culture sequences difficult, beyond site formation/preservation factors and uneven archaeological coverage of the Commonwealth. While the geographic dispersal of distinctive material elements such as steatite is easily charted, the archaeological record remains largely ambiguous as to whether this movement was through trade or long distance movement. Some dispersal of the distinctive Broadspear forms is likely attributable to group movement/migration. However, the degree to which the spread of Late Archaic cultural traits can be attributed to group migration is uncertain. While some migration can be presumed, this raises the specter of group assimilation over time, with this process likely reflected in the material culture record. This does little to ease the task of defining period material culture traits and sequences.

In summary, factors challenging archaeologists studying the Late Archaic include:

- A paucity of period sites with intact stratigraphic contexts;
- Difficulty in recognizing non-lithic features;
- Charcoal for C-14 dating generally rare;
- Preservation of organics (floral and faunal) that would contribute to our understanding of foodways and resource exploitation is rare
- Large coastal sites likely inundated; and
- Floodplain sites perhaps buried and/or unevenly preserved.

Broad but inter-related cultural trends characteristic of the Late Archaic further making fine-grained definition of period material culture and chronology difficult are:

- Greatly increased rate of cultural change over the preceding Middle Archaic;
- Increasing diversity and regionalization of material culture;
- Variability in timing/scope in the adoption of new technologies and lifeways;
- Rise of trade networks resulting in dispersal of material culture elements, and
- Migration and the prospect of inter-group coexistence and/or assimilation.

Despite these limitations, the full archaeological record on the Late Archaic is potentially extremely rich.

The realization of this potential undoubtedly hinges on the systematic excavation of Late Archaic site locations and the long term protection of known and unknown site locations that may someday to yield important data.

Future Research

As is the case with all prehistoric time periods, our understanding of the Late Archaic would be significantly enhanced through the recovery of additional data pertaining to fundamental research domains to include chronology (absolute dating, relative context), material culture (artifact type, function and stylistic sequences), settlement (occupation term, group size, landscape location), and subsistence (diet and human interaction with the environment). This basic data can only be derived from systematic excavations of Late Archaic sites in all regions of the Commonwealth. Thoughtful synthetic analysis of survey level data can also shed light on broad-based cultural patterning of the Late Archaic. Any such analysis must take into account the ambiguities and limitations inherent to survey data. Analyses of both site findings and survey level data should be integrated with that of the most current paleoenvironmental research and studies. In addition, it is absolutely critical that all data gathered be made readily available to the broader archaeological community.

The following questions are intended to help frame future directions in Late Archaic research. These are posed to compliment the aforementioned basic research constructs pertaining *Chronology*, *Material Culture*, *Settlemen*t, and *Subsistence* common to all prehistoric site investigations.

In the broadest context, a central question pertaining Late Archaic research in Virginia must be:

What is Savannah River?

Is it the signature archaeological remains of a dominant culture; one that had its origins in the Southeast and spread north into Virginia and beyond, taking full exploitive advantage of newly developed and rich environmental zones; flourishing in the "James River Crescent" stretching from the salt tidal zone to the high ridges of the western headwaters? Alternately, should Savannah River (and later stone vessel manufacture) be seen as a generalized material culture trait; one diffusively adopted in varying degrees by both long established resident groups and perhaps more recent arrivals to what is now Virginia? Or is it something in between?

In regards to the other material culture element most closely associated with the Late Archaic;

What are the full implications of steatite vessel manufacture and use?

In addition to better temporally defining the adoption of steatite vessels, establishing quarry sources and tracking movement of material from their origin, one must ask how and in what way is steatite use interrelated with changing subsistence ways, geographic mobility, social complexity and group interaction. What are the broader cultural implications of such interrelationships?

Further:

What is the nature of the other Late Archaic complexes also featured in the archaeological record?

How do the Late Archaic complexes more typical of the Potomac drainage northwards (Lamoka, Poplar Island, Bare Island, Perkiomen, Susquehanna) factor into culture history of the Commonwealth? Are the tool forms associated with these complexes found in southeast and southwest corners of Virginia direct evidence for the out-migration of people and their distinct material culture from their core areas to the north, or are other more complex cultural processes at work in shaping the archaeological record?

Any attempt to answer the above leads one to ask:

What cultural processes best account for what we call the Late Archaic?

To what degree can in-situ cultural change versus the geographic spread of cultural traits account for the development of Late Archaic lifeways. With respect to the latter, to what degree did direct migration versus the diffusive spread of cultural traits account for the archaeologically expressed cultural patterning of the Late Archaic period?

Other research questions central to a better understanding of the Late Archaic include:

In terms of subsistence, what is the exact nature of the "intensification" process widely regarded as a hallmark of the period?

Given that anadromous fish runs and shellfish beds only could have provided a small percentage of subsistence needs within a relatively small portion of the Commonwealth, what other resources might have been intensively exploited and how?

Did Late Archaic people extensively modify local environment in the context of subsistence intensification? If so, in what manner was this done?

In absence of direct evidence of horticultural activities to support growing populations, what means of increasing subsistence take may have been engaged?

To what degree are resource intensification, residential stability, and increasing social complexity linked?

Does one even assume that these trends are must inherently be interconnected?

What level socio-political complexity may have existed in Late Archaic societies?

To what extent is the Big Man concept of incipient social complexity applicable? Given the lack of firm archaeological evidence for food storage, should the assumption that Late Archaic societies were non-egalitarian be reconsidered, at least as it pertains to the management of communal labor efforts and resultant surpluses? What is the interrelationship between long distance trade/access to exotic material and the development of social complexity? Does a direct link between these cultural trends even need to exist?

What kind of ritual/mortuary behavior was undertaken in Virginia and what can these behaviors tell us about the Late Archaic as a whole?

Do the elaborate Late Archaic mortuary practices documented in the Northeast and elsewhere have corollaries in Virginia? Is the near absence of evidence for complex mortuary ceremonialism on Virginia sites attributable to preservation factors and perhaps the loss of major riverine sites to sea level rise and channel transgression? Alternately, is the lack of data reflective of actual cultural patterns?

In conclusion, one certainty about the Late Archaic is there remain more questions than answers. Some answers will come with the additional excavation of Late Archaic components and the dissemination and synthesis of the findings. If we continue to ask questions, while at the same time putting preconceived notions about the Late Archaic aside, what is sure to emerge is a more complete, richer understanding of this critical and complex period in prehistory.

Chapter 7

State Plan and Research Design Early Woodland (1100 BC – 500 BC)

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Introduction

The Early Woodland is perhaps the least understood era in Virginia prehistory. Once regarded an interim phase, one that diffusely bridged hunter-gather life ways of the Archaic with those of village dwelling horticulturalists, the Early Woodland is perhaps best viewed as a distinct entity in and of itself. The period witnessed pronounced settlement shifts as well as major changes in lithic tool manufacture and use. The adoption of ceramics stands as hallmark of the era. Other notable trends include the apparent near collapse of long distance trade networks operative during the preceding era. While some incipient social stratification is typically inferred for the Late Archaic, the organization of Early Woodland societies remains enigmatic.

Chapter Organization

Organization of this chapter closely follows others in the current volume. The *Physical Regions of the Commonwealth* section summarizes attributes of the various physiographic provinces in Virginia as they may pertain to Early Woodland adaptations, as well as site occurrence, condition, and visibility. Recent advances in the understanding of past climate and its influence on the environment is summarized in the *Early Woodland Climate and Environmental Conditions* section. The *Chronology and Material Culture* section provides an account of period material culture with an emphasis on recently published archaeological findings. Similarly, the *Review of Archaeological Research to Date* section focuses on results of investigations carried out since publication of the original COVA synthesis volume. The intent is to summarize existing data pertaining to the Early Woodland and to identify specific gaps. Discussion of the Early Woodland as presently understood is done with the aim of guiding research according to established topics, presented as *Research Themes*, including Chronology and Material Culture, Settlement Pattern, Economic Pattern, and Social/Political/Community Patterns. The final section posits specific research questions intended to help frame future investigative efforts into the Early Woodland period in Virginia and beyond.

General Description of Early Woodland in Virginia

The Early Woodland has traditionally been demarcated by the appearance of ceramics in the archaeological record. While this technological innovation ultimately had far reaching consequences, the Archaic and Woodland transition seems to have been incremental in nature. Early ceramics likely functioned in a similar manner as steatite vessels of the preceding era, both in straight economic terms by way of food preparation and storage, and also as socially charged markers. The morphological similarity between Late Archaic carved bowls and early ceramics underscores the transitional nature of period material culture. Use of Broadspear-derived projectile point forms, as well as the continued production and use of ground stone implements and slate accoutrements further link the two periods. However, while there appears to have been a continuum in some material culture traits, other changes between the two periods are relatively pronounced. With respect to lithic use, one sees a distinct shift towards locally available material. Other marked changes include the increased use of informal,

expediently produced cutting tools, together with a reduction in bifacial tool manufacture in general. Long distance trade appears to fall off dramatically, with exotic items becoming rare. There also seems to be a change in settlement with a narrower range of settings chosen for occupation. Some upland areas are nearly abandoned to use while major river floodplain areas become favored. These settlement shifts, together with the apparent de- emphasis on formal bifacial tool manufacture and use could signal an increasing reliance on plant food resources. However, evidence of formal horticulture is essentially lacking. Most site occupations appear to have been seasonal in nature and of relatively limited duration. In this regard, Early Woodland settlement and associated life ways seem to have had more in common with Late Archaic than the latter half of the Woodland era.

Environmental Setting

Climate and Environmental Conditions

Early paleoenvironmental reconstructions, including work by Carbone (1976), characterized the Early Woodland as a period of ameliorating climate compared to the more dynamic conditions of the Late Archaic. More recent research generally supports Carbone's findings. In the preceding chapter, Late Archaic climate is portrayed as a period of relative warmth but with significant fluctuations in both temperature and precipitation patterns. The very end of the Late Archaic may have experienced a short but intense warm/dry episode (Willemse and Tornqvist 1999). This appears to have been followed by a general cooling, with more regular precipitation patterns characteristic of the Subatlantic phase. For areas east of the Fall Line, a significant environmental factor was the newly developed Chesapeake Bay, which had largely reached its modern configuration during the preceding millennia (Colman et al. 1991; Bratton et al. 2003; Cronin et al. 2007). Pollen profiles indicate that the establishment of essentially modern forest communities in the Middle Atlantic predates the Early Woodland by a significant margin (Delcourt and Delcourt1985; LeeDecker and Koldehoff 1991; Newby et al. 1994). However, one potential ecological effect of a severe warm/dry episode during the Late Archaic-to-Early Woodland transition would have been the greater occurrence of pine species, particularly east of the Blue Ridge, and intermittent fire-maintained succession communities throughout. In addition, some normally dryer locales such as the Shenandoah Valley floor may have hosted broken forest and patchy grassland.

Climate reconstructions for the Early Woodland have the benefit of dendrochronological data. Once largely limited to the Southwest United States, recent studies have established fairly robust sequences applicable to East Coast locations. Quality data has been obtained from bald cypress along the Nottoway River, in southeast Virginia (Stahl et al. 1998), and white cedars in Ontario (Kelly et al. 1994). More broadly applicable are Irish oak and other comprehensive sequences for continental Northern Europe (Braillie 1988). In addition, study and analysis of Greenland ice cores has provided a rapidly expanding data base pertaining to North Atlantic climate. Ice core data suggest that the North Atlantic climate around cal 1200 BC was warmer than any time since cal 7500 BC. This was followed by a sudden drop of two degrees C by ca. 1000 cal BC (Willemse and Tornqvist 1999).

The sudden cooling of the climate around 1000 cal BC appears to have been one of several such episodes during the Early Woodland. Fiedel (2001) cites correlative Greenland ice core and European tree ring data that point to multiple pronounced but relatively short term cooling events. These begin at 1159 BC and 850 BC respectively. The 850 BC demarcation could be linked to one in a series of periodic Holocene cooling episodes named Bond Events after their discoverer. These episodic cool downs of the North Atlantic climate are signaled by the presence of ice rafted sediment/debris on the sea floor. Bond Events recurred on a 1500 +/- 500-year interval throughout much of the Holocene (Bond et al. 2001). While the 850 BC cooling correlates with an established Bond Event, the earlier 1159 BC episode (evidenced in tree ring data) may have been related to a major volcanic eruption, dust and ash from which would have blocked sufficient sunlight to effect hemispheric or even global temperature regimes (Braille 1988). Numerous researchers have noted a flattening, or plateau in the radiocarbon curve between cal 800 BC and 400 cal BC, suggesting elevated atmospheric radioactive carbon during that time frame. Following van Geel et al. (1999), Fiedel (2001) reasons that atmospheric C14 rose as a result of decreased solar activity and a corresponding cooling of the global climate. Such increases in C14 are

linked to reduced uptake of CO2 by ocean waters during climate cooling (Stocker and Wright 1996). The period around 800 BC may also have experienced a Grand Solar Minimum event (Martin-Puertas et al. 2012), resulting in global cooling. Such periodic decrease in solar output are very limited in absolute terms yet are thought to have a pronounced effect on climate, with feedback driven changes in atmospheric circulation patterns the primary driver (Martin-Puertas et al. 2012). In sum, the Early Woodland seems to have experienced significant cooling, perhaps as a result of multiple causal factors.

Early Woodland floodplain depositional patterns suggest infrequent major flood episodes. Vento et al. (2008) have proposed that elements of floodplain depositional sequences could be linked across multiple river basins while integrating paleoclimate data. Their observations and analysis suggest an extended period of floodplain stability between 3000 BP and 2000 BP. By contrast, the preceding Late Archaic seems to have been more dynamic, with alluviation dominant along larger drainages and some instability evident on smaller tributaries. The post-3000 BP floodplain stability cited by Vento et al. (2008) is in line with observations of stable Early Woodland archaeological surfaces along the Potomac drainage and other Virginia locations (Klein and Klatka 1991; McLearen 1991a, 1991b). These conditions suggest relatively regular precipitation with few extreme flood events. This can be seen as enhancing the suitability of floodplain settings for longer term settlement. Early Woodland floodplain stability is further evidenced at sites such as 44WR0232, along the South Fork of the Shenandoah in Front Royal (Fidel 2013). Here the Early Woodland was defined by a clear, apparently stable occupation floor. Subsequent to these occupations and prior to the Late Woodland, this floor was buried under a thick mantle of alluvium, indicating a resumption of more dynamic fluvial conditions.

In summary, the Early Woodland appears to have experienced a somewhat cooler and moister climate than the preceding Late Archaic. In eastern Virginia, the establishment of fully modern estuarine conditions in the Chesapeake Bay basin has significant resource implications. The very beginning of the Early Woodland experienced a sharp but short- lived warm/dry climate episode. Whatever their root causes, several subsequent cooling episodes may have been severe enough to stress Early Woodland populations. However, alluvial patterning and accompanying archaeological data point to floodplain stability and, by extension, relatively moderate precipitation with few extreme overbank events. One result of moister and more stable climatological conditions during the Early Woodland would have been a reduction of pine in many Virginia locations, and a corresponding entrenchment of climax forest conditions. Any remnant grasslands, broken forest, or fire-maintained communities persisting from Late Archaic times would have quickly filled in under the prevailing, moister conditions.

Physical Regions of the Commonwealth

The diverse physical regions that make up Virginia likely exerted a significant influence on prehistoric settlement and economic life ways. With respect to the Early Woodland, the break between the Coastal Plain and Piedmont represents a particularly salient divide. By the Late Archaic, the Chesapeake Bay had essentially achieved its modern configuration. Major rivers east of the Fall Line were under tidal influence, with former floodplain areas inundated to form broad, estuarine arms of the Chesapeake Bay. By contrast, expansive floodplains characterized the major river valleys across the Piedmont region. These physiographic and environmental distinctions would have been of major significance in terms of local human adaptations. The Fall Line area would have been of particular importance, not only for its central location with respect to diverse physical and environmental settings but also as a prime location to exploit anadromous fish. The Blue Ridge also represents a formable demarcation. Of the major rivers in the commonwealth, only the Potomac and the James traverse the Blue Ridge province. In far northern Virginia, the Blue Ridge is relatively low. Here, the Potomac River provides a direct route into the northern Shenandoah Valley and the Ridge and Valley. This feature likely helped to channel human movement within the region and facilitated ongoing cultural connections. Further south, the Blue Ridge rises in elevation to form an impressive massif separating the expansive southern Piedmont from the Ridge and Valley. The James River can be the thought as dividing the northern and southern Blue Ridge sub-regions. Like the Potomac, the James River break through the Blue Ridge likely had a significant role in channeling settlement and promoting and maintaining cultural ties

between physiographic regions.

Further south, the New River Valley is part of the greater the Ohio drainage. With its open character, ample floodplains, fertile limestone soils, and diverse resource base, the New River Valley environs have long been recognized having supported intensive Late Woodland settlement. These same environmental conditions would have made this area desirable for occupation during earlier times as well. The New River Valley's central location with respect to the other physiographic provinces, and its proximity to principal river drainages in Virginia likely made the region a cultural cross road. Much of the Virginia Appalachian Plateau lies within in the greater Ohio River watershed. The rugged uplands and deeply incised valleys of this area are unique in the Commonwealth. Finally, with its remote location and difficult access from the east, the Tennessee River drainage in far southwest Virginia likely remained under cultural influence of the interior Southeast.

The Piedmont is by far the largest physiographic province in Virginia. Like the Ridge and Valley, it can be divided into Northern and Southern sub-areas demarcated by the James River. The Northern Piedmont is cross cut by the three principal Chesapeake Bay tributaries: the Potomac, Rappahannock, and James. Piedmont sections of these rivers are characterized by expansive floodplains. The Roanoke River is largest drainage in Southern Piedmont. As part of the greater Carolina Sounds watershed, the Roanoke River as well as its largest tributary, the Dan River, can be seen as having connected the Southern Piedmont to the greater Southeastern cultural realm.

Physiographic setting has also had a strong bearing on Early Woodland site preservation and visibility. In the Coastal Plain, it must be assumed that a significant portion of prime settlement locations have been lost to rising sea levels and shoreline regression. Occupations along the main stem of the Chesapeake Bay and the near the mouths of the major tributaries are likely to have been the most vulnerable. This leaves researchers with a compromised view of Early Woodland settlement. Evidence for the exploitation of shellfish and other estuarine resources may be particularly underrepresented due to site loss. The tidal inundation of major floodplains along the Middle and Inner Coastal Plain may also have directly influenced settlement. Egghart (2004) posits that inundation of these floodplains directed Early Woodland occupations into smaller tributary valleys and toward interior swamp and wetland settings to exploit plant resources formerly available along the now drowned floodplains of the major coastal rivers.

In the Piedmont, the Early Woodland settlement focus on major floodplains has implications with respect to site visibility, as many period components are likely buried. Further, those Early Woodland components that are expressed in surface context may not be easily recognized due to the fragile nature of early ceramics, which tend to disintegrate with exposure and plow action. A lessening emphasis on formal chipped stone tool production and use also likely further limits the visibility of Early Woodland components, not just in floodplain settings but throughout the range of occupation locales. Identifying Early Woodland site locations is particularly problematic in much of the Appalachian Plateau. This is due to a lack of stable landforms along rivers and streams, as well as the severity of terrain in upland zones.

Overview of Early Woodland Material Culture

Projectile Points

As with many other aspects of the Early Woodland, definition of projectile point types is less than clear (Table 7.1). The earliest forms appear to be derived from the Savannah River tradition, with a reduction in size also evident. As a specific point type, Small Savannah River appears to span the Late Archaic to Early Woodland transition. Other apparent Savannah River-derived forms include Calvert (Stephenson and Ferguson 1963). Found mostly in Southwest Virginia, the Gypsy Stemmed (Oliver 1981) type also appears derived from Savannah River.

Small Savannah River was formally defined by Oliver (1981) and elaborated on by Wasselkov (1982) and McLearen (1991a). As the name implies, the point seems to be a scaled down version of the Late Archaic Broadspear. Beyond size, one difference is a squatter, more squared stem. A shift toward non-quartzite material (typically quartz) is also apparent. McAvoy and McAvoy (1997) place Small Savannah River towards the end of the Late Archaic based on stratigraphic positions recorded along the Nottoway drainage. An association with early ceramic wares has been reported for Small Savannah River along the James River Piedmont (Mouer et al. 1981).

The Calvert point was described by Stephenson and Ferguson (1963) at the Accokeek Creek Site. Calvert points are typically short, thick in cross section, and have a pronounced, fully squared stem. A strong preference for quartz is expressed. The only firmly dated contexts are from the White Oak Point Site along the tidal Potomac, where Wasselkov (1982) obtained three overlapping dates averaging around 3050 BP.

Small, stemmed points that do not readily conform to formally described types occur widely in Early Woodland context across much of Virginia. Along the Nottoway River, McAvoy and McAvoy (2015) applied the provisional designation Small Stemmed to this generalized form, while noting a stratigraphic occurrence at the very end of the Late Archaic. In far Southwest Virginia, McLearen (1994b) reported similar points in dated Early Woodland contexts while noting that their general morphology was consistent with Early Woodland points from other parts of the state. These points morphologically overlap with Oliver's (1981) descriptions of the Gypsy Stemmed type. Inashima (2011) applied the Gypsy Stemmed name to similar forms recovered from dated Early Woodland contexts together with Selden Island ceramics at the Clark's Branch Site in the Northern Virginia Piedmont.

Susquehanna points (Witthoft 1953) have been traditionally regarded as dating to the latter portion of the Late Archaic. In the Northeast, this era has alternately been referred to as the Transitional Period or the Terminal Archaic. Susquehanna points have been recovered from sealed, dated Early Woodland contexts along both the North Fork of the Shenandoah (McLearen 1991) and the South Fork (Fidel 2013) in Front Royal, suggesting that use of the type may have continued into the ceramic era.

Fishtail points have a wide but relatively uneven distribution across Virginia. As with many Early Woodland points, the Fishtail appears to be rooted in the Late Archaic. Ritchie (1965, 1971) originally referred to the point type as Orient Fishtail, while noting an association with steatite vessels. In Virginia, the singular term "Fishtail" seems to have found favor. A very similar point is Dry Brook (Kinsey 1972) and the two types appear to intergrade. An intergrade between the Fishtail and Susquehanna types is also evident.

Piscataway is perhaps the most widely distributed projectile point associated with the Early Woodland in Virginia. The type was first described by Stephenson and Ferguson (1963) at the Accokeek Creek Site. This foliate to lozenge-shaped point form may have origins in the Late Archaic (Dent 1995; Luckenbach 2010). The Teardrop (Mounier and Martin 1994) is very similar in form but has not been radiocarbon dated in Virginia. In the Northeast, two robust suites of radiocarbon samples date Teardrop to the Early Woodland (Mounier and Martin 1994; Petraglia et al. 1998).

Will's Cove represents yet another Early Woodland point type, albeit with no apparent connection to the greater Broadspear tradition. The point was originally described by Bottoms (1979) and elaborated on by Egloff (2016). Will's Cove has an elongated, slightly excurvate blade, pronounced shoulders and a short, straight stem with a square or partially rounded base. Flaking is irregular, often giving the points a somewhat crude appearance. While speculative, a genetic connection to the Late Archaic Poplar Island or Bare Island traditions seems plausible.

Vernon may also be of Early Woodland age, though no reliable radiocarbon dates are reported for the type. Vernon was first described by Stephenson and Ferguson(1963), who proposed an Early Woodland association based on the findings at the Accokeek Creek Site. Some researchers place Vernon in late Middle Archaic, citing its strong similarity to Halifax. In Virginia, Egloff (2016), as well as Nash (2009), ascribe an Early Woodland association to Vernon. Analysis of the Ogle Projectile Point collection from sites Sussex County demonstrated that the occurrence of Vernon points strongly follows that of Piscataway and Will's Cove, while little correlation with the distribution of Halifax and related late Middle Archaic side-notched points was noted (Egghart and Manson 2016).

Large, crude triangle points have long been regarded as dating to the Early Woodland. This is based on descriptions by Coe (1964) of the Badin type, a large triangle occurring in the North Carolina Piedmont. Egloff (2016) places Badin in the early Middle Woodland based in part on stratigraphic contexts at the Doerschuk Site (Coe 1964). Some researchers have posited that Badin-like points represent performs for Middle Woodland or Late Woodland triangles rather than finished weapon tips. Egghart and Manson (2016) compared the site occurrence of Badin-like points in the Ogle Collection against Archaic points, Early Woodland types, and Middle/Late Woodland triangles. Results

were ambiguous. Large triangles were essentially absent on several sites with hundreds of Archaic points, but outnumbered Archaic points on one site. Badin-like points occurred in elevated numbers on two Woodland village locations but not the third. No correlation was noted in the occurrence of Badin points and known Early Woodland types on any site represented in the Ogle Collection (Egghart and Manson 2016).

Ceramic Wares

Bushnell Plain may be the earliest ceramic in Virginia. Egloff and Potter (1982) suggest that the type is as old, and possibly older than the more widespread Marcey Creek ware. The type is named for David Bushnell who identified it during his pioneering excavations in Caroline County (Egloff and Potter 1982). Vessel bodies are coil constructed with smoothed over surfaces. Temper consists primarily of schist particles with grog, fiber, with steatite sometimes present. Vessel form is generally a small, shallow bowl. Other examples are ovoid or rectangular with a flat base. Lug handles are sometimes applied. Rim and lug handles can have finger notching or single cord impressions (Egloff and Potter 1982).

Marcey Creek is defined by the presence of crushed steatite temper, sometimes comprising up to 50 percent of the paste. The type was originally defined by Mason (1948) during excavations at the Marcey Creek Site along the Potomac River Falls near Washington, D.C. The vessel body can be coil constructed or hand molded (Egloff and Potter 1982). McLearen (1991a) observes that elements of Marcey Creek vessel form seem to copy earlier steatite bowls, including an ovoid or rectangular shape along with a flat base and distinct lug handles. Course mat impressions are sometimes observed on the base. Marcey Creek has a widespread occurrence from southeastern Virginia, across the Coastal Plain, and inland along the greater Potomac drainage (McLearen 1991a).

First described by Slattery (1946), Selden Island ware is very similar to Marcey Creek. Temper is crushed steatite and the interior surfaces of the vessels are hand smoothed. Cord marked surface treatment is a defining attribute. A primary distinction from Marcey Creek is that Selden Island is always coil constructed (Egloff and Potter 1982). In addition, vessel form is usually conical rather that flat-bottomed. McLearen (1991a) and others have suggested that Selden Island may be slightly younger than Marcey Creek.

Ware Plain appears to represent a sand and grit-tempered variant of Marcey Creek. The type was first described by Catherine McCane (1950) at the Ware Creek Site in New Jersey. McLearen (1991) notes that the term Ware Plain has become freely applied to early pottery that seems very similar to Marcey Creek but lacks steatite as a tempering agent.

Croaker Landing was first described based on findings at the Croaker Landing Site along the York River (Egloff et al. 1988). The ware is tempered with grog (previously fired clay) which can comprise up to 50 percent of the paste. Interior surfaces are smoothed,

Table 7.1: Early Woodland Point Types

Type	Distribution	Notes
Teardrop	East of Blue Ridge	Early to Middle Woodland
Small Stemmed	Statewide?	Early Woodland
Gypsy Stemmed	Far South, SW	Early Woodland
Badin	South and East?	Early Woodland Triangle?
Will's Cove	Coastal Plain	Early Woodland
Calvert	North and East	Early Woodland
Small Savannah River	Statewide	Late Archaic into Early Woodland
Piscataway	Statewide except SW	Late Archaic and Early Woodland
Fishtail	Intermittent Statewide	Late Archaic into Early Woodland
Susquehanna	Intermittent Statewide	Late Archaic into Early Woodland
Vernon	North and East	Middle Archaic? Early Woodland?

with grog inclusions giving them an uneven contour. Exterior surfaces are plain or cord- marked. The vessels at Croaker Landing were straight sided with a vertical rim. A large circular lug was present on one specimen (Egloff et al. 1988).

Currituck ceramics were first reported by Painter (1977) at the Currituck Site in northeast North Carolina. The type has subsequently been found in Virginia as far north as the York River. A defining characteristic of the ware is a flat-bottomed jar or beaker shape. Painter (1977) reports grog, sand, and shell tempered-variations of the beaker form. Surface treatment consists of cord, fabric or net impressions. Egloff and Potter (1982) suggest that flat bottomed jars represent a relatively diverse, but localized tradition that post dates circa 800 BC.

Accokeek appears to be the most common Early Woodland ceramic in Virginia. It was defined by Stephenson and Ferguson (1963) at the Accokeek Creek Site along the tidal Potomac, in Prince Georges County, Maryland. Vessels are coil constructed with exteriors marked with a cord-wrapped paddle. Temper is sand, with small additions of crushed quartz sometimes noted. Vessels are generally medium to large in size, with conical or semi-conical bodies. Color can be variable. Paste is typically friable (Egloff and Potter 1982). For the James River Piedmont, Mouer et al. (1981) described a regional Accokeek variant called Elk Island. Elk Island vessels can have a flattened base, with lug handles also occasionally present. A similar ware is Stony Creek (Evans 1955), found primarily in far southeastern Virginia.

A variety of additional early ceramic wares occur in Virginia. Though not formally described, these forms appear related to the greater Marcey Creek tradition. McLearen (1991) observed Marcey Creek-like ceramics in the Shenandoah Valley that contain variety of crushed rock temper. Similar forms with shell and/or grog temper appear in the southeastern Virginia Coastal Plain. For the Delmarva region, Wise (1975) coined the term Experimental Phase to describe early ceramic production during which a variety of tempering agents and surface treatments were used. In the northern and central Delmarva, Dames Quarter ceramics (Wise 1975) co-occur with Marcey Creek, and it is reasonable to assume that the type may extend south into the Virginia Eastern Shore. Dames Quarter paste, surface treatment, and vessel construction are very similar to Marcey Creek, with the main difference being use of crushed hornblende or gneiss rather than steatite as the tempering agent.

Ceramics in Virginia have their earliest occurrence in the Coastal Plain. Early ceramic finds also center on the Fall Zone of the James River and the James River Piedmont. In northern Virginia, the Fall Zone of the Potomac, the outer Piedmont, and the lower reaches of the main Shenandoah River forks have significant occurrences of early ceramic archaeological components. Ceramics appear in Southwest Virginia somewhat later, or around 500 BC, with the occurrence crushed quartz/sand tempered Swannanoa ware (Egloff 1991). In the Roanoke drainage, a sand tempered ware named Hyco Plain and Hyco Cord Marked was first described by Miller (1962).

Table 7.2: Principal Early Woodland Ceramic Wares in Virginia

Type	Distribution	Notes
Elk Island	Coastal Plain and Southern Piedmont	Accokeek Variant
Hyco	Southern Piedmont; Roanoke Drainage	Accokeek Variant?
Accokeek	Coastal Plain, Piedmont, Potomac drainage	
Currituck	Far Southeast	Flat Bottom Beaker
Croaker Landing	Southeast only	
Swannanoa	Far Southwest	Oldest ware in SW
Dames Quarter	Eastern Shore?	
Ware Plain	Coastal Plain, Potomac drainage	
Selden Island	Coastal Plain, Potomac drainage	
Marcey Creek	Coastal Plain, Piedmont, Potomac drainage	
Bushnell Plain	Coastal Plain and Outer Piedmont	

The ware has not been firmly dated but seems to be related to the greater Accokeek/Elk Island tradition.

Chipped Stone Tools

One trend readily observable for the Early Woodland is a marked change in lithic preferences for the production of chipped stone tools. A sharp decrease in the use of exotic and other non-local material is evident. A variety of locally available stone types is favored for the manufacture of relatively small, stemmed and notched point forms. Quartz use becomes particularly common in Coastal Plain and Piedmont. Mid-grade chert is commonly found in nodule form across much of the Ridge and Valley. This material was locally utilized through much of prehistory, including the Early Woodland. McLearen (1991) notes an economy of lithic utilization across the Coastal Plan and Piedmont, with small, edged tools opportunistically being produced from pebble sources. An increased use of expedient cutting tools seems to accompany a general de-emphasis in the manufacture of formal hafted bifaces and ballistic weapon tips. There also appears to be decline in the manufacturing quality of projectile points, at least following the phase out of Broadspear-derived forms early in the period.

Ground Stone Tools and Cobble Tools

The distinctive ground stone axes that first appeared during the Late Archaic continue to be found in Early Woodland contexts (McLearen 1991). These items are typically made of greenstone, basalt, and similar material that was sourced well away from many occupation locales. Slate gorgets and other ground items also remain in use, indicating some extra-local trade remained operative. Mouer (1990) notes that while resembling axes, wear characteristics of many large ground stone tools suggest their use as grubbing implements.

The occurrence of cobble tools is notable on some Early Woodland sites. The raw material for most of these items appears to have been opportunistically procured, and the tools typically show extensive wear indicative of pecking, hammering, and grinding. Some of these items may have been used in the manufacture of ground stone tools or engaged in bipolar reduction. However, given that cobble tools occur in substantial numbers on Early Woodland sites with limited evidence for lithic reduction activities, use in plant food processing seems more likely to have been a primary function.

Summary of Early Woodland Research to Date

Survey Data

James River Survey (Mouer et al. 1981; Mouer 1990, 1991)

Although extensively cited in previous works, the James River Survey warrants mention in any regional review on Early Woodland settlement. The James River Survey was a large scale archaeological salvage effort the undertaken by Dan Mouer and staff of Virginia Commonwealth University in 1980. During that autumn of that year, severe flooding scoured large areas of the James River floodplain above Richmond. Volunteer efforts were directed in recorded artifact concentrations and features exposed by eroding floodwaters. These investigations revealed extensive evidence of Early Woodland occupation along the Piedmont James (Mouer 1990, 1991). Present on these sites were dense deposits of fire-cracked rock, along with Accoceek and Elk Island ceramics. Mouer considered these occupations to represent fairly long term settlements rather than encampments. Associated points included Small Savannah River, Calvert, Piscataway and possible Fishtails. One site, Stoneman West (44GO0040), was more intensively investigated. These efforts uncovered numerous pits and a large midden. One large pit feature, measuring three feet in diameter, yielded Accokeek and Elk Island ceramics, and a Small Savannah River point.

Madison County Survey and Settlement Analyses (Nash 2009)

Of particular relevance to advancing understanding of Early Woodland settlement in the northern Piedmont and adjoining Blue Ridge region is Nash's (2009) dissertation focusing on modeling prehistoric settlement in Madison County. The county presented an ideal opportunity for study. In addition to having a large number of recorded sites and collections for review, Madison County cross cuts the Piedmont and Blue Ridge provinces. East to west the study area encompasses the Mesozoic Basin, Inner Piedmont, the Blue Ridge foot hills/ slope, each with differing elevation and environmental characteristics. The study area is drained by the named headwater forks of the Rappahannock, with its westernmost limits defined by the Blue Ridge summit.

Early Woodland components in the study area were signaled primarily by Accokeek ceramics and robust

occurrences of Vernon and Calvert points. Piscataway and Fishtail points occurred with lesser frequency. A shift to lowland settlement is expressed in period site distributions. Early Woodland settlement was centered on the Inner Piedmont and Mesozoic Basin, with base camps occupied during the Late Archaic continuing to be utilized. In general, one sees a greater utilization of lower elevation, stream-side locations, while a nearly 5000-year pattern of short term encampment near summit areas ends during the period. Stream and river confluences appear to have seen the most intensive Early Woodland use (Nash 2009). These findings mirror Klein and Klatka's (1991) observations in the central Piedmont of a significant increase in floodplain versus upland settlement around 1000 BC.

Arnold Valley Survey (Barber 2010)

The reduction in upland settlement noted by Nash is also evident in the James River Blue Ridge. Arnold Valley is situated along the Blue Ridge slope near the point at which the James River enters the Piedmont. The topographically diverse valley, which extends from the James River towards the Blue Ridge summit was extensively settled throughout much of prehistory. Of the 152 sites identified and/or reviewed by Barber (2010), a total of 63 had discernible temporal components. None of these dated to the Early Woodland. This absence of recognizable Early Woodland components is in marked contrast to findings for the preceding period. Late Archaic sites were common and occurred across the full range of topographical settings that characterized the Arnold Valley study area. The Early Woodland is similarly absent at Daugherty's Cave (44RU0014) in far southwest Virginia. Benthall (1990) notes the abandonment of the major rock shelter site between the Late Archaic and Middle Woodland.

Analysis of the Robert Ogle Collection (Egghart and Manson 2016)

The Ogle Collection was compiled from surface sites along the Nottoway River Fall Zone in Sussex County, Virginia. Robert Ogle carefully recorded the locations of the points he found, thus providing opportunity for meaningful archaeological analyses. Egghart and Manson (2016) charted point type occurrence against the physical and environmental site settings to elucidate shifts in settlement preference through time. One observation was that Early Woodland site selection favored swamp and wetland settings. Examination of comparative regional assemblages indicated a similar Early Woodland favoring of wetland settings, specifically the Blackwater Swamp margins in Sussex County and terraces overlooking the Chickahominy Swamp near Richmond (Egghart and Manson 2016).

Major Early Woodland Archaeological Excavations

A number of Early Woodland sites have been excavated and fully reported since publication of the original COVA synthesis volume. These include 522 Bridge 44WR329 (McLearen 1991) and sites 44WR0232/44WR0446 (Fiedel 2013) located along the Shenandoah Forks in Front Royal. Others are the Enfield Plantation (Pullins et al. 1996) on the Mattaponi River, and the Wheeler Site 44LE33 (McLearen 1994b) in far Southwest Virginia. Excavation of all four sites was sponsored by the Virginia Department of Transportation (VDOT) and the respective compliance reports represent significant contributions to the understanding of the Early Woodland period in the Commonwealth.

The 522 Bridge Site 44WR329 (McLearen 1991)

The 522 Bridge Site was located along the North Fork of the Shenandoah River just upstream of its confluence with the South Fork. Extensive evidence of Early Woodland occupation included numerous house outlines containing a repeated pattern of central hearths, doorway locations, large interior support posts, and interior flat-bottomed storage facilities. Somewhat larger (ca. one-meter diameter), flat-bottomed pits were also documented outside of the house lines. Ceramics from the 522 Bridge Site were predominantly Accokeek, with Marcey Creek and Ware Plain occurring in limited numbers. Projectile points resembled Piscataway, with one Susquehanna also found. Despite the evidence for a long-term occupation, artifact density at the 522 Bridge Site was extremely light. Overall, the lithic artifact assemblage was particularly sparse, with ceramic sherds and debitage items present in approximately equal numbers.

Sites 44WR0232 and 44WR0446 (Fidel 2103)

Sites 44WR0232 and 44WR0446 were situated on South Fork of the Shenandoah near its confluence with the North Fork. The South Fork is a much larger River than the North Fork, and unlike the 522 Bridge

Site, the occupation surfaces on 44WR0232 and 44WR0446 were buried. The Early Woodland floor was separated from the later occupations by nearly sterile alluvium. Early Woodland features on the sites consisted primarily of fire-cracked rock clusters. Several large flat-bottomed, but otherwise irregularly shaped pits were also documented. The cultural origin of these entities was not certain, although in size and profile they bear some resemblance to the Early Woodland pit features identified outside of the structures outlined at the 522 Bridge Site. Charcoal associated with the fire-cracked rock features yielded eleven Early Woodland AMS dates spanning approximately 450 radiocarbon years. While placing the occupation squarely in the Early Woodland, the wide date range would point to repeated site occupations over time. The ceramic assemblage was predominantly Accokeek, with Selden Island and Marcey Creek occurring as minority types, mirroring findings at the nearby 522 Bridge Site. Lithic debris and weapons/cutting tools were comparatively limited in number. Piscataway was the main point type associated with the Early Woodland occupation at both sites (Fidel 2013).

Ferry Farm 44ST0174 (Galke 2017)

The George Washington Foundation conducted intensive archaeological investigations at Ferry Farm, along the Rappahannock River in Fredericksburg. Over 900 contiguous, five-foot units were excavated as part of an effort to locate, study, and recreate the boyhood home of George Washington. The unit blocks identified a spatially discreet Early Woodland, Accokeek component within the major historic site occupation. An overlay of Accokeek finds and Piscataway, Small Savannah River, and Susquehanna-like points by unit showed that of all three types broadly correlated with Early Woodland ceramic occurrence. Piscataway exhibited the strongest spatial association with Accokeek. Of the 21 Piscataway points in the Ferry Farm assemblage, 20 were from units containing Accokeek or had Accokeek recorded in an adjoining provenience. The occurrence of Susquehanna-like points also aligned with Accokeek. Of the eight recovered points, seven were from units containing Accokeek or had Accokeek in an adjoining unit. The spatial correlation between Accokeek and Small Savannah River was less distinct. Also identified below the historic occupation surface was an Early Woodland pit feature containing 105 Accokeek sherds.

Croaker Landing 44JC0070 an 44JC0071 (Egloff et al. 1988)

The Croaker Landing Site was a small shell midden complex located along the south bank of the tidal York River. In addition to being the type site for Croaker Landing ware, excavations at this stratified shell midden provided excellent subsistence data and helped refine the material culture sequences on the Virginia Coastal Plain. Small, bowl-shaped pits were identified in Early Woodland contexts. However, the full nature of Early Woodland occupations at the site remained largely undetermined.

The Enfield Plantation Site 44KW81 (Pullins et al. 1996)

Situated along the Mattaponi River in King William County, Enfield Plantation represents the only fully investigated Early Woodland site in the Virginia Coastal Plain.Grog-tempered Croaker Landing (n=839) was the predominant find at the site (Pullins et al. 1996:71). Lithic artifacts were notably sparse. Manufacture of ceramic vessels utilizing local clay appears to have been a major on site activity. In addition to sherd clusters interpreted as "pot drops," identified features consisted of small bowl-shaped pits and isolated post molds.

Wheeler Site 44LE33 (McLearen 1994b)

The Wheeler Site stands as the only fully investigated Early Woodland occupation in Southwest Virginia. The site was located on a high terrace overlooking Indian Creek, a tributary of the Powell River. Mechanical removal of plowed soils revealed a large number of small-to-medium-size pits (ca. 30 cm-75 cm diameter) and numerous randomly patterned post molds. Several pits contained Swannanoa ceramics and points similar to Gypsy Stemmed.

Research Themes

Discussion of the Early Woodland is aligned to this volume's research themes. These are: *Chronology and Material Culture*, *Settlement Pattern*, *Economic Pattern*, and *Social/Political Pattern*. The existing body of archaeological data is synthesized in the context of these themes. Also detailed are gaps in the understanding of the Early Woodland. This is done with the intent of framing specific research questions to guide future investigations into the Early Woodland in Virginia. Some archaeological aspects pertain to more than one research theme. Implications for the adoption and use of

pottery, for example, were far ranging and extend across all four main research themes.

Chronology and Material Culture

There are ambiguities in the definition of Early Woodland chronology and material culture sequences in Virginia. One challenge facing researchers is that the transition between the Archaic and Woodland periods was gradual, at least in terms of material culture expressions. Multiple projectile points dating to the first part of the Early Woodland appear to be derived from the Savannah River tradition. While some morphological attributes of Savannah River persist into the Woodland era, a reduction in point size is evident, as is a shift in lithic material preference away from quartzite. Quartz use becomes prevalent across the Coastal Plain and much of the Piedmont. Chert and other locally available stone find favor in the Ridge and Valley and other mountain areas. Also observed is a seeming reduction in manufacturing quality. A less rigid adherence to a specific template in the knapping process also seems expressed in some point types.

Continuity between the Archaic and Woodland is also seen in durable vessel forms. Some Marcey Creek vessels retain the flat bottom, rectilinear shape of the carved steatite vessels of the earlier period. The use of lug handles is also a persisting feature. Equally compelling is the inclusion of steatite itself as a tempering agent. Steatite has excellent thermal properties It is not clear if the continued use of this material in vessel production was purely functional in nature or if it had non-utilitarian implications.

One challenge in defining projectile points is that multiple types seem to span the Late Archaic-to-Early Woodland transition. These include Small Savannah River, Fishtail, and Calvert. Susquehanna has traditionally been considered as dating to the latter part of the Late Archaic. There is however, increasing evidence that use of this distinctive type may also extend into the Early Woodland era. In his compilation of regional radiocarbon assays, Inashima (2008) cites no less than seven Early Woodland returns for Susquehanna that fall between 3040 +/-95 B.P and 2460 +/-60 BP. While all of those were from New York or Connecticut, excavations at the 522 Bridge Site (McLearen 1991b) and 44WR0232/44WR0446 (Fidel 2013) in Front Royal each encountered Susquehanna Points in tightly dated Early Woodland contexts. At 522 Bridge, two Susquehanna points—one chert and one purple rhyolite—were recovered from separate Early Woodland pit features. The pit with the rhyolite specimen was radiocarbon dated 2740 +/-150 BP (McLearen 1991: 90,122). At nearby 44WR0232/44WR0446, an apparent point cache was uncovered consisting of four Piscataway and one small Susquehanna. The cache was encountered in association with Accokeek ceramics in an alluvially sealed context firmly radiocarbon dated to the Early Woodland period (Fidel 2013).

Piscataway is the most common Early Woodland projectile point in Virginia. Piscataway points were recovered from tightly dated Early Woodland contexts at the 522 Bridge Site and 44WR0232/44WR0446 along the Shenandoah Forks in Front Royal. However, at the stratified Pig Point Site (18AN0050) in Anne Arundel County, Maryland, Piscataway occurred predominately in Late Archaic contexts, with only a few specimens found in the lower portions of the Accokeek levels (Luckenbach 2010; Grow and Sharpe 2010). Dent (1995) also considers Piscataway to be a Late Archaic point. Blanton (2002) takes a similar view, placing the type at the beginning of the Late Archaic based on findings at the Magnolia Site near the Dismal Swamp. However, the Piscataway points on the Magnolia Site were not recovered from dated contexts. Further, based on artifact photos accompanying the report, Blanton's (2002:45) typing of many of the Magnolia site points as Piscataway seems problematic. Adding confusion is the fact that Piscataway points are sometimes referred to having a teardrop shape (Luckenbach 2010), conflating a morphologically descriptive term with a formal type name. Teardrop points as formally described type (Mounier and Martin 1994) tend to be precisely made with a distinctive form. In Virginia, Mouer (1991) reports an association between Teardrops and Accokeek ceramics. In New Jersey and in Delaware, Teardrop points have been firmly-dated to the Early Woodland period (Mounier and Martin 1994; Petraglia et al. 1998).

It is useful to put the Piscataway type name in full archaeological context. Like Calvert, the Piscataway point was first described by Stephenson and Ferguson (1963) at the Accokeek Creek Site. The investigators originally proposed a Late Woodland association, perhaps due to the point's relatively small size and quartz

manufacture. McLearen (1990:115) elaborated on the Piscataway type based on findings of the James River Survey (Mouer 1990, 1991) and other Virginia locations. McLearen (1991) expanded the type designation to include numerous small, contracting stem, foliate and lozenge-shaped forms found in association with Accokeek ceramics on Piedmont James River floodplain sites. McLearen observed that a somewhat variable stem form albeit in conjunction with a common size class, flaking pattern, and lithic preference (quartz) constitute a defining characteristic of the Piscataway type. The apparent contradiction in age could result from the basic Piscataway form having originated in the Late Archaic while continuing to have been produced and used into the Woodland era. This author would propose that well made Piscataway points having a symmetrical, a deltoid outline date to the Late Archaic, while the morphologically more variable and sometimes cruder points described by McLearen (1991) represent the Early Woodland manifestation of the Piscataway tradition.

Small Savannah River Points also seem to fully span the Late Archaic to Early Woodland transition. At the Pony Pasture Site (44HE0313), along the Chickahominy River east of Richmond, McLearen (1987) reported a radiocarbon date of 3260 +/- 90 BP on a rock hearth with a Small Savannah River lying adjacent. A fractured and fire-reddened Cattle Run Savannah River variant was contained within the hearth. More recently, a date of 3150 +/- 40 BP was obtained for Small Savannah at the Clark's Branch Site in Fairfax County (Inashima 2011). Excavations at that site also encountered a Small Savannah River point in close spatial association with Selden Island ceramics (Inashima 2011). Also recovered on the same occupation floor was a stemmed point classified by Inashima as the Savannah River-related Otarre type (Inashima 2011:148,153). However, the specimen's blade and stem morphology as illustrated in the report, as well as quartz manufacture, seems fully consistent with the local Calvert type. An adjacent hearth feature yielded the aforementioned AMS date of 3150+/-40 BP (Inashima 2011). This fits well with the suspected range of Small Savannah River, the three radiocarbon dates for Calvert and Bushnell Plain ceramics obtained by Waselkov (1982) along the tidal Potomac.

The only Early Woodland dates from Southwest Virginia were obtained from the Wheeler Site (44LE0133), in Lee County (McLearen 1994b). Here a series of small pits containing with Swannanoa pottery and a Gypsy Stemmed Point returned conventional radiocarbon dates of 2640+/-90 BP, 2740+/-70 BP and 2950+/-90 BP (McLearen 1994b:76).

The confluence of the main Shenandoah Forks appears to be a focal point of Early Woodland settlement. The three intensively investigated sites in Front Royal yielded more period radiocarbon dates than all of other sites in the Commonwealth combined. At the 522 Bridge Site, four pit features directly associated with structure patterns yielded conventional radiocarbon dates of 2740±150 BP, 2800±90 BP, 2930±100 BP, 2960±120 BP (McLearen 1991). A total of eleven AMS were obtained from sites 44WR0232/ 44WR0446. These ranged from 2663 +/-26 BP to 3126+/-25 BP (Fiedel 2013). The material culture associated with the chronometric results is very similar. Accokeek dominated the ceramic assemblage at the North Fork and the South Fork sites.

Interestingly, Marcey Creek, Selden Island and Ware Plain co-occur as minority types in roughly equal proportions across all three sites, implying that these antecedent types remained in use during the time at which Accokeek become dominant. The projectile point assemblages are also very similar. Piscataway and Piscataway-like forms comprise the bulk of the points, with Susquehanna occurring in firm Early Woodland context on both the North Fork and South Fork sites.

Settlement Pattern

Settlement during the Late Archaic has traditionally been portrayed as having a riverine focus. However, while Late Archaic peoples clearly gravitated to resource-rich river floodplain and estuarine settings, a significant body of data shows that the full range of physiographic and environmental zones were intensively utilized throughout the period. By contrast, Early Woodland settlement appears to have had a more selective, floodplain orientation. Also observed is a highly uneven pattern of site occurrence. Early Woodland components appear to be rare in many Coastal Plain areas. Along the Lower James River this lack of recognizable Early Woodland components has been noted and discussed by multiple researchers (Bowden 2000; Egghart 2004; Mouer 1991). West of the Fall line, the James River floodplains seem to have been relatively intensively settled (Mouer 1990, 1991; Bowden et al. 2002). This is in keeping with a shift to floodplain settlement in the Virginia Piedmont noted by Klein and Klatka (1991). In the Potomac drainage,

Table 7.3: Radiocarbon Dates Relevant to the Early Woodland in Virginia

Assoc. Material	Date	Site	Reference
Coastal Plain			
Small Savannah River	**3260 ± 90 BP** (cal 2 sigma BC 1754 to 1317)	Pony Pasture (HE0313)	McLearen 1987 (Beta-12458)
Calvert, Bushnell Plain	**3020 ± 70 BP** (cal 2 sigma BC 1424 to 1053)	White Oak Point (WM0119)	Waselkov 1982 (SI-4376)
Calvert, Bushnell Plain	**3060 ± 75 BP** (cal 2 sigma BC 1495 to 1090)	White Oak Point (44WM0119)	Waselkov 1982 (SI-4375)
Calvert, Bushnell Plain	**3110 ± 70 BP** (cal 2 sigma BC 1523 to 1131)	White Oak Point (44WM0119)	Waselkov 1982 (SI-4377)
Croaker Landing	**3080 ± 70 BP** (cal 2 sigma BC 1495 to 1128)	Enfield Plantation (44KW0081)	Pullins et al. 1996 (Beta-80925)
Piedmont			
Elk Island, Small Savannah River	**2840 ± 155 BP** (cal 2 sigma BC 1448 to 668)	Stoneman West (44GO0040)	Mouer et al. 1981 (UGa-3347)
Selden Island Small Sav. River	**3150 ± 40 BP**	Clark's Branch (44FX3226)	Inashima 2011 (Beta-272400)
Selden Island	**2800 ± 40 BP** (cal 2 sigma BC 1050 to 837)	Clark's Branch (44FX3226)	Inashima 2011 (Beta-244349)
Marcey Creek	**3070 ± 40 BP** (cal 2 sigma BC1429 to 1215)	(44P00081)	Pullins and Monroe 2004 (Beta-160613)
Ridge and Valley (Northern Shenandoah Valley)			
Accokeek, Marcey Creek	**2800 ± 90 BP** (cal 2 sigma BC 1249 to 801)	522 Bridge (44WR0329)	McLearen 1991 (Beta-34386)
Accokeek, Marcey Creek, Fishtail	**2930 ± 100 BP** (cal 2 sigma BC 1405 to 903)	522 Bridge (44WR0329)	McLearen 1991 (Beta-34388)
Accokeek	**2960 ± 120 BP** (cal 2 sigma BC 1450 to 855)	522 Bridge (44WR0329)	McLearen 1991 (Beta-34389)
Susquehanna, Accokeek	**2740 ± 150 BP** (cal 2 sigma BC 1370 to 515)	522 Bridge (44WR0329)	McLearen 1991 (Beta-34390)
Selden Island	**2930± 30 BP** (cal 2 sigma BC1220 to 1020)	44WR0323	Fiedel 2013 (Beta-31542)
Selden Island	**2750 ± 30 BP** (cal 2 sigma BC 980 to 820)	44WR0323	Fiedel 2013 (Beta-309906)
Selden Island Accokeek, celt	**2663 ± 26 BP** (cal 2 sigma BC 900 to 790)	44WR0323	Fiedel 2013 (D-AMS 1217-338)
Accokeek	**2790 ± 40 BP** (cal 2 sigma BC 1030 to 840)	44WR0446	Fiedel 2013 (Beta-259383)
Ridge and Valley (Southwest VA)			
Gyspy Stemmed, Swannanoa	**2950 ± 90 BP** (cal 2 sigma BC 1401 to 929)	Wheeler (44LE0133)	McLearen 1994 b(Beta-66994)
Swannanoa	**2740 ±70 BP** (cal 2 sigma BC 1106 to 791)	Wheeler (44LE0133)	McLearen 1994b (Beta-66991)
Swannanoa	**2640 ± 90 BP** (cal 2 sigma BC 1011 to 426)	Wheeler (44LE0133)	McLearen 1994 b(Beta-66992)

a focus on prime floodplain locations is underscored by the intensive Early Woodland settlement along the confluence of the Shenandoah River Forks (Fiedel 2013; McLearen 1991).

This settlement focus on floodplains was accompanied by a pronounced drop in upland settlement. In the northern Blue Ridge, Nash (2009) notes a sharp reduction in the use of high elevation settingsareas. Survey data from the Madison County study area indicates that a 5000-year-long occurrence of small, special function campsites in highland settings terminates around 1000 BC. Early Woodland occupations transition to lower elevations, with the confluences of the larger tributary forks representing favored locations.

Relatively little settlement data exist for the Early Woodland in Southwest Virginia. The greater New River environs and the Clinch, Powell, and Holston river drainages are well known for late period, village-type settlement. Numerous major Late Woodland sites have been investigated in this region, primarily under the auspices of the ASV. It is possible that the intensity of these Late Woodland occupations, and the abundant archaeological remains they generated, could mask the less prominent physical manifestations of Early Woodland site use. However, little or no evidence for Early Woodland occupation was noted at Daugherty's Cave in Russell County (Benthall 1990). This hiatus in an otherwise intensive occupation sequence mirrors changes in period settlement observed in other regions of the Commonwealth, including the high elevation Blue Ridge and the James River Coastal Plain.

By contrast, the Nottoway River Fall Zone environs were intensively settled during the Early Woodland. Analysis of the Robert Ogle Collection underscores an increasing use of wetland settings during the period. The Transitional Broadspears and well as Fishtail and Small Savannah River points were found in greatest numbers along the broad, well drained floodplains of the Nottoway River. The Early Woodland Will's Cove and Piscataway types strongly favored site locations with a pronounced swamp and wetland aspect (Egghart and Manson 2016).

Assemblages from other large sites in nearby Coastal Plain watersheds provide further evidence of a shift towards wetland settings (Table 7.4). Ogle collected artifacts from a large site he named Disputanta (44SX0553) that overlooks Blackwater Swamp. Early Woodland types comprised 19.3 percent of the 141 points found at this location. The Nase Site (44HE0001) was located in an analogous setting along the Chickahominy Swamp near Richmond. The site was initially recorded by Howard McCord and was excavated by Virginia Commonwealth University (VCU) during the mid-1970s. Early Woodland points comprised 13.3 percent of the Paleoindian through Middle Woodland points at the site. However, evidence for similar Early Woodland settlement along the middle reaches of the tidal James was absent. Multiple excavations at the Deep Bottom Site Complex (44HE0007/44HE0038) yielded 240 Early Archaic through Late Archaic projectile points but not a single Early Woodland specimen (Egghart 2014a). Findings at Deep Bottom underscore the previously discussed scarcity of Early Woodland components along the Lower James River.

Settlement term during the Early Woodland is an open question. Evidence of semi- sedentary or even long-term settlement in Virginia is limited. The 522 Bridge Site represents the only fully investigated occupation that appears to have been long-term. Other investigated sites lack large storage features or complex architectural remains indicative of extended habitation. Features on these sites were typically comprised of small pits interpreted as simple cooking facilities and individual, randomly occurring post molds.

Economic Pattern

Economic lifeways of the Early Woodland bear similarities with those of the preceding era. Most site occupations appear to have been of relatively short duration. The Early Woodland may also have seen an overall increase in reliance on plant food exploitation. However, evidence for true cultigens is essentially lacking. Mast clearly constituted an important food source for much of the Archaic and likely remained so throughout the Early Woodland. An increase in cobble tool occurrence is noted at some site locations. Specific items suggestive of intensive plant food processing on regional Early Woodland assemblages include grinding tools, hammer stones, pitted nutting stones and mano/metates (Egghart and Knepper 2016).

The threshold of what constitutes true horticultural practices in Native American economies is less than clearly defined. Work by Bruce D. Smith (1991) suggests that Native Americans actively promoted certain wild plants to increase yields and that these practices became engrained

Table 7.4: Relative Frequency of Early Woodland Points on Major Multi- Component Sites in Southern Coastal Plain

Site	Setting	Total Points	EW Points	Percent of Total
Stony Creek 3 (44SX0405)	Floodplains at Nottoway confluence	956	49	5.1%
Carter 2 (44SX0411)	Galley/Rowanty Swamps	699	64	9.2%
Disputanta (44SX0553)	Mid-reach Blackwater Swamp	141	27	19.3%
Nase (44HE0001)	Mid-reach Chickahominy Swamp	82	11	13.3%
Deep Bottom (44HE007/0038)	Tidal James River—Four Mile Creek	240	0	0.0%

Source: Egghart and Manson 2016

in the local subsistence regimes. Smith further argues that these practices intensified and evolved to the extent that Eastern North America could be regarded and an independent center for the development of horticulture. Mouer (1990, 1991) suggests that intensive utilization of seed producing early succession communities helped to support the near sedentary aggregation of Early Woodland peoples along the Piedmont James River floodplains. An increased focus on such plant food utilization fits with the shift to floodplain settlement seen in other parts of the Piedmont (Klein and Klatka 1991). Similarly, the pronounced settlement orientation to swamp and wetland areas along the Nottoway River Fall Line and elsewhere is seen as related to an intensification of wild plant food exploitation during the period (Egghart and Manson 2016).

In their synthetic review of the archaeological database, McKnight and Gallivan (2007) note that native starchy/oily seed plants do not occur in Early Woodland contexts east of the Blue Ridge. Further, true horticulture in these areas did not begin until the introduction of tropical cultigens relatively late in prehistory. West of the Blue Ridge, seeds of the genus *Polygonum* (knotweed and smartweed) were recovered from pit contexts at 522 Bridge (McLearen 1991). Other carbonized plant remains recovered from pit fill include the genera *Vitis* (wild grape varieties), *Brassica* (mustards) and *Amarantus* (pigweed). At the Wheeler Site, in far Southwest Virginia, *Amaranthus*,

Polygonum, and also *Chenopodium* were recovered from dated Early Woodland contexts (McLearen 1994b). In addition to having contributed to prehistoric diets, the above plants all require open environs, and thrive on recently disturbed ground.

With the possible exception of the Shenandoah Forks confluence sites, large pit features and other evidence for the storage of food surpluses is lacking in Virginia. However, very large Early Woodland storage pits are documented in northern Delmarva and also the District of Columbia. Large, cylindrical pits were first identified at the Delaware Park Site (7NC-E-41) in New Castle County (Thomas 1981). Similar Early Woodland pits were subsequently encountered on other sites in Delaware including Lums Pond (7NC-F-18) (Petraglia et al. 1998) and Puncheon Run (7K-C-51) (LeeDecker et al. 2005). This class of feature has come to be known as "silo pits" in reference to their size, form, and presumed function. The Lums Pond examples ranged in volume from circa 275 liters to over 800 liters. Interestingly, these large storage features were not associated with long-term habitations. Early Woodland occupation at both Lums Pond and Puncheon Run were deemed to have been encampment-type settlements, with the large pit features apparently used to cache food stuffs to be accessed during return site visits. Closer to Virginia, Phase II investigation of the Wrights Circle Site (51SW0022), along the Anacostia

River in the District of Columbia, encountered a very large pit feature estimated to be four feet to five feet in diameter (Bedell and Katz 2012). This pit contained 725 ceramic sherds, primarily Accokeek. Carbonized material in the fill provided an AMS date of 2590+/-30 BP. Though partially disturbed by historic construction activities, the pit was deemed by the investigators to represent a large storage facility (Bedell and Katz 2012). It is not known what might have been kept in the storage feature along the Anacostia, as well as the Delaware silo pits. However, given the respective site settings, marsh tubers and perhaps mast resources would seem likely items.

Egghart and Knepper (2016) conducted a synthetic review of regional major Early Woodland site findings. The study area consisted of the Delaware, eastern Maryland, and Virginia Coastal Plain, as well as the Potomac/Shenandoah watershed in Virginia. The review underscored a marked overall decrease in bifacial reduction. On multiple sites, Early Woodland ceramic counts were equal to or exceeded debitage totals. Cobble tools were prominent in many of the site assemblages. Common to all sites in the study was a central location with respect to highly productive local environments. With the exception of Lums Pond, the Delaware and the District of Columbia sites were all located along the Fall Line of large rivers or at the head of tide of secondary drainages. Another trait was a direct proximity to freshwater tidal marshlands. The Fall Line/head of tide occupations were all ideally located to exploit anadromous fish. At the Blackbird Creek Site (7NC-J-195D), in New Castle County Delaware, the rendering of anadromous fish was seen as a major activity (Egghart et al. 2014). Evidence for shellfish exploitation was very limited across the study area. It is possible that prime locations for oyster harvesting by Early Woodland peoples have been lost to transgressing sea levels and that this potentially important subsistence source may be severely underrepresented in the archaeological record.

In sum, Early Woodland peoples in Virginia were relatively mobile foragers well adapted to intensively exploit a variety of wild food resources. Most site occupations appear to have been short term. Evidence for extended term settlement is restricted to the Shenandoah Forks confluence area, and possibly the Piedmont James River floodplains. Formal horticulture does not seem to have been undertaken. However, archaeological occurrence of edible seeds from plants that thrive in disturbed areas raises the specter that Early Woodland peoples actively modified the local environment in subsistence context. In Delmarva, the occurrence of very large, formally constructed pits points toward intensive, communal level processing and storage of food stuffs by peoples who had a relatively mobile life way. An overall reduction in the importance of terrestrial game hunting seems to be expressed in material cultural assemblages. This would have been accompanied by increasing reliance on plant foods, and perhaps fish and other aquatic resources. The adoption of ceramic technology has economic implications with respect to efficiencies in food preparation, including the effective processing of plant food resources. Durable vessel technology in the form of stone bowls predates the Early Woodland. Additionally, non-durable vessels can be presumed to have been effectively employed throughout prehistory, including after the adoption of clay vessel technology.

For these reasons, the production and use of ceramic vessels should not be seen purely as a technological innovation with resultant economic benefit. Rather, the non-utilitarian aspect of ceramics must be fully considered, including their potential function as social markers, expressions of group identity, and implications for gender role. These aspects are discussed in the following Social/Political Pattern section.

Social/Political Pattern

The nature of Early Woodland societies in Virginia remains enigmatic. While some incipient social ranking is typically inferred for the Late Archaic, social organization of the Early Woodland era is unclear. There is little archaeological evidence that would suggest Early Woodland peoples in Virginia were anything but efficient hunger-gatherers with an egalitarian social structure. The inference of incipient social stratification in Late Archaic societies is predicated in part on aspects of the long distance trade and exchange networks operative during that time. Though outwardly utilitarian in nature, steatite vessels were procured over very large distances and thus represent a significant investment. As such, they likely represented prestige items with their possession and use charged with meaning in social context. Some exotic lithics found on Late Archaic sites originated far outside the region. Control over access to these items would presumably have been maintained by individuals with differentiated status within the group. Other arguments

for differential status in the Late Archaic society include the need to organize communal resource exploitive activities in an era characterized by increasing residential stability and population growth.

These same dynamics do not appear to have been fully operative during the Early Woodland. The long distance trade and exchange networks diminished or disappeared altogether. Further, population growth may have stabilized or perhaps even significantly reversed, as discussed in a following subsection. Not all trade relations fell away during the period; continued use of steatite as temper in early ceramic manufacture speaks to the maintenance of relations between coastal and Piedmont groups. The utilization of other Piedmont stone for temper such as hornblende or gneiss also underscores continuing connections between the two regions. Slate for gorgets and pendants, as well as lithic material suitable for the manufacture of large, heavy ground stone tools also occur in Early Woodland contexts far from their source areas.

Some steatite used as ceramic temper may have been recycled from disused carved bowls. This persistent utilization of steatite is itself interesting and perhaps telling. In addition to its ability to be shaped, steatite has excellent thermal properties. This could account for its continued use into the ceramic era. However, non-utilitarian explanations warrant consideration. The continued use of steatite (as temper) could be seen as expressing a connection between the users of the new durable vessel technology and the ways of their ancestors. Thus, the very act of recycling of steatite vessels for ceramic manufacture and other uses could be viewed as culturally meaningful rather than merely an expedient use of surplus material.

Direct and indirect benefits and societal aspects of ceramic vessels can be viewed in gender role context. Evidence for Early Woodland subsistence and settlement suggests greater emphasis on wild plant food exploitation. If undertaken on a communal level, such activities would require a significant degree of coordination and collaboration in terms of scheduling and the marshalling of labor and other resources. Disposition and storage of generated surpluses would also have to have been addressed. In ethnographically studied hunter-gatherer societies, plant food procurement and processing is generally in the female realm. In assuming a similar sexual division of labor among Early Woodland groups, an increase in the importance of plant food in the overall subsistence regime likely had commensurate implications for gender relations and dynamics. With respect to the manufacture of steatite bowls, Sassaman (1993) posits that this activity was a component of the overall lithic procurement regime and thus largely in the male realm. By contrast, pottery manufacture is normally attributed as the female activity in Woodland societies. Therefore, the manufacture and use of durable vessels using commonly available local material could be seen as not only a change to the sexual division of labor but also as potentially empowering female group members in that they made greater contributions to the overall subsistence needs.

As with adoption of steatite vessels, the development and use of fired clay vessels clearly had economic implications. It is perhaps useful, however, to decouple the adoption of durable vessels and the presumed functional/economic benefits thereof. Throughout prehistory, Native Americans made extensive use of non-durable containers including hide bags, cured animal bladders, clay pits, dugout logs, water-proofed baskets, bark buckets, and split stave boxes among other constructions. While these items all have advantages and disadvantages, one must not assume that they were always inferior to ceramic vessels. Early ceramic vessels came with liabilities. Not the least of these was the difficulty in transporting the relatively heavy and fragile vessels between site locations.

In considering the actual origins of pottery, the notion of its "invention" should be discounted. To merely survive, prehistoric hunter-gatherers had to possess a highly detailed knowledge and understanding of the natural world around them. By necessity, they were highly adept at fashioning all manner of materials into the tools, implements, and articles they needed. It can be assumed that Native Americans of all time periods were familiar with the concept of sun baking or fire hardening malleable clay. The critical question is: why during a particular point in time was this knowledge applied in the development and refinement of durable containers for common use? Thus, the appearance of ceramics in the archaeological recorded should not be viewed as the result of an inventive process but rather the acceptance of a technological concept.

Early cultural historians viewed the initial use of pottery in the Old World as interlinked with developing sedentism and agricultural production. In the Eastern Woodlands of North America, any connection between

initial ceramic use and horticultural village life has long been discounted. In many areas, ceramic technology was fully adopted by groups that maintained a highly mobile life way within pure hunter-gatherer economy. Accounting for all possible underlying reasons for the adoption of ceramic technology is perhaps out of scope for this plan. However, researchers should remain open to a wide range of approaches and frameworks rather than focusing on the techno-functional aspects pottery and derived benefits. Sassaman (1993) argues that early ceramics must be considered in full societal context. This includes not just the initial adoption of fired clay vessels but also the apparent hesitancy by some groups to embrace the technology. Using the Savannah River Valley as an example, Sassaman maintains internal cultural group dynamics had a strong influence on the adoption of ceramics over the continued utilization of steatite bowls. He also critiques traditional diffusionist models and functional models for the adoption of pottery. The former fails to account for the differential initial use of ceramics across both time and space, while functionalist approaches overly emphasize the pure adaptive nature of the new technology and its uses. In essence, Sassaman sees increasing social demands on labor—the effort needed to sustain the social function of hunter-gatherer life, as a primary driver in the acceptance of ceramic technology. These social demands on labor would have stemmed in large measure from the participation in a system of cooperation, exchange, and reciprocal obligation that had long underpinned relations within and between hunter-gatherer groups. He also proposes that resistance to the initial use pottery over stone bowls in some areas may have been related to individuals wishing to maintain their differential access to steatite as a coveted item within ongoing systems of exchange (Sassaman 1993).

It is not clear whether such a model as articulated by Sassaman for the Southeast would be applicable to the Middle Atlantic. If so, it would offer a view into Early Woodland societies based on material culture residue while at the same time addressing the differential acceptance of technological innovation in highly traditional societies.

Community Pattern

Archaeological evidence for community patterning is scarce in Early Woodland contexts. Relatively few investigated sites contain extensive feature patterning from which community organization can be inferred. When identified, Early Woodland pits and fire-cracked rock clusters are usually suggestive of simple, camp site-type activities undertaken by relatively small groups of individuals. The small, bowl-shaped pits seen on many sites likely represent generalized fire pits. This suggests that the encampments were organized around small social units, perhaps at the family level. The lack of significant features on some Early Woodland sites may be attributable in part to the relatively limited areal site exposure inherent to unit-based excavation strategies. However, plow soil removal over large areas of the Enfield Plantation site resulted in the same feature finding as other Coastal Plain sites; namely small, bowl-shaped pits and minor pot drop locations (Pullins et al. 1996). Similar feature patterning was observed at the Wheeler site (McLearen 1994b) at the opposite end of the Commonwealth, again suggesting small group and perhaps family-level organization of site activities.

The 522 Bridge Site (McLearen 1991) stands as an exception to the relatively basic site structure expressed on most occupation locales. Full plow soil removal across the core of the site uncovered at least eight complete structure patterns, replete with internal hearths and modest size storage pits. Large pit features thought to represent storage/cooking facilities were identified outside the structure patterns. Cooking and storage inside the structures would have been at the family level. Other on-site activities were likely communal in nature. A large, flat-bottomed pit located outside of the structures contained almost 500 fire-cracked rocks, including large cobbles and several small boulders collectively weighing over 38 kg. McLearen (1991) did not offer a detailed functional interpretation for the rock-filled feature. However, when considering the pit's size, morphology, location with respect to the structures, and artifact content, use as a communal oven or roasting facility would seem reasonable.

Based on the artifact assemblage, radiocarbon dates, and feature patterning, McLearen (1991:123-124) viewed the 522 Bridge occupation as a single Early Woodland component. The spatial interrelationship of the individual house patterns led McLearen to conclude that few of the structures were actually contemporary. Accordingly, he viewed the site as a closely linked series of extended term occupations. Activities on the site were undertaken at both the small group and communal level. Such a long-term occupation could be expected to have been supported by forays well away from the strategic

floodplain location. Regular use of outlying encampments would have resulted in an overall community pattern not unlike that of the Late Woodland village dwelling folk in the greater region.

Early Woodland Population

Among the more enigmatic aspects of the Early Woodland is an apparent decline in the number of recognizable site components. This is seen not just in Virginia, but across much of the Middle Atlantic and the Northeast regions. In the Virginia Coastal Plain, Early Woodland sites appear to be particularly rare (Bowden 2000; Egghart 2004; Mouer 1991). Along the Nottoway River Fall Line, a precipitous drop in Early Woodland projectile point frequency is recorded in comparison to Late Archaic counts (Egghart and Manson 2016). Statewide collections in North Carolina also show a sharp decline in point counts as well (Davis and Daniel 1990). Apparent reductions in Early Woodland settlement intensity are noted in the upper Susquehanna drainage (Funk and Rippeteau 1974), western New York (Trubowitz 1977), the Cape Cod area (McManamon 1984), and southern New England as a whole (Mulholland 1988).

Fiedel (2001) sees the settlement shifts during the Early Woodland and relative scarcity of known period components post 800 BC as evidence of a cultural discontinuity. He further suggests that the site distributions and material culture trends of the period do not merely represent a reorientation in settlement but rather reflect severe cultural stress or even population collapse. Fiedel proposed that the root causes for such stress may have included sudden climate change or even pre-Columbian epidemics. Additional data is clearly needed to support such assertions. However, extreme underlying cultural factors such as population collapse cannot be ruled out in explaining the marked differences between Late Archaic and Early Woodland material culture, site frequencies, and settlement trends.

Egghart (2016) compiled time-weighted point counts from the Ogle Sites as well as from three comparative regional collections for use as population proxies. The first comparative assemblage consists of 2,597 Paleoindian through Early Woodland points recovered from the five major Sussex County sites investigated by the NRS group (McAvoy and McAvoy 2015). These are: Cactus Hill (44SX0202), the Slade Farm Complex (44SX0006, 44SX0007, 44SX0098 and 44SX0162), Nay (44SX0080), Fannin (44SX0014), and Stith (44SX0147). The second comparative date set consists of 8,338 (non-triangle) points obtained during surveys in North Carolina before 1980 (Davis and Daniels 1990). These Paleoindian through Early Woodland points curated by the North Carolina Department of Cultural Resources were recovered from over 1,000 sites statewide. The third comparative data set is a composite assemblage from seven sites in eastern Henrico County investigated by VCU and the ASV. The two largest sites, Nase (44HE0001) and Posnick (44HE0003), were both situated on low terraces overlooking the swampy, middle reaches of the Chickahominy River. The other five site excavations were Section 106-mandated data recoveries associated with construction of the Henrico Regional Wastewater Treatment System (McLearen 1987; Mouer 1986a; Mouer1986b). These were located along the low order tributaries to the Chickahominy Swamp.

In this analysis, gross numbers of Late Archaic (2500 BC–1110 BC) and Woodland (1100 BC–500 BC) points are divided by the number of centuries in that respective time frame. The resulting values are expressed as projectile points per 100 years of potential occupation (Points/100 yrs). Differences between sub-periods are shown as Percent Change. Results appear in Table 7.5.

The Nottoway River assemblages (Ogle Collection, NRS Sites) exhibit a dramatic, nearly two thirds drop in time-weighted projectile point counts between the Late Archaic and Early Woodland. Some of the drop in Early Woodland point numbers may be attributable to changes in lithic utilization and subsistence practices of the period. Specifically, a de-emphasis on bifacial tool production commensurate with a lessening importance of terrestrial game hunting would result in fewer projectile points left behind on a period site occupation. Nonetheless, the drop in point counts along the Nottoway River Fall Line is so extreme that population decline must be considered. The drop in time-weighted point counts in the North Carolina assemblage is less pronounced but still significant. Interestingly, the Eastern Henrico assemblage shows a modest increase in point frequency between the Late Archaic and Early Woodland periods. The Henrico County sites were all situated along the Chickahominy Swamp margins. This underscores both the previously observed favoring of wetland settings for Early Woodland settlement and the uneven nature of period site occurrence.

Table 7.5: Time Weighted Projectile Point Counts in Regional Assemblages

Assemblage	Late Archaic Points/100 yrs	Early Woodland Points/100 yrs	Change in EW Points/100 yrs
Ogle Collection Nottoway	94.1	36.0	Minus 62%
Nottoway River Survey	52.3	18.0	Minus 66%
North Carolina	231.9	168.3	Minus 27%
Eastern Henrico County	7.6	8.5	Plus 12%

Source: Egghart 2016

Conclusion

Summary Review

Despite significant gaps, the existing body of archaeological data allows for general summations of the Early Woodland in Virginia. The earliest ceramics appear relatively suddenly in the archaeological record around 3100 BP. Accokeek and related sand tempered wares originate somewhat later and remain in use for the balance of the period. Initial Early Woodland point types appear derived from the Savannah River tradition and other Broadspears. These are replaced by a variety of stemmed and notched point forms. Other material culture trends include an increasing reliance of flake tools and other expedient cutting implements. Ground tools such as greenstone and basalt axes continued to be produced. Some, but not all, excavated sites contain large numbers of cobble tools used in pecking, hammering and grinding. A preponderance of cobble tools, together with a de-emphasis on bifacial tool manufacture may indicate a greater reliance on plant food resources. Evidence of formal horticulture is lacking. However, some disruption/manipulation of surrounding site environments may have been undertaken in subsistence context.

Substantial changes in settlement are evident for the Early Woodland. There seems to have been a significant reduction in the use of uplands, with some higher elevations being abandoned outright. This is accompanied by a pronounced shift toward floodplain settlement. In the Coastal Plain, an orientation to swamp and wetland settings is expressed through site occurrence. A de-emphasis on lithic reduction likely makes some Early Woodland site components difficult to recognize. When fully investigated, however, numerous lithic artifact-poor sites have been shown to contain large features and/or complex feature arrangements. Overall, most site occupations appear to have been of relatively short duration. Evidence for longer term, multi-seasonal site use is limited to the Shenandoah Forks confluence, and possibly the Piedmont James River floodplain settings.

A notable aspect of the Early Woodland, both in Virginia and regionally, is an apparent reduction in settlement intensity. Early Woodland site components are very rare in some parts of the Commonwealth, including those heavily utilized during the preceding Late Archaic. The nature of Early Woodland societies with respect to organization and individual status is also unknown. The development of ceramic technology is a defining characteristic of the period that should be viewed in more than straight technological terms. The acceptance and integration of ceramic use has significant implications not just for food preparation/storage, but also group mobility, cultural identity, and sexual division of labor and gender role.

Strengths and Weaknesses of Existing Data

There are both strengths and weaknesses in the exiting body of knowledge pertaining to the Early Woodland in Virginia. The basic Early Woodland ceramic sequences for the Coastal Plain and portions of the interior Potomac Drainage are fairly well demonstrated. Despite the relatively limited number of Early Woodland sites excavated in Virginia, a significant number of robust radiocarbon dates help to place the initial adoption and use of pottery in reasonably well-defined temporal context. The climate and environmental conditions experienced by Early Woodland peoples are also fairly well understood. In contrast to Paleoindian and Archaic times, weather patterns, forest make up, fluvial regimes,

and estuarine conditions of the Early Woodland were roughly analogous to present day conditions. However, the degree to which the several documented cooling episodes in Early Woodland climate may have affected Native American groups remains undetermined.

A clear weakness in the data is that it was gathered from a few select locations within the Commonwealth, primarily the northern Shenandoah Valley and the Potomac and James River Piedmont. Relatively little is known with respect to Early Woodland settlement and material culture across the expansive southern Piedmont, the southern Ridge and Valley, and Southwest Virginia as a whole. Another shortcoming is the paucity of ethnobotanical data and the generally poor organic preservation typical of Middle Atlantic site contexts. Also, given the apparent Early Woodland focus on floodplain settlement, it is reasonable to assume that site burial and other factors limit the archaeological visibility of many Early Woodland components. Similarly, sea level rise may have significantly compromised low-lying coastal and estuarine sites, resulting in a distorted view of period settlement and site use.

Directions for Future Research

A major research priority must be the full definition of material culture sequences, both early ceramic traditions and the projectile point types. This need is particularly pressing in all areas outside the Coastal Plain, the Outer Piedmont and the greater Potomac drainage. Clear definition and temporal refinement of the various projectile point types following the phase-out of the Broadspear-derived forms should be a priority state-wide. Understanding of the Early Woodland would benefit significantly from additional radiocarbon returns from all regions in the commonwealth.

Other specific questions guiding future research should include:

Was the timing of ceramic adoption uneven across Virginia's diverse regions? If so, what might be the underlying reasons or differential adoption of ceramics?

Was ceramic use even universal during the Early Woodland?

Native American peoples had long thrived in a variety of North American environments without any durable container technology whatsoever. Would some mobile groups have rejected the use of heavy, breakable items when other vessel technologies had served effectively for thousands of years and continued to do so?

What are the full economic and societal implications for the adoption of ceramic vessel technology?

How might the adoption and integration of fired-clay vessel technology into Early Woodland life be manifest in subsistence practices, gender role/sexual division of labor, geographic mobility, and group identity?

Are there downstream economic, social, and even political ramifications of ceramic use that might not be readily obvious or even previously considered?

What are the full implications of the shifts in lithic utilization and bifacial tool manufacture observed during the period?

If the highly uneven geographic distribution of Early Woodland site components accurately reflects period settlement trends, what may have been the underlying cause(s) of the phenomenon? What would this tell us about the economic life ways of the period?

How does one characterize Early Woodland subsistence and might subsistence practices of the period have differed from those of the Late Archaic?

Does the apparent de-emphasis in the manufacture of formal bifacial tools indicate a reduced reliance on traditional terrestrial game hunting? Would such a shift be accompanied by an increase in the reliance on plant food resources?

What were the contributions made by anadromous fish and shellfish in Early Woodland subsistence regimes?

To what extent did Early Woodland peoples modify the local environment in subsistence context?

Existing ethnobotanical data suggest the clearing of Early Woodland settlement locations. Did clearing activities extend to adjoining floodplain areas in order to facilitate and promote the succession communities to include starchy/oily seed bearing species?

Did these activities produce significant surplus? If so, what societal changes could be expected to have been manifested?

Did semi-domesticates such as components of the Eastern Agricultural Complex contribute to Early Woodland diets in any regions of the Commonwealth?

How would one best characterize Early Woodland settlement?

In light of the fact that most investigated Early Woodland occupations appear to represent relatively

short-term encampments, is the evidence for long-term settlement seen along the North Fork of the Shenandoah River and perhaps the Piedmont James River floodplains anomalous in state-wide context?

Alternately, could the relative scarcity of evidence for long term occupation in other parts of the Commonwealth be attributable to survey bias and site visibility factors?

What was the nature of Early Woodland societies with respect to organization and individual status?

Should incipient social stratification have developed during the Late Archaic, can one expect a trend toward increasing social complexity to have continued during the Early Woodland?

Alternately, could Early Woodland societies have reverted to an egalitarian order surmised to have been the norm prior to the Late Archaic?

What might have been the underlying causes and ultimate impacts of the near collapse of the long distance trade and exchange networks operative during the Late Archaic?

Similarly, what societal changes may have stemmed from greatly reduced long distance trade?

As differential access to coveted trade items is widely regarded as have played a role in shaping Late Archaic societies, what intra-group social dynamics might have resulted from these items becoming increasingly scarce?

What might have been the role of climate change in shaping Early Woodland lifeways?

How might the recorded anomalies in the radiocarbon curve have been related to climate extremes and/or environmental disruption?

Did the Early Woodland Period in fact experience a significant population decline?

Could other factors such as reduced site visibility, use of non-durable material for ballistic weapon tips, and other changes in lithic utilization alone account for the apparent decrease in settlement intensity for the period?

If actual population decrease can be demonstrated, what may have been the root causes for the decline?

Could climate-induced environmental change alone account for a significant population drop?

What influence might a decline in Early Woodland population have had on cultural trends and developments of the succeeding Middle Woodland period?

Chapter 8

Middle Woodland Research in Virginia: A Review of Post-1990 Studies

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Until the early 1990s, the Middle Woodland was the 'liminal period' of Virginia archaeology – perennially idling on the threshold of social complexity that would reach its fullness in the Late Woodland, still enmeshed in its egalitarian, hunter-gatherer roots. Middle Woodland society in much of Virginia was never quite ranked; indigenous domesticates made an appearance, but horticulture was never quite embraced; sedentism was never quite settled upon. Trade in non-local items may have opened the door to regional integration, but the imprint of interaction with highly visible cultural systems such as Adena, Hopewell, Point Peninsula, and Webb Complex was barely detectable in the Virginia Middle Woodland archaeological record. When compared to trait lists associated with a generalized Middle Woodland lifeway in the Eastern Woodlands (Gibbon 1998:518), Virginia's Middle Woodland was often characterized more by what it lacked than by distinctive, region-specific patterns.

In part, the ambiguity associated with Middle Woodland studies arose from limited a lack of information concerning the distribution and chronological placement of cultural traditions in a state as physiographically diverse as Virginia (McLearen 1992), a point made by all authors writing about the period in *Middle and Late Woodland Research in Virginia* (Reinhart and Hodges 1992). Challenging the archaeological community to move beyond the generalized settlement/subsistence modeling approach of the 1980s to more particularistic studies addressing issues of chronology, inter-area and inter-regional contact (Blanton 1992), and sociopolitical organization (Hantman and Klein 1992), the synthetic volume became a major reference for Virginia, Middle Atlantic and Southeastern archaeologists.

The following discussion, set in the larger context of the Middle Atlantic region, reviews Middle Woodland research in Virginia since 1990. Almost three additional decades of fieldwork reinforce characterizations of the period as enigmatic and elusive across much of the state. However, the foundational work of the pioneer synthesizers redirected Middle Woodland studies, and this overview assesses the progress made toward answering or reframing their questions.

The Database

Middle Woodland research in Virginia has benefited from compliance-based projects driven by region-specific development. 1,188 components or sites identified as Middle Woodland are recorded with the Virginia Department of Historic Resources, an increase of 196% since1990 (Figure 8.1). Middle Woodland-identified sites are documented in 103 jurisdictions, the greatest concentration being east of the Fall Line. As an indication of the intensity of CRM studies in Virginia, 32% (n=382) of these sites were recorded since 2000. Two-thirds of the CRM reports containing descriptions of Middle Woodland components were completed post-1990. The Virginia Radiocarbon Database reflects this increase: of the 115 Middle Woodland radiocarbon assays, 63% (n=73) were submitted after 1990.

The grey literature continues as the repository for Middle Woodland data. The publication of the Virginia Backlog Project reports in the ASV's *Quarterly*

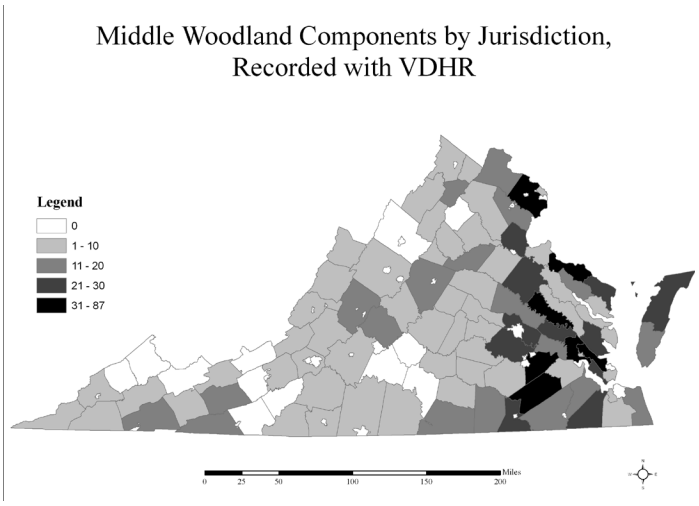

Figure 8.1. Middle Woodland Components by Jurisdiction Recorded with VDHR.

Bulletin has added significant information to the Middle Woodland database, as has the publication of Research, Survey and Planning, and Technical reports by the Virginia Department of Historic Resources. The Virginia Archeobotanicalbotanical Database is a much needed repository of plant-based subsistence data. Several theses and dissertations of the past 20 years include extensive Middle Woodland data, while book-length regional syntheses provide a greater context for Middle Woodland studies in Virginia; however, coverage across the state remains uneven.

Culture History

The articles appearing in *Middle and Late Woodland Research in Virginia* were reviewed in *American Antiquity* as "without exception...cultural historical" (Seeman 1994:582). The reviewer intended this observation as a criticism, calling for a more processual approach with "explicit ties to middle-range theory, the organization of technology, (and) hypothesis testing," However, the daily practice of Middle Atlantic prehistoric archaeology is seated in problem-oriented research grounded in Native American culture history and settlement pattern studies (Custer 1994:331). The language of this work is often derived from culture history. Many Virginia archaeologists appear to agree wit Billman (1999:5): "Too often in the rush to deal with broad theoretical questions, we pay only cursory attention to the fundamentals of data collection, site dating, analysis of site function, and reconstruction of populations." The period since 1990 has seen more focused, explanatory Middle Woodland studies in Virginia, but these discussions often return to culture history. As a result, basic sequences are confirmed for some areas of the state while fundamental questions about chronology, type definition, and geographic distribution remain unanswered for others.

General Period Definitions

Recognizing the difficulty of settling on a definition for the Middle Woodland in a state as geographically diverse as Virginia, Stewart (1992:4) offered a Middle Atlantic-based trait list of cultural markers for the period: relatively sedentary residence; a terrestrial subsistence base supplemented by an intensified harvest of riverine and estuarine resources; social organization exhibiting greater complexity; extensive interaction networks involving exchange and travel over great distances; and population movements or migrations. Many authors in the 1992 volume appealed to Gardner's (1982) Middle Atlantic-based chronological scheme of the Middle Woodland as a 1400-year period beginning at 2500 BP and extending to 1100 BP. His further division of the Middle Woodland period into two sub-periods — Middle Woodland I (2500 B.P – 1800 BP) and Middle Woodland II (1800 BP – 1100 B.P) – remains common in the literature.

While Middle Woodland I is distinguished from the Early Woodland in many parts Virginia with the appearance of a net impressed ceramic 'horizon' and new forms of stemmed projectile points, a marked transition is seen in only two areas within or contiguous to the state: the northern Ridge and Valley (earthen and stone burial mound complex) and the Delmarva Peninsula (Adena-like complexes) (Gardner 1982:65). In these areas, the Middle Woodland I lifeway included participation in extensive trade networks, the development of ranked societies, changes in settlement patterns and site types, and the appearance of elaborate burial ritual. As with any generalized chronology, Gardner considered "Middle Woodland" a heuristic device, emphasizing the continuity between Early Woodland and Middle Woodland lifeways in most areas of the state, particularly the southeastern Coastal Plain, Piedmont, and southwestern Virginia. The question of such dramatic regional variability in the adoption of 'classic' Middle Woodland characteristics has caused some researchers to re-think the EarlyWoodland/ Middle Woodland distinction (Table 8.1).

Table 8.1. Middle Woodland Period Names and Temporal Ranges Relevant to Virginia

Region	Period Name	Temporal Range	Reference
Middle Atlantic	Middle Woodland I	2500 - 1800 BP	Gardner 1982
Middle Atlantic	Middle Woodland I	1800 - 1100 BP	Gardner 1982
Southwest Virginia	Middle/Late Woodland	1700 - 1000 BP	Reid 1997
Southside Virginia	Early/Middle Woodland	2200 - 1100 BP	McLearen 1992; Hodges 1998
Delmarva	Woodland I	5000 - 1000 BP	Custer 1989

McLearen (1992:52) suggests that, while the general Middle Woodland time frame is applicable to much of the state, archaeologists should reexamine its meaning for southwestern Virginia. As a follow-up, Reid (1997) classifies the Middle and Late Woodland of far southwestern Virginia, 1700 BP to 1000.BP, as a single period associated with cultural developments of the Upper Tennessee River drainage. The lumping of Middle Woodland with Late Woodland phenomena preceding Mississippian influence is, in part, a reflection of the poor understanding of this 700-year interval and its apparent complexity (Reid 1997:39).

For the Delmarva, Custer argues for a "Woodland I" designation that includes the period from 5000 BP to 1000 BP, usually recognized in Middle Atlantic chronologies as Late Archaic, Early Woodland, and Middle Woodland (1989:142). The logic for combining these periods lies in similarities in ecological adaptations and social organization for this four-thousand year span: settlement and subsistence changes associated with riverine and estuarine-focused adaptations; an increase in the number, size and complexity of sites; the appearance of large-scale exchange networks; and participation of complex mortuary ceremonies (1989:144). Virginia Delmarva studies (Blanton and Margolin 1994; Lowery 2001) demonstrate the great threat posed by ocean transgression and shoreline erosion to archaeological resources there; it is hoped that an intensification of efforts to document the region will also serve to test Custer's Woodland I classification scheme.

The transition from Middle Woodland I to II at ca. 1800 BP is marked by "greater cultural segmentation of the landscape" (Blanton 1992:77), with localized ceramic styles emerging alongside interregional traditions, denoting more restricted (albeit permeable) cultural territories. However, at the same time archaeological evidence supports population growth and increased sedentism and social complexity for Coastal Plain groups, much of the Piedmont and Ridge and Valley north of the James River, and especially the upper and middle Potomac watershed, witnessed a hypothesized population decline and/or regional abandonment (Neumann 1992; Gardner 2000). For Southside, McClearen (1992:47) questioned the Middle Woodland I and II distinction altogether, suggesting a continuity of relatively low residential mobility from the later Early Woodland through the Middle Woodland in this region. Hodges (1998) supports this observation, as does an overview from the adjacent northern coastal region of North Carolina (Ward and Davis 1999:203). The picture of cultural diversity and differences in lifeways drawn from the Middle Woodland archaeological record eludes the overarching period classifications that pervade archaeological language. Inherent in any cultural chronology is the collapse of myriad, historically-embedded details into categories representing essential features of the period (Nash 2009). However, research conducted during the past ten years points to the possibility of several "Middle Woodlands" in the Virginia. The following review of culture history, based on Blanton's outline of Middle Woodland culture area (1992:73-77), examines cultural chronology to determine how recent work has refined our understanding of the temporal span and geographic distribution of cultural traditions across Virginia. Unless otherwise noted, all radiocarbon assays included in this discussion are adjusted to calendar year.

Before proceeding with specific discussions of Middle Woodland culture history, I would like to draw attention to an analytical technique introduced that has the potential to revolutionize our study of ceramics as temporal diagnostics: Klein's absolute seriation approach (1994a). In this study, ceramics from radiocarbon-dated features from 30 Middle and Late Woodland sites in the Roanoke, Potomac, and James River Valleys were analyzed according to a ceramic engineering model and a regression-based statistical study of attributes. To improve the context, Klein initiated a radiocarbon dating project that provided assays for 20 features from 11 sites in the study area (1994b:17).

In its simplest formulation, the ceramic engineering model hypothesizes a continuous adjustment in cooking technology as a response to subsistence changes. Recognizing the lack of fine-grained chronological control afforded by cultural historical types and their limitations for the study of cultural processes, Klein's approach provides archaeologists the means for assigning an absolute calendrical date to ceramic assemblages, thereby demonstrating subtle shifts within previously defined types. Analyses of vessel form, sherd thickness and temper size and shape demonstrates correlated reductions through time in vessel wall thickness and temper size, both in silicate and limestone-tempered ceramics from the Piedmont and Ridge and Valley between the Potomac and Roanoke Rivers. Developed as a means to "reconcile seriation methods with the probable patterns of change in artifacts" (1994a:326), the absolute seriation approach provides the basis for distilling discrete groups of ceramic attributes into temporal types. The model also provides indirect evidence of subsistence shifts, where the reduction in temper and wall thickness indicates maximized thermal conductivity and thermal shock resistance, conditions necessary for the extended cooking time required by starchy domesticates (maize, beans, and squash). Several applications of this technique, discussed below, have resulted in new observations concerning the development of Middle Woodland ceramic traditions.

Coastal Plain

Table 8.2. Middle Woodland Diagnostic Artifacts/ Coastal Plain

	Ceramics	Projectile Points
Middle Woodland II	Abbott Zoned-Incised Mockley Hercules Mount Pleasant Nomini Varina Chesterfield	Yadkin Levanna Jacks Reef Corner-Notched Jacks Reed Pentagonal Nomini Fox Creek/Selby Bay
Middle Woodland I	Prince George Stony Creek Pope's Creek Accokeek	Potts Rossville/Piscataway Vernon Calvert

Blanton (1992) separates the Coastal Plain into two sub-areas along a major watershed divide: north of and including the James River (Chesapeake Bay watershed); and south of the James River (Albemarle Sound watershed). Dent (1995:238) provides a list of radiocarbon dates associated with Middle Woodland ceramics from the former. Based on ceramic sequences, the Middle Woodland culture history of this physiographic province is the most complex in Virginia, with four culture areas defined for Middle Woodland I and five for Middle Woodland II (Blanton 1992:74, 76). During Middle Woodland I, Coastal Plain populations largely manufactured net-impressed sand- and grit-tempered wares (Popes Creek in the Chesapeake and Stony Creek south of the James River), with pebble-tempered Prince George in the James and York River interior. Sand and grit-tempered ceramics, both similar to and contemporaneous with the Popes Creek wares of the Western Shore, are described for the Eastern Shore (Blanton (1992:75).

Excavations and analyses of the past ten years have demonstrated temporal overlap between Coastal Plain ware types generally identified as discrete Early Woodland and Middle Woodland cultural markers. In an application of the absolute seriation method, Klein and Stevens (1996:115) analyzed sand and grit-tempered sherds from the Falcon's Landing Site (18PR131) and the Accotink Meander Site (44FX1908) in the Inner Coastal Plain Potomac Valley to determine temporal variation in the attributes of Accokeek Creek-like cord-marked sherds. The authors were especially interested in the temporal span of the Accokeek tradition, which, as an inspectional type, has been identified in Middle Woodland contexts for some portions of the Middle Atlantic. Based on their study of well-documented Accokeek-like assemblages from the Maryland and Virginia Coastal Plain and Piedmont, they hypothesize three varieties: a friable sand and grit tempered body with 20-50% aplastic inclusions from 3100-2500 BP; a predominantly sand tempered body with 10-25% aplastic inclusions from 2500-2250 BP; and a grit, sand, and crushed rock-tempered body from 2250-1800 BP. They conclude that Accokeek-like ceramics "may form a significant portion of some Middle Woodland assemblages in the Middle Atlantic Region" (Klein and Stevens 1996:133). The excavations at Falcon's Landing support a Middle Woodland association for Accokeek-like ceramics, with the later variety co-occurring with Mockley sherds in a context radiocarbon-dated to BC 412- 477 +/-118. A Middle Woodland I association for Accokeek is also proposed by Barse (2002) based on work in the Potomac Valley.

Calvert Stemmed, Vernon Side-Notched, and Rossville/Piscataway Contracting Stemmed points have been recovered from Middle Woodland I contexts in the Middle Atlantic Coastal Plain (Dent 1995:228, 236). In a review of Middle Atlantic data, Barse (2002) makes a convincing argument for the continuation of these forms, typically associated with the Early Woodland, into Middle Woodland I, if not later. At 44HN204 in the Inner Coastal Plain (Jones and Blanton 1993:57), a Rossville point was excavated from a context radiocarbon dated to BC 380+/120. Twenty-four of these points were recovered from the site, most in context with Middle Woodland ceramics (Jones and Blanton 1993:57). At 44IW88, "Merom-like" stemmed points were excavated in association with Pope's Creek ceramics and radiocarbon-dated to 150+/-70 (VDHR 2010). Better temporal control exists for the Potts Side-Notched form, the traditional Middle Woodland I diagnostic marker for the Coastal Plain; recovered from three radiocarbon-dated contexts at the Skiffes Creek Site (44NN7), this type ranges from 425 +/-65 BC to 125 +/-65 BC (Geier 1983).

During Middle Woodland II, shell-tempered Mockley ware emerged as a circum-Chesapeake phenomenon, with sand-and grit-tempered Hercules and Mount Pleasant-like ceramics blanketing the region south of the James River. Nomini, Varina and Chesterfield wares were also developed at this time, with these localized, non-shell tempered traditions perhaps cross-cutting the intraregional distribution of Mockley (McLearen 1992:44). Further underscoring the contemporaneity of distinct ceramic traditions in the Coastal Plain, Hodges (1998:190) describes the co-occurrence of sand-tempered (Mt. Pleasant) and shell-tempered (Mockley) wares in Middle Woodland contexts at the Great Neck Site (44VB7). The differences in temper, paste, surface treatment, vessel form, and decoration led to the suggestion that the two traditions as representative of separate, but contemporaneous, populations.

The recovery of Abbott Zoned-Incised ceramics from six sites in the Virginia Coastal Plain indicates possible interaction with more northerly groups during late Middle Woodland II (Stewart 1998c), although more recent work with the Hatch Site (44PG0051 proposes a Late Woodland association (Makin 2018). Excavated from dated contexts at Hatch, the Maycock's Point Site (44PG40), and the Bartlett Site (44NK166), these ceramics are most closely associated with the Trenton Complex at Abbot Farm, New Jersey. Their presence in Virginia is considered later in the chapter.

Mockley and Middle Woodland Coastal Plain Cultural Traditions

The meaning of the Mockley phenomenon has long been debated by Middle Atlantic archaeologists who have documented this Middle Woodland II Coastal Plain ceramic ware from the Delaware south to Virginia, with variants stretching into the Lower Delaware Valley of New Jersey (Stewart 1990:243). Custer (1990:277) describes the emergence of a Coastal Plain "interaction sphere" as responsible for the distribution of the ware, which followed a south-north time cline. This diffusion, evidenced by the grafting of shell temper onto existing ceramic technologies, is also suggested by the lack of cultural discontinuity associated with its introduction (ibid). Blanton (2002) proposes Mockley as a "home grown" ceramic innovation, describing its spread as "regionally uneven."

An innovative approach to the question of Algonquian migration represented by the Mockley ceramic tradition is seen in a Middle Woodland ceramic technology study undertaken in direct response to a question raised by Stewart (1992:9) regarding Mockley as a circum-Chesapeake phenomenon (horizon). Noting the similarity in Mockley paste and surface treatment, as well as the ethnographic observation that such similarity across a broad region may be indicative of trade, Stewart called for clay sourcing studies to determine whether these pots were, indeed, made from clays with a common source and traded, or produced and used locally. The implications are important for those interested in what Stewart called "the regional connectedness of coastal ceramic traditions(1992:9)," a possible extension of the exchange systems characteristic of the Middle Woodland and possible marker for an Algonquian migration during Middle Woodland II.

For a senior research project at William and Mary, Lane (1999) designed a petrographic study of Mockley vessesls from radiocarbon-dated pit contexts at the Jenkins Neck Site (44GL320) in Glouchester County, a multi-component site with an early Middle Woodland II seasonal occupation dating to BC 170+/-100 (1999:65). A comparison of the petrographic analyses of sherds and

clay samples taken from geologic formations in Gloucester County found similarity in their mineral composition, indicating local manufacture (1999:74). The study did not result in the identification of a direct link between the ceramics and clay samples tested (1999:77), but her discussion of method is most impressive and provides a template for future work.

An x-ray diffraction and color analysis study of Mockley, Townsend, and Potomac Creek sherds from the Davis Site (44LA46) in Lancaster County also demonstrates the probable use of local clays in the manufacture of these wares (Key and Gaskin 2000:161). The kaolinite-rich Sedgefield clay is widely available in the outer coastal plain, making a precise source area difficult to identify, but its continuous use from the Middle Woodland through the Late Woodland indicates a clear preference by potters. While not directly addressing the question of whether this preference originated with Middle Woodland immigrants, this research supports the hypothesized restricted mobility of the late prehistoric era and provides another avenue for future studies of territoriality.

Traditionally assigned to a 700-year time span (roughly 1800-1100 BP), earlier radiocarbon dates from the Lower Peninsula extend the appearance of the ware to 2100 BP at 44NN7 (Geier 1983) and 1900 BP at 44HT36 and 44HT37 (Edwards et al 1989). The Taft Site (44FX544) on Mason's Neck yielded feature-related Mockley ceramics with an associated radiocarbon date of 1940+/-40 BP (Norton and Baird 1994a:102). The co-occurrence of Mockley, Albemarle, and Popes Creek sherds from pit feature contexts at the Fletcher's Boathouse Site (51NW13) in the Chesapeake and Ohio Canal National Historical Park, Washington, D.C., also requires a reconsideration of Mockley longevity (Barse 2002). Two AMS dates on residue from Mockley sherds – 180+/-40 BC and 100+/-40 BC – mark the earliest occurrence of this ware in the Middle Atlantic, placing it well within the temporal range of Popes Creek. McLearen and Mouer (1989) posit an overlap between the Popes Creek cognate, Prince George ware, and Mockley in the Lower James River Valley, with the two wares co-occurring at the Aignor#3 Site (44HE596) in features radiocarbon-dated to BC 250+/-60 and BC 450 +/-60.

Barse (2002) hypothesizes the emergence of Mockley from Popes Creek in the Potomac Valley, noting the similarity of attributes such as rim form, vessel shapes, and range of vessel sizes. Mockley and Popes Creek "represent the endpoint of a lengthy ceramic continuum, with Popes Creek being on the earlier end, itself derived from the Accokeek horizon. Arguing that Mockley does not represent a direct replacement of Popes Creek and that the shift from one ware to the other was gradual, he writes "it is not unreasonable to find contexts where both wares are present" (2002). Taking this in another direction, Johnson (1991:47) describes what may be an intermediate form from the Neha Site (44FX1561) that could represent a phase of either Popes Creek or Mockley: a sandstone-tempered, cord- and net-impressed ware with Mockley-like paste and hardness recovered in association with shell-tempered ceramics. Dubbed "Culpeper Ware" by Moore (1992), it was associated with a context radiocarbon-dated to BC 510+/-90.

Conversely, Potter (2002), after Green (1987), proposes a southern origin for Mockley in the Virginia Beach/Currituck Sound area, where a common Early Woodland ceramic tradition expressed the attributes of cord and net impression, shell tempering and beaker-shaped vessels (Painter 1977). Hodges (1998:192-194) reviews the evidence for the 'southern origins' hypothesis in light of her analysis of Middle Woodland "flat bottomed, eaker vessels" from the Great Neck Site. Described as falling within the Mockley series, cord- and net-impressed sherds were recovered from a pit feature radiocarbon-dated BC 260+/-60. Interpreting the Great Neck beakers as "a subregional (Mockley) tradition confined to the Outer Coastal Plain of southeastern Virginia" (1998:202), Hodges acknowledges the possibility of the development of Mockley out of the shell-tempered beaker ware of the Early Woodland. However, she also warns that the "vast temporal range" of the flat-bottomed form (ca. 1000 years) should be met with "some skepticism"(1998:190).

Middle Woodland II diagnostic projectile points include the well-documented Selby Bay/Fox Creek Stemmed type that often occurs with Mockley ceramics (Dent:237; Gibb and Hines 1997:60). While there are no absolute dates for this type in the Virginia Chesapeake Coastal Plain, it is well-documented for the 1800-1100 BP period in the Maryland Coastal Plain (Gibb and Hines:239). A preference of rhyolite and argillite for the manufacture of these points required the procurement of these resources from outside the Coastal Plain, a choice that had implications for intra-regional exchange systems of Middle Woodland II (Stewart 1989:60). Other late

Table 8.3. Middle Woodland Diagnostic Artifacts/Piedmont and Blue Ridge

	Ceramics	Projectile Points
Middle Woodland II	Albemarle Hell Island/ Shockoe Fabric Impressed Grayson Yadkin Uhwarrie	Yadkin Madison Levanna Jacks Reef Corner-Notched Jacks Reef Pentagonal Fox Creek/Selby Bay
Middle Woodland I	Albemarle Vincent Clements Pope's Creek	Potts Rossville/Piscataway Teardrop Vernon

Middle Woodland Coastal Plain projectile point types include Nomini (Potter 1993:68), Jacks Reef Corner-Notched and Pentagonal varieties, and large-medium triangular forms such as Levanna and Yadkin. The corner-notched, pentagonal, and triangular forms will be considered at length below in the discussion of the introduction of bow and arrow technology into Virginia.

Piedmont

While our basic understanding of the Middle Woodland ceramic sequence for the Virginia Piedmont remains little changed in the past three decades, although recent reviews raise the possibility that the lack of investigation into accepted ceramic types, especially north of the James River, may be responsible for our broad brush approach (Klein 1994a; Gallivan 1999; Nash 2009). Blanton divided the Middle Woodland I Piedmont into two culture areas (Chesapeake and Albemarle Sound watersheds), and the Middle Woodland II Piedmont into three culture areas (Potomac, Rappahannock and James/Albemarle Sound watersheds). During Middle Woodland I, Chesapeake Piedmont groups adopted the crushed rock-tempered Albemarle ware, while Albemarle Sound groups manufactured grit- and sand-tempered Vincent and Clements-like wares (1992:74). These two traditions continued into Middle Woodland II, with the possible addition of finely crushed quartz- and mica-tempered Hell Island-like wares in the Potomac Piedmont (ibid:75). McLearen reports Shockoe Fabric Impressed ceramics, similar to Hell Island, found in association with Jacks Reef points in the James River Piedmont/Fall Line area (1992:49), as do Dietrick et al (1997:177).

While commonly associated with Middle Woodland II/Late Woodland I sites in the southern Ridge and Valley, Clark (2001:163) reports Grayson series ceramics from feature contexts at the Clark Site (44PK15) in the far southwestern Piedmont. Taking a perspective from North Carolina, Abbott (1994:32) describes the southern Virginia Piedmont Middle Woodland ceramic sequence as Yadkin cord impressed and fabric impressed ceramics with appearances by Uwharrie, Clements and Grayson wares.

The Middle Woodland projectile point sequence for the Piedmont overlaps that of the Coastal Plain, but absolute dates for these diagnostic artifacts are few. The Piscataway/Rossville type continued into Middle Woodland I, if not later, in this region. In addition, Gardner (1994a:7) and Petraglia et al (1993:108) proposed the continuation of Early Woodland side-notched forms, such as Vernon, into Middle Woodland I in the Potomac and Rappahannock Piedmont. The Teardrop point has also been associated with Middle Woodland components in the Piedmont, although it is sometimes described as a bifacial tool unrestricted to any cultural or temporal period (Wall, Stewart, and Cavallo 1996:75). At the Neha Site (44FX1561), Piscataway, Vernon, and Teardrop points and Neha ceramics are dated to BC 510+/-90 (Moore 1992). The longevity of these contracting stemmed and side-notched forms reduces their utility as precise chronological markers in non-ceramic bearing contexts (Petraglia 1993: :603).

Potts Side-Notched points are well-documented in the Chesapeake Piedmont for Middle Woodland I, often occurring with Popes Creek and net-marked cognates (Gardner 1994a), although no absolute dates for this point type are known for the region. In the Albemarle Sound watershed, medium to large triangular forms, such as Yadkin, are viewed as general Middle Woodland markers (Ward and Davis 1999:85).

Selby Bay/Fox Creek points are documented as intrusive Middle Woodland II forms in the Virginia Potomac Piedmont (Johnson 1991:50). These have been excavated from contexts dated to BC 580+/- 140 at 44LD250 and BC 370+/-415 at 44LD283 (VDHR 2010b). In addition to the James River Fall Line occurrence noted above, the Jacks Reef point (pentagonal and corner-notched varieties) is known throughout the Potomac and Rappahannock Piedmont as a late Middle Woodland form. Large and medium triangular points

such as Levanna and Madison are also assigned to Middle Woodland II in the Chesapeake Piedmont (Gallivan 1999:183), with dates of BC 650+/-140 from 44BK2, the Davis Farm Site, and BC 335+/-85 from 44HE470, the Alvis Reynolds Site (VDHR 2010).

Based on ceramic and projectile point sequences, the picture of the Middle Woodland I Piedmont is one of long-term cultural stability and more clearly defined boundaries between cultural traditions. A promising avenue of inquiry into the culture history of this sub-period concerns the permeability of these boundaries. Interaction across the Potomac Fall Line during Middle Woodland I is seen at the Fletcher's Boathouse Site, where the co-occurrence of Albemarle, Popes Creek, and Mockley ceramics in pit feature contexts is interpreted by Barse (2002) as an overlap between Coastal Plain groups and Piedmont groups at the site, which sits at the Coastal Plain/Piedmont juncture.

The Fall Line, while often described as a cultural boundary extending back to the early Middle Woodland if not earlier (McLearen 1992:55), also functioned as a "point of contact between different groups or peoples"Potter 2002). Archaeologists working in the Potomac Piedmont have recognized the permeability of the Fall Line for Middle Woodland II Selby Bay groups, whose travels to the rhyolite quarries of the Maryland Blue Ridge are evidenced by the presence of Selby Bay projectile points and ceramics in the Great Valley, Blue Ridge and Monocacy Valley (Curry and Kavanagh 1991:15). Because these components are confined to rockshelters or small upland camps, the use of the region and the entire Potomac Piedmont during this sub-period is interpreted as transitory (Johnson 1991:35; Norton and Baird 1994b:49; Israel 1998:25; Klein et al 2002:24). Occupied on the way to and from the quarry, these sites evidence limited hunting and/or rhyolite processing activities. Thus, Curry and Kavanagh characterize the Potomac Piedmont of Middle Woodland II as an "archaeological wasteland" (1991:16), an open territory for Coastal Plain travelers whose use of the region was exclusive.

As evidenced by the Potomac Piedmont data, the late Early Woodland-Middle Woodland cultural continuity of the Chesapeake Piedmont north of the James River was disrupted during Middle Woodland II. Due to a dramatic decline in the number of identified components for this sub-period, large-scale regional abandonment is hypothesized for the northern and central Virginia interior (Gardner 2000). In this scenario, population growth ceased and even declined, evidence of resource surpluses and the institutions that oversaw their distribution disappeared, and the development of emergent sedentism ceased. Nash (2002) has argued that, for the James and Rappahannock Piedmont, the culprit is not an absent resident population but a cultural historical sequence predicated on a poorly defined ceramic series comprised of six types – Albemarle – that is often identified as a Late Woodland ware, Ceramics identified as Albemarle range in date from 2100 BP at the Fletcher's Boathouse Site in Washington, D.C. to 630 BP at Cabin Run in Warren County (Figure 8.2). Three of the14 entries for Albemarle series ceramics in the Virginia Radiocarbon Ddatabase (2002b) fall within Middle Woodland II: BC 540+/-60 for Albemarle cord- and fabric-impressed at the Lewis Creek Cement Plant Site (44AU51); BC 650+/-140 for Albemarle at the Davis Farm Site (44BK2); and BC 570+/-50 for Albemarle cord-impressed at the Spessard Site (44FV134). Four additional dates for Albemarle chert tempered cord- and fabric-impressed ceramics fall within 100 years of the Middle Woodland II/Late Woodland transition at 1100 BP (VDHR 2010).

In the original seriation, Evans (1955) found that the frequency of the fabric-impressed type increased as that of the cord-impressed type decreased. The temporal range of the co-occurring cord-impressed and fabric-impressed types has not been resolved, leading to much confusion among archaeologists who attempt to use Albemarle as a cultural diagnostic. Gallivan's (1999:187) application of Klein's absolute seriation method to ceramic assemblages from the Wood Site (44NE143) found the diverse range

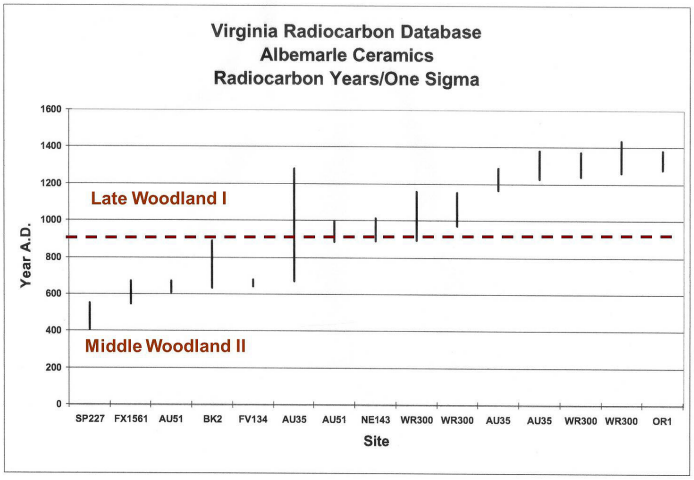

Figure 8.2. Virginia Radiocarbon Database Albemarle Ceramics Radiocarbon Years/One Sigma

of surface treatments and tempering methods giving way to the increased manufacture of quartz-tempered, fabric-impressed ceramics over time. The method returned dates of 1100-900 BP, consistent with the site's radiocarbon dates of BC 830+/-60. In a region where Middle Woodland II is poorly documented, the crushed feldspar-tempered, cord-impressed sherds from Wood are considered diagnostic of Middle Woodland II (Gallivan 1999:190).

Similar results have been obtained from the Ramp 3 Site in southwest Washington, D.C. Residue from an Albemarle chert-tempered, cord-impressed sherd returned an assay of BC 550-665 (cal., two-sigma) (Crowell and Potter 2000). At the neighboring Whitehurst West Site, residue from an Albemarle quartz-tempered, fabric-impressed sherd returned two assays of BC 720-735 and BC 760-985 (cal., two-sigma).

A growing body of evidence supports Evans' original observation of the relationship between the fabric-impressed and cord-impressed varieties, providing a starting point for the use of Albemarle as a meaningful diagnostic. Taken together, these data point to a long-lived interior cultural tradition signaled by Albemarle ceramics and chronologically segmented by frequency ratios of the cord- and fabric-impressed types, reduction in temper size and vessel wall thickness, and surface treatment.

Blue Ridge

The Middle Woodland in the Blue Ridge is poorly known, and chronological sequences are based upon those of the contiguous Inner Piedmont and Ridge and Valley (Nash 2009). South of the Roanoke River where the Blue Ridge massif widens, rising in elevation to 5730' a.s.l. at Mount Rogers, virtually nothing is known of the Middle Woodland. In the narrower and lower elevation northern Blue Ridge, the small number of recorded sites led to the characterization of the mountains as buffer zones between groups settled in the floodplains on the eastern and western margins (Hoffman and Foss 1980).

A study of lithic raw materials used in the manufacture of diagnostic projectile points by Rappahannock Inner Piedmont and eastern Shenandoah Valley groups demonstrates movement through the Blue Ridge from both directions during Middle Woodland I and II (Nash 2009). On the eastern flanks, the lower elevations evidence Middle Woodland occupation in rockshelter and alluvial fan settings (Nash 1999).

The only Middle Woodland-associated radiocarbon assay for the Blue Ridge comes from the Meadow School Road Site (44PA174) in Shenandoah National Park; a fire pit containing small, broad-stemmed and Rossville-like points returned a date of BC 370+/- 70 (Inashima 1990). Corner-notched projectile point types and pentagonal variants similar to Jacks Reef are associated with terminal Middle Woodland Albemarle ceramics at two sites in the Central and South Districts of Shenandoah National Park (Inashima1988).

Northern and Southern Ridge and Valley and Appalachian Plateau

Table 8.4. Middle Woodland Diagnostic Artifacts/ Northern and Southern Ridge and Valley

Middle Woodland II	Albemarle Candy Creek Connestee Wright Check Stamped Mulberry Creek Plain Bluff Creek Simple Stamped	Yadkin Levanna Jacks Reef Corner-Notched Jacks Reef Pentagonal
Middle Woodland I	Albemarle Long Branch Fabric Impressed Popes Creek	Potts Rossville/Piscataway Vernon

The Middle Woodland ceramic and projectile point sequences for the Ridge and Valley in the Shenandoah/ Potomac and James River drainages parallel those of the Chesapeake Piedmont and suffer from the same lack of radiocarbon-dated contexts. Based on a frequency seriation of sherds from the Peer Site (44SH133), Gardner and Nash (1990) hypothesize a Middle Woodland crushed rock temper tradition developing out late Early Woodland sand tempered ceramics. Ascending the stratigraphic column, the frequency of cord-impressed sand-tempered Accokeek-like sherds decreased as that of Popes Creek-like net-impressed crushed rock-tempered sherds increased, marking the transition to Middle Woodland I. Projectile point types associated with Middle Woodland I in the northern Ridge and Valley include Piscataway/Rossville, Potts, and Vernon.

Continuing up the column, the frequency of net-impressed crushed rock ceramics decreases with the increase in cord- and fabric-impressed ceramics. Believed to mark the transition from Middle Woodland I to II,

these later forms, typed within the Albemarle tradition, are predominately tempered with crushed quartz (Gardner and Nash 1990), although chert-tempered sherds have been recovered from Middle Woodland II radiocarbon-dated contexts at the Cement Plant Site (44AU51). The appearance of fabric impression is hypothesized as a stylistic phenomenon that moved into the northern Shenandoah Valley and eastward into the Piedmont from the southwest, temporally extending well into the Late Woodland period (Gardner 1986; Snyder and Fehr 1984). Middle Woodland II projectile point types include large and medium triangular forms and Jacks Reef Corner-Notched and Pentagonal varieties.

A Middle Woodland II association for crushed rock-temper ceramics is also seen at the Mouth of Seneca Site (46PD1) in Pendleton County, West Virginia, at the western margin of the Ridge and Valley province (CCRG 1998:268). Feature-based radiocarbon dates for crushed rock-tempered (siltstone and chert) cord-impressed ceramics and small stemmed and notched points range from BC 70-690 (cal., 2-sigma). Identified as a new series, South Branch, the ceramics are similar in description to Clemson's Island and Buck Garden, the latter documented for the upper Potomac in the Maryland Great Valley (Curry and Kavanagh1991:7). Sherds matching these descriptions and identified as Albemarle have also been recovered from the Fout Site (44FK3) in far northwestern Virginia (Nash 1994).

As in the Piedmont, the presence of a long-lived crushed rock-tempered ceramic tradition in the Ridge and Valley has been the source of some confusion. Gardner and Nash type a shale-tempered cord-impressed variety from 44SH133 as Albemarle. Its co-occurrence with steatite- and sand-tempered sherds led to its association with the late Early Woodland occupation at the site. Gardner believed it to be cognate to Seldeon Island, a type generally dated to 2850 to 2700 BP (Gardner 1994b). A similar ware has been excavated at the Warwick Mansion Site (44BA337) in the upper James River Valley (Tolley 2002). Future research must focus on temporally discriminating the types within the Albemarle series, as the cord-impressed variety is "relatively useless by itself as a chronological indicator" (Gardner and Nash 1990).

During Middle Woodland I, the stone and earthen burial mound tradition developed in the Shenandoah Valley and the contiguous upper Potomac River drainage. Characterized by clusters of stone mounds located on bluffs overlooking floodplains (Gardner 1993), the mounds are comprised of piles of stones capping one or more burial pits and have a temporal range of 2450 to 1850 B.P.BP. Recovered grave goods (celts, ochre, biface caches) are often made from local materials, leading to the hypothesis of the mounds as an indigenous interpretation of a non-local (Ohio Valley Adena-Hopewell) practice that served to reinforce emerging social ranking. The Middle Woodland mounds have been documented on the South and North Forks of the Shenandoah River and west to the Shenandoah/Potomac River confluence in the West Virginia Panhandle, as well as into the Great Valley of Maryland (Stewart 1989:57). More recent research into this tradition will be examined in some detail below.

The Woodland period in the southern Ridge and Valley and Appalachian Plateau has been described in the context of the greater southwest Virginia/northeast Tennessee/northwestern North Carolina region (Mathis and Moore 1996:63). This mountainous interior region is drained by the New and Tennessee Rivers; contrary to hypothesized cultural insularity associated with geographic isolation, recent mitigation projects associated with Route 58 improvements confirm cultural links between southwest Virginia and the Appalachian Summit during the Middle Woodland period (Egloff 1987:8; Reid 1997:4; Ward and Davis 1999:147).

The Middle Woodland ceramic sequence in southwest Virginia begins with limestone-tempered Long Branch Fabric Impressed, a ware of Southeastern origin that spread into upper East Tennessee by 2700 BP (Reid 1997:35). At 44LE121, three radiocarbon dates from feature contexts associated with Long Branch ceramics, clustered at 2210 BP, confirm this as a late Early Woodland diagnostic according to the cultural chronology accepted for the region. Based on the recovery of Long Branch Fabric Marked ceramics below stratum radiocarbon dated to BC 322+/-70 at the Daugherty's Cave Site (44RU14), McLearen (1992:53) proposes a continuation of the type into the Middle Woodland.

Subsequent to Long Branch is the limestone-tempered Candy Creek Cord Marked, manufactured from 1900-1100 BP (Egloff 1987). The Virginia Radiocarbon Database (2002b) includes three entries for Candy Creek ceramics: BC 180+/-115 and A.D 410+/-80 from features at the Fox Meadows Apartments Site (44RU44); and BC 710+/-80 at the 656 Elk

Garden Site (44RU61). In both instances at 44RU44, Candy Creek ceramics were excavated along with sherds of the sand-tempered Connestee series (1800-1200 BP), a ware associated with sites in the region that also contain Hopewell-related artifacts (Ward and Davis,151). The Hopewell association is inferred from the artifact assemblage from 44RU44, which contained cut mica, polyhedral cores, and prismatic blades (VDHR 2010). The Hopewell-Connestee connection has seen support in a recent petrographic analysis of the ceramic assemblage from the Icehouse Bottom Site in the Little Tennessee River Valley (Stoltman 1999). A typically local Middle Woodland assemblage of Candy Creek and and Connestee Series sherds included three rocker stamped vessels whose pastes matched several similar vessels from sites in the Ohio Valley. Even more interesting is the fact that ceramics manufactured from clays near the Icehouse Bottom Site have been recovered from the Seip Site in Ross County, Ohio, confirming the exchange of ceramic vessels between the two locales.

Other Middle Woodland ceramic types recovered from southwest Virginia sites include Wright Check Stamped, Mulberry Creek Plain, and Bluff Creek Simple Stamped. Along with Connestee, Egloff interprets the later Middle Woodland forms as "an intrusive expression of ceramics that entered southwest Virginia during the period BC 100-600."

According to Reid, the Middle Woodland diagnostic projectile point type for southwest Virginia is the triangular arrow point (36). Jacks Reef Corner-Notched and Connestee points have also been recovered from excavated contexts at 44LE165 (Pullins 1999:29) and 44LE129 (Reid 165).

Paleoenvironmental Studies

Macro-scale paleoenvironmental reconstructions of Eastern North America characterize climate and vegetational cover as effectively stabilized to modern conditions by ca. 3000 BP with the onset of the Sub-Atlantic episode (Delcourt and Delcourt 1985:21). As today, during the Middle Woodland two major zones of the Eastern deciduous forest divided the state: the Oak-Pine Forest of the Outer Piedmont and Coastal Plain and the Appalachian Oak Forest of the Inner Piedmont, Blue Ridge and Ridge and Valley (Delcourt and Delcourt 2000:371-372). Extreme westernmost outliers of the Appalachian Plateau fell within the Mixed Mesophytic Forest region (Delcourt and Delcourt 2000:365).

The need for research into the localized effects of global trends has been recognized by archaeologists concerned that Native American settlement systems require a small-scale approach that adequately models specific ecosystems (Custer 1989:177). While finer-resolution forest community descriptions are now available (Delcourt and Delcourt 2000:358), studies of localized, micro-climatic shifts and ecosystem responses can provide much needed context for the changing hunter-gatherer lifeways hypothesized for the Early and Middle Woodland. For example, a mild decline in average global temperature is proposed for the Vandal Minimum of 1600-1200 B.P. According to Anderson (2001), the three centuries prior to the onset of the Medieval Warm episode (1200 BP) were somewhat cooler than normal— impacting a number of cultural systems in widely differing parts of the world, some of which evidenced a reduction in organizational complexity. Recent palynological and geomorphological studies from several Virginia physiographic zones describe the specific effects of such a climatic shift on local ecologies, providing a basis for testable hypotheses concerning the impact of environmental change on "populations at the threshold between band and tribal level organization" (Blanton 1992:89).

Palynological analysis of Chesapeake Bay sediment cores (Cronin 2000) demonstrates climatic shifts during the late Holocene (3,000 to 250 BP) "that may correspond to hemispheric or global climate events" such as ice rafting in the North Atlantic (Willard and Korejwo 2000:84). While the late Holocene climate was generally wetter and cooler than that of the middle Holocene, intensified intervals of wetter and cooler conditions at 1400 BP are indicated by high percentages of pine, a corresponding decrease in oak, and a constant abundance of hickory (78). Taken together, these data indicate the Middle Woodland II oak-pine forest of eastern Virginia saw greater overlap with the dominantly evergreen forests of the southeast than with the deciduous forests of the Inner Coastal Plain. An overall reduction in forest biomass may have led the hunter-gatherers of the Outer Coastal Plain to focus on more abundant estuarine-based resources. One hundred miles inland, a shift from drier to cooler, moister climatic conditions during the Middle Woodland resulted in a different scenario of resource distribution. A palynological study associated with

excavations at the Indian Creek Site (36PR94) in Prince Georges County, Maryland (LeeDecker et al 1991) offers one of the more complete pollen records for the late Pleistocene and Holocene Inner Coastal Plain (Dent 1995:86). Radiocarbon dates bracket a major reduction in arboreal pollen and corresponding expansion of herbaceous species between 1860+/-110 BC and 230+/-40 BC, signaling drier conditions for much of Middle Woodland I. The mature forest community, with oak as the dominant element, saw increased pine, hickory, and walnut. A return to cooler, moister conditions resulted in the re-establishment of more mesic forest after 1770+/-40 B.P. Oak, while the dominant arboreal member, was present in reduced frequency from the previous regime. Non-arboreal species, such as blueberry and elderberrry covered the landscape. This patchwork environment would have provided habitat for myriad reptiles, amphibians, fowl, and large and small mammals, with edge areas signaling an increase in the white-tailed deer population. The significance of this climatological shift, falling within the Middle Woodland I and II transition, should be further examined by archaeologists working in this region. The richness of the forest may contribute to the explanation for a continued fusion-fission cycle of settlement of the Inner Coastal Plain during Middle Woodland II.

Geomorphological studies by WMCAR demonstrate two trends during the Middle Woodland, both associated with continued sea level rise, for tidal rivers: the establishment of interior wetlands along tributary streams and the formation of fringing marshes along major streams such as the James and York by 2000 BP (Blanton and Margolin 1994:7; Blanton 2000:5; Blanton and Pullins 2004). Coastal Plain rivers experienced continued floodplain maturation post 2500 BP, with stabilization occurring by 2000 BP (Pullins et al 1996). Similarly, a rising water table led to the appearance of interior 'swamps' on the Eastern and Western Shores of the Chesapeake Bay (Dent 1995:92). These wetland environments, both freshwater and estuarine, offer year-round resource diversity, productivity, and reliability and have specific implications for hunter-gatherer studies. Nicholas (1998b) predicts a range of behaviors, similar to those hypothesized for Middle Woodland groups, associated with the utilization of wetlands: reduced mobility, surplus production, territoriality, social stratification, increased population density, gender specific-activities, and greater cultural and economic diversity.

For example, adapted to both freshwater and low salinity brackish water, stands of protein-rich wild rice (*Zizania aquatica*) thrive in this setting (Mason1998:7), as do arrow arum or tuckahoe (*Peltranda virginica*), smartweed (*Polygonum sp.*), and fibrous grasses and cattails (Lippson and Lippson 1997:185-189). Saltwater marshes, including fringing and pocket marshes, provide habitat for marsh periwinkles and Atlantic ribbed mussels (1997:192). Such environments are game attractants, particularly for wild birds, migratory waterfowl, beaver, and river otter. The development of these wetland and estuarine habitats in the Inner Coastal Plain corresponds to a dramatic increase in the number of small campsites along interior tributaries at 2000 BP, as well as the appearance of shell midden sites at the then limits of brackish water shellfish exploitation (Blanton 2000:4; Blanton et al 1997:45; Johnson 1991:32).

In sum, these palynological and geomorphological data point to significant ecological changes during the Sub-Atlantic episode at the transition from Middle Woodland I to Middle Woodland II. Accordingly, a change in settlement pattern is seen throughout the Coastal Plain at this time, with Middle Woodland groups fusing in the rich estuarine locations and, for the first time, taking fullest advantage of these resources (Blanton 2000) while continuing to occupy the interior on a seasonal basis (Johnson 1991).

In contrast to the general cool and moist conditions of the Tidewater Middle Woodland, evidence of drought in the Delmarva Peninsula underscores the regional climatic variability of the Sub-Atlantic. Abundant geomorphological evidence of middle-late Holocene aeolian erosion and deposition signals a reduction in vegetation cover, reflecting a drier climatic regime (Custer 1989:180-181; Blume 1995; Lowery 2001:161). Stratigraphy at the Gum Branch Site (7S-E-83C) in the Nanticoke River drainage indicates periods of drought from 3000 BP to 1000 BP, with Woodland I and Woodland II-period artifacts recovered from aeolian deposits (Custer 1999:178). This sequence dovetails with palynological studies from several eastern Delaware marshes, also indicating an extremely dry period from 1900.BP to 1450 BP (Brush 1994:94). The extreme drought shaped the environmental setting for the Carey Complex, which saw the decline of mortuary

ceremonialism and the elaborate exchange networks of the preceding Delmarva Adena Complex and the fissioning of macro-band base camps (Custer 1989:288).

Evidence of localized, catastrophic environmental change in the Virginia Blue Ridge during Middle Woodland I comes from a study of a 1995 rapid mass movement event in Madison County (Wieczorek et al, 1996). Dissecting a co-alluvial fan in the upper Rapidan River basin, the Kinsey Run debris flow exposed a geomorphological record of similar past events. Radiocarbon dates bracket the last episode of this magnitude between 2480 BP and 2050.BP with studies from Nelson County indicating a similar pattern in the Upper Tye River basin (Nash and Eaton 1997). Documented archaeological sites in the Kinsey Run area, which had seen repeated occupation from the Middle Archaic through the Early Woodland, were essentially abandoned by 2200 BP (1997). Multiple rapid mass movement events may have disrupted the highly productive oak-chestnut climax forests of these upland fan settings, interrupting the long-standing pattern of seasonal use and social mobility in parts of the northern and central Virginia Blue Ridge.

Other geomorphological studies shed light on the question of the paucity of Middle Woodland sites in the central and northern Virginia interior. Hayes and Monaghan's 1998 analysis of James and Potomac River alluvial settings upstream of the Fall Line hypothesizes a peak in floodplain accumulation around BC 1, marking a high flood interval. Floodplain surfaces rapidly aggraded, burying archaeological evidence of human settlement and preventing the formation of midden-like deposits and organic rich soils. The burial of floodplain occupations occurred less often during the later Middle Woodland with a decline in the high flood interval. Gallivan (1999:159) correlates this trend with the earliest stage for which substantial numbers of features have been excavated in all portions of the James River Basin. By BC 1000, declining flood frequency and lower sedimentation rates led to the intense formation of organic and artifact rich deposits in floodplain settings, with the more stable landforms being conducive to repeated occupations. Thus, prior to the Late Woodland, floodplain dynamics did not favor the development of archaeological sites detectable using site discovery techniques favored in the Middle Atlantic, emphasizing the need for systematic, deep testing of floodplain settings.

Middle Woodland Social Organization and Subsistence

In an overview of Middle Woodland settlement systems, Blanton (1992:71) summarized the trends of gradually increasing population, sedentism, and inter-area integration that resulted in more clearly identifiable territories. In this scenario, "the preceding Early Woodland pattern was gradually refined to accommodate more people within the same territory, probably through a still general but more intensified and scheduled subsistence round" (1992:88). A segmentary lineage model of social organization (Sahlins 1961) was invoked to explain the movement and associations of smaller, lineage-based group within a larger territory.

Two settlement models were proposed to explain Middle Woodland settlement hierarchy: the logistical model and the fusion-fission model (1992:69-71). In the former, extended family or corporate group base camps were established on a seasonal rotation. From these, smaller parties dispersed to collect a variety of resources. Typical of band-level organization, the logistical model is proposed for Middle Woodland I in all areas of the state except the northern Ridge and Valley, where the stone burial mound tradition reflected greater social complexity. In the fusion-fission model, macro-social basecamps, inhabited by aggregations of corporate groups, coalesced seasonally in locations with rich, predictable resources, and then dispersed in smaller groups. Typical of tribal level organization, the fusion-fission model is proposed for Middle Woodland II. For both models, increased sedentism refers to the tendency toward lengthy occupation, not necessarily year-round occupation of a single locale.

Blanton was careful to point out different groups around the state "may have exhibited features of both these organizational levels" at different times (1992:71). Challenging archaeologists to focus their investigations on the question of increasing cultural complexity associated with this period of "flux" (89) he called for the improvement of local chronologies, the study of inter-area and inter-regional interactions, the definition of 'intensification' and 'sedentism,' and large area excavation to determine patterning within Middle Woodland sites.

Today, our understanding of the Middle Woodland in Virginia remains rooted in the settlement pattern approach, with site location studies providing the

basis for inferences of subsistence practices and social organization. While generalized models developed for the southern Middle Atlantic region are still referenced (Gardner 1982), large-scale survey projects, mitigations, and literature reviews have built on Blanton's suggestions and refined interpretations of Middle Woodland settlement throughout Virginia: the Outer Coastal Plain (Hodges 1998; Potter 1993), the Upper Chickahominy (Blanton et al 1994; Gallivan 2009), the lower Mattaponi (MAAR 1993, the Drained Uplands between the Chickahominy and James Rivers (Bowden 2001), the James River Piedmont (Gallivan 1999), the Potomac and Rappahannock Piedmont (Petraglia et al 1993; Klein and Feidel n.d.; Nash 2002); the Potomac Fall Line (Barse 2002), and the Ridge and Valley (Gardner 1993; Reid 1997; Pullins 1999).

General subsistence strategies of Middle Woodland Eastern North America — the continued harvest of wild resources with an emphasis on gathering and cultivation of locally available seed-bearing plants, and an overall intensification of food procurement (Gibbon 1998:518) — are assumed for Virginia in most overviews of the period. McKnight and Gallivan's Virginia Archaeobotanical Database Project (2007) is a major step in clarifying the question of plant-based dietary diversification and intensification for the Woodland period. Largely an archival effort that relies on information gleaned from a wide range of sources, the georeferenced, relational database includes site descriptions, radiocarbon assays (where available), taxonomic identifications, and direct dating of a sample of cultigens. Observations include the decline through time in deciduous wood charcoal and recovered nutshell from feature contexts, attributed to land clearance beginning in the Middle Woodland period (2007:183) and a possible shift toward the cultivation of crop plants. McKnight and Gallivan's work demonstrates that curated assemblages can provide clues overlooked in earlier analyses. Their AMS-based, direct dating research on Mesoamerican cultigens, and especially maize, has forced archaeologists to rethink the timing of the introduction of these foodstuffs in Virginia. As will be shown in the discussion following, indirect radiocarbon assays systematically place the first occurrence of maize in Virginia in the later Middle Woodland; however, AMS direct dating undertaken by McKnight and Gallivan demonstrate that the cultigen was present only after A.D. 1100 (2007:186) in the Chesapeake region, and then through "episodic incorporation into select communities" (Gallivan 2011:299). have emerged as major research interests.

A relevant question for Middle Woodland period research concerns the timing and distribution of the Eastern Agricultural Complex (Smith 1992) – domesticated varieties of starchy and oily seed plants such as the sunflower (*Helianthus annus*), sumpweed (*Iva annua*), goosfoot (*Chenopodium berlandieri*), Jerusalem artichoke (*Helianthus tuberosus*), knotweed (*Polygonum erectum*), and squash (*Curcubita pepo*) - which has been well documented in parts of eastern North America as early as the late third millennium BC (Gremillion 1996:193). The production of these indigenous cultigens is hypothesized as the economic base for more complex forms of social organization that developed in the Midwest and Midsouth by 2250 B.P. (Smith 1989) and is viewed as prelude to a maize-centered agriculture of the Late Woodland. Wild varieties of these plants had long been included in the hunter-gatherer diet, with stored surpluses the basis of probable kin-related sharing during times of shortfall. Their development as crops, however, required the establishment of "domestilocalities": permanent, year-round settlements occupied over long periods of time (Smith 1995:211) that had important ramifications for sociopolitical and settlement organization.

To date, few Middle Woodland sites in Virginia have actually yielded direct evidence of Eastern Agricultural Complex domesticates; similarly, direct evidence of the intensified harvest of wild plant resources is sparse. As flotation is implemented for feature contexts, archaeologists have recovered limited plant remains from Middle Woodland sites (see specific descriptions in this section). Importantly, wild mast resources constitute make up the bulk of recovered floral assemblages. Archaeologists might do well to consider, as did Hodges in her analysis of the Great Neck Site (44VB7) whether the absence of (cultivated) foods from Middle Woodland sites "is a true reflection of subsistence practices or the product of limited sampling or preservation biases in the archaeological record" (1998:200).

Following optimization models of evolutionary ecology, Virginia archaeologists should consider the first hypothesis – that cultivated species were not fundamental to Middle Woodland subsistence across most of the state. Discussions of the transition from hunting and gathering

to farming emphasize the adoption of domesticates as a means of risk reduction (Gremillion 1996:199). In this scenario, farming is a buffering strategy on the part of foragers against temporary shortages in wild foods (Snow 1996:163). In communities where returns from wild foods are high relative to needs, the adoption of cultivated foods may represent a long-term investment that never comes to fruition. The new resource may play a minor subsistence role if it offers little energetic return, seeing nly minimal representation in the archaeological record until such time when its integration is merited. Thus, maize, first introduced into eastern North America before 2000 BP, did not contribute significantly to the Eastern Woodlands diet until after 1200-1000 BP (1996:194), and its few early occurrences in Virginia (discussed below) may reflect experimentation during a time of plenty.

Outer Coastal Plain

Hodges' report of excavations in the Great Neck Peninsula provides a much-needed overview of Middle and Late Woodland settlement in the southern Outer Coastal Plain (1998). Her synthesis of the excavations at the Great Neck Site (44VB7) offers abundant evidence for overlapping Middle and Late Woodland settlements extending at least 640 meters along the south shore of Broad Bay in an area that is now largely a subdivision (1998:1). Of particular interest for this review is an extensive 1800-1600 BP occupation. Based on an analysis of features and botanical and faunal remains, Hodges hypothesizes distinct Middle Woodland occupations that represent macro-band base camps along the Peninsula. Abandoned for only short periods of time by shell-tempered ceramic (Mockley) producing groups that cycled within a limited Outer Coastal Plain/ Inner Coastal Plain territory (1998:201), the presence of large, deep pits (ranging upwards of 1.65 m. in diameter and .82 m. in depth) at Great Neck are taken as evidence of storage associated with occupations of at least several months' duration. More recent work was undertaken by VDHR on three lots slated for development at the western end of the site (Clem 2016). The discovery of large bell-shaped pits, small shell-filled roasting pits, and post molds supports the earlier findings of intensively-occupied Mockley components. An ambitious program of waterscreening and flotation directed by Dr. Elizabeth Moore at the Virginia Museum of Natural History is currently underway with the goal of recovering information on diet and seasonality of occupation (Clem 2016). Preliminary results of the faunal analysis indicate that in addition to the standard suite of animals found at many Native American sites (i.e., deer, turkey, turtle), this assemblage is dominated by marine fish remains, including an estimated 50,000 small fish vertebra (Moore 2018).

Two structures tentatively identified as Middle Woodland, based on ceramics from an associated feature, were documented at 44VB7: an oval structure measuring 4.5 meters by 3.3 meters, and an attached rectangular storage facility measuring 1.5 meters by 1.2 meters. The rectangular structure may have been erected to protect a large (.94 meter) diameter storage pit (1998: :144). The only analogous Middle Woodland feature complex known from the southern Middle Atlantic is an oval house pattern and associated (but not attached) covered pit at the Mockley Phase Patuxent Point Site (18CV272) on the Maryland western shore (Gardner et al 1989).

At Great Neck, botanical and faunal remains suggest a broad-based subsistence economy dependent on wild foods, including large and small mammals, finfish, shellfish, hickory, walnut, acorn, and fleshy fruits (Hodges 1998). No evidence of cultivated, locally available plants was recovered, although maize cupules were identified in flotation samples from four Middle Woodland features. Conventional radiocarbon assays were performed on charcoal from the excavation contexts of these samples, returning a date of AD 351-688 (cal. 2-sigma) (Virginia Radiocarbon Database 2002b).. While these contexts exhibited "a relatively high degree of archaeological integrity" (Hodges 1998:200), a concern with contamination by Late Woodland components led the author to reserve judgement on the practice of Middle Woodland maize agriculture in the Coastal Plain. Direct dating of the maize cupules by McKnight and Galivan returned a date of AD 1032-1210 (cal. 2-sigma), a 560-year discrepancy with the earlier indirect date.

This is not the first time that the possibility of Middle Woodland maize has tantalized researchers in this region. The earliest occurrence of maize in Virginia is associated with the Hampton School Site (Edwards et al 1989), where a possible maize kernel was recovered along with gathered botanicals and Mockley ceramics from charcoal in a feature context radiocarbon dated to AD 239-561 (cal 2-sigma). While the collection was unavailable for

direct AMS dating, given the carbon reservoir problem associated with wood charcoal (McKnight and Gallivan 2007:186), it is likely that this early date is not reliable.

Coastal Plain archaeologists have been searching for Middle Woodland maize since *Zea* sp. pollen dated to 2250-2050 BP was recovered from a Dismal Swamp peat profile (Whitehead 1965). More recently, however, the association of maize pollen with a Middle Woodland context has been questioned by Gibb and Hines (1997), whose excavations at the Smithsonian Pier Site in Ann Arundel County, Maryland, recovered maize pollen in the subsoil beneath a Selby Bay Phase shell midden. The authors challenge the Middle Woodland association due to the phenomenon of pollen percolation into and preservation in lower pH subsoils (1997: :70). Contextual issues aside, Eubanks cautions that positive identification of fossil maize pollen is very difficult due to morphological overlap with its wild relatives and hybrids between them (1974:144). Given questions of identification and context, definitive statements concerning the introduction of maize into the Virginia Coastal Plain during the Middle Woodland period awaits a larger regional synthesis.

The work at Great Neck supports Gardner's hypothesis (1982) of a Middle Woodland sedentary settlement system focused on estuarine resources in the Outer Coastal Plain, although contrary to his model, sedentism did not develop on the Great Neck Peninsula during the Early Woodland (Hodges 1998: :201). And, after such intensive Middle Woodland use, the Great Neck area was occupied only intermittently between 1600-700 BP, the cause of its apparent abandonment unknown. This deserves greater attention: presumably, locales like Great Neck were prime spots for the continued, *in situ* development of sedentary society so well documented for the Late Woodland.

Whether related or not, another settlement hiatus is documented for the region. Underwood and Blanton (1999:39) describe small, Middle Woodland I procurement camps on the margins of the Great Dismal Swamp that were also abandoned after 1800 B.P. In those locations, the low topographic relief of the area associated with sea level rise and stabilization may have precluded continued use. Ward and Davis (1999:227) hint at the migration of Algonquian speakers into the Chesapeake during the late Middle Woodland as a possible cause of regional cultural disruption.

The presence of Mount Pleasant sand-tempered ceramics at Great Neck, which are roughly coeval with Mockley and associated with Nottoway, Meherrin, Blackwater, and Chowan River populations, signals seasonal transhumance between the interior and coastal regions. Interpreted as procurement camps, the Mount Pleasant-associated occupations at Great Neck may represent "people whose core territory was situated to the west in southeastern Virginia and who practiced an adaptation which was more interior, riverine oriented" (Hodges 1998:192). The short duration of their occupations at Great Neck are seen not only in the small percentage of Mount Pleasant ceramics on the sites, but also in the infrequency of the association of Mount Pleasant ceramics with pits, a situation in direct contrast with the Mockley occupation of the area. The presence of at least two distinct population groups at Great Neck during the Middle Woodland is testament to the fluidity of cultural boundaries and should be a focus of future research.

For the northern Virginia Outer Coastal Plain, Potter (1993:68-77, 103-114) provides a detailed synthesis of Middle Woodland II settlement data, largely based on excavations and survey along the Coan River of the Northern Neck, known as the 'Chicacoan Locality' after the historically documented Algonquian chiefdom of the area. Implementing a site classification scheme based on size, integrity, and predominant midden composition, Potter documented a variety of Middle Woodland II componen types, ranging from large midden sites such as the ca. 5 ha. multicomponent Boathouse Pond Site (44NB111) to small, interior camp sites. Indicative of a seasonally-based fusion-fission settlement pattern, the Coan River study emphasizes the importance of investigating a variety of site types in addition to highly visible shell midden sites.

From 1800-1450 BP, Chicacoan settlement was focused on estuarine-based small and intermediate shell middens and small interior sites. The small shell midden sites were occupied by family-sized groups that seasonally fused into larger, band-sized groups at intermediate shell midden sites such as Plum Nelly (44NB128). Plum Nelly, with its rich faunal and botanical remains, is identified as a Selby Bay Phase basecamp occupied during the fall and winter (1993:73). Small interior sites functioned as short-term procurement camps whose occupants were focused on specific upland resources (1993:139).

Subsistence analysis points to a broad-based diet of wild plants and animals for these people; while shell middens have been the focus of excavation and interpretation for this period, "deer provided as much (or more) caloric input to the diet as mollusks" (1993:139). Thus, Potter proposes a mixture of a "diffuse adapative strategy" in the larger catchment areas of the residential bases, and a "focused adaptive strategy" at smaller sites where large quantities of seasonally-available resources were intensively collected (193:140).

After 1450 BP, a major settlement shift occurred so that necklands adjacent to coves and embayments became the focus of a more sedentary existence. The Boathouse Pond Site is identified as a "village where a local or regional band gathered during seasonally optimum times of the year, perhaps with some members of the band resident throughout most of the year" (1993:100). In addition to the extensive refuse midden, Potter reports a possible pole-supported structure from the site (1993:71). As an indication of continued — albeit restricted — mobility, small- and intermediate-sized shell middens were occupied throughout the late Middle Woodland, as were the small interior camps. The settlement shift correlates with the reduction in the diversity of species found at oyster-gathering camps and an increase in the volume of gathered oysters – a signal of the intensification of a focused adaptive strategy in which specific resources are collected and processed for the residential base. At the same time, the localized Nomini ceramics (quartz tempered, cord- and fabric impressed) and Nomini point (manufactured from quartz or quartzite) appeared in the archaeological record.

The Smithsonian Pier Site (18AN284) on the Rhode River provides an example of Potter's small shell midden site type (Gibb and Hines 1997). Located in a highly productive ecological setting, the stratified Middle and Late Woodland shell midden is characterized as an oyster-processing site with a strong focus on shellfish collection and only limited or opportunistic exploitation of other faunal or botanical species. Occupied by Selby Bay groups during the spring and autumn, 18AN284 is viewed as a special task site (1997:73), representing only one segment of Selby Bay settlement and subsistence practices. The authors caution researchers to recognize the limitations of the highly visible Middle Woodland shell middens for answering larger questions concerning late prehistoric coastal adaptations 1997:(74).

Also underscoring the diversity of Middle Woodland subsistence practices is the Mulberry Island Site (44RD81). Located on a low floodplain terrace of the Rappahannock River in close proximity to extensive marshlands, the site is an example of Potter's small decomposed site type (Anderson 1999). Few oyster shells were recovered from the Popes Creek or Nomini phase components, despite numerous oyster shell middens in the general area. Interpreted as a series of short-term occupations associated with fishing or marsh resource exploitation, the lithic assemblage is dominated by expedient tools (1999:60).

The continuation of the fusion-fission settlement pattern should not be taken as a challenge to the overall picture of the adoption of a more sedentary way of life by coastal Middle Woodland groups. Restricted group movement between estuarine and adjacent riverine zones was the norm. Further evidence of decreased mobility is seen in the disruption of the supply of rhyolite from the Maryland Blue Ridge to the Coastal Plain (Potter 1993:100). In contrast to the 1800-1450 BP pattern, rhyolite Fox Creek and Selby Bay projectile points from the Boathouse Pond Site exhibit heavy reworking and other curation techniques, indicative of the lack of availability of this raw material. Curry and Kavanagh describe a similar breakdown in exchange networks during the early Late Woodland on the Maryland Western Shore (1991:21). The combination of these changes—decreased mobility, highly focused collecting, the cessation of the rhyolite trade, and the appearance of localized ceramic and projectile point types—all provide evidence of territorial restriction and greater boundary definition for late Middle Woodland Outer Coastal Plain groups (Potter 1993:141). The challenge for archaeologists lies in the development of well-supported explanations for this cultural change.

Inner Coastal Plain and Fall Zone

Middle Woodland settlement pattern studies have seen more refinement in the Inner Coastal Plain than in any other region of Virginia. Extensive CRM studies associated with highway, pipeline, and reservoir projects have tested the models proposed by Gardner (1982), McLearen and Mouer (1989), and Blanton (1992) in a variety of settings.

Among the accomplishments of Virginia Commonwealth University's long-term research program in the James River Basin/Fall Line zone is a model of Middle

Woodland settlement and a refined ceramic chronology that guide current research in the area. The Middle Woodland in this region is marked by the appearance of large numbers of seasonally occupied band camps in riverine settings, particularly along tributaries, and small foray camps (McLearen 1987). Based on a study of the Four Mile Creek Valley, Mouer and McLearen (1989) described only limited use of adjacent upland settings.

The restricted distribution of localized ceramic types (Prince George and Varina) is taken as evidence of the intensification of territorial boundaries, although the co-occurrence of Mockley with these types indicates the permeability of these boundaries. The larger base camps, such as Aignor #3 (44HE596) and Aignor #9 (44HE599), include numerous pit and hearth features, indicating occupations of some duration associated with possible plant food processing. The intensive occupation seen at these sites is interpreted as evidence of probable site reoccupation on a regular rotation during both Middle Woodland I and II. In his review of Middle Woodland research (1992:45), McLearen described the lack of excavation at these larger sites as an impediment to determining their identity as macroband base camps or overlapping clusters of band occupation.

More recent studies of the Inner James River Coastal Plain/Fall Line, including Bowden's synthesis (2001) of Middle Woodland settlement for the Drained Uplands of Henrico County, have modified the Mouer/McLearen model. Based on surveys of Cornelius and Totopotomoy Creeks, Bowden contends that settlement models have yet to acknowledge the variety of procurement tasks represented by small sites in this inter-riverine area. He hypothesizes that some sites identified as Middle Woodland base camps, such as the Redwood Field Site (44HE597), are actually lithic procurement sites that saw brief, yet repeated occupation from the Middle Archaic through the Middle Woodland periods.

Similarly, a number of smaller sites that yield diverse ceramic assemblages are probably not briefly-occupied foray camps, but procurement or processing camps of some importance to residents who re-occupied them over hundreds of years. While the lack of site excavation in inter-riverine locales has limited our ability to interpret their functions, intensive clusters of Middle Woodland sites along relatively short stretches of interior creeks can be interpreted as a response to regional population pressure. In addition, the recovery of Mockley ceramics at sites that otherwise yield local ceramic varieties may indicate incursions from groups based in the Outer Coastal Plain.

In terms of settlement patterning, the inter-riverine sites could represent "an annual rotation or sub-seasonal rotation between a complex of sites, rather than the traditionally viewed seasonal round" (Bowden 2001). This variant of the logistical model hypothesizes a continuation of residential mobility, albeit within a highly restricted zone. It fits Blanton's description of "procurement loci associated with a single corporate group" (1992:86).

The William and Mary Center for Archaeological Research (WMCAR), through its regional paleoenvironmental and archaeological documentation effort, has investigated Middle Woodland settlement in the lower James and York River drainages (Blanton 2000; Blanton and Pullins 2004). Based on this work, Middle Woodland I groups maintained moderate-sized, semi-sedentary base camps along major streams, seasonally dispersing to smaller sites along interior streams for the intensive harvest of wild foods. Identified as procurement camps occupied for relatively brief periods of time, their number increased dramatically between 2500 BP and 1700 BP Surveys of Powhatan, College, and Queens Creeks in the Williamsburg area have documented large numbers of such sites, identified by the presence of Popes Creek, Prince George, or Varina ceramics, for the full reach of these drainages (Blanton 2000:4). As in the James River Fall Line area, the rapid increase in interior sites on the Lower Peninsula may have been associated with population pressure. The intensive use of the area corresponds with an increase in charcoal and ragweed pollen in a core from Chisel Run Swamp, west of Williamsburg, both indicative of forest clearing (2000:5).

Another variable that might have precipitated the settlement shift was the search for potable water in an area where the rising level of the Chesapeake Bay increased salinity in tributary rivers at ca. 2000 B.P. The locations of small shell midden sites below Williamsburg represent the limits of brackish water shellfish exploitation, with the accumulation of debris at these sites reflecting repeated visits over time (Blanton et al 1997). Mitigation of sites 44JC127 and 44JC850 in the Chisel Run Headwaters of Powhatan Creek (Blanton and Pullins 2004) expanded the understanding of Middle Woodland regional dynamics in Tidewater. In addition, careful environmental reconstruction based

on pedological, geomorphic, and palynological studies created a context for understanding the rapid increase in site frequency and population at this time. On terrace lobes overlooking wooded wetlands, each of these small sites corresponds to a larger Inner Coastal Plain pattern of Middle Woodland occupations in settings above 50 feet ams. (2004:74) and over 4 km from large rivers. The sites are interpreted as short-term, generalized foraging camps where extended family groups subsisted on interior plant and animal resources. Phytoliths recovered from selected contexts include possible Curcubitaceae that are probably derviced from squash or pumpkin (2004::57). Ceramic assemblages of sand, crushed rock, and shell temper, recovered together in feature contexts, are taken as evidence of "mutualism" (2004:91) between interior groups and estuarine-based populations, particularly those focused around shellfishing and processing sites.

Another contribution to our understanding of the Middle Woodland period of the Inner Coastal Plain comes from the re-evaluation of the Chickahominy River Survey (McCary and Barka 1977) by Gallivan (2009) and colleagues at the College of William and Mary. A watershed-scale assessment, the survey was originally devoted to the identification of Chickahominy Indian settlements depicted on early Colonial-era maps. A reanalysis of the data, completed within the context of a collaborative effort with the contemporary Chickahominy community, demonstrates limited Middle Woodland settlement in the area. However, the presence of sand (Popes Creek), crushed-rock (Varina), and shell-tempered (Mockley) ceramics indicate "trade and intermarriage between between different hunter-forager groups" (2009:81), with connections between interior and estuarine settings. The longevity of settlement at some of the sites included in the survey, especially the Moysonee Site (44NK167) indicates the emergence of a Chickahominy core area during the Middle Woodland.

On the Chickahominy River floodplain, Middle Woodland sites are found most frequently on lower terraces and alluvial fans where low-lying settings fostered wetland formation. While such settings may have been conducive to the horticultural practices often attributed to Middle Woodland peoples, wetlands and fluvial landforms may not have been present prior to the Middle Woodland. The product of late Holocene sea level rise and stabilization, the incorporation of wetlands into the settlement system may reflect an adaptation to a new set of resources (Blanton et al 1994:60). An example of a small interior Middle Woodland component comes from 44HN203, a stratified site located on a small rise in the Chicahominy River floodplain, ca. 10 miles east of the Fall Line (Pullins and Schuldenrein 1993). While the site held evidence of an early Middle Woodland occupation represented by sand-tempered Bailey's Creek ceramics and a late Middle Woodland occupation represented by Varina and Mockley sherds, the most intensive use of the site during this period is associated with Prince George ceramics (ca. 2500.BP – 1800 BP). During mitigation, a complex of Prince George features was discovered in a 60 square foot-area: a small pit, a hearth, a concentration of ceramic sherds, and a large soil discoloration identified as an occupational surface. Lithic artifact distributions reflect a separate activity area for the manufacture of stone tools. The more formal structure of the site during the Prince George occupation signals stays of longer duration; unfortunately, the poor state of organic preservation precludes direct evidence of subsistence activities at the site, which adjoins an extensive floodplain swamp. The excavations at 44HN203 offer an example of the type of fieldwork that must be undertaken to explain Middle Woodland settlement intensification in the Inner Coastall Plain.

The study of band- to tribal-level transition, as described by Blanton, depends in part on the archaeological identification of macro-social base camps where bands from adjoining territories gathered, either annually or more frequently. His observation that few of these sites are known (1992:85) still holds today. Maycock's Point (44PG40), a stratified freshwater shell midden of the upper tidal James River estuary (Opperman 1992), is often cited as an example of an aggregate site due to its large size and location in a resource-rich zone at the interface of cultural sub-areas. Radiocarbon dates place major site occupations within Middle Woodland II (Klein 1994b:21), providing three absolute associations for Mockley ceramics. An analysis of vertebrate fauna from the site found evidence of year-round occupation, with a strong focus on terrestrial species in addition to the freshwater mussels that comprise the bulk of the midden (Barber 1981). In contrast, an examination of the faunal assemblage from the lower deposit revealed a single warm weather episode dating to 1700 -—1500 BP (Opperman 1992:90); while 39 taxa of aquatic and terrestrial fauna were identified, freshwater mussels

contributed most of the protein for site occupants at this time. Taken as evidence of seasonal group fusion, the challenge in interpreting Maycock's Point lies in understanding "the sudden intensification of freshwater shellfish exploitation at the beginning of the late Middle Woodland period" (1992:93). Explanations focus on population growth and increased sedentism that required the intensive exploitation of less efficient food sources. Also hypothesized is a hierarchical social organization to coordinate the intensification.

At Maycock's Point, the presence of northern Middle Atlantic Abbott Zoned-Incised (AZI) ceramics, traditionally identified as Middle Woodland II markers, is taken as further evidence of the site's use as a gathering place for regionally-based bands and also indicates possible cultural associations between far-flung groups. Stewart (1998b) proposes that the highly decorated ceramics functioned in public ceremonies associated with feasting and group coalescence during the intensive seasonal focus on fishing and shellfishing. A conventional radiocarbon date charcoal associated with AZI in the upper level of the midden supports a Middle Woodland association of AD 354-657, cal. 2-sigma (Opperman 1992).

Maycock's Point has seen more recent work as a result of damage from hurricanes and continued erosion (Barber and Madden 2006). A controlled surface collection of the beach below the site, across a 1,500-foot linear area, resulted in the discovery of five additional Middle Woodland shell middens and additional evidence of a strong Middle Woodland II (Mockley ceramics and Fox Creek/Selby Bay projectile points) association. Barber's reanalysis (2013) of curated faunal collections from the site resulted in the identification of a bone tool type not previously described: the shucker. Produced from the metatarsal and metacarpal bones of the white-tailed deer (*Odocoileus virginianus*), the tool was used to pry open bivales at the hinge, and especially the fresh water mussel found in abundance at Maycock's, *Elliptio camplantus*. An experimental study of such tools was completed by Manson (2013) and successfully demonstrated the efficacy of the tool for just such as task.

Gardner proposed two alternative settlement pattern models for Middle Woodland I of the Inner Coastal Plain, differentiated by their degree of restricted mobility and regional integration (1982:59). In the first alternative (intrazonal), related bands seasonally fused and fissioned within separate zones (freshwater and saltwater estuaries). In the second alternative (inter-zonal), the same groups seasonally shifted between freshwater and saltwater zones, with major spring and early summer settlement focused on anadromous fish runs and fall and winter settlement centered around the saltwater zone where oyster beds were intensively exploited. In both scenarios, a site hierarchy of macro- and micro-social base camps and smaller, limited foray camps ordered group activities and reflected various levels of social integration. Some sites, such as Popes Creek, saw extensive use during Middle Woodland I, "blossoming into a macro-population center" (1982:77).

Gardner contended that the second model, interzonal shifiting, best accounted for the observed evidence (1982:60). By Middle Woodland II, continued population growth in the Potomac Coastal Plain pushed macro-social base camps to the broader floodplain reaches below this freshwater/saltwater transition (Barse 2002). Smaller exploitative sites are included in this semi-sedentary pattern, including small shell middens in estuarine settings or hunting camps along drainage divides. Johnson (1991, 2001) amended Gardner's Alternative I Freshwater model for the Potomac

Fall Zone to include interior, upland hollow habitation sites that may represent small winter camps. By Middle Woodland II, the settlement focus shifted to estuarine habitats and resources, with interior occupation decreasing significantly. However, the presence of Mockley, Popes Creek, and Rappahannock ceramics at upland hollow sites like the Gulf Branch Site (44AR5), identified as micro-social base camps, suggest a continuation of seasonal settlement around the Fall Line by coastal-based groups during the Middle and Late Woodland.

The role of native plants in Inner Coastal Plain Middle Woodland settlement intensification is not well understood. Opperman (1992:94) argues that the study of Middle Woodland subsistence, especially in estuarine settings where aquatic tubers are plentiful, requires the implementation of rigorous recovery and analytical techniques, including phytolith analysis. Based on ethnographic analogy, Bowden (2001) hypothesizes that the extensive amounts of widely scattered fire cracked rock at Middle Woodland sites near the Fall Line may represent tuckahoe roasting areas. Dramatic, albeit indirect, evidence of possible intensive plant processing or storage is seen at the Fletcher's Boathouse Site (51NW13), located 12 miles downstream of the

Potomac River Fall Line, where mitigation resulted in the discovery of scattered fire cracked rock and a tight cluster of thirteen large storage pits, ranging in size from six to seven feet in diameter and five feet deep (Barse 2002). Associated Mockley, Albemarle, and Popes Creek ceramics identify the site as Middle Woodland, with two AMS radiocarbon dates overlapping at BC 140. Believed to be associated with long-term storage functions, and possibly a storage/disposal precinct separate from an as yet undiscovered domestic structure, the cylindrical pits with flat bottoms contained no evidence of cultigens. Preservation of organic remains, in general, was poor, with only 12 nut fragments and small, fragmentary bone recovered. What, exactly, was stored in these pits remains a mystery; no other cluster of features of such magnitude has been excavated in the Middle Atlantic. Based on the lack of re-fit between any of the rim and body sherds recovered from the features, the pits are interpreted as seeing serial, not simultaneous, use. The site is identified as a serial base camp occupied seasonally by one or more related family groups.

Two pit clusters bearing some resemblance to that at Fletcher's were excavated at the Puncheon Run Site (7K-C-51) near Dover, Delaware (LeeDecker 1999). Located at the confluence of Puncheon Run and the St. John's River on a series of floodplains and bluffs, this large, complex site is comprised of "a number of discrete activity areas that may or may not have been integrated into a single settlement system" (LeeDecker1999). The pit clusters contained a total of 40 pits, a number of which were cylindrical with flat bottoms and ranged up to 5 or 6 cubic meters in volume. Called "silos," they contained very little preserved material; although an aggressive flotation regime was implemented, their original contents remain a mystery. Three radiocarbon dates from feature fill cluster at BC 150, with ceramic types indicating Woodland I and II occupations. As at Fletchers's, the pits were concentrated in an area that contained little occupational debris, indicating minimal consumption at the storage pit locales. No evidence of associated structures was found, but one cluster adjoined a large grinding stone and a number of fire cracked rock clusters that may represent cooking or processing stations. Current interpretations center around the clusters as temporary caching locations associated with late summer and fall processing camps. Presumably, food preserved here was later consumed at winter camps. Thus, Puncheon Run may provide an example of an aggregate base camp associated with surplus production, although LeeDecker hesitates t classify it according to traditional site categories. Implementing a landscape approach, his interpretation of Puncheon Run as comprised of discrete activity areas parallels Barse's view of Fletcher's Boathouse as occupied by a single community over time.

Given the lack of preserved faunal and floral materials in non-shell midden contexts, in concert with the increased number of pit features at Middle Woodland sites, regional archaeologists are employing other means to derive subsistence information. At the Taft Site (44FX544) on Mason Neck, the excavation of a Middle and Late Woodland shell midden revealed several features described as "greasy stains" (Norton and Baird 1994a:105). Infrared spectrometry and gas chromatographic analysis identified several of the stains as having high fatty acid content, none of which were in triglyceride form. Believed to represent mollusk fat (due to the presence of microscopic broken shell in the residue), the stains could also be the result of plant food processing. At Puncheon Run, soil chemistry studies were used to delineate specific activity areas. High concentrations of strontium in soil samples taken from features may be an indicator of fish processing, since this element occurs in very low amounts in terrestrial contexts but is one of the most abundant elements in sea water (LeeDecker 1999).

Piedmont and Blue Ridge

Archaeologists working in the Potomac, Rappahannock, and James Piedmont have agreed that the Middle Woodland settlement pattern reflects mobility with an emphasis on riverine locations (Hantman and Klein 1992:143; Klein n.d.), but a pronounced lack of data has limited more specific statements. Gardner (1982:77), influenced by Mouer's early work in the Outer Piedmont James River valley, described a continuation of the riverine-focused Early Woodland settlement system in which relatively sedentary, micro-social procurement camps in the uplands supported corporate basecamps along major floodplains. Hypothesizing extensive drainages like the James as offering evidence of different types of settlement patterns at different points along the river, he suggested a more sedentary and complex lifeway downstream where larger floodplains and greater quantities of anadromous fish supported larger populations engaged in intensive resource harvests.

However, when later research described smaller-sized and fewer Middle Woodland sites in the outer Piedmont, McLearen (1992:49) proposed an apparent break between Early Woodland and Middle Woodland settlement systems, the cause of the discontinuity unknown.

The lack of chronological control over Piedmont Middle Woodland diagnostics contributes to this confusion. While presenting a formidable difficulty, though, chronological questions can be resolved through careful excavation and the application of absolute dating techniques. An even larger stumbling block to our understanding of Middle Woodland settlement is the difficulty of locating sites for such excavations. Typical of known Middle Woodland period Piedmont sites are those investigated by Petraglia et al (1993) during Phase II and III studies associated with a gas pipeline corridor in the Potomac Piedmont lowlands of Fauquier, Prince William, and Loudoun Counties. The corridor sampled high order perennial stream valleys with well-established wetlands, a prime setting for Middle Woodland occupation in the diverse physiographic zones of Virginia (Blanton 1992:86-87). At five mitigated sites, "Early/Middle Woodland" components were identified based on the presence of Piscataway points and a "Woodland Side-Notched Form" similar to the Vernon type. A Middle Woodland II Jacks Reef occupation was identified at 44FQ107, located on a low ridge overlooking the wetlands of Cedar Run. While some of these sites contained deeply buried Archaic components, all evidenced Woodland components in near-surface or plowed contexts (Petraglia et al 1993:610), making assessments of function and density difficult. Based on site size and limited artifact diversity, all Middle Woodland occupations were identified as camps or specialized, task-oriented sites (1993:617). The question of the location of the larger base camps supported by these foray camps remains open, as it does for much of the central and northern Piedmont (Gardner 1994a).

Two upland sites evaluated as part of the Hunting Run Reservoir project in Spotsylvania County further emphasize the paradox of Middle Woodland studies (Klein n.d). A handful of Middle Woodland II Albemarle sherds were recovered during the work, but two storage features radiocarbon dated to this sub-period were discovered during data recovery. One pit from 44SP227 was dated to BC 330-620 (cal); another from 44SP220 (Hord's Mill Site) was dated to BC 620-880 (cal), the latter containing carbonized nutshell and a single burned maize cupule (Catts et al 1996). If the date for the nutshell applies to the cupule, the Hord's Run Site provides one of the earliest dates for maize in the Middle Atlantic (Klein n.d.), possibly representing stored maize carried from a riverine location to the upland campsite. However, for the reasons described earlier, direct dating of the cupule is necessary to confirm this date. The few diagnostic artifacts and limited artifact diversity from either of these Middle Woodland components indicate ephemeral use by a small family group focused on upland resources, but the storage features point to a more extended stay or at least intensive gathering while they were present.

Adding to the chronological and locational difficulties are our own perceptions of what interior Middle Woodland sites should look like, particularly given our expectations of emergent sedentism, the large aggregate sites of the Coastal Plain, and the apparent social complexity of the stone burial mound phenomenon of northwestern Virginia. The lack of recognizable archaeological signatures in the Piedmont north of the James River that would mark a continuation or elaboration of the Middle Woodland I lifeway has led some to hypothesize a population decline, a disappearance of institutions overseeing surplus production and distribution, and possible regional abandonment during Middle Woodland II. "Having looked long and hard in a variety of settings, it must be conceded a post BC 200 Middle Woodland, apart from Mockley quarrying and intrusions into the Potomac Piedmont and Northern Shenandoah Valley, is not there…(T)he population simply disappeared, and the area was not repopulated until around BC 900…" (Gardner 2000).

Johnson observed a drop in the number of Middle Woodland II sites in Fairfax County and considered the possibility of "a hiatus of cultural activity" (1991:49). However, the dearth of sites here is attributed to problems with artifact typologies and artifact identification, as well as mixed contexts (1991:50). In the Fairfax County case, improved field methods (intensive artifact recovery from plowzone contexts, waterscreening and careful sorting of wet screen) have led to the discovery of later prehistoric ceramics (Middle and Late Woodland) from what are normally considered heavily eroded upland contexts (2002:129).

As for the Rappahannock and James Piedmont,

the lack of documented Middle Woodland II sites could be attributed to a combination of the confusion over diagnostics and mixed contexts described for the Potomac Piedmont. In addition, recent research points to the possibility that archaeologists may have failed to detect a Middle Woodland II settlement shift to the location generally recognized as Late Woodland real estate – the outer floodplain (Nash 2009).

Support for this comes from the Inner James River Piedmont, where Gallivan (1999:190) suggests that by Middle Woodland II, groups here were committed to specific floodplain locations for activities including storage and large-scale food preparation events. At the Wood (44NE7) and Spessard Sites (44FV134), storage and roasting pits are taken as an indication of the return of several households over multiple settlement cycles. While the lack of architectural evidence and the limited types of features at both sites contrast with more sedentary Late Woodland signatures, accumulating Middle Woodland II midden deposits are indicative of a riverine-centered settlement system.

A study of surface collections from 28 ceramic-bearing sites in the upper Rappahannock Valley (Nash 2009) further demonstrates a Middle Woodland II presence and settlement shift to Late Woodland settings. As discussed above, radiocarbon dates place Albemarle cord- and fabric-impressed varieties in the Middle Woodland II sub-period. In the upper Rappahannock study, 63% of assemblages include both varieties. Fabric impressed ceramics in this sample never occur by themselves,but are always recovered with the cord impressed variety. The reverse is not true, indicating the longevity of cord impression and the temporal restriction of fabric impression. Middle Woodland II Jacks Reef points were recovered at 75% of the sites bearing the fabric impressed variety.

The most common setting for the sites with Albemarle fabric impressed sherds is the high order stream outer floodplain (38%). The remainder include high floodplain terraces, inner floodplains, rockshelters, low ridge tops, and in one instance, a high elevation Blue Ridge meadow. Assemblages from nine sites include crushed rock net impressed, fabric impressed, and cord impressed sherds, all falling within the type descriptions of Albemarle, and all located in the outer floodplain. Preliminary analysis of the dataset points to a long-lived, riverine-centered interior cultural tradition, signaled by Albemarle ceramics. Smaller procurement sites are also included in the settlement pattern of this subperiod, as evidenced by the upland sites and rockshelters in the upper Rappahannock basin (Nash 2009).

Taken together, the James and Rappahannock data point to mobile populations in a relatively restricted territory. The role of the Blue Ridge in such a settlement system is poorly understood, although most identified higher elevation Middle Woodland sites signal short-duration occupations, evidenced by low artifact density and diversity. An exception to this is the Meadow School Road Site (44PA174), where charred *Polygonum* seeds were recovered from a hearth feature (Inashima 1990). This evidence of wild plant gathering and processing at a high elevation may be the work of a riverine-based task group whose regular, lowland food sources included indigenous cultigens.

The Clark Site (44PK15), located in the Blue Ridge foothills of the Dan River drainage, provides another example of a Middle Woodland II occupation underlying an early Late Woodland hamlet (Clark 2001). Located on the second terrace above the South Mayo River, the site was investigated in the mid-1970s in advance of highway construction. Stripped plowzone revealed four cultural features associated with mixed Grayson and Dan River components. The Grayson Series, tentatively reassigned to the 1400-1000 BP period based on studies of the cognate Uwharrie series of the North Carolina Piedmont (Clark 2001:163), is suggested as the predecessor of the Dan River Series. As such, small sites like 44PK15 hold the potential for the study of the evolution of Late Woodland /Proto-Historic Siouan traditions from late Middle Woodland origins. In addition, 44PK15 yielded significant subsistence data; recovered from a pit feature along with acorns, walnuts, and hickory nuts were two corn kernels. Charcoal from the maize-bearing layer was radiocarbon-dated to BP 1049-1142 (cal.), leading to the feature's association with a late Grayson-early Dan River occupation (Clark 2001:174). A sample of maize was direct dated by McKnight and Gallivan (2007) and found to calibrated median probability of AD 1190, further indicating the introduction of maize into a well-established foraging economy. Multiple episodes of fill in several features point to a pattern of site abandonment and reoccupation, well-documented for Late Woodland sites in the region, but also seen in a late Middle Woodland context at the site.

Ridge and Valley

The Middle Woodland Ridge and Valley settlement system is believed to fall within the continuum of post-1800 BC riverine-focused occupations that saw less intensive use of upland zones and a reduction in wholesale seasonal movement (Gardner 1982). Detailed descriptions are elusive due to an extremely limited database (McLearen 1990; Gardner 1993, 2000).

According to Gardner, the settlement pattern of Middle Woodland I in the northern Ridge and Valley is a continuation of the late Early Woodland pattern of micro-social basecamps associated with plant-rich, inner floodplain backwater swamps (1982:73, 77; c.f. Gardner 1986 for a description of these sites as "hamlets"). This model includes both upland foray camps and outer floodplain procurement camps as support for the sedentary basecamps. The small number of identified sites dating to this sub-period is taken to reflect a population reduction in the floodplain, although spring-associated encampments identified by the presence of Potts points are numerous in inter-riverine zones.

The central feature of the Middle Woodland I settlement pattern in the northern Ridge and Valley is the stone burial mound cluster (Gardner 1982), which will be discussed in detail in a following section. Situated on bluffs overlooking floodplains, these mounds are interpreted as signaling ranked social organization and possibly "nascent chiefdoms," with clusters functioning as sociopolitical and population centers (Gardner 1986:72-73). ' Big Men' oversaw long-distance trade (evidenced in the limited number of non-local items recovered from the mounds), surplus accumulation, and redistribution. Mound cluster size may have mirrored the social rank of a particular family or lineage: major clusters include 13-18 mounds; medium clusters, 4-5 mounds; and minor clusters, 2-4 mounds. A later analysis of mound settings by Gardner (1993) associated their locations with Pleistocene terraces bearing the large cobbles necessary for mound construction. An "impressive viewshed" (Gardner 1998) also factored into mound site selection, with most mounds overlooking broad stream valleys.

Gardner's analysis (1993) of the spatial distribution of 16 mound clusters of the "South Fork Group" in Page and Warren Counties has implications for the study of territorial boundaries within this ranked system. Distributed over a distance of 25 air miles, the mound sites are separated by an average distance of two miles. The largest mounds are located at either end of the distribution. The South Fork Group is, in turn, separated by nine air miles from the "Thunderbird Ranch Group" of 16 mounds. The "polar opposition" of the larger mounds of the South Fork Group may have marked a territorial boundary. Similarly, the nine-mile hiatus between that group and the Thunderbird Ranch group may have marked a buffer between territories. This promising avenue of research should be considered by future researchers, who are faced with the task of assessing historical accounts of these mounds, reanalyzing artifact collections from early excavations (Fowke 1894), and confirming actual site locations.

Evidence of social ranking abruptly disappeared during Middle Woodland II with the abandonment of burial mound mortuary practices and the attenuation of long-distance trade networks (Gardner 1982:66). A population reduction and possible depopulation of resident groups has been proposed to explain this social disintegration, although causes are uncertain (Gardner 2000). As will be discussed below, a reconsideration of mortuary ceremonialism in the Ridge and Valley demonstrates continuity between Middle and Late Woodland burial mound traditions, calling into question the proposed disruption between these practices. In addition, the same chronological difficulties plaguing Albemarle ceramics from the Piedmont sites also present difficulties for Ridge and Valley researchers. An intensive re-evaluation of sites with these assemblages may result in the identification of Middle Woodland II components.

In an attempt to correlate Middle Woodland site types with specific physiographic variables, Neumann (1992) identified four Middle Woodland site types in the Upper Potomac South Branch Valley: small, upland sites; Middle and Late Woodland component sites adjacent to small streams; small, northwest-facing bottomland sites occupied only by Early and Middle Woodland groups; and large bottomland sites adjacent to the South Branch and occupied during multiple periods, particularly the Middle and Late Woodland (1992:102-103). Derived from cluster analysis, the four site types suggest a change in site location between the early and late Middle Woodland, the former associated with burial mounds and oriented to T2 terraces, and the latter to T1 terraces.

A test of Neumann's model comes from recent excavations at the Mouth of Seneca Site (46PD1). Located in the Upper Potomac drainage in Pendleton

County, West Virginia, this site is situated on a second terrace above the confluence of Seneca Creek and the North Fork of the South Branch of the Potomac River. Fowke (1894:70) recorded a stone burial mound in the general vicinity, although its precise location is now unknown. Data recovery in the mid-1990s revealed two Late Woodland Page Series villages and adjacent, but spatially discrete, Middle Woodland I and II components (CCRG, 1998). Over 100 features are documented for the two Middle Woodland loci, approximately half of which are positively associated with the Middle Woodland through diagnostic artifacts and/or radiometric dates. Feature types include large, shallow hearth/trash pits and deep roasting/trash pits. The hearth and roasting features contained small stemmed and notched points in association with vertically cord marked, crushed rock tempered ceramics identified as the provisional South Branch type (CCRG 1998:268).

The site provides the best evidence yet of Middle Woodland subsistence activities in the northern Ridge and Valley. The poorly preserved faunal assemblage from the Middle Woodland loci was identified only as belonging to the class *Mammalia*, with the exception of two while-tailed deer metatarsal fragments from a basin-shaped pit (CCRG 1998:370). However, 71% of Middle Woodland features contained nutshell (hickory and black walnut), and the high number of fragments recovered from two shallow basin features suggests nut processing (CCRG 1998:357). Fruit seeds (hackberry, huckleberry, mulberry, blackberry, blueberry, choke cherry, and grape) were recovered in association with the nutshell remains. *Polygonum* spp. seeds (identified as water pepper and water smartweed) were found in great quantity in a clay-lined roasting pit and may have been intentionally exploited as a grain (CCRG 1998:361). Of particular interest are the 4% of Middle Woodland features containing squash rinds (*Curcubita pepo*), providing evidence of limited horticultural activities. The botanical remains suggest late summer-early fall occupations by Middle Woodland hunter-gatherers moving between altitudinal zones (CCRG 1998:362).

The Middle Woodland components at the Mouth of Seneca Site are interpreted as neither basecamps nor hamlets due to the infrequency of ceramics, the wide distribution and lack of patterning of features, and the lack of storage pits, house patterns, or other features typical of a sedentary lifestyle (CCRG 1998:395). Identified as small, overlapping camps of very brief duration, the components are described as being "on the fringe" of larger Middle Woodland settlements — sporadically occupied by groups moving from core area to core area. Alternately, the components could have functioned as auxiliary sites for an as-yet undiscovered mound-centered hamlet, suggesting that the site was part of a regularly exploited territory (CCRG1998:396).

A glimpse of the Middle Woodland settlement system of the southern Ridge and Valley comes from the 656 Elk Garden Site (44RU61), located on the floodplain of Elk Garden Creek, a tributary to the Clinch River (McLearen 1990). Features associated with a Middle Woodland occupation yielded radiocarbon dates ranging from BC 40-BC 830, and combined with diagnostic lithic and ceramic artifacts, suggest repeated occupations throughout this period (McLearen 1990:39). Numerous post molds were discovered during the excavation; one pattern, associated with a late Middle Woodland assay, formed a substantial structure with a central hearth. While the structure might elicit the notion of more permanent residence, the lack of a wide variety of artifact types and the overall paucity of ceramics suggests a seasonally occupied micro-band basecamp (McLearen 1990:152). As in the northern Ridge and Valley, given the lack of comparative data, the function of such a site within a regional context remains to be understood. If part of a fusion-fission cycle, 44RU61 may represent a foray camp for provisioning a macro-band basecamp (as yet unidentified); if interpreted according to the logistical model, 44RU61 may represent seasonal movement within a restricted territory.

Sites from extreme southwestern Virginia appear to hold the greatest potential for the study of Middle Woodland horticulture, perhaps because of the region's proximity to known centers of domestication in the Little Tennessee Valley (Crites 1991). Macrobotanical evidence of domesticated starchy grain (chenopod and erect knotweed) and oily seeds (sunflower and marsh elder) were recovered from storage and roasting pits at 44LE121, located in the Indian Creek drainage of Lee County. Dating from 260 BC-170 BC, (Reid 1997:49), the co-occurrence of these cultivars with harvested wild species (black walnut, hickory, acorns, persimmon, grape, and sumac) suggests a wide range of subsistence activities. Curcubit rind fragments were also recovered from a pit feature at this small basecamp, believed to

have been occupied for significant periods of time (Reid 1997: :127-131).

In the northern Cumberland Plateau region of eastern Kentucky, a study by Delcourt et al (1998) demonstrates small-scale environmental change at the hands of Late Archaic through Fort Ancient cultures, and is of great relevance for archaeological studies in the Virginia region of this physiographic province. Based on palynological and sedimentological analyses of deposits from Cliff Palace Pond Rockshelter, sections of mixed oak-chestnut and pine forests of the region were cleared by 3000 BP for the cultivation of native plants of the Eastern Agricultural Complex. According to the authors, anthropogenic fires increased populations of fire-adapted and fire-tolerant oaks, chestnut, walnut, and pitch pines in upland forests, allowing for the cultivation of *Curcubita*, sunflower, sumpweed, goosefoot, maygrass, knotweed, and amaranth in small garden plots on hill slopes and ridge tops near rockshelters (Delcourt et al 1998:275). Continuing for 2,800 years, the human manipulation of the upland forest encouraged multiple subsistence strategies, including mast gathering and plant cultivation in small plots. Given the preservation potential of dry rockshelter environments, future excavations of these sites in southwestern Virginia should include in their research designs techniques that allow for the recovery of evidence of cultivation and fire management. In addition, well-provenienced, curated soil samples from previously excavate rockshelters may contain important evidence of landscape alteration and plant cultivation in Woodland cultural contexts.

Additional recovery techniques have been introduced to gather evidence of Woodland horticultural practices. The interiors of several ceramic sherds recovered in association with cultivars from a roasting pit feature at 44LE121 were analyzed for pollen and residue (Reid 1997:133). When compared to the soil matrix, the sherds were found to exhibit higher concentrations of starch granules associated with grass seeds, "suggesting that the vessel may have contained ground meal made of grass seeds" (Reid 1997:136).

Macrobotanical evidence of maize has been recovered from a transitional Middle Woodland/Late Woodland archaeological context at 44LE165, located in the Powell Valley of Lee County (Pullins 1999). While the majority of artifacts associated with this component were recovered from plowzone, a large pit feature contained three maize cupule fragments and two complete kernels along with hickory and walnut shell fragments (Pullins 1999:67). Radiocarbon dates of BC 645-880 (cal. 2-sigma) and BC 780-1000 (cal. 2-sigma) place the maize and co-occurring Radford ceramics at the late Middle Woodland/early Late Woodland transition. While rare, sites such as 44LE165 provide critical evidence of the timing of the introduction of maize, suggesting late Middle Woodland experimentation with this domesticate. The Middle Woodland component suggests "a certain degree of permanence related to small-scale horticulture," leading to its identification as a "hamlet" (Pullins 1999:75).

The Social Context of Technology: Introduction and Adoption of the Bow and Arrow

The adoption of a new technology has ramifications for every cultural dimension. Given the critical role of hunting in Indigenous societies for subsistence, identity, and social interaction, the appearance of a new hunting package—in this instance, the bow and arrow—should reverberate across multiple cultural dimensions that can be studied in the archaeological record. One of the hallmarks of the Middle-Late Woodland transition is the adoption of this technology. However, the mechanisms by which it was introduced and adopted by Virginia's Native peoples are not well understood. The full integration of the bow and arrow into the Native toolkit required at least a half-millennium in Virginia, if not longer. The innovation appeared abruptly, possibly during the first century A.D. By the middle of the fourth century, the bow and arrow had achieved more widespread distribution; by the ninth century, it apparently had gained statewide dominance, although regional rates of adoption are in need of clarification. The standardized triangular point form that blanketed much of Eastern North America by the end of the Middle Woodland period may be taken as evidence of diffusion, but its original sources and routes by which the form was transmitted are probably myriad. The challenges of disentangling these different points of origin and rates of adoption in Virginia will require the efforts of future researchers.

Archaeologists in the Southeast (Nassaney and Pyle 1999) and Ohio Valley (Seeman 1992; Shott 1993) have applied discriminant function analyses of projectile point attributes to the question of the adoption of the bow and arrow. The debate has turned on the timing, rate, and direction of this adoption through studies

of morphological changes in projectile point forms associated with Middle and Late Woodland contexts. This discussion has implications for our understanding of culture history, inter-regional interaction and labor and social organization.

Based on current reconstructions, Eastern Native cultures shifted from notched or stemmed hafted bifaces (darts associated with atlatls) to triangular bifaces (arrow points) between 1500 and 1200 B.P. (Shott 1993:425), although triangular forms comparable in size and shape (but not basal treatment) to Middle and Late Woodland types are documented as early as the Middle and Late Archaic for southern New England and the northeastern Middle Atlantic (Stewart 1998a; Luckenback et al 2010). In North Carolina, the shift to triangular forms began during the Early Woodland (Badin Phase of the Piedmont; Swannanoa Phase of the Appalachian Summit) (Ward and Davis 1999:80, 143). For much of Virginia, the projectile point typologies of Early Woodland to Middle Woodland I mirror an observation for the Mid-Ohio Valley: "the smooth evolution of one modal projectile point type into another" so that stylistic changes represent "an evolving regional cultural tradition, as particular attribute clusters drift to new configurations over time" (Seeman 1992: 42). This *in situ* development was interrupted by the introduction of "thin, broad, and lightweight projectile point styles"(1992:42) such as the Levanna, Yadkin, and Jacks Reef types.

In both the Ohio Valley and Central Arkansas, arrow points are recognized by statistically significant reductions in mean projectile point thickness, length, neck width, and weight (Seeman 1992; Shott 1993:432; Nassaney and Pyle 1999: 253). In all analyses, several notched and stemmed types fall into the "arrow point" category (Shott 1993:435). Of particular interest for Virginia archaeologists is the Jacks Reef Corner-Notched type that appeared in the Northeast during the Kipp Island Phase (Ritchie 1994:228). Believed by some researchers (Wright 1994) to be a fully developed arrow point and by others (Seeman 1992) as possibly representing a transitional form during the introductory period of the bow and arrow, the three radiocarbon dates on deposits directly associated with Jacks Reef points, Daugherty's Cave, 44RU14, (Gardner 1992) vary from late Middle Woodland (1050+/- 60 BP, cal 2-sigma) to terminal Late Woodland. Three entries for limestone-tempered cord- and fabric-marked ceramics from 44LD15 (Catoctin Creek Site) describe a Jacks Reef Pentagonal point ten centimeters above transitional Middle Woodland I/ Middle Woodland II assays (A.D. 110+/-90; A.D 170+/-80; A.D. 350+/-100) (Rust 1986).

According to Nassaney and Pyle (1999:250-252), the archaeological signatures of dart point manufacture are recognizably different from those of arrow point manufacture; the former requires a core tool (staged biface) reduction sequence, while production of the latter implies use of a flake tool reduction sequence, bipolar manufacture, and marginal pressure flaking. Odell (1998:555) and Andrefsky (1999:213) hypothesize that a decline in bifacial reduction and an increase in expedient tools mark decreased residential mobility. The association of formal tools with mobile peoples has been hypothesized as a means of risk reduction. Multifunctional, modifiable, and easily portable, bifaces and prepared cores allow their users greater flexibility by guaranteeing preparedness (Andrefsky 1999:214). On the other hand, tools manufactured through a flake tool reduction sequence are expedient and disposable, reflecting the needs of the moment (1999:214).

Bipolar techniques and flake tool assemblages associated with Middle and Late Woodland components are well documented for the Virginia Coastal Plain (Geier 1990; Dent 1995; Hodges 1998; Blanton et al 1999), although such assemblages more often are attributed to the efficient use of locally available raw material (small cobbles and pebbles) than to arrow point manufacture or sedentism per se (Neumann and Polglase 1992:49). Analyses of other Middle and Late Woodland triangular biface assemblages in the Middle Atlantic demonstrate bifacial reduction as the preferred method of manufacture. At several Trenton Complex sites, bifacially reduced triangular forms were made on split cobbles of locally available cryptocrystallines (Wall, Stewart, Cavallo 1996:27-29). In another example, a study of 584 triangular preforms from the Fout Site (44FK3) in the Virginia Ridge and Valley demonstrated a bifacial reduction sequence at this basecamp/hamlet adjacent to thick lenses of Licking Creek Formation chert (Nash 1994:26). At both the Trenton Complex sites and the Fout Site, impurities in the raw material and mistakes in biface thinning resulted in rejected late-stage bifaces with characteristic 'humps' (Wall, Stewart, Cavallo 1996:130).

The Virginia Radiocarbon Database (VDHR 2010)

includes nine entries for Middle Woodland triangular forms: Yadkin/Levanna (N=3); Yadkin (N=1); Large Triangular Points (N=1); Small and Medium Triangular Points (N=1); and Triangular Points (N=3). Although the sample size is small, five of the calibrated dates (one-sigma) overlap the span between A.D. 381 and A.D. 414, and a sixth registered at A.D. 427. Early examples of Yadkin/Levanna points from the Skiffes Creek Site in Newport News (Geier 1983), are associated with Middle Woodland I radiocarbon dates of A.D. 228-390 and A.D. 242-406. Geier believed these dates to be several centuries too early due to the co-occurrence of the projectile points with the Mockley Series ceramics; however, more recent Coastal Plain excavations (Edwards et al 1989; Barse 2002) support Middle Woodland I Mockley associations. Two dates for triangular forms cluster near the Middle/Late Woodland transition, overlapping at A.D. 609.- A.D. 634 (cal., one-sigma). These mark the beginning of the long continuum of triangular forms gradually declining in size through the Late Woodland (VDHR 2010). The geographic distribution of these sites, which include locations in the Appalachian Plateau, Inner Coastal Plain, and Outer Coastal Plain, indicates the rapid introduction of bow and arrow technology, possibly from different sources.

The co-occurrence of stemmed/notched projectile point forms and triangular forms in five of the nine Middle Woodland triangular entries provides evidence of the continued reliance on the atlatl during this introductory period (Figure 8.3). A total of fifteen Middle Woodland entries in the radiocarbon database are associated with point types identified as darts: Piscataway/Rossville, Vernon, Fox Creek, Potts, Nomini, Teardrop, and Merom-like. Based on flake tool reduction manufacture, some analysts classify as arrowpoints small stemmed forms like Merom, (Nassaney and Pyle 1999:256).

Researchers have long discussed the improved efficiency of the bow and arrow for accuracy, range, and stealth, although some have noted the lack of empirical evidence to substantiate such claims (Shott 1993:436-437). In Virginia, Middle Woodland II may represent "the period of progressive refinement after initial innovation" (Seeman 1992:42), a time during which Native cultures employed both atlatl and bow and arrow delivery systems. Ethnographic evidence demonstrates that the adoption of the bow and arrow does not preclude the continued use of the atlatl; each may have had its proper use and

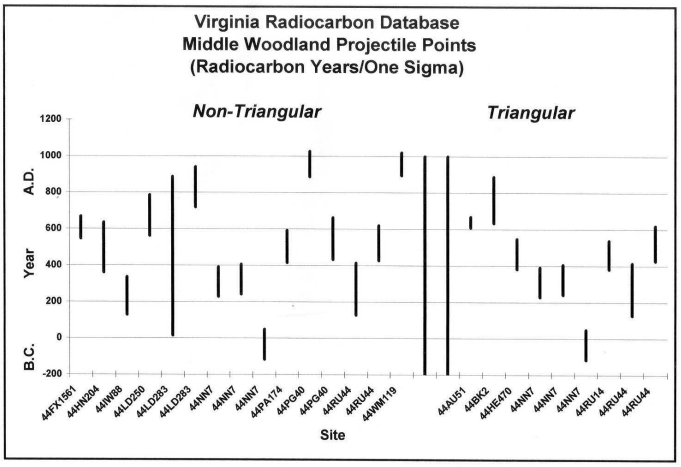

Figure 8.3. Virginia Radiocarbon Database Middle Woodland Projectile Points (Radiocarbon Years/ One Sigma)

accompanying social context (Smith 1999:386). "The main advantage retained by the atlatl is a higher impact force which may have been beneficial in hunting large game" (Nassaney and Pyle 1999:259) or in cooperative hunting activities. Ethnographically, the bow and arrow is the favored delivery system for the majority of kills, most of which are considerably smaller than spear kills (Shott 1993:437). Dent (1995:268) hypothesizes the adoption of the bow and arrow as having profound social and economic implications for Native cultures, in that the system possibly individualized the hunting process, rendered it less gender-specific, and increased hunting returns for the group.

Comparisons of faunal assemblages from pre-triangular point associations and triangular point associations are needed to determine whether the adoption of the bow and arrow contributed to prey selection. In an analysis of the faunal assemblage from the Spessard Site (44FV134), Barber (1991:75) wrote, "When viewing the vertebrate assemblages of the Late Woodland and Middle Woodland sites along the James River, the most striking contrast is that of the more varied species utilization during Middle Woodland times with a drop-off in species numbers in Late Woodland times" (1991:75). While he suggests that the decline in species variety may be attributed to a greater reliance on horticulture as a subsistence base, future researchers should also consider the possibility that individualized hunting with the bow and arrow limited species choice or focused it on high-return mammals like white tailed deer.

Another research topic concerns the actual production

of bows, which required not only a wider range of raw materials than the atlatl but also a higher skill level, possibly encouraging labor specialization that should be visible in the archaeological record (Seeman 1992:42). A more difficult issue to consider is the relationship between the bow and arrow and intergroup warfare, particularly the role conflict may have played in the adoption of the new technology (Nassaney and Pyle1999:259). The period of bow and arrow proliferation in Virginia, post-1650 B.P., coincided with the Vandal Minimum, a decline in global temperature that some have associated with the collapse of focused, long-distance exchange systems and interaction spheres, as well as a corresponding reduction in organizational complexity (Anderson 2001:165). Researchers need to consider whether this climatic shift may have factored into or even precipitated hostilities that solidified Middle Woodland II tribal boundaries and encouraged the regular use of the bow and arrow to ensure their protection.

Big Man, Big Woman: Gender Studies in Middle Woodland Archaeology, with a Focus on Virginia

The archaeological literature of the past twenty-five years saw a great increase and plateau in the number of articles, edited volumes, and books focusing on gender as an organizing concept for research. Gender—the cultural values (roles, identities, ideologies) inscribed on sex categories (Hays-Gilpin and Whitley 1998)—is a doorway though which questions about the social relations of power and individual and collective identity can be investigated (Morgen 1989). The archaeological interest in gender is largely attributed to the infusion of feminist perspectives into the discipline and often associated with concerns about the (in)visibility of women in the archaeological record. By questioning modern assumptions and biases about the roles held by women AND men in prehistoric societies, gender-based research has the potential to clarify all aspects of past cultural systems (Conkey and Spector 1998).

This section of this chapter provides an overview of research undertaken by regional archaeologists on the expression of gender in the prehistoric/contact period archaeological record. Gender associated studies have appeared in Virginia archaeology, the majority of contributions for the prehistoric period coming out of Middle and Late Woodland research, and focusing on the sexual division of labor, social organization, subsistence practices, and technology.

Johnson and Speedy (1992) employed gender to explain a pattern observed in material culture of the lower James River region: the preferred final twist direction of cordage impressions preserved in ceramic sherds. Accepting the provision that cordage twist direction is a stable attribute in textile technologies (Hurley 1979), the authors interpreted Middle Woodland ceramic wares with a strong preference for a final S twist as an indication of population continuity, whereas the Late Woodland preference for a final Z twist is taken to signal a population replacement. Taking this further, the authors note the possible inference of a sexual division of labor and its implication for post-marital residence patterns in this stable Middle Woodland population. Relying on an ethnographic model of net manufacture as a male activity in hunting and gathering societies, the authors argued that male cordage-making traditions need not be the same as that of women, who traditionally manufacture cordage for other purposes. In the study sample, net-impressed wares (both Middle and Late Woodland) displayed a predominance of Z twists, while the contemporary cord-impressed varieties exhibited a predominance of S twists. Johnson and Speedy suggest the Z twist for nets and "S" twist for cord indicate the (male) net makers in these Middle Woodland groups exhibited cordage-making traditions generally at variance with the (female) cordage manufacturing traditions (1992:100). This pattern points to the residential stability of females in this culture, into which males married from a pool of bands whose cordage-making technology for hunting equipment reflects traditions different from that of their female partners. The implication is that Middle Woodland society, at least in the James River Inner Coastal Plain, was matrilocal and by extension, matrilineal.

The consideration of gender is most welcome in this archaeological study, as it allows the examination of issues traditionally considered problematic for the archaeological record. However, the assertion of a strict sexual division of labor with regard to net manufacture merits review. Textile specialists (Barber 1994; Soffer et al 2000) question the exclusive ethnographic association of males with net manufacture. For the Powhatan, Rountree (1998:15) lists net manufacture as one of the tasks included in women's daily schedules (as time permitted). Analogues for Eastern North America include nets as a

regular component of the female meat-acquisition tool kit (Brumbach and Jarvenpa 1997:20). Researchers who associate gender and artifactual signatures should be mindful of the danger of reinforcing gender stererotypes (Conkey and Spector 1998; Waguespack 2005); however, as seen in the previous example, multiple lines of evidence (archaeological, ethnographic, ethnohistorical) can be used to create a more complex and nuanced understanding of gendered activities.

A later study of cordage twist on Middle Woodland ceramics from the Chickahominy and James Rivers (Hayden 2009) that was more focused on interaction networks and traditions of practice found that, in these regions of the Inner Coastal Plain, twist direction does not correspond to specific sites. For example, of the six sites in the study—each of which exhibited the Middle Woodland sand/crushed rock/shell tempering traditions — none demonstrated an exact correspondence between twist and temper through time. "These data show that people inhabiting one site did not necessarily all employ the same twist direction and were not necessarily part of the same learning networks (2009:103). The most interesting finding lies with the numbers: 50% of sand and crushed rock-tempered sherds (Varina, Prince George, and Popes Creek wares) in the study exhibited the Z twist, while 50% exhibited S twist, which that indicates variable learning networks. On the other hand, almost 100% of the shell-tempered sherds (Mockley wares) exhibited the S twist, which not only signals a different learning network, but "a homogenization of ceramic technology and cordage production methods" (2009:103). In opposition to the hypothesis of a sudden Algonquian migration (represented by Mockley ceramics, Hayden found that the co-occurrence of the clastic-tempered ceramics and the Mockley ceramics may indicate co-existence of people of varying traditions, especially in the interior, away from the rivers. Gender does not explicitly figure in Hayden's analysis, but her work provides an approach for investigating communities of practice and production that have a gendered dimension.

Beyond ceramics, the association of artifacts with sexed osteological remains, often assumed to be the strongest evidence for a gendered division of labor and clearly-defined gender identity, can prove challenging. For the Middle Woodland Island Field Site in Central Delaware, the association of three female burials with complete flintknapping kits (Custer et al 1990) has opened to door to multiple interpretations: the females as 'twin spirits' engaged in tasks traditionally associated with males; the females as skilled flintknappers; the females as representatives of a regional cultural tradition associating such goods with women and children; and, simply, unusual burial associations (Claassen 1997:67, 86). Regardless of the problems inherent in Johnson and Speedy's characterization of Middle Woodland society as matrilocal/matrilineal, or the multiple hypotheses for the association of flintknapping kits with females, the acknowledgement of the study of gender through the archaeological record provides Virginia archaeologists a point of departure for analyzing assumptions about gender and social organization embedded in the received view. For example, implicit in the segmentary lineage classification of Middle Woodland society (Blanton 1992:88) is patrilocality and patrilineality. While Middle Woodland residence and kinship reckoning is poorly understood at this juncture, the limitations placed on our reconstructions of gender by a model developed to explain "predatory" of expansionistic groups under stress from population pressure (Sahlins 1961) can skew archaeological interpretations. Segmentary lineage is recognized by ethnographers as a relatively rare form of political organization in which segments (clan-like) are united through male cognates or age-sets (Ellen 1982:58-59), in situations where movement is essential (1982:281). Whether this lens is appropriate for viewing Middle Woodland society in Virginia requires discussion.

Similarly, the application of the "Big Man" model of political organization with regard to the Shenandoah Valley stone burial mound complex (Gardner 1982:81) holds implications for the study of gender and status in Middle Woodland society. In this model, burial with local manifestations of exotic grave goods (Adena and/or Hopewell influence), as well as the association of certain hamlets with mound clusters, are taken as evidence of Middle Woodland I ranked lineages led by males. "Big Men" similar to those recorded by ethnographers for Melanesia (Sahlins 1972:248), are seen as emerging as leaders who organized labor, public feasting, and exchange. Among the Trobriand Islanders, the most commonly referenced analogue, "Big Men," are associated with matrilineages (Weiner 1988:35) in which women's wealth is expressed in the village-based mortuary-related distribution of goods that would fall

under the classification of "perishables." Interestingly, this distribution is overseen by "Big Women" (1988:129) who acquire leadership positions on a situational basis. Male-controlled wealth, particularly that associated with the extra-village Kula trading partnerships, is more durable, expressed in stone and shell (1988: 9), and depending on the island, equally situational.

Gender-based authority in matrilineages falls along a continuum: in some, women have little autonomy and status; in others, decision-making is shared between males and females; still, in others, women have great autonomy and social standing (Mascia-Lee and Black 2000:55). The question of gender-based power and its expression as "Big Men" or "Big Women" (or both) in the stone burial mound-associated Middle Woodland society of the northern Ridge and Valley and in other Middle Woodland contexts deserves the attention of future researchers.

The human remains recovered from stone mounds are usually so fragmentary as to make sexing difficult or tenuous, at best. Strong muscle attachments on a humerus from a cremation burial in the Kimsey Run Mound of the Upper Potomac Valley were taken as evidence of a male, but the individual was described as "gracile" (Gardner 1993). The cremated remains of another "gracile individual" (Crowell 1999) from the late Middle Woodland Ramp 3 Site in Washington, D.C. are interpreted as a female, aged 30-40 (Potter 2002). The association of her remains with a suite of exotic grave goods reflecting the influence of the Kipp Island Phase may mark this person as a "head of lineage engaged in focused exchange of prestige goods" (2002). The Ramp 3 burial may be a woman whose family controlled the spring fish run harvest and who was, in turn, recognized in death as a person of great influence (2002).

Ethnographic models suggest that female status in hunting and gathering and horticultural societies lies not in their subsistence contributions, but rather, in control over the conditions of their labor and the distribution of the products of that labor within the context of kinship organization (Mascia-Lees and Black 2000:58). In this light, studies of Eastern Woodlands horticulture offer a new analysis of gender, subsistence, and social organization—a discussion having implications for future Middle Woodland studies in Virginia. Based primarily on ethnographic analogy and ethnohistorical evidence, Watson and Kennedy (1991) postulate that Eastern Woodland Native women were active gatherers, harvesters, and domesticators of plants. Writing in opposition to Smith's scenario of a slow, gradual transition from gathering to horticulture in which "the plants virtually domesticate themselves" (1991:262), Watson and Kennedy argue that women made horticulture their "business" (1991:269), commencing with *Curcubita pepo* in the Middle Archaic, and continuing with seed plants in the Late Archaic and the Northern Flint variety of maize during the Middle and Late Woodland. Recognizing women as agents of change in control of major subsistence decisions, Watson and Kennedy expose an androcentric bias through which prehistoric Native women are presented as 'naturally' passive and, therefore, incapable of innovation. Smith later acknowledged women's roles in plant domestication in his revised "Floodplain Weed Theory" (1993).

The implication of Watson and Kennedy's engendered interpretation of horticulture in the Eastern Woodlands is clear: women, as possessors of specialized botanical knowledge underpinning the economy, and (presumably) in control of that knowledge and the products it created, achieved standing beyond that normally attributed them in models of "Big Man" social organization. In the southern Middle Atlantic, evidence of the generation and storage of surplus is seen in the increase of pit features during the Middle Woodland, both in terms of overall number and size (Gallivan 1999:190; Barse 2002).

That these pits are often interpreted as the reflection of activities ethnographically associated with women (shell fishing, nut and seed crop harvesting, root gathering and processing) raises interesting questions about the gender-based control of Middle Woodland economies. In a study of Middle and Late Woodland shell middens in the lower Potomac Valley, Klein (1999) proposes that artifacts deposited in such features, and even the shells themselves, may be used to develop hypotheses about labor organization and male/female roles in hunter-gatherer societies. Drawing from ethnographic studies that demonstrate a sexual division of labor in shellfishing activities, Klein suggests that the archaeological record of shellfishing sites most often reflect the labor of female task groups in charge of digging roasting pits and gathering shellfish from estuarine locations (1999:143). In opposition, male shellfishing concentrated on strenuous methods requiring greater physical prowess —

ritual displays or diving for deep channel shellfish. Historic-period northeastern Algonquian males turned to shallow water shellfish collecting when the hunt proved unsuccessful (1999:143).

Klein urges archaeologists excavating shell middens to consider the variation in midden composition, often masked by the surface similarity of the features. If the middens contain debris from long-term occupations, a variety of objects and features generated by both male and female can be expected (1999: :145-146). When bivalves from deep channel beds comprise the midden, one can hypothesize that male-associated deep diving was involved. Repeated occupation at the site for distinctly different purposes over the course of the year would result in midden formation shared by males and females. Midden formation at hunting and fishing camps, with shellfishing ancillary, could be attributed to both males and females. Otherwise, most middens may be assumed to reflect mollusk collection by women and the artifact assemblages the product of female artisans, a point emphasized by Claassen in her studies of the Shell Mound Archaic of the Mid-South (1991). While fairly exhaustive reviews of the historic and ethnographic literature confirm a pronounced sexual division of labor with regard to shellfishing in Eastern North America, future researchers should remember that "the exact division of labor derives from particular historical circumstances rather than constant biological or social causes" (Endicott 1999:416).

At the Lower Potomac Valley shell midden sites identified as potentially gender-specific, Klein observed a distinctive pattern in the lithic assemblages: the near absence of extensively worked stone tools of any type and the presence of expedient tools based in a core and flake technology and local raw materials (1999:147). This generalized tool tradition may reflect the need for efficient, locally-produced tools in the face of the multiple demands placed on Native women, including reproductive responsibilities, manufacture of household items, plant and firewood gathering, cultivation, cooking (Rountree 1998). Blume (1991) documented a similar pattern of flake tool manufacture for a Woodland-period upland nut processing camp interpreted as the locus of female activity in the Delaware Piedmont.

The methodological challenges posed to archaeologists committed to explicit investigations of gender lie in developing testable hypotheses, recognizing the signature of gender in the archaeological record (Galloway 1997:54), and selecting appropriate ethnographic and ethnohistoric analogues to assist interpretation (Rountree 1998:1). Based on the research outlined above, the Virginia Middle Woodland holds great potential for gender studies that can, in turn, more clearly focus our attention on a "peopled" archaeology (Joyce and Claassen 1997:5).

Mortuary Ceremonialism, Exchange, and External Influences

It is fitting to end this chapter by addressing some of the questions raised at the outset concerning the tension between cultural traditions that develop in place, emerging out of the Early Woodland shift toward restricted mobility, and cultural traditions that appear to be part of larger networks originating outside the region. One such question concerns Middle Woodland mortuary ceremonialism and its inferred social complexity, which have received a great deal of attention from Virginia archaeologists, figuring into the very definition of the Middle Woodland period for some portions of the state (Gardner 1982:65). Highly visible in the history of Virginia archaeology, mortuary complexes once attributed to Ohio Valley traditions have undergone an interpretive shift in recent decades. The bluff-top stone and earthen burial mounds of the northern Ridge and Valley are now described as localized traditions that do not "fit comfortably into either Adena or Hopewellian categories" (Gardner and Anderson 1991:1). Similarly, the late Early Woodland/Middle Woodland I Delmarva Adena phenomenon of mortuary-exchange centers provided "the sanctification of exchange relationships" (Custer 1989:272) growing out of ephemeral, ranked social systems developing *in situ*. The discovery of Delmarva Adena ritual mortuary pits at the Pig Point Complex (Luckenback 2013) in Anne Arundel County, Maryland has re-energized this discussion. The Middle Woodland trade in extra-regional exotics is described as lacking structure (Stewart 1989:63), with no constant flow of goods from the Ohio Valley or Northeast (Custer 1989:272). In the Middle Atlantic, Hopewell and Adena influences are now viewed as diffused, ideological overlays for an evolving, indigenous social complexity with roots in the earlier exchange systems of the Archaic (Custer 1989:140) and/or the focused exchange systems of the Early Woodland (Stewart 1989:58). Thus, instead of viewing the Virginia archaeological record as

exhibiting "a provincialism supplemented by Hopewell ideas" (George 1992:29), recent investigations are more focused on testable questions of the territoriality implied by mound clusters (Gardner 1993; Dunham 1994) and the implications of the short-lived expression of societal ranking.

However, the contextualization of Middle Woodland Ohio Valley ideology has not silenced questions about external cultural influences in Virginia. Recent finds and re-analyses of past work have intensified the discussion of population migrations, exchange systems, and Middle Woodland peoples as precursors to Late Woodland and historically documented Native cultures. Virginia archaeologists are now concerned with the continuity between Middle and Late Woodland mortuary traditions. Hypotheses of Middle Woodland Algonquian migrations, previously drawn from glottochronological analyses, are challenged by an analysis of mortuary practice that points to a possible Iroquoian migration or cultural association. These separate but related issues of mortuary practice, migration, external influences, and exchange among the most interesting in Virginia Middle Woodland studies today.

The Continuity of Middle and Late Woodland Mound Building

Based on radiocarbon dates, Gardner (1993) argued that the bluff-top earthen and stone burial mound phenomenon was restricted to a 600-year time span, from 2450 BP to 1850 BP). Separated by almost 800 years from the more egalitarian Late Woodland accretional mound tradition, also known as the Lewis Creek Mound Culture (MacCord 1986), the end of Middle Woodland mound building was thought to signal a movement away from social ranking and the attenuation of pan-regional exchange networks.

A reanalysis of Fowke's 1894 mound investigations led Dunham (1994:591) to hypothesize that four of the documented accretional burial mounds in the James, Shenandoah and Rappahannock drainages (Cowpasture, Linville, Hayes Creek, and Rapidan) served an original function as "bounded cemeteries" for high ranking individuals. Primary, individual sub-mound interments reflected the pattern previously documented in Middle Woodland mortuary ceremonialism. The presence of Middle Woodland Point Peninsula-style artifacts in two sub-mound pits at Linville Mound, as well as a radiocarbon date of BC 660+/-110 from a sub-mound pit in the Rapidan Mound, contributed to these observations.

Excavations at the Gala Site (44BO48) in the upper James River basin underscore the need to further examine the hypothesized connection between Middle and Late Woodland mound construction. A dense cluster of at least 28 burials and cremations with associated large pit features are interpreted as the initial stages of mound construction. Bowden, Boyd, and Boyd (2002) note the similarity between these features and the submound components of the four accretional mounds reviewed by Dunham, hypothesizing Gala mortuary ceremonialism as transitional between that of Middle Woodland stone/earthen mounds and Late Woodland accretional mounds. Four calibrated radiocarbon dates (2-sigma) overlap between BC 9901030, placing these features at the early range of the accretional mound phenomenon.

Regardless of the structural similarity between the bluff-top stone and earthen burial mound interments and the sub-mound interments of Fowke's accretional mounds, the few radiometric dates for these sites point to a temporal separation of at least 500 years. This hiatus in mound building corresponds to the lack of recorded sites dating to Middle Woodland II, both taken as evidence of social disintegration and possible regional abandonment of the interior north of the James River (Gardner 2000). The small number of Middle Woodland II sites has been discussed earlier in this paper as a reflection of a confusion over diagnostic artifacts rather than an actual population decline or abandonment. However, the temporal gap in mound building and its re-emergence in a new context must become a focus of research, in light of the hypothesized transitional burial forms now recognized. Based on present data, it appears that restricted burial in stone and earthen mounds ceased for several centuries during Middle Woodland II, but re-emerged during the 7th century BC to form the basis of the later practice. The idea of a 'reservoir' of mound building and social ranking in western Virginia should be of great interest to archaeologists working in the region, as should the shift from restricted to communal burial in the same mound.

Using a landscape approach, Nash (2006) proposed that locational studies of Middle Woodland mounds could enhance our understanding of the emergence of settled communities ancestral to the Late Woodland populations of the region. A GIS-based viewshed

analysis of three mound clusters in the northern Shenandoah Valley—Indian Grave Ridge, Sandy Hook, and Thunderbird Ranch—demonstrated clear lines of site between individual mounds within clusters, as well as clear lines of site between the mounds and residential sites below. At Indian Grave Ridge, where three stone mounds are documented, the largest (44PA0106) is positioned on the bluff overlooking a fish weir in the South Fork of the Shenandoah River and an accompanying Middle Woodland I settlement (44PA0114). At Sandy Hook, a single mound (44SH100)—the largest Middle Woodland I mound documented for western Virginia at 33 feet in length—is visible fromseven floodplain sites below. At Thunderbird Ranch, 11 mounds have sight lines connecting them to each other, and all mounds are visible from three Middle Woodland I sites on the floodplain below. Together, these sites establish a cosmological-residential complex, centered on mortuary features and perhaps associated with fish runs and feasting rituals. Taken together, these support landscape-based Adena studies (Clay 1998), which have shifted ritual centers to the edges of corporate group territories—from being the central places of group territories to loci between different groups that served as 'hinges' between them. When the possibility of intergroup cooperation is considered, the ritual settlement becomes an increasingly complicated pattern of overlapping territories and interacting corporate groups. In this line of thinking, clusters of mounds may represent the temporal and spatial linkages of communities whose 'persistent places' are solidified as expressions of negotiations between transegalitarian groups (Hayden 1996).

Fire Ceremonies and Population Migrations

Located adjacent to the confluence of Rock Creek and the Potomac River near the Georgetown waterfront, a striking example of Middle Woodland mortuary practice comes from the Whitehurst Freeway cremation burial pit, discovered during a 1996 CRM assessment (Crowell 1998). Containing Pope's Creek and Mockley ceramics, charcoal from the burial pit returned radiocarbon dates of BC 640-790, placing the feature in the late Middle Woodland period. Human remains excavated from the base of the pit were found in association with exotic artifacts, including fragments of incised elk antler a comb. Other artifacts recovered include fossilized shark teeth, slate pendants, a wooden bead, a sandstone phallus, antler discs, chert triangular projectile points, and preserved fabric. The bones of a large raptor (possibly an eagle, hawk, or osprey), and the tailbone of a large bird, indicative of a feather fan, were also recovered. Osteological analysis of the fragmentary human remains points to a small, gracile individual, possibly in early middle age (Crowell 1999).

Crowell interprets the feature as the resting place of a high status individual. Analysis of the matrix points to the cremation occurring elsewhere; the remains were then gathered and placed in the burial pit along with grave offerings. A second ceremonial fire was extinguished with soil, and the burial layer capped with large stones. Archaeological parallels are seen in the Middle Woodland Point Peninsula Focus, Kipp Island Phase, defined by Ritchie (1994:234) and documented from Ontario to southeastern Virginia. In Crowell's estimation, the Point Peninsula burials displaying the greatest affinity to that at Whitehurst are associated with the Jacks Reef Site in northern New York State.

The antler comb from Whitehurst is nearly identical to one found in a cremated sub-mound burial at the Linville Mound (44RM281) in Rockingham County (Fowke 1894). Similar exotic artifacts have also been described from burials excavated at the Hand Site (44SN22) in Southampton County (Mudar, Jones, and Verano 1998:149). Identified as a Late Woodland/Protohistoric locus associated with the historic Nottoway-Meherrin (Smith 1984), the reanalysis of the Hand Site burials points to a longer-lived association. Nine graves evidenced what Smith called 'the fire ceremony': an extensive fire built over primary or secondary remains. Restricted to the eastern side of the cemetery, these burials included unique grave goods (fossil shark teeth, antler combs, bone discs, and bar gorgets). Recent radiocarbon assays on charcoal from Hand Site Burial 55, a child interred with two bone combs and 32 perforated fossil shark teeth, present a range of BC 690-970, overlapping the dates of the Whitehurst feature and indicating a late Middle Woodland association (Crowell 1999).

The presence of a similar suite of exotic items in cremation burials from the Whitehurst Freeway Site, the Hand Site, and Linville Mound raise questions concerning the expression of external influence in distinct cultural regions and the relationships between the groups who adopted the mortuary practice. What

did the Kipp Island Phase of the Point Peninsula culture represent to these geographically and (presumably) culturally distinct groups in the Coastal Plain and Ridge and Valley of Virginia? As Crowell (1999) wrote, "Do (the burials) represent the dissemination of ideas or a migration of people?" The recovery of a stone pendant manufactured from Shenandoah Valley silicified slate from the Whitehurst burial raises a corollary question: how did these distinct groups relate to each other and to those at other Point Peninsula 'nodes'?

Ritchie (1994:251) tentatively explained the "obscure connection" between Kipp Island the Linville Mound as the result of "diffusions into the Southeast in late Middle Woodland times of post-Hopewellian cultural developments in the Ohio area," paralleling similar developments in the Northeast. Snow (1994) argues that, although there are questions about the transition from Point Peninsula to Owasco, the Ontario Iroquois tradition grew "implicitly" out of Point Peninsula. Mudar, Jones, and Verano (147) concluded that the "fire ceremony" mortuary practices at the Hand Site are indicative of the Iroquoian pattern of interring high status individuals with other members of the burial community, a departure from the Algonquian practice of separating those individuals from the community in death.

Such speculations introduce greater complexity into the question of Middle Woodland migrations, challenging Fiedel's claim that "the Point Peninsula culture group is the archaeological manifestation of the Proto-Algonquian lingusitic community" (1990:215). His glottochronological reconstruction of a second wave of Algonquian migration from BC 200-700 is predicated on the separation of the Central and Eastern Algonquian language groups in the Great Lakes region, perhaps initiated by intrusive Iroquioians. This movement was marked by the spread of 'exotic' projectile point styles (Jacks Reef, Levanna) and mortuary complexes (Webb Complex, Kipp Island Phase, Parkline Phase).

Agreeing with Fiedel, Potter (2002) argues that "the prestige goods network exemplified by the suite of exotic Kipp Island Phase artifacts and attendant mortuary ritual is both the route marker and the horizon maker for the movement of Eastern Algonquian-speaking peoples from their Proto-Algonquian homeland in the vicinity of Lakes Ontario and Erie into the Chesapeake Bay watershed between BC 650 and 800." In this review, Potter identifies the Iroquoian occupation at the Hand Site as restricted to the historic era. The Late Woodland Colington Phase ceramics are associated with Algonquian-speakers, presumably the descendants of Algonquian-speaking, Point Peninsula-associated people.

The wisdom of identifying population migrations through mortuary practices has been questioned by Curry (1999:6-7), who details the "confusion and uncertainty" posed by an incomplete archaeological record and the limited documentation of mortuary sites in the southern Middle Atlantic. Boyd and Boyd (1992:264) make a similar observation in their review of statewide mortuary practices. The presence of Kipp Island-like burials in distinct physiographic cultural zones (Middle Woodland II of the northern Ridge and Valley and Inner Coastal Plain) calls into question the direct association of these practices with migrating groups, be they Algonquian or Iroquoian (or both). As an alternative, the Kipp Island phenomenon could also be interpreted as a mechanism for maintaining alliances between indigenous and intrusive groups. The Kipp Island-like features of the southern Middle Atlantic, while dramatic expressions of cultural association, could reflect the integration of long-lived indigenous burial practices, such as the sub-mound cremation burials of the bluff-top earthen and stone mounds (Gardner 1993), with new alliance and exchange networks originating in the Northeast.

A model for Middle Woodland alliance formation comes from Stewart's (1998c, 1998d) study of Abbott Zoned Incised (AZI) ceramics. An elaborate, zoned decorated pottery most closely associated with the Trenton Complex at Abbott Farm, New Jersey, its dates there fall between AD 200-900. Mockley-like ceramics bearing Abbot Zoned incised motifs are known from only six sites in the Virginia Coastal Plain (1998d:270). All, like Maycock's Point, were intensively occupied, aggregate sites located in rich riverine environments. Stewart proposed that the highly decorated ceramics functioned in public ceremonies associated with feasting and group coalescence during the intensive seasonal focus on fishing and shellfishing. A small number of pots may have been presented as gifts to members of assembled groups, but at Abbott Farm, these are found in general contexts that do not indicate their use as prestige items (Lattanzi et al 2011). Rather, they reinforced solidarity during feasting events for groups that came to the location infrequently for that purpose. Taking it

a step further, based on their patchy distribution from New England to southern Virginia, Stewart interpreted the pots as possible symbols of "Algonquian solidarity" (1998c: :274) among widely dispersed groups.

Research on the Abbott Zoned ceramics from Virginia sites has added a new dimension to this discussion. Rockman (1993) undertook petrographic analysis of AZI samples from three Virginia sites and Abbott Farm and found that the clay pastes were different for each site, supporting the hypothesis that production occurred in different locations. This work also demonstrated a difference in paste between utilitarian Mockely and AZI vessels, indicating a difference production process. (Later work by Pevarnick (Lattanzi et al 2011) confirmed a compositional difference between the clays found at Abbott Farm and those used to produce some AZI vessels, which probably came from Piedmont or other Coastal Plain settings and were brought to Abbbott Farm). Steadman (2008) undertook a laser ablation-inductively coupled plasma-mass spectrometry (LA-ICP-MS) study of 114 samples of AZI and Mockley ceramics from Abbott Farm and six Virginia sites to compare the clay pastes and determine the origins of the vessels. The AZI samples from Maycock's Point were found to be "mostly locally produced vessels, rather than a product of continued, long-distance trade alliances" (2008:58) and were produced from clay sources similar to those used to make the Mockley vessels from that site. As highly visible markers of identity used in feasting settings, Steadman argues that the vessels were statements of kinship between peoples to the north, perhaps mediated through inter-marriage alliances. Interestingly, the study showed that some of the utilitarian Mockley vessels were transported between sites in the Virginia coastal plain and between Virginia and the Delaware River Valley (2008:59).

How the AZI tradition found its way to Virginia is still an open question, but recent work on the Hatch Site collection by Gallivan and Makin (2018) point to the possibility that it appeared there during the Late Woodland period. AMS dates on 9 of 12 contexts containing AZI place it at 1000-1400 CE, in features most likely associated with feasting rituals at the ritualistic aggregation site. If the conventional radiocarbon date of AD 354-657 reported by Opperman (1992) for Maycock's Point is correct—and this does fall in line with early dates on AZI contexts at Abbott Farm — this ceramic type had longevity of at least 600 years in the James River Inner Coastal Plain.

Cave Burials and the Threat of Vandalism; Sea Level Rise and Site Loss

Evidence for late Middle Woodland mortuary practice in the far southwestern Ridge and Valley and Appalachian Plateau is available from the Marginella Burial Cave Project (Hubbard and Barber, 1997). Through 1995, 32 Native American burial caves in the Powell, Clinch, and Holston River drainages were field documented and all but one found to be vandalized. These sites are interpreted as belonging to a regional cluster of burial caves extending from southwest Virginia to east Tennessee, one of two areas in the southeastern United States where such clusters are located. Characterized as "cemeteries" (Boyd and Boyd 1997:165), over 520 individuals have been exhumed or identified from the Virginia/Tennessee cluster. Such sites are usually attributed to Mississippian-related cultures of the Late Woodland; however, several burials located in the twilight zone of Bone Cave in Lee County (44LE169) were associated with Middle Woodland Candy Creek ceramics (1650 BP-1000 BP), marine shell beads, and cut mica. As noted by the authors, "such artifactual associations in a mortuary context imply attitudes of elaborate ceremonialism typically linked to the Middle and Late Woodland period in the Upper Tennessee River Basin" (1997:159). In Russell County, cut mica, polyhedral cores, prismatic blades and Candy Creek ceramics are radiocarbon dated to Middle Woodland contexts at the Fox Meadows Apartments Site (44RU44) (McIlhany 1983). Given the loss of cave and rockshelter sites to vandalism and looting, the study of regional mortuary ceremonialism is in jeopardy in southwestern Virginia; the protection of these sites must be made a priority in coming years.

On the opposite side of the Commonwealth, the tidal zone is being impacted by sea level rise: by some measures, three times the global average (Sallenger et al 2012). Residents of these areas contend with the problems of storm surge, extreme high tides, extreme rain events, nuisance flooding, water table elevation, and erosion. All are contributing to the catastrophic impacts to heritage resources, and accelerated climate change has accelerated research and discovery. We are data rich because of the impacts of climate change along an active coastline. For example, 14% of the archaeological sites recorded for Virginia's Eastern Shore have been discovered in the past four years (V-CRIS 2018), and re-survey of

documented resources for vulnerability determinations has greatly enhanced our knowledge of coastal sites (Lowery 2016). However, as Kirsti Uunila, Preservation Planner for Calvert County, Maryland has written (2017), "The rising tide is a careless archaeologist." The rate at which sites are being impacted is overwhelming our ability to respond. Recent efforts to establish the severity of the threat rely on recorded site data; in the southern Middle Atlantic (Maryland and Virginia), it is estimated that over 2800 recorded sites are currently at or below sea level. With a one-meter rise, over 4200 sites will be inundated here (Anderson et al 2017). Given the emphasis placed on the tidal region in this chapter and the wealth of information about the Middle Woodland contained in these sites, it stands to reason that we are in danger of losing a tremendous amount of information in the coming years. The goals now are to organize efforts to recover as much information as possible, to identify and prioritize vulnerable areas, and to develop community partnerships that sustain the work.

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Chapter 9

Late Woodland Archaeology of Northern Virginia and Adjacent Regions

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Popular Summary

Northern Virginia: Definition and Environmental Setting

- Northern Virginia is defined here as the region within the state that falls into the Potomac-Shenandoah Drainage Basin.
- This area encompasses the city of Alexandria, and most or all of Rockingham, Page, Shenandoah, Frederick, Warren, Clarke, Loudon, and Prince William counties, plus portions of Stafford, King George, Westmoreland, Northumberland, Fauquier, Augusta, and Highland counties.
- During the Late Woodland period, the Potomac River served as a conduit for the movement of people, ideas, and items to and from the Atlantic Coast into the adjacent Ohio River, and Susquehanna drainage systems.
- The Potomac-Shenandoah drainage system cuts through four of Virginia's five physiographic provinces. From west to east, these are: the Ridge and Valley ; the Blue Ridge; the Piedmont; and the Coastal Plain. The Fall Line separates the Coastal Plain from the Piedmont and represents a major physical and cultural barrier.

Overview of Late Woodland Archaeology in Northern Virginia and Adjacent Regions

- The Late Woodland period is usually considered to have begun around AD 900 and ended with European Contact, ca. AD 1600.
- During this time, there was a shift in some areas of Northern Virginia and adjacent regions toward full-scale maize (corn) horticulture and the rise of settled village life.
- Even after maize (corn) horticulture was adopted, people continued relying on wild plants and animals. Deer were particularly important for subsistence and as a source for tools and skins.
- Archaeologists have traditionally defined a series of cultures in Northern Virginia based partly on the characteristics of pottery vessels, including how pots were decorated, their forms, and the material used to temper vessels.
- These archaeological cultures are useful for framing the discussion of Northern Virginia's past, but are not without their issues, including: the tendency by some researchers to ignore variation that does not fit within the specific culture's definition; the false equation some people make between archaeological cultures and ethnographically known American Indians; and, questions about the ceramic typologies and chronologies that underlie these archaeological cultures.

Late Woodland Cultures and Cultural Complexes

of Northern Virginia and Adjacent Regions

- Montgomery Complex or Focus
  - o The Montgomery Complex cultural area was concentrated along the Middle Potomac River and major tributary streams including the Shenandoah River in Virginia and the Monocacy River in Maryland.
  - o Traditionally, this complex is dated from AD 900 to ca. AD 1300.
  - o Sites include villages with ring-shaped layouts where wigwam-style houses surrounded an open plaza. Flexed burials were common.
  - o Shepard wares were the major associated ceramic type, and vessels were tempered with crushed quartz and/or igneous rock.
- Lewis Creek Mound Culture/Central Virginia Late Woodland Mound Complex
  - o This complex consisted of over a dozen mounds within a 50 mile radius of Staunton, Virginia, and overlapped the southern part of the Northern Virginia area.
  - o Some researchers argue that the mounds dated from AD 950 to 1450, while others see little evidence that they were used after AD 1350.
  - o These accretional mounds were built over time as people periodically revisited them to inter their dead, usually as secondary bundle burials, but sometimes as cremations or fully articulated burials.
- Mason Island Complex
  - o The Mason Island Complex appeared by AD 1450 and its members may have forced Montgomery Complex groups out of the Middle and Upper Potomac Valley, and down the Potomac River to become the Potomac River Complex peoples.
  - o Mason Island groups are thought by some to have disappeared by AD 1500.
  - o Initially, people lived in hamlets and then later villages, some of which were palisaded. Extended burials became common, as opposed to the flexed burials seen with the Montgomery Complex groups.
  - o Page wares were the major associated ceramic type, and vessels were typically tempered with limestone.
- Potomac Creek Complex
  - o The Potomac Creek Complex was located around the Fall Line along the Potomac River and is generally thought to have been intrusive to the region. However, the origins of the complex are controversial.
  - o Traditionally, the complex is dated from AD 1300 to 1600, after which the Potomac Creek Complex peoples become the historically known Patawomeck and Piscataway.
  - o Potomac Creek Complex communities lived in nucleated and palisaded villages. Ossuary burial was practiced by these communities.
  - o The major associated ceramic type was Potomac Creek wares were the major associated ceramic type, and vessels were tempered with crushed rock such quartz or sand.
- Luray Complex or Focus/Keyser Complex
  - o The Luray Complex, also known as the Luray Focus, or the Keyser Complex, was distributed along the middle Potomac and Shenandoah Rivers.
  - o This complex is considered to have been intrusive, with an origin to the west, and is seen as having replaced the earlier Mason Island Complex.
  - o Villages were nucleated and palisaded and individuals were interred in circular or oval pits located throughout a village settlement.
  - o Keyser wares are the major ceramic type, and vessels were tempered with shell.

Major Research Efforts and Issues

- New excavations at previously excavated sites have begun to transform our understanding of the Late Woodland period in Northern Virginia. This has occurred particularly through the application of improved and innovative excavation strategies and the use of techniques or technologies unavailable or underutilized when the sites were first investigated, including flotation of feature contents and radiocarbon assays. Major new excavations at old sites include:
  - o Fisher site (44LD4): This Montgomery Complex village site was first excavated in 1938 and more recently in 2002.
  - o Winslow site (18MO9): This Montgomery Complex village site was first excavated in 1940

and more recently in 2002 and 2003.
  - o Potomac Creek site (44ST2): This Potomac Creek Complex village site first excavated in 1935 and again in 1996.
  - o Accokeek Creek site (18PR8): This Potomac Creek Complex village site was first excavated in 1935. Recent research has focused on curated artifacts from the site.
  - o Keyser Farm site (44PA1): This Luray Complex village site was first excavated in 1940 and again from 2003 to 2007. Recent research has also incorporated curated artifacts from the site.
- Subsistence and Chronology
  - o Radiocarbon dating of curated collections and newly excavated materials has raised questions about the ceramic-based chronology used to temporally order and distinguish archaeological cultural complexes.
  - o A major effort has also been undertaken to use radiocarbon dating to determine when people in Northern Virginia began to intensively grow specific crops, such as maize (corn) and beans.

Conclusion: Future Directions

- Additional work needs to be conducted on variations in ceramic technology, including geographic and chronological variation in tempering agents and cordage-twist impressions on the surfaces of pottery vessels.
- Further investigations at previously excavated sites would provide much needed data on community patterns, as well as critical information on subsistence absent from earlier archaeological efforts.
- Detailed analyses of curated collections housed in museums and other research facilities would help clarify chronological issues, such as the date specific plants were adopted, or when poorly dated sites were actually occupied.
- GIS mapping of known Late Woodland sites in Virginia would generate key information on settlement patterns, as well as the spatial and geographic extent of defined archaeological cultural complexes—once additional radiocarbon assays are obtained.

Introduction

The Late Woodland period of Northern Virginia is usually argued to have begun around AD 900 and to have ended with sustained European Contact when the English colony at Jamestown was established in AD 1607. During this time, in some areas of Northern Virginia, there was a shift to an economy based on full-scale maize (corn) horticulture and a commitment to settled village life. The shift to village life for some inhabitants of Northern Virginia resulted from and generated further changes in intra- and inter-community social, political, and economic structures, and the overall number of people living in the region apparently increased from earlier times. One major consequence of this apparent population increase is that settlement mobility would have decreased, leading Late Woodland peoples to develop new social, economic, and political means to hold communities together (Potter 1993:167). Archaeologists have defined a series of cultural groups located throughout Northern Virginia and assigned discrete temporal ranges to these groups, largely based on supposed changes in ceramic technology or variation in surface impressions on ceramic vessels. Some of these archaeological cultures and their associated territories have been associated with historically known social groups encountered by the first Europeans as they explored the Potomac River Valley and the Atlantic Coast of Virginia. There is also a large body of ethnohistoric data that has been dissected by many scholars over the years, but these data are strongest around the mouth of the Potomac River and become considerably weaker as one moves upriver.

The timing and the extent to which various cultural groups adopted a maize-oriented lifestyle and the temporal and geographic extent of archaeological culture groups are major issues currently debated for the Late Woodland period of this region. Maize was once thought to have been adopted at the beginning of the Late Woodland period, but now seems to date much more recently (see, for example, McKnight and Gallivan 2007:186). Other questions relate to the nature and extent of cultural contacts beyond this region with outside American Indian groups—some of these outsiders are argued to have migrated into Northern Virginia, or to have influenced the migration of peoples within this region. These questions persist despite over

seven decades of systematic excavation that were initiated by T. Dale Stewart's investigations at the Potomac Creek site (44ST2) beginning in 1937 (Blanton et al. 1999:5). More recent investigations in Northern Virginia and adjacent regions have turned toward new excavations at old sites (Barber et al. 2007; Blanton et al. 1999; Dent 2003, 2005; Pullins and Lewes 2002) or have drawn on curated collections to obtain absolute dates on discrete site components and cultigens to help clarify these persistent questions (McKnight and Gallivan 2007; Means and McKnight 2010).

For the purposes of this discussion, Northern Virginia is defined as the region within the Commonwealth that falls into the Potomac-Shenandoah drainage basin, which includes the North and South Forks of the Shenandoah River, as well as the Potomac River itself (Figure 9.1). This area encompasses the city of Alexandria, and all or most of Clarke, Frederick, Loudon, Page, Prince William, Rockingham, Shenandoah, and Warren counties, as well as portions of Augusta, Fauquier, Highland, King George, Northumberland, Stafford, and Westmoreland counties.

Environmental Setting

The Potomac and Shenandoah Rivers and their tributaries flow into and through Northern Virginia, as well as parts of adjacent states, including Maryland, West Virginia, and Pennsylvania. The headwaters of the Potomac River in Maryland are geographically adjacent to streams that flow into the Ohio and Susquehanna River systems and beyond (Flint 1965). The Potomac-Shenandoah drainage system served as a conduit for the movement of people, ideas, and items to and from the Atlantic Coast into the adjacent Ohio River, and Susquehanna drainage systems.

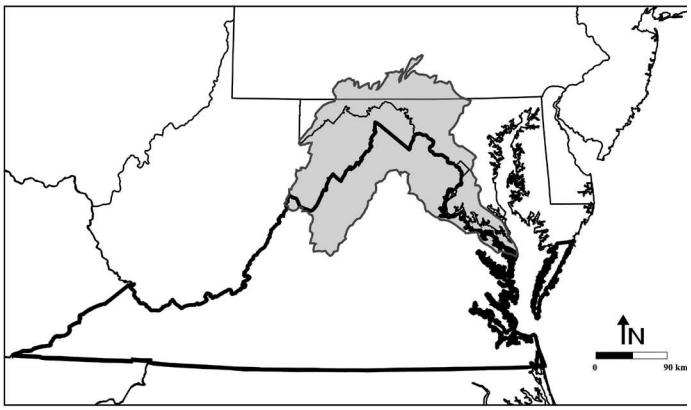

Figure 9.1. Geographic extent of the Potomac-Shenandoah Drainage system

The Potomac-Shenandoah drainage system cuts through four of Virginia's five physiographic provinces. From east to west, these provinces are: Coastal Plain; Piedmont; Blue Ridge; and, Ridge and Valley. The Coastal Plain has low topographic variation and can effectively be viewed as a raised sea floor with elevations primarily under 500 feet above mean sea level (Hunt 1967:137). Lithic materials suitable for the production of chipped stone tools are comparatively rare in the Coastal Plain and needed to be imported from other areas, including the adjacent Piedmont physiographic province. The Coastal Plain is separated from the Piedmont physiographic province by the Fall Line, which represents the last place where a person moving upriver could cross the Potomac River easily (Hunt 1967:139). Major American Indian sites were located at the Fall Line, including the Potomac Creek (44ST2) site, also known as Patawomeke. Beginning at the Fall Line, the Piedmont province extends to the slope of the Blue Ridge Mountains, which vary in width from 5 to 50 miles, and are structurally similar to the Ridge and Valley (Hunt 1967:172). The latter consists of long, narrow ridges separated by valleys. Limestone is a common rock in this area, and was one of the materials used to temper American Indian pottery for some Late Woodland groups. An important subdivision of the Ridge and Valley province is the Great Valley subprovince, which includes the Shenandoah Valley in Virginia and Hagerstown Valley in Maryland (Barfield and Barber 1992:236; Curry and Kavanagh 1991:9). In the 1992 monograph *Middle and Late Woodland Research in Virginia: A Synthesis*, these geographic divisions were used to frame the discussion of archaeological investigations in the northern portion of the Great Valley (Walker and Miller 1992) and along the Coastal Plain (Turner 1992). Hodge's (2004) updating of research on Virginia's Late Woodland period focused on the Coastal Plain.

The climate during the Late Woodland period was essentially modern—and had been for five millennia before the Late Woodland began (Klein 1994a:22). Therefore, Late Woodland peoples in Northern Virginia would have been well versed in the range of wild plant and animal resources available to them. Deer were certainly plentiful, and were widely hunted for their

meat, skins, bones, antlers, and sinews: skins were used for clothing and shelters, as well as trade; bones and antlers were used to make tools; and sinews were used for fasteners and glue (Barfield and Barber 1992:229). There was some variation in the exploitation of wild resources depending on ecological and topographic differences between the physiographic provinces (Barfield and Barber 1992:226). The Coastal Plain is known for its abundant natural resources, including the oysters and shellfish that supported large populations with complex social and political organizations encountered by the first Europeans to set foot on the shores of Virginia. Barfield and Barber (1992:226) noted that subsistence items—both wild (deer) and domestic (maize)—also became tied to expressions of wealth as Coastal Plain societies became more complex throughout the Late Woodland. Groups in the Piedmont hunted not only deer, but also raccoon and beaver. The mountains of the Blue Ridge and Valley and Ridge provinces were a source of deer, elk, black bear, and wild turkey. Fishing would have been practiced up and down the Potomac and Shenandoah Rivers, but the Potomac River at and below the Fall Line would have been a major fishing area. The Potomac Creek site (44ST2) on the Potomac River at the Fall Line contained evidence for sturgeon, garfish, yellow perch, catfish, and sucker. Evidence for the consumption of tuckahoe, wild rice, and the edible roots of cattails was also recovered at the Potomac Creek site (44ST2) (Rountree and Turner 2002:55).

Late Woodland Cultures and Cultural Complexes

A considerable amount of research has been conducted in Northern Virginia over the last several decades (Barber et al. 2003, 2007; Blanton et al. 1999; Geier and Boyer 1982; Geier and Warren 1982a; Hodges 2004; M. Johnson 2006, 2008; W. Johnson 1996, 2001, 2007; Klein 1994a, 2003; MacCord 1973, 1996; Manson et al. 1944; Means and McKnight 2010; Pullins and Lewes 2002; Potter 1993; Slattery and Woodward 1992; Stewart 1992). American Indian interactions occurred within the entire drainage system, and did not stop at the Virginia's borders with Maryland and West Virginia. Native peoples of the past did not have the foresight to recognize that one day arbitrary political boundaries would separate one side of the Potomac from the other. If we want to understand the archaeology of Northern Virginia, we need to look beyond the state's borders, especially toward Maryland. Maryland has seen a flurry of major recent investigations along the Maryland side of the Potomac River, many at sites first excavated decades ago (Chase 1988; Curry 2014; Curry and Kavanagh 1991, 2004; Dent 2003, 2005, 2010; Dent and Jirikowic 2001; Dent et al 2001; Kavanagh 2001; Kollmann 2007; Moore 1994, 2005, 2010, 2013; Wall 2001, 2004).

Much of this work has been framed within cultural historical constructs that were formulated well before the development and widespread acceptance of radiocarbon dating, as well as the development of more systematic and sophisticated excavation and data analysis techniques. The geographic and temporal boundaries of these cultural historical units—especially when derived largely from ceramic typologies—are somewhat problematic and should be employed cautiously. Certainly, one should not uncritically equate archaeological constructs to actual native cultural groups—as has been done in the past. Nonetheless, these culture historical constructs are important for at least two reasons: the archaeology of Northern Virginia and adjacent areas developed within the framework of these culture historical constructs; and, these culture historical constructs are still actively used by a number of researchers today.

One of the major developments during the Late Woodland period throughout parts of the Middle Atlantic region was the rise of village societies—and Northern Virginia is no exception to this pattern. Sometime after the beginning of the Late Woodland period, American Indian families living along the North and South Forks of the Shenandoah River and along the Potomac River joined together from their dispersed one or two family hamlets and chose to live together in compact, planned village communities. This is thought to have happened after AD 1450 in the northern Shenandoah Valley (Walker and Miller 1992:172-173). MacCord (1996) argued that Late Woodland peoples in Northern Virginia largely lived in hamlets prior to AD 1200, and villages after that date. Following death, individuals were usually interred in pits located throughout village communities—often in simple oval or circular pits (Boyd and Boyd 1992:258). In the upper Shenandoah River valley, the lack of burials at village sites or extensive rebuilding of dwellings is thought by some to indicate that these villages were occupied for short periods (Barber et al. 2003:18; Walker and Miller

1992:181). By the beginning of the Contact Period, archaeological evidence suggests that the Shenandoah Valley was abandoned by village dwellers, perhaps used as a hunting reserve by the Iroquois at this time (Geier and Hofstra 1999:160). Contact Period village settlements, of course, are known at Fall Line of the Potomac River and downstream, notably a Patawomeck village (44ST1) visited by Captain John Smith that was near the earlier Potomac Creek site (44ST2) (Rountree and Turner 2002:56). The Patawomecks encountered by Smith were Algonquians (Rountree and Turner 2002:58).

In both hamlets and village communities, individual families largely lived in houses with circular floor plans that were probably domed, like historically recorded wigwams. Village settlements were often surrounded by a palisade the protected villagers from their enemies and various wild animals, as well as serving to foster community identity. Major palisaded village sites in Northern Virginia include the aforementioned Potomac Creek (44ST2) site, and the Keyser Farm site (44PA1) located along the South Fork of the Shenandoah River. Both sites are discussed at greater length below. The impetus for living in nucleated villages may have been related to the widespread adoption of maize horticulture, although the timing of the earliest villages and an increased dietary dependence on maize is not as clearly linked to a village lifestyle as was once thought. Most valid radiocarbon dates on maize in Virginia fall after AD 1100 (McKnight and Gallivan 2007:188) and it is not clear when the earliest villages were inhabited. We do know from analyses of human skeletal remains that people who lived within the Piedmont and Ridge and Valley provinces ate more maize than those who inhabited the Coastal Plain (Hodges 2004:7). Some have argued that Coastal Plain groups were the last to adopt maize, because they had access to abundant natural resources, such as shellfish—but the exact paths that the adoption of maize followed in the Potomac-Shenandoah drainage system are not well known (McKnight and Gallivan 2007). Chase's (1988) examination of skeletal remains from Piedmont and Coastal Plain sites indicates that while both populations exhibited increased nutritional stress with the adoption of maize, the impact was less on Coastal Plain populations, possibly due to the consumption of oyster and other estuarine resources. Beans were adopted as part of the diet some centuries after maize horticulture began in the region, likely after AD 1300 (Hart and Scarry 1999; Hart et al. 2002). Locally available wild plants probably continued to have been critical to the diet of Late Woodland peoples in the Potomac-Shenandoah drainage system—but botanical evidence from sites in this region are sorely lacking, especially on the Virginia side of the Potomac River.

The earliest major culture historical group defined for the Potomac-Shenandoah drainage system is the Montgomery Complex—also known as the Montgomery Focus (Figure 9.2) (Curry and Kavanagh 2004; Dent 2003; Dent et al. 2002; Kavanagh 2001; Slattery and Woodward 1992:1). Montgomery Complex village sites are recorded along the middle Potomac River as well as major tributary streams, including the Monocacy and Shenandoah Rivers (Curry and Kavanagh 2004:3; Kavanagh 2001). The Montgomery Complex first appeared between AD 900 and 1150 and was still present as late as AD 1450 (Curry and Kavanagh 2004:1; Kavanagh 2001:8). The Fisher (44LD4) and Kerns (44CK3) sites in Virginia and the Winslow (18MO9) and Shepard (18MO3) sites in Maryland were included in the original definition of the Montgomery Complex (Pullins and Lewes 2002:41; Slattery and Woodward 1992).

The major trait used to define the Montgomery Complex is the presence of Shepard wares, which were slab-constructed and tempered with crushed quartz and/or igneous rock (Dent 2003:5; Kavanagh 2001:1; MacCord 1996:60). The majority of these ceramics have final Z-twist cordage impressions (Johnson 2001:5).

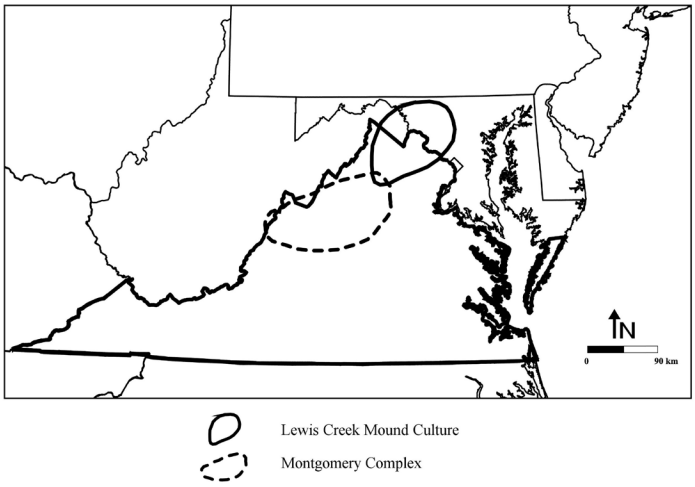

Figure 9.2. Traditional extent of Late Woodland cultures of the Potomac-Shenandoah Drainage system, ca. AD 1200. Adapted from MacCord (1996).

Approximately 90 percent of Shepard wares were decorated, commonly with a cord-wrapped dowel (74%) and less commonly through incising (21%) (Kavanagh 2001:1). These wares have been radiocarbon dated between AD 1100 and 1370 (Dent 2005:21).

Montgomery Complex villages probably consisted of a ring of single-family houses— each with circular floor plans—surrounding a central, open plaza. Village layouts are generally unclear but community patterns at some sites consisted of an oval pattern of pits around an open plaza. Insufficient excavation has been conducted at most Montgomery Complex village sites to determine whether they were palisaded or even to recover dwelling outlines (Curry and Kavanagh 1991:15; Slattery and Woodward 1992:157)—but see discussion below. Interments at Montgomery Complex sites were frequently placed in the flexed position (Dent 2003:5). Reinvestigation of the Montgomery Complex Winslow site (18MO9) in 2002 and 2003—more than forty years after the last formal excavations at that site—revealed both circular dwelling outlines and traces of a palisade (Dent 2003:16, 20; Dent 2005; Dent et al. 2002:25-26). These new excavations at Winslow (18MO9) demonstrated that at least this Montgomery Complex site resembled the ring-shaped Monongahela tradition village sites located to its north and west (Means 2007). Additional information on the recent Winslow site (18MO9) excavations are presented later in this chapter.

Kavanagh (2001:1) synthesized important research on Montgomery Complex sites in the Monocacy River drainage in Maryland, which is the largest tributary of the Potomac River in the Piedmont physiographic province. She noted that of 20 sites along the Monocacy River that had Shepard wares, three were villages located in the central part of the valley and the remainder were small dispersed farmsteads or hamlets dispersed along the Monocacy (Kavanagh 2001:5). Analyses of archaeologically recovered faunal remains suggests that Montgomery Complex groups in the Monocacy Valley did not rely heavily on cultigens, but incorporated horticultural activities into a seasonal scheduling that involved a heavy reliance on gathering and hunting (Kavanagh 2001:8).

South and west of the Montgomery Complex sites—and extending beyond the area defined here as Northern Virginia—is the Lewis Creek Mound Culture, also known as the Central Virginia Late Woodland mound complex (Figure 9.2) (Barber et al. 2003:27; Boyd and Boyd 1992; MacCord 1996). Boyd and Boyd (1992:259) indicate that these burial mounds should not be considered synonymous with a single cultural group, and prefer the mound complex designation. This archaeological complex consisted of over a dozen accretional mounds ranging from hundreds to thousands of burials. MacCord (1996:60) argued that these mounds were used largely between AD 950 and 1450, but others argue that few mounds were used after AD 1350 (Barber et al. 2003:175). There was considerable variety in the mortuary expressions seen in these mounds. Most mounds consisted largely of secondary bundle burials, but cremations and primary interments have been documented as well (Boyd and Boyd 1992:259). These mounds were highly visible elements of the landscape and may have been created by people living in hamlets along major rivers. Some have argued that the people who created these mounds eventually joined with Montgomery Complex peoples, while others suggest that they were possible ancestors of Monacan and Manahoac Indians (Egloff and Woodward 2006:41-42; MacCord 1996:60-64). The most thorough discussion this author has seen on the Central Virginia Mound Complex is presented in Barber et al. (2003), who also consider how this complex fits generally with Late Woodland mortuary customs practiced throughout the Eastern Woodlands.

Mason Island Complex groups are thought by some to have succeeded Montgomery Complex groups in the middle and upper Potomac River valley around AD 1450 (Figure 9.3) (Hodges 2004:6-7; Johnson 1996; Potter 1993), supposedly forcing the latter downstream to become the Potomac Creek Complex or Focus (as discussed below). Limited maize agriculture may have been practiced by Mason Island groups, who relied more heavily on hunting, gathering, and fishing for their primary subsistence regime (Wall 2004:95). Kavanagh (2001:8) noted that Mason Island settlement and subsistence characteristics were similar to Montgomery Complex groups, despite differences in ceramic technology and mortuary practices. Mason Island mortuary practices differed from that of Montgomery Complex groups, with the former including graves with individuals that were typically extended rather than flexed (Dent 2003:5)—although flexed burials are not unknown. Page wares associated with Mason Island sites were frequently tempered with crushed

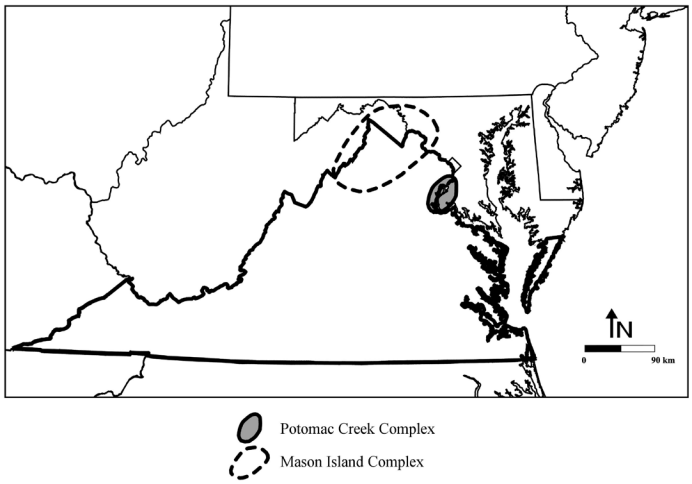

Figure 9.3. Traditional extent of Late Woodland cultures of the Potomac-Shenandoah Drainage system, ca. AD 1500. Adapted from MacCord (1996).

limestone (Dent 2003:5, 2005:21). Surfaces of Page wares were cordmarked, although smoothing of the surface—especially in the rim area— obliterated much of the surface treatment (Barber et al. 2007:3). Where visible, cordage impressions on Page vessels show a clear preference for final Z twist (Johnson 2001:5). Page vessels often had added rim strips and many were decorated, singly or in combination, with vertical or horizontal incised lines, oblique punctuations, thumbnail gouges, and horizontal, vertical, or other angled cord-marked impressions (Barber et al. 2007:3).

The type site for Page wares is the Keyser Farm site (44PA1), located on the South Fork of the Shenandoah River (Barber 2008; Manson et al 1944:405-406). Compliance excavations at the Huffman site (44BA5), investigated as part of the Gathright Dam project, uncovered the "most impressive" assemblage of Page ceramics in Virginia (Barber et al. 2003:131). The Page wares from the Huffman site (44BA5) were tempered with limestone or limestone and calcite, and had collars with regularly spaced cord impressions parallel to the rim, as well as regularly spaced notches or pinches along the base of their collars (Barber et al. 2003:131). Barber et al. (2003:155-159,180) have suggested that Page wares were used throughout the Late Woodland period, and that these wares reflected increasing ties with cultural groups located in Maryland and Pennsylvania after AD 1300. An extended discussion of Page wares, including how they differ from limestone-tempered Radford wares, can be found in Barber et al. (2003).

The Potomac Creek Complex is traditionally thought to have dated between AD 1300 and 1600 (Figures 9.3 and 9.4) (Dent and Jirikowic 2001:40). The Potomac Creek ware type was first described in 1903 by William Henry Holmes using sherds collected from the surface of the Potomac Creek site (44ST2) (Pullins and Lewes 2002:41). Potomac Creek ceramics were tempered with crushed rock, such as quartz, or coarse sand, and, at the Potomac Creek site (44ST2), replaced the fabric-impressed, shell-tempered pottery that had existed along this portion of the Coastal Plain (Barber et al. 2003:24; Pullins and Lewes 2002:42). Potomac Creek Cord-impressed vessels typically had final Z-twist cordage impressions (Johnson 2001:5). Notable at Potomac Creek village sites were large ossuaries. The Potomac Creek site (44ST2) itself contained five ossuaries, one of which had the remains of at least 287 individuals (Barber et al. 2003:24). At the Accokeek Creek site (18PR8), on the Maryland side of the Potomac River, over 1400 individuals were interred in four large ossuaries (Dent and Jirikowic 2001:44). Potomac Creek groups expanded by AD 1600, becoming the historically known Patawomeck Indians in Virginia, and who were related to the Piscataway Indians of Maryland (Cissna 1986; Rountree and Turner 2002:42).

Along the middle Potomac and Shenandoah rivers, the Mason Island Complex was replaced by the Luray Focus or Complex, also known as the Keyser Complex, and was first recognized at the Keyser Farm site (44PA1) in a component since dated to the early 15th century AD (Figure 9.4) (Barber et al. 2007; Johnson 2001; MacCord 1996; Means and McKnight 2010). Large, circular or oval, and palisaded villages are associated with the Luray Focus (Kavanagh 2001:9). Both flexed primary interments and secondary bundle burial interments have been recorded at Luray Complex villages, sometimes divided spatially into distinct social groups (Dent 2003). Luray Complex village sites are primarily known from the Ridge and Valley province, but the Hughes (18MO1) and Biggs Ford (18FR14) sites in Maryland are located in the Piedmont (Kavanagh 2001:9). Dent (2003) indicated that the Luray Complex peoples represent a clear intrusion into the Potomac Valley from points well to the west.

The Luray Complex is dominated by Keyser ceramics, which were tempered with crushed mussel shell and most were cord-marked (Barber 2008; Barber et al.

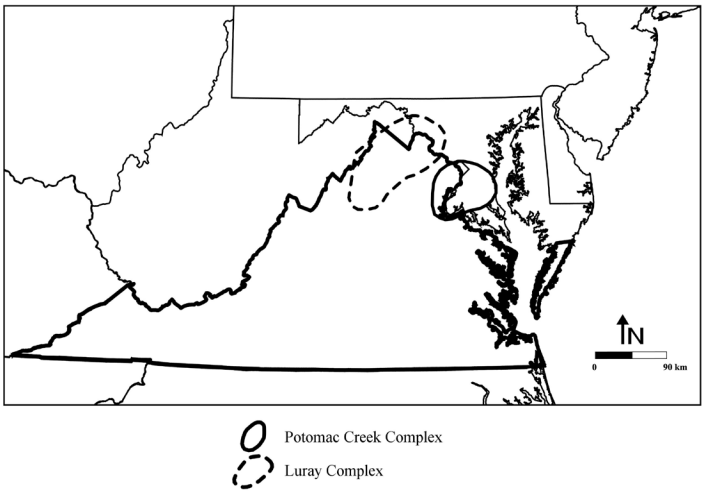

Figure 9.4. Traditional extent of Late Woodland cultures of the Potomac-Shenandoah Drainage system, ca. AD 1600. Adapted from MacCord (1996).

2007:2; Dent 2003:5). Keyser Cord-marked ceramics become the predominant ware in the upper Potomac region sometime after AD 1400 (Wall 2001:19). The rims usually exhibited vertical cord markings, but oblique cord-marking is not unknown. Decoration of Keyser vessels was largely limited to the lip and adjacent parts of rims (Barber et al. 2007). Keyser Cord-marked ceramics generally have final S-twist cordage impressions (Johnson 2001:18). MacCord (1996) suggested that the Luray Focus peoples left the Upper Potomac and Shenandoah Valleys and moved upriver to Cumberland, Maryland, to become the historically known Shawnee.

Some researchers have argued that the Luray Complex sites were inhabited by an intrusive group from the west (Dent 2003:5). Wall (2001:28) suggested that Luray Complex peoples were eastern Siouan in origin—rather than Algonquian—and perhaps related to the Manahoac. Johnson (2001:18) used the preference for final S-twist cordage impressions among Keyser Cord-marked ceramics to support the argument that these wares were produced by an intrusive group; earlier ceramics from the region—Shepard, Page, and Potomac Creek—all show a preference for final Z-twist cordage impressions. Who, specifically, the Luray Complex people were was not determined by Johnson (2001:22), but they were clearly not the Monongahela Tradition as some had argued based on superficial ceramic similarities (MacCord 1996:64; Walker and Miller 1992:166); while Monongahela Tradition ceramics—outside the Allegheny Mountain region—are typically tempered with shell, their cordage impressions are most commonly final Z-twist (Johnson 2001:21). The Susquehannock moved into the area inhabited by the Luray Complex peoples around AD 1600 to 1620; archaeologically, it is not clear if the Susquehannock were responsible for the Luray Complex peoples abandoning the upper Potomac Valley (Wall 2004:95).

Summary of Recent Archaeological Investigations

Targeted new archaeological excavations at older sites have proven a key way of uncovering additional information crucial to understanding the Late Woodland peoples of Northern Virginia and adjacent regions. These excavations have asked new research questions, used refined or advanced field approaches, and recovered a wider range of data as well— including critical botanical and faunal remains that were either not recovered or not retained from earlier investigations. Curated collections from these sites have also seen additional scrutiny, including the application of new technologies such as accelerator mass spectrometry (AMS) dating.

The William and Mary Center for Archaeological Research (WMCAR) teamed with American University in June 2002 to conduct limited excavations at the Fisher Site (44LD4)—an American Indian village located on the Potomac River in Loudon County, Virginia (Pullins and Lewes 2002:ii). The site had first been tested in a limited fashion by Richard Slattery and Hugh Stabler in 1938 and again in 1981 by Howard MacCord and William J. Hranicky (Pullins and Lewes 2002:1-4; Slattery and Woodward 1992). The 21st century excavations recovered 558 vessel fragments, of which the majority (n=340) were classified as Shepard wares, with minor amounts of Potomac Creek (n=61) and Page (n=52) sherds rounding out the identified types (Pullins and Lewes 2002:41). One important aspect of these recent excavations was the use of flotation analysis, which recovered subsistence remains that were missed in earlier excavations at Fisher (44LD4) and other Late Woodland sites throughout Northern Virginia (Pullins and Lewes 2002:49).

An AMS assay (Beta-159908) of 590 ± 40 BP (cal 2 σ AD 1296 to 1417) was obtained from fragments of charred corn recovered from the 2002 excavations of a possible palisade trench (Pullins and Lewes 2002:47). This assay produced a radically different age for the site

than an earlier assay (UGa-4470) obtained on deer bone (Slattery and Woodward 1992), which dated to 1025 ± 70 BP (cal 2 σ AD 832 to 1186). Given that the more recent assay is from a cultigen and also an AMS date, it would seem that this date probably best characterizes the Montgomery Complex component of the Fisher site (44LD4). As Pullins and Lewis (1992:48) noted, additional radiocarbon assays are needed to clarify the occupational history of this site.

Another significant finding from the 2002 Fisher site (44LD4) investigations was the recovery of deer remains, notably a high number of bones from deer extremities. These bones largely represent hindquarter meat portions, suggesting butchering of deer took place elsewhere—a pattern that contrasts with the Potomac Creek site (44ST2) where a more even distribution of deer elements indicates entire carcasses were brought to that site (Pullins and Lewes 2002:51). The 2002 Fisher site (44LD4) excavations indicate that modern recovery techniques can uncover a wealth of data from new excavations at old sites—even if these investigations are restricted in size and scope.

Recent investigations at the Winslow site (18MO9) also contribute to a further understanding of the Montgomery Complex. The Winslow site (18MO9) is located in Maryland within the Middle Potomac Valley in the Piedmont physiographic province and on an area of expansive floodplains (Dent 2003:3-4). Recent excavations conducted under the direction of Richard J. Dent (2003, 2005) are relevant to understanding the Late Woodland occupation of northern Virginia. The Winslow site (18MO9) is assigned to the Montgomery Complex because most ceramics at the site are what would be classified as Shepard wares (Dent 2003:5). Dent's re-excavation of this site is significant for a number of reasons, including:

- He has found definite traces of two structures, both of which had circular floor plans. Presumably these are wigwam-like structures (Dent 2003:20-22; 2005:36-38);
- Dent also found definite evidence of a palisade around this site. Based on the spacing and size of the stockade posts, Dent (2003:18) speculates that the palisade was intended less for defense, and more liked used to define social boundaries; and,
- He obtained two AMS assays from the new excavations that place the site into the late 14th century AD Beta-177862 from Feature 36 and Beta-177863 from Feature 37 returned identical assays of 580+40 BP (cal 2 σ AD 1300 to 1420) (Dent 2005:43-44)

Based on the size of the excavated structures, the lack of extensive, private storage, and other factors, Dent (2003:22) concluded that family organization at the site would have been loose, because individual structures at best could have housed only a large nuclear family. We would caution toward this latter conclusion; without full exposure of the site's community pattern, it is not possible to see whether or not larger groups might not have been present in clusters of dwellings distributed along the village's house ring. Dent (2003:10) also suggested that the non-local rhyolite recovered at the Winslow site (18MO9) might have had some unspecified but unique significance to the villagers who lived at this location. Analysis of flotation results by McKnight (2005:55) determined that "the residents of the Winslow site (18MO9) used a wide spectrum of plants from the rich flora of the area for their food, fuel, construction, tool, and medicinal needs." Cultivated plants included maize and beans (McKnight 2005:56). Identified faunal remains were dominated by deer and fish. The latter had not been previously recovered from the Winslow site (18MO9), and their presence can be traced directly to modern recovery techniques, e.g. the use of flotation (Moore 2005:65).

Excavations at the Rosenstock site (18FR18) were first conducted in 1979 with additional excavations in 1990-1992 conducted by the Maryland State Archeologists's office (Curry and Kavanagh 2004). This Montgomery Focus site contained an arcing line of trash pits, two semi-subterranean "keyhole" structures interpreted as sweatlodges, and a number of large pit features. The village plan appears to have a plaza area representing the village center, the two keyhole structures and a sheet midden, then an arcing line of trash-filled pits outside of which is the probable location of domestic structures (Curry and Kavanash 2004:29). No evidence for a palisade was recovered. The location of the domestic structures away from the center of the village and surrounding pit features is similar to that found at the more recent excavations at Winslow. While the ceramic assemblage is characterized as predominantly Shepard ware, much of the artifact assemblage from the site awaits analysis and interpretation.

Thirteen radiocarbon dates were obtained from the Rosenstock site (Curry and Kavanagh 2004:24-26). These dates range from AD 1000 to nearly AD 1600. While some of the outlying dates may be explained by sampling issues, reoccupation of the site resulting in mixed organics, or other issues resulting from using charcoal and not seeds and/or nuts for dating, the dates still represent an exceedingly long occupation. The authors suggest that the best estimate for the occupation of the site can be calculated using a zone of maximum overlap for the dates which would plade the site at the late end of the Montgomery Complex from AD 1335-1400.

The faunal remains from Rosenstock are dominated by white-tailed deer which comprise 67% of the identifiable remains. The site contains an impressive list of taxa, the most diverse for any of the Montgomery Focus sites, and includes snapping turtle, common musk turtle, Eastern painted turtle, Eastern box turtle, poisonous and non-poisonous snakes, coral snake, common loon, whistling swan, goose, merganser, ruffed grouse, common bobwhite, wild turkey, passenger pigeon, pileated woodpecker, red-bellied woodpecker, American crow, blue jay, common grackle, American eel, creek chub, river chub, common shiner, suckers, white sucker, redhorse sucker, Northern hog sucker, shorthead redhorse, golden redhorse, silver redhorse, brown bullhead, striped bass, sunfishes, minnows, perches catfishes, sturgeon, jackrabbit, Eastern cottontail, woodchuck, Eastern chipmunk, Eastern gray squirrel, Eastern fox squirrel, beaver, mouse, muskrat, mountain lion, bobcat, dog, fox, mink, river otter, striped skunk, black bear, raccoon, and elk (Moore 1994:167-171). One significant seasonality indicator is the presence of 13 crania fragments with intact antlers indicating fall/winter hunting. The deer mandibles, however, indicate year-round hunting. Of the 43 mandibles complete enough to be aged, 22 of them were in the younger age categories and could be used to examine seasonality. Of these 22 juvenile mandibles, 11 were hunted in the spring, two in the summer, four in the fall, and five in the winter. The fauna clearly reflects the year-round occupation of the site with an intensive use of both year-round and seasonal resources.

One enduring question among archaeologists working in the Potomac Valley is the exact origins of the Potomac Creek Complex. Cissna (1986) examined two hypotheses for the origins of the Potomac Creek Complex. Using largely ceramic attributes, the first posits that Potomac Creek represents a Coastal Plain incursion by Montgomery Complex people to the west. The second hypothesis, the "Eastern Shore Hypothesis" (Cissna 1986:31), is based on Piscataway oral history recorded in 1660 (Mooney and Thomas 1907) which holds that the predecessor of the inherited chiefdomship came from the Eastern Shore to the east, not to the west.

Partly to address this question, WMCAR conducted new excavations at the Potomac Creek site located in Stafford County, Virginia, in November and December 1996. Major excavations at the site had first been undertaken between 1935 and 1940, especially under T. Dale Stewart of the Smithsonian Institution (Blanton et al. 1999:4). The Potomac Creek Complex was defined partly based on this large, palisaded village (Blanton et al. 1999:8). One of the major contributions from the recent investigations at this site was a reconsideration of the notion that the Potomac Creek Complex was "a foreign culture relocated to the lower Potomac basin." Blanton et al. (1999:102) saw the Potomac Creek Complex as derived from proto-Iroquoian cultures that lived along the Upper Susquehanna River (see also discussion in Hodges (2004:7) and Rountree and Turner (2002:58)).

Regardless of the specific origins of the Potomac Creek Complex, an issue that is revisited below, the WMCAR investigations uncovered critical new information related to site chronology that was linked to transformations of the Potomac Creek site over time. Wood charcoal produced eight radiocarbon assays that indicated three significant episodes in the occupational history of the site over time (Blanton et al. 1999:89). These episodes are referred to as stages. Stage I—uncomfortable immigrants, ca. AD 1300-1400—is viewed as the period when outsiders settled at the Potomac Creek site's location and established a fortified circular village settlement. Villagers may have fortified their settlement out of "residual concerns from their homeland as well as uncertain relations with local groups" (Blanton et al. 1999:92). The dead may have been buried outside of the village's walls at this time. The Accokeek Creek (18PR8) site, considered below, may have been settled about the same the Potomac Creek site was established (Blanton et al. 1999:92-96). Stage II—a flourishing tidewater culture, ca. AD 1400-1560—saw the inhabitants of the Potomac Creek village site as fairly well integrated into the regional socio-political landscape—so much so

that they decreased the village's fortifications and began to exert an influence on their neighbors within the region. A specialized structure within the site may have represented a mortuary building or chiefly residence, and ossuaries were integrated into the settlement space during this time. These site characteristics were likely associated with the development of the chiefdom-level societies encountered by Europeans at Contact (Blanton et al. 1999:96-98). State III—maturity and change, ca. AD 1560-1650— witnessed the abandonment of the Potomac Creek site (44ST2) as a residential community and the transformation of this ancestral place into a location devoted to ossuary burial—with a large quantity of European trade items placed within some graves (Blanton et al 1999:98). The villagers at the Potomac Creek site relocated to the Indian Town Site (44ST1) visited by Captain John Smith in 1608 (Stewart 1992).

A recent re-examination of the major Potomac Creek Complex site on the Maryland side of the Potomac River, the Accokeek Creek site (18PR8), built on the work of Blanton and his colleagues and has contributed to a re-evaluation of the nature of the Potomac Creek Complex. This new work at the Accokeek Creek site (18PR8) did not involve additional excavations beyond those conducted decades earlier (1935-1940), but rather a second look at artifacts curated at the University of Michigan's Museum of Anthropology. The goal of the recent archival archaeology project was to find ceramics with sufficient carbon residue to permit AMS dating, because no absolute dates existed for the Accokeek Creek site (18PR8). A suitable sherd was found and returned a surprisingly early date of ca. AD 1160, almost two centuries earlier than some had thought would have been likely (Dent and Jirikowic 2001:52).

Dent and Jirikowic (2001:49-54) used the new AMS date from the Accokeek Creek site (18PR8) to revisit the debate about the origins of the Potomac Creek Complex. They considered four scenarios:

- A west to east migration, with Montgomery Complex groups moving from the Piedmont to the Coastal Plain, possibly forced out by Luray Complex or Mason Island groups;
- An east to west migration from the Eastern Shore, based on an oral tradition held by the Piscataway and the presence of ossuary burials at both the Eastern shore and at Potomac Creek sites;
- Migration from the north, with Potomac Creek groups derived from the Owasco, as argued by Blanton and his colleagues; and,
- In situ development, suggesting that the Montgomery Complex and Potomac Creek Complex are one and the same and simply covered a larger area than people had previously thought.

Of these scenarios, Dent and Jirikowic (2001:54) favored the Eastern Shore hypothesis, based on linguistic evidence, oral tradition, and the fact that peoples living on the Eastern Shore also had a tradition of ossuary burial. They argued that the "shift from the individual flexed interments of the Montgomery Complex to the ossuary burial protocol of the Potomac Complex represents a dramatic discontinuity" (Dent and Jirikowic 2001:54). Dent and Jirikowic (2001:54) left open the possibility that Montgomery Complex groups might have migrated into the Potomac Creek Complex territory on the Coastal Plain, but that they would have joined populations that had arrived earlier from the Eastern Shore. We certainly applaud the notion of re-visiting old collections and using them to reconsider existing hypotheses, but we caution relying too much on a single radiocarbon assay. Further, AMS assays or additional systematic excavations of Potomac Creek sites can help determine which of these scenarios is most likely.

The Hartwell site (44FX1847) located in Fairfax County is another Late Woodland Potomac Creek Complex site in Northern Virginia. Excavated in the late 1980s and early 1990s near the mouth of the Occoquan River, this site has yielded significant findings and has never been fully analyzed or published. The site consists of two, adjacent and stratified shell middens. The upper midden is located on a terrace bank, has been assigned to the Potomac Creek phase, and produced a radiocarbon date of ca. AD 1360. The lower midden has been assigned to the Rappahannock phase and is partly submerged. Both components also have excellent preservation of faunal remains. Further analyses of this site's collection could help clarify the origin of the Potomac Creek Complex (M. Johnson 2008). Potomac Creek rim motifs from the Hartwell site (44FX1847)—and other sites—were closely examined in a master's thesis by George Svokos (2004). Svokos (2004:134) study of rim motifs was hampered by poor chronological control and variation in the sizes of the samples available for study. His study did indicate that select members of

each community made many of a community's pots, and that the 23 distinct motifs he delineated were variations on a shared theme (Svokos 2004:135). One avenue of future research suggested by Svokos (2004:139) was to determine if the motifs were represented in media other than ceramic vessels.

The Lee Road 2 site (44FX2553) is the westernmost site in Fairfax County with Potomac Creek pottery. The sherds are quite small and one might consider them insignificant, except for the fact that they were recovered through water screening (Johnson 2006). Mike Johnson (2006) argued that we need to think more carefully about our standard recovery methods. Potomac Creek pottery may have been more common than many archaeologists think in this area, because these sherds would have been missed through conventional dry screening.

Re-excavation of old sites within Virginia has built on earlier work and revealed significant new information. The most significant recent investigations in Northern Virginia have taken place at the Keyser Farm site (44PA1) (Barber 2008; Barber et al. 2007). As many as 200 people are estimated to have lived at the Keyser Farm site (44PA1) in Page County, Virginia.

The original excavations at the Keyser Farm site (44PA1) in 1940 by Carl Manson and Howard MacCord uncovered nearly 100 refuse-filled pits and 26 graves (Barber et al. 2007; Manson et al. 1944; Walker and Miller 1992:178). More intensive archaeological recovery techniques were implemented at the Keyser Farm site (44PA1) during the 2003 to 2007 investigations, including flotation of all feature contents (Figures 9.5 and 9.6). These recent investigations were conducted under the direction of the U.S. Forest Service, the Virginia Department of Historic Resources (VDHR), and the Archaeological Society of Virginia and others (Barber et al. 2007). Pit features at Keyser Farm (44PA1) contained Shepard, Page, and Keyser wares, associated, respectively, with the Montgomery Complex, the Mason Island Complex, and the Luray Complex. Flotation of feature contents was critical to the recovery of large quantities of plant and animal remains, and these recovered ecofacts were the source of new radiocarbon assays— discussed below. Analyses of excavation results are ongoing and have not yet been published in detail. However, the wealth of archaeological information recovered from the recent investigations will allow a greater understanding of the Late Woodland occupation of the Potomac-Shenandoah

Figure 9.5. Excavations at the Keyser Farm site (44PA1) in 2007. Photograph by Bernard Means.

Figure 9.6. Flotation of feature fill from the Keyser Farm site (44PA1) in 2007. Photograph by Bernard Means.

drainage above the Fall Line—something missing from recent syntheses of Virginia's Late Woodland period.

Preliminary analyses show that bone tools at the Keyser Farm site (44PA1) were dominated by deer metatarsal beamers. Barber and his colleagues tied the large quantity of bone beamers to the overproduction of hides by the occupants of Keyser Farm (44PA1), which they may have traded with Iroquoian middlemen to the north (Barber 2008). Coastal Plain groups may also have exchanged various items for deer skins produced at the Keyser Farm site (44PA1), as discussed below (Barber 2008). The venison created by the intensive deer hide production effort may have been incorporated into ceremonial feasting efforts—this certainly would have been a very visible way for individuals to gain prestige and strengthen ties within and outside the village community (Barber 2008)

The dedicated flotation effort of all feature contents at Keyser Farm (44PA1) led to the recovery of a large quantity of shell disk beads. Beads manufactured from native copper were also uncovered. The small, disk shell beads—roughly 3 to 5 mm in diameter—would have been challenging to produce and this alone indicates the importance these items would have had for villagers at Keyser Farm (44PA1). Disk shell beads may have evolved as a way to store and display wealth (Barber 2008). The beads were manufactured from marine bivalves obtained from the Atlantic Coast. The inhabitants of the Keyser Farm site (44PA1) could have been obtained the raw material for shell bead production through exchange with groups living along the Coastal Plain; these Coastal Plain groups apparently traded some of their Potomac Creek vessels into the Valley and Ridge province (Barber 2008). The beads probably had symbolic value and were worn as necklaces, or were sewn into clothing as status symbols, as is known to have been the case for Powhatan's mantle. Some of the small shell disk beads were heated to turn from white to gray, perhaps to change their symbolic properties (Barber 2008). White and gray beads might have been strung on necklaces in alternating colors on a single line, conveying meaning important to the wearer and other members of their social group (Barber 2008). Barber (2008) suggested that shell beads and bone beads and pendants can be viewed as "visual tools" that reflected social nuances, such as rank, status, clan membership, or even wealth. It is possible that the Potomac Creek vessels obtained from Coastal Plain groups had symbolic value as well (Barber 2008).

The Chronological Framework for Northern Virginia's Late Woodland

The chronological framework for the Late Woodland in Northern Virginia remains rooted in ceramic typologies, notably the Shepard-to-Page-to-Keyser sequence. These ceramic types are discussed above in the context of defining archaeological culture groups and are not considered in detail in this section; these ceramic wares will be revisited in the next section. Rather, here we examine the principle dating technique that is theoretically independent of chronologies based on presumed changes in ceramic technology—e.g. radiocarbon dating of Late Woodland sites in Northern Virginia. The first radiocarbon date obtained for the entire state of Virginia was in 1957 from the Kerns (44CL73) site, Clarke County, which is in the area defined as Northern Virginia in this chapter (Slattery and Woodward 1992). Since 1957, over 800 radiocarbon dates have been obtained from archaeological contexts within Virginia.

Building on a database originally created and maintained by Keith Egloff—formally of the VDHR—Means assessed all of Virginia's radiocarbon dates in 2008 and 2009, with support of a Council of Virginia Archaeologists (COVA) research grant. Three basic problems were encountered in the research that limit the effectiveness of radiocarbon dates for the Late Woodland period in Northern Virginia—or for any period elsewhere in Virginia: inattention to materials selected for dating; incomplete or improper reporting of dating results; and, difficulties in determining what materials are actually associated with a given radiocarbon assay. Late Woodland contexts are especially an issue with radiocarbon dating, particularly if due caution is not exercised in selecting contexts. Occupations at Late Woodland villages were relatively intensive, with activities that could have cut into earlier components and mixed material of different ages. This issue can add to the difficulty with associating an individual radiocarbon assay to a specific component within a site. Consequently, obtaining a single date from a site is not sufficient. Unfortunately, many archaeologists in the past have viewed a single radiocarbon assay from a site as being sufficient for determining the age of that site. This is simply not the case. Ideally, a minimum of three samples should be submitted from each discrete

site component to ensure that the dates obtained were not anomalous. If two dates are obtained from a discrete context, and they happen to differ, one cannot know which date is correct. With at least three dates, the researcher can more readily assess which dates are valid. For further discussion of these issues, we refer the reader to Means (2005) and Means and McKnight (2007). All of the radiocarbon assays presented here (Table 9.1) or discussed elsewhere in the chapter were recalibrated using the Calib Radiocarbon Calibration Program (Calib) (Stuiver and Reimer 1993, 2005).

Approximately 20 percent (n=169) of the total radiocarbon assays in Virginia come from the area associated with Northern Virginia, as defined here. However, 55 of these assays predate the Late Woodland and an additional 35 can readily be dismissed as invalid, either because their calibrated ranges extend into the modern era, or because they have an error of greater than 100 years. Some of the remaining dates are likely suspect as well, because it is often difficult to tell from how the assays were reported whether they were obtained from discrete contexts. Valid radiocarbon assays are critical to our interpretations of Virginia's past, and without them it is challenging to examine temporal changes in ceramic technology, or intra- and inter-community relations, among other topics of interest to archeologists. Two of the best dated sites within Northern Virginia are the Potomac Creek (44ST2) and Keyser Farm (44PA1) sites, largely because of AMS dating of material recently collected from the sites. The new assays from Keyser Farm (44PA1) are detailed in the next section.

Major Research Issues

One major research issue is the link between ceramic variation, technical innovation, and culture group identity, and how these tie into named temporal phases and cultural complexes. Kavanagh (2001:11), for example, called into question the supposed chronological progression of Shepard to Page to Keyser wares, noting that "recently obtained 15th century dates for all three groups indicate a… complex and dynamic relationship." Klein (1994a:59) suggested that interaction networks linking the Potomac Creek people to their neighbors led to rapid changes in ceramic technology, rather than seeing a migrant population responsible for the new ceramic types represented by Potomac Creek wares. Trying to tie ceramic types to specific cultures continues to remain an issue. This approach leads to continuing debates about origins, who was related to whom, but does not necessarily tell us much about the people that produced the ceramics. The relationship between ceramic types—and the archaeological cultures associated with these wares—is clearly more complex and dynamic than traditionally thought.

Of course, major late Woodland research has been conducted on artifacts from sites located throughout the Potomac –Shenandoah drainage system since COVA's Middle and Late Woodland volume was published over 20 years ago (Reinhart and Hodges 1992). This includes Mike Klein's research on ceramic technology and chronology covered in his 1994 dissertation and subsequent publications. Klein's work is particularly significant because he has focused on both social and technological factors underlying ceramic variation in the Potomac Valley (Klein 2003). For example, he suggested that the increased cooking times for boiling starchy seeds heightened the "visibility of cooking pots" and that "Potomac Valley ceramic decoration indicates a… shift in the focus of social signaling from sacred to mundane contexts" (Klein 2003:30). He also noted that there was an increasing trend toward diversity in ceramics, rather than simple replacement of one ware by another. People often relied on locally available materials for temper, especially as they became more sedentary (Klein 1994a:76,200).

William C. Johnson has continued to expand his research on cordage twist patterns from the Potomac River basin; while his 1999 publication included an impressive 500 impressions, as of November 2007, Johnson now has over 4000 casts of cordage impressions. Johnson noted a fair amount of geographic stability for the first 2,200 years of the Woodland period, with greater variation in the Potomac River Basin in the Valley and Ridge and Piedmont provinces during the last 400 years of the Late Woodland period (Johnson 2007).

Our understandings of Late Woodland settlement patterns in Northern Virginia must be strengthened. More attention to regional settlement patterns and an expansion from site-focused research would prove beneficial. For example, Clarence Geier and Warren Hofstra (1999:163) investigated the Middle and Upper Drainages of Opequon and described an area that represented fragments of larger settlement systems whose primary focus was "elsewhere along the Shenandoah

River or Potomac Drainages." Newer technologies should be more widely employed in this research; GIS is an important tool for examining variables underlying site locations within and across various time periods.

Examining Late Woodland subsistence continues to be an important question for the region. Understanding the adoption, spread, and intensification of cultivated crops remains poorly understood due to the scarcity of preserved botanicals in discrete contexts as discussed above. Preservation of faunal material has fared better, particularly in Late Woodland pit features. Moore's 1994 analysis of faunal remains from Montgomery Complex (Shephard (18MO3), Winslow (18MO9), and Rosenstock (18FR18) and Luray Focus (Hughes (18MO1), Shepard Barracks (18MO4), and Keyser Farm (44PA1)) sites examined differences in faunal exploitation between the two cultural complexes. Results indicated that Montgomery Complex people exploited a wide variety of taxa from all available habitats. Deer were hunted with a particular strategy that resulted in the focus on age groups that were of maximum meat-bearing age and size and seasonally abundant resources were targeted for exploitation.

In contrast, Luray Focus inhabitants focused their animal resource use on fewer taxa and the assemblages did not reflect as much of a focus on seasonally available resources. Instead, the taxa being exploited are those typically characterized as garden pests, leading Moore to hypothesize that an increase on the raising of cultivars resulted in increased "garden-hunting" – hunting those animals preying on cultivated crops (Linares 1976). The more recent excavations that included recovery through flotation and the subsequent analysis of faunal data from the Hughes (Moore 2006) and Winslow (Moore 2005) sites add more data supporting this interpretation. The addition of fish remains from flotation indicates that although the general garden-hunting pattern still holds, more riverine resources may have been used than the earlier evidence indicated.

Hunting smaller garden pests is not the only possible adaptation to an increased reliance on horticulture. Speth and Scott (1989) observed in the American Southwest that in some areas, a greater horticultural commitment increases the need for high-yield seasonal resources (1989:78). In areas where fish are not available, that need can result in an increase in the hunting of larger mammals when smaller mammal populations are depleted. Since we are still seeing evidence of garden-hunting in the Luray Focus, this model leads us to more questions to explore about the dependence of Luray Focus groups on domesticated crops, the length of occupation at these village sites, the importance of riverine resources, and the exploitation of non-garden pest animals. Watson and Kennedy (1991) present a strong argument that women played a critical role in the domestication and adoption of cultivars. What are the implications of this on our interpretation of gender and resource exploitation during the Late Woodland of this region? In order to have sufficient datasets to address gender roles, other than inferring a broad division of labor, we need additional data, particularly flotation data, from tightly dated and discrete contexts.Chronology continues to be a major stumbling block for understanding and interpreting the Late Woodland peoples of Northern Virginia. Existing chronological frameworks contain a sometimes unholy mix of culture historical constructs and uncritically applied radiocarbon assays. We need more work on determining the exact dates of various ceramic wares and other artifact classes and should avoid assigning a ceramic ware to a particular time period, or confining its distribution to a particular geographic area until we have more solid chronological control (Klein 1994a, 2003; Means and McKnight 2010).

Despite the radiocarbon dating technique being developed over 60 years ago, the examination of all extant radiocarbon assays in Virginia has shown that radiocarbon dating has been dramatically underutilized on Late Woodland sites in Northern Virginia. Further, many extant dates are very questionable. Recent studies have used targeted AMS dating of curated collections, which has greatly broadened our understanding of Northern Virginia's Late Woodland period. McKnight and Gallivan's (2007) Virginia archeobotanical database project is a solid application of AMS dating to a specific problem, the timing of the presence and widespread adoption of various cultigens, particularly maize. As other researchers have determined, the archaeological visibility of maize and other cultigens is more recent than many have thought. While the Late Woodland is seen as beginning in AD 900 with the presumed adoption of maize horticulture, one of the earliest direct dates on maize in Virginia is ca. AD 1100 at the Maycock's Point site (44PG40) (McKnight and Gallivan 2007:186). McKnight and Gallivan (2007) have some interesting

notions about the spread of maize horticulture throughout Virginia. This topic is definitely one that needs to take a much larger regional approach. There has been a lot of attention to the actual age of various plants throughout the northeast, notably the findings of John Hart and his colleagues that the common bean is not archaeologically visible throughout much of the northeast until the end of the 13th century AD (Hart and Scarry 1999; Hart et al. 2002).

Archaeologists have also used AMS dating to expand on the surprisingly small number of well-dated archaeological contexts in the Potomac-Shenandoah drainage system. Means and McKnight (2010) obtained VDHR Threatened Sites fund to obtain accelerator mass spectrometry (AMS) dates from curated organic remains recovered from Late Woodland sites in Bath, Page, and Shenandoah counties. Outside of Fairfax, Loudon, and Stafford counties, Northern Virginia is under-represented in terms of radiocarbon assays, despite encompassing an area that was located at a critical cross-roads with cultural developments to the north and west. Additional radiocarbon assays from sites in this region would aid in clarifying aspects of changes in regional ceramic chronologies, settlement patterns, and the use of cultigens.

As part of the VDHR Threatened Sites project, Means and McKnight (2010) obtained 10 AMS radiocarbon assays from Late Woodland sites curated in collections held by VDHR and James Madison University (JMU), as detailed below (Figure 9.7). Emphasis on selecting samples for this project focused on cultigens, which were documented and identified by the McKnight prior to submission to Beta Analytic, Inc., of Miami, Florida. Selection of samples emphasized carbonized maize kernels and cob fragments or common beans so that this project could be readily integrated into McKnight and Gallivan (2007)'s Virginia Archaeobotanical Database. Seven samples were obtained from collections held by VDHR. One suitable sample was found in carbonized material collected from the Quicksburg site (44SH3) by the late Howard MacCord during excavations in 1969 by the Archeological Society of Virginia (ASV) and the Virginia State Library. The Quicksburg site (44SH3) is located in Shenandoah County on the North Fork of the Shenandoah River and one mile east of the town the site is named after. This multicomponent site included a palisaded village occupation estimated at 300 feet in diameter with both shell- and limestone-tempered pottery (MacCord 1973). The remaining VDHR samples were obtained from the Keyser Farm site (44PA1), which was discussed above. Three samples were selected from collections held by JMU from two sites in Bath County: Perkins Point (44BA3) and the Huffman (44BA5) site. The Perkins Point site (44BA3) is a stockaded village with a component originally dated to the seventeenth century AD.This village measured 300 feet north-south and 440 feet east-west (Geier and Boyer 1982:109, 116). The Huffman site (44BA5) is a large, nucleated but unfortified village located on a terrace overlooking the Jackson River and is the type site for the Huffman Phase. This site was originally dated to the twelfthcentury AD (Geier and Boyer 1982:87-88).

Two of the new radiocarbon assays are clearly erroneous, as their ranges extend to the end of the calibration data set: Beta-261039 from the Perkins Point site (44BA3) and Beta-260822 from the Quicksburg site (44SH3) (Figure 9.7). The exact reason why these dates are invalid is uncertain. They could represent instances of contamination, possibly related to archaeological site formation processes that introduced recent material into deeper strata. Although one of the newly obtained Perkins Point (44BA3) dates is problematic, the other newly obtained assay does date to the Late Woodland period. To assess this date, the previously obtained radiocarbon dates must be examined first. One of the earlier dates (UGa-3082) has a very large uncertainty of 130 years, and is considered unreliable. It will not be considered further here. Of the remaining three dates, UGa-3080 and UGa-3083 are statistically identical with the new AMS date of Beta-261038. The pooled radiocarbon assay from these three samples produced a date of 369 + 28 BP (cal 2 σ AD 1449 to 1632), indicating an occupation during the 16th century AD. The remaining date (UGa-873) is either erroneous or represents an earlier component dating to the early 15th century AD

There were five previously existing dates from the Huffman site (44BA5), although two of these are clearly not related to the Late Woodland occupation of the site. The remaining previously existing dates, UGa-4048 and UGa-4055, are statistically identical and produced a pooled age of 748 + 46 BP (cal 2 σ AD 1187 to 1383), with a likely occupation during the 13th century AD. UGa-4055 is not statistically identical to these two assays and could represent an earlier component. It was

expected that a new AMS date would either verify the two statistically identical dates or that there was definitely an earlier component at this site. Instead, Beta-261307 produced an assay of 440 + 40 BP (cal 2 σ AD 1410 to 1633), suggesting a probable occupation during the 15th century AD (Figure 9.7).

There are four previously obtained radiocarbon assays from the Keyser Farm site (44PA1). Two were obtained from Michael Barber (personal communication, 2009). These two assays, Beta-205353 and Beta-205354, clearly indicate a different and earlier occupation than that represented by the newly obtained AMS assays. It has been suggested that the two earlier assays may represent the initial occupation of the region around the North and South Forks of the Shenandoah River by the Keyser people, because these are the earliest dates known for a Keyser occupation (Barber et al. 2007:7). Together, the two assays are statistically identical and produce a pooled radiocarbon assay of 496 + 33 BP (cal 2 σ AD 1330 to 1450), indicating that the earlier occupation at Keyser Farm (44PA1) dated to the first half of the 15th century AD The other two pre-existing dates from the Keyser Farm site (44PA1) were obtained from George Tolley (personal communication, 2009) and are statistically identical to the newly obtained AMS dates from this site. The dates provided by George Tolley and the new AMS dates produced a pooled age of 378 + 14 BP (cal 2 σ AD 1451 to 1617) that likely indicates an occupation of the Keyser Farm site (44PA1) in the latter half of the 15th century AD (Figure 9.7). It should be strongly emphasized that the Keyser Farm site (44PA1) material was not obtained from the excavations at the site in the first half of the twentieth century, but rather from the recent re-excavations at the site discussed above—which were partly and explicitly designed to obtain organic remains from controlled contexts.

Conclusions

Ethnohistorical records can be used to examine some of the major social, political, and economic transformations that characterized Northern Virginia's Late Woodland cultures. However, these records retain European biases and are increasingly vague and imprecise as one tries to extend these backwards in time or too far westward from the Atlantic Coast. Very simply, continued archaeological research is vital to understanding the complex social, political, and economic relations of the past peoples that pursued vibrant lifestyles in Northern Virginia during the Late Woodland period.

Given the lack of available material from excavated Late Woodland components in Northern Virginia, further targeted excavations along the lines of those conducted at the Fisher (44LD4), Keyser Farm (44PA1), and Potomac Creek (44ST2) sites are clearly warranted for archaeological sites excavated prior to the development of modern field and analytical techniques—should intact portions of these sites remain. New excavations at old sites can recover critical data on community patterns, transformations in settlement and subsistence practices, and verify the chronological placement of individual components.

Ideally, curated collections of field records, artifacts, and ecofacts should be able to help us clarify many of the issues that remain unsolved for the Late Woodland period of Northern Virginia. Except for recent excavations at sites like Keyser Farm (44PA1), however, we lack organic remains recovered from discrete contexts for many of the major sites excavated prior to the last decade or so—as Means determined when he examined the extant radiocarbon database for all of Virginia—and not just for the Late Woodland period (Means and McKnight 2010). This situation needs to be addressed. Additional AMS dates on introduced cultigens—particularly maize—from discrete contexts would not only help us determine when specific plants were adopted, but also help discern when poorly dates sites were actually occupied. AMS dates from organic residue adhering to ceramic vessels would also help contribute to recreating the occupational history of various sites—and, allow us to further decipher the extent that technological differences between named ceramic types might have correlated to distinct temporal ranges. We might also be able to examine variation across Northern Virginia throughout the Late Woodland between distinct social groups if we combine information on well-dated ceramic vessels with data on cordage-twist impressions, technological variation, and the geographic distribution of these vessels.

Kavanagh (2001:11) noted that we lack data on community structure for large sites, and chronological data for small sites, associated with the Montgomery Complex. We would argue that we can generalize her statement for all cultural groups that inhabited Northern Virginia throughout the Late Woodland period. If we want to truly understand how American Indian

societies changed during the Late Woodland period, we need broad exposure of community patterns for sites of all sizes. As has shown elsewhere, layouts of village settlements—at least—were integral to how many American Indian villagers viewed their place within this world and were consciously manipulated to reinforce the tenuous ties that characterized village societies—sometimes by making a direct link to native perceptions of the cosmos (Means 2007). Currently, we lack details on community structure from many sites, because our excavation strategies in the past have often emphasized intensive recovery of information from small areas and not extensive information from large site areas.

Hodges (2004) advocated for more regional survey and more attention to settlement patterns. We strongly agree with the latter statement, and tentatively agree with her call for more regional survey. However, we do not have a solid notion of what site date we already have available to us. Integration of GIS efforts with the existing site data base—especially linked directly to temporal data—would help us specifically determine why Late Woodland groups chose to live where they did and why this shifted over time. We would argue that we should endeavor to move away from using culture historical constructs as much as possible. We do not think that we always ask the questions that we should about past American Indian lifeways. Rather, we often expend all of our energy forcing sites to fit into extant culture historical constructs or constantly work to refine the definition of these constructs. We must admit that we look forward to the continued and dedicated efforts by archaeologists working in the field and with curated collections over the next few years— building on the legacy generated by decades of archaeological research—to explore the dynamic changes that happened among Northern Virginia's American Indian societies during the Late Woodland period.

Table 9.1. Calibrated radiocarbon assays from Northern Virginia. Note: some of the sites may be outside of the area defined here as Northern Virginia, but are in counties that overlap this area.

Laboratory#	County/ city name	Site#	Site name	Calibrated Radiocarbon Age	Reference
SI-219	Augusta	20	Lewis Creek Mound	580 ± 200 BP (cal 2 σ AD 1017 to 1953)	MacCord and Valliere 1965
SI-218	Augusta	20	Lewis Creek Mound	860 ± 240 BP (cal 2 σ AD 653 to 1485)	MarCord and Valliere 1965
Beta-108336	Augusta	20	Lewis Creek Mound	980 ± 50 BP (cal 2 σ AD 973 to 1180)	Trimble 1996
Beta-108337	Augusta	35	John East Mound	970 ± 50 BP (cal 2 σ AD 983 to 1186)	Trimble 1996
SI-367	Augusta	35	John East Mound	730 ± 90 BP (cal 2 σ AD 1050 to 1413)	Valliere and MacCord 1985
SI-366	Augusta	35	John East Mound	640 ± 150 BP (cal 2 σ AD 1035 to 1626)	Valliere and MacCord 1985
SI-365	Augusta	35	John East Mound	1050 ± 290 BP (cal 2 σ AD 396 to 1436)	Valliere and MacCord 1985
SI-480	Augusta	51	Lewis Creek Cement Plant	1100 ± 60 BP (cal 2 σ AD 779 to 1026)	Valliere and Harter 1986
SI-5891	Bath	0	Williams Cave	920 ± 65 BP (cal 2 σ AD 1000 to 1253)	Faulkner 1988

Table 9.1. *continued*

Laboratory#	County/ city name	Site#	Site name	Calibrated Radiocarbon Age	Reference
SI-5791	Bath	0	Williams Cave	890 ± 70 BP (cal 2 σ AD 1023 to 1261)	Faulkner 1988
SI-5792	Bath	0	Williams Cave	955 ± 75 BP (cal 2 σ AD 900 to 1252)	Faulkner 1988
UGa-873	Bath	3	Perkins Point	550 ± 60 BP (cal 2 σ AD 1296 to 1445)	MacCord 1985
Beta-261039	Bath	3	Perkins Point	40 ± 40 BP (cal 2 σ AD 1691 to 1926)	Means and McKnight 2010
Beta-261038	Bath	3	Perkins Point	340 ± 40 BP (cal 2 σ AD 1462 to 1643)	Means and McKnight 2010
UGa-3083	Bath	3	Perkins Point	435 ± 50 BP (cal 2 σ AD 1408 to 1632)	Whyte and Geier 1982, Geier and Boyer 1982
UGa-3080	Bath	3	Perkins Point	315 ± 60 BP (cal 2 σ AD 1450 to 1795)	Whyte and Geier 1982, Geier and Boyer 1982
UGa-3082	Bath	3	Perkins Point	440 ± 130 BP (cal 2 σ AD 1278 to 1953)	Whyte and Geier 1982, Geier and Boyer 1982
UGa-4057	Bath	5	Huffman	1625 ± 400 BP (cal 2 σ 730 B.C. to AD 1186)	Geier and Warren 1982
UGa-4048	Bath	5	Huffman	730 ± 65 BP (cal 2 σ AD 1165 to 1396)	Geier and Warren 1982a, Geier and Boyer 1982
UGa-4055	Bath	5	Huffman	765 ± 65 BP (cal 2 σ AD 1052 to 1390)	Geier and Warren 1982a, Geier and Boyer 1982
UGa-4056	Bath	5	Huffman	1065 ± 70 BP (cal 2 σ AD 779 to 1154)	Geier and Warren 1982a, Geier and Boyer 1982
UGa-4054	Bath	5	Huffman	935 ± 75 BP (cal 2 σ AD 985 to 1256)	Geier and Warren 1982a, Geier and Boyer 1982
Beta-261037	Bath	5	Huffman	440 ± 40 BP (cal 2 σ AD 1410 to 1620)	Means and McKnight 2010
UGa-4053	Bath	15	Noah's Ark	675 ± 65 BP (cal 2 σ AD 1226 to 1409)	Geier and Warren 1982b, Geier and Boyer 1982
UGa-4051	Bath	15	Noah's Ark	695 ± 70 BP (cal 2 σ AD 1211 to 1411)	Geier and Warren 1982b, Geier and Boyer 1982
UGa-4050	Bath	15	Noah's Ark	645 ± 80 BP (cal 2 σ AD 1227 to 1431)	Geier and Warren 1982b, Geier and Boyer 1982
UGa-4052	Bath	15	Noah's Ark	700 ± 85 BP (cal 2 σ AD 1164 to 1417)	Geier and Warren 1982b, Geier and Boyer 1982
UGa-4049	Bath	15	Noah's Ark	920 ± 120 BP (cal 2 σ AD 871 to 1295)	Geier and Warren 1982b, Geier and Boyer 1982

Table 9.1. *continued*

Laboratory#	County/ city name	Site#	Site name	Calibrated Radiocarbon Age	Reference
UGa-2517a	Bath	31	Hidden Valley Rock-shelter	165 ± 55 BP (cal 2 σ AD 1655 to 1953)	Geier 1982:31; 179 (BA-28)
UGa-2517b	Bath	31	Hidden Valley Rockshelter	190 ± 55 BP (cal 2 σ AD 1640 to 1955)	Geier 1982:31; 179 (BA-28)
SI-127	Bath	35	Hirsh Mound	920 ± 130 BP (cal 2 σ AD 783 to 1377)	Holland 1962, 1964
UGa-1462	Bath	39	Beaver I	435 ± 90 BP (cal 2 σ AD 1311 to 1650)	Geier and Trout 1978
Beta-227630	Bath	39	Beaver Pond	330 ± 40 BP (cal 2 σ AD 1466 to 1646)	McKnight and Gallivan 2007:187
UGa-3079	Bath	131	Tampoons Defeat	440 ± 55 BP (cal 2 σ AD 1400 to 1635)	Geier and Coffey 1982, Geier and Boyer 1982
Beta-83406	Bath	870	Little Mt. Glyph Cave	500 ± 90 BP (cal 2 σ AD 1288 to 1633)	VDHR files
Beta-83403	Bath	870	Little Mt. Glyph Cave	820 ± 110 BP (cal 2 σ AD 995 to 1392)	VDHR files
Beta-83405	Bath	870	Little Mt. Glyph Cave	980 ± 120 BP (cal 2 σ AD 781 to 1268)	VDHR files
Beta-83404	Bath	870	Little Mt. Glyph Cave	1100 ± 120 BP (cal 2 σ AD 673 to 1161)	VDHR files
SI-535	Clarke	3	Kerns	900 ± 70 BP (cal 2 σ AD 1020 to 1260)	Slattery and Woodward 1992
SI-58	Fairfax	1	Fraser	790 ± 100 BP (cal 2 σ AD 1026 to 1392)	Slattery and Woodward 1992
Beta-46954	Fairfax	544	Taft	850 ± 50 BP (cal 2 σ AD 1043 to 1270)	Johnson 1988, Norton and Baird 1994
Beta-46955	Fairfax	544	Taft	750 ± 70 BP (cal 2 σ AD 1053 to 1396)	Johnson 1988, Norton and Baird 1994
Beta-46956	Fairfax	544	Taft	360 ± 130 BP (cal 2 σ AD 1309 to 1954)	Johnson 1988, Norton and Baird 1994
AA-17229	Fairfax	544	Taft	354 ± 44 BP (cal 2 σ AD 1453 to 1639)	VDHR files
Beta-61318	Fairfax	544	Taft	390 ± 60 BP (cal 2 σ AD 1434 to 1641)	Norton and Baird 1994
Beta-46953	Fairfax	1471	Little Marsh Creek	640 ± 50 BP (cal 2 σ AD 1279 to 1406)	Moore 1990:35
Beta-34804	Fairfax	1471	Little Marsh Creek	430 ± 90 BP (cal 2 σ AD 1312 to 1653)	Moore 1990:35
Beta-49255	Fairfax	1847	Lazy Point	590 ± 60 BP (cal 2 σ AD 1286 to 1430)	
Beta-139298	Fairfax	2076	Lorton Town Center	330 ± 40 BP (cal 2 σ AD 1466 to 1646)	VDHR files
Beta-177222	Fairfax	2634	David	1210 ± 40 BP (cal 2 σ AD 687 to 937)	Inashima 2006:4.13, 10.07

Table 9.1. *continued*

Laboratory#	County/ city name	Site#	Site name	Calibrated Radiocarbon Age	Reference
Beta-177179	Fairfax	2634	David	1230 ± 50 BP (cal 2 σ AD 669 to 934)	Inashima 2006:4.13, 10.07
Beta-179551	Fairfax	2634	David	330 ± 40 BP (cal 2 σ AD 1466 to 1646)	Inashima 2006:9.59
Beta-244348	Fairfax	3226	Clark's Branch	1040 ± 40 BP (cal 2 σ AD 893 to 1119)	Inashima 2008
Beta-11095	Frederick	31	Otter Creek	630 ± 50 BP (cal 2 σ AD 1281 to 1409)	Egloff et al.1987
SI-137	King George	3	De Shazo	360 ± 120 BP (cal 2 σ AD 1314 to 1954)	MacCord 1965
Beta-109227	King George	105	Payne	660 ± 40 BP (cal 2 σ AD 1274 to 1397)	Klein et al. 1998
Beta-159908	Loudoun	4	Fisher	590 ± 40 BP (cal 2 σ AD 1296 to 1417)	Pullins and Lewes 2001
UGa-4470	Loudoun	4	Fisher	1025 ± 70 BP (cal 2 σ AD 832 to 1186)	Slattery and Woodward 1992
Beta-141256	Loudoun	10	Trittipoe	510 ± 60 BP (cal 2 σ AD 1297 to 1485)	Hranicky and MacCord 1999
Beta-14817	Loudoun	14	Point of Rocks	730 ± 80 BP (cal 2 σ AD 1057 to 1409)	Rust 1986
Beta-178036	Loudoun	15	Catoctin Creek	760 ± 40 BP (cal 2 σ AD 1187 to 1295)	Corson 2003
UGa-2983	Loudoun	15	Catoctin Creek	885 ± 60 BP (cal 2 σ AD 1030 to 1254)	Rust 1986
UGa-2819	Loudoun	15	Catoctin Creek	780 ± 75 BP (cal 2 σ AD 1043 to 1388)	Rust 1986
Beta-8319	Loudoun	250	Country Side	810 ± 110 BP (cal 2 σ AD 1016 to 1395)	Rust 1986
Beta-13226	Loudoun	250	Country Side	1370 ± 140 BP (cal 2 σ AD 402 to 976)	Rust 1986
Beta-6701	Loudoun	283	Lot 72	1210 ± 70 BP (cal 2 σ AD 671 to 971)	Rust et al. 1983, Rust 1986
Gx-9111	Loudoun	283	Lot 72	1580 ± 415 BP (cal 2 σ 537 B.C. to AD 1257)	Rust et al. 1983, Rust 1986
Beta-27978	Loudoun	379	Indian Creek	650 ± 80 BP (cal 2 σ AD 1226 to 1426)	Haynes 1990
Beta-29491	Loudoun	379	Indian Creek	580 ± 160 BP (cal 2 σ AD 1046 to 1657)	Haynes 1990
Beta-	Loudoun	521	Dulles Wetlands	550 ± 60 BP (cal 2 σ AD 1296 to 1445)	Balicki and Stevens 1994
Beta-	Loudoun	521	Dulles Wetlands	790 ± 70 BP (cal 2 σ AD 1043 to 1383)	Balicki and Stevens 1994
Beta-205353	Page	1	Keyser Farm	480 ± 40 BP (cal 2 σ AD 1327 to 1477)	Barber, Michael, personal communication, May 27, 2009

Table 9.1. *continued*

Laboratory#	County/ city name	Site#	Site name	Calibrated Radiocarbon Age	Reference
Beta-205354	Page	1	Keyser Farm	530 ± 60 BP (cal 2 σ AD 1296 to 1454)	Barber, Michael, personal communication, May 27, 2009
Beta-260817	Page	1	Keyser Farm	360 ± 40 BP (cal 2 σ AD 1450 to 1636)	Means and McKnight 2010
Beta-260818	Page	1	Keyser Farm	370 ± 40 BP (cal 2 σ AD 1446 to 1636)	Means and McKnight 2010
Beta-260820	Page	1	Keyser Farm	380 ± 40 BP (cal 2 σ AD 1442 to 1635)	Means and McKnight 2010
Beta-260821	Page	1	Keyser Farm	380 ± 40 BP (cal 2 σ AD 1442 to 1635)	Means and McKnight 2010
Beta-260816	Page	1	Keyser Farm	390 ± 40 BP (cal 2 σ AD 1437 to 1635)	Means and McKnight 2010
Beta-260819	Page	1	Keyser Farm	410 ± 40 BP (cal 2 σ AD 1427 to 1632)	Means and McKnight 2010
Beta-214927	Page	1	Keyser Farm	350 ± 40 BP (cal 2 σ AD 1456 to 1638)	Tolley, George, p.c. 2009
Beta-214928	Page	1	Keyser Farm	380 ± 40 BP (cal 2 σ AD 1442 to 1635)	Tolley, George, p.c. 2009
SI-135	Shenandoah	1	Bowman	240 ± 120 BP (cal 2 σ AD 1456 to 1954)	Holland 1964; MacCord 1964
SI-136	Shenandoah	1	Bowman	310 ± 120 BP (cal 2 σ AD 1416 to 1954)	Holland 1964; MacCord 1964
Beta-56601	Shenandoah	3	Quicksburg	460 ± 70 BP (cal 2 σ AD 1313 to 1635)	MacCord 1973, Klein 1994a, 1994b
Beta-260822	Shenandoah	3	Quicksburg	250 ± 40 BP (cal 2 σ AD 1513 to 1955)	Means and McKnight 2010
Beta-104595	Stafford	2	Potomac Creek	350 ± 30 BP (cal 2 σ AD 1457 to 1636)	Blanton et al. 1999
Beta-104593	Stafford	2	Potomac Creek	730 ± 30 BP (cal 2 σ AD 1224 to 1297)	Blanton et al. 1999
Beta-104592	Stafford	2	Potomac Creek	340 ± 40 BP (cal 2 σ AD 1462 to 1643)	Blanton et al. 1999
Beta-102324	Stafford	2	Potomac Creek	410 ± 50 BP (cal 2 σ AD 1421 to 1635)	Blanton et al. 1999
Beta-102322	Stafford	2	Potomac Creek	640 ± 50 BP (cal 2 σ AD 1279 to 1406)	Blanton et al. 1999
Beta-102323	Stafford	2	Potomac Creek	540 ± 60 BP (cal 2 σ AD 1296 to 1449)	Blanton et al. 1999
Beta-102325	Stafford	2	Potomac Creek	670 ± 60 BP (cal 2 σ AD 1252 to 1411)	Blanton et al. 1999
Beta-104594	Stafford	2	Potomac Creek	990 ± 70 BP (cal 2 σ AD 896 to 1211)	Blanton et al. 1999
Beta-226809	Stafford	2	Potomac Creek	350 ± 40 BP (cal 2 σ AD 1456 to 1638)	McKnight and Gallivan 2007:187

Table 9.1. *continued*

Laboratory#	County/ city name	Site#	Site name	Calibrated Radiocarbon Age	Reference
Beta-7443	Warren	2	Sours Site	650 ± 50 BP (cal 2 σ AD 1275 to 1405)	VDHR files
Beta-2913	Warren	300	Cabin Run	630 ± 50 BP (cal 2 σ AD 1281 to 1409)	Snyder and Fehr 1984
Beta-2911	Warren	300	Cabin Run	700 ± 60 BP (cal 2 σ AD 1218 to 1399)	Snyder and Fehr 1984
Beta-3218	Warren	300	Cabin Run	730 ± 80 BP (cal 2 σ AD 1057 to 1409)	Snyder and Fehr 1984
Beta-2915	Warren	300	Cabin Run	820 ± 80 BP (cal 2 σ AD 1031 to 1291)	Snyder and Fehr 1984
Beta-3219	Warren	300	Cabin Run	1020 ± 80 BP (cal 2 σ AD 785 to 1212)	Snyder and Fehr 1984
Beta-2910	Warren	300	Cabin Run	260 ± 100 BP (cal 2 σ AD 1449 to 1954)	Snyder and Fehr 1984
Beta-2912	Warren	300	Cabin Run	1030 ± 100 BP (cal 2 σ AD 777 to 1215)	Snyder and Fehr 1984
Beta-3220	Warren	300	Cabin Run	740 ± 120 BP (cal 2 σ AD 1036 to 1415)	Synder and Fehr 1984
Beta-200315	Warren	329	522 Bridge	300 ± 50 BP (cal 2 σ AD 1465 to 1796)	VDHR files
DIC-1766	Westmoreland	119	White Oak Point	490 ± 45 BP (cal 2 σ AD 1317 to 1478)	Waselkov 1982
DIC-1764	Westmoreland	119	White Oak Point	640 ± 50 BP (cal 2 σ AD 1279 to 1406)	Waselkov 1982
DIC-1762	Westmoreland	119	White Oak Point	260 ± 55 BP (cal 2 σ AD 1470 to 1955)	Waselkov 1982
DIC-1767	Westmoreland	119	White Oak Point	320 ± 55 BP (cal 2 σ AD 1451 to 1662)	Waselkov 1982
DIC-1770	Westmoreland	119	White Oak Point	410 ± 55 BP (cal 2 σ AD 1420 to 1635)	Waselkov 1982
DIC-1768	Westmoreland	119	White Oak Point	610 ± 55 BP (cal 2 σ AD 1284 to 1417)	Waselkov 1982
DIC-1769	Westmoreland	119	White Oak Point	1070 ± 60 BP (cal 2 σ AD 781 to 1149)	Waselkov 1982
DIC-1763	Westmoreland	119	White Oak Point	1090 ± 60 BP (cal 2 σ AD 778 to 1033)	Waselkov 1982
SI-4374	Westmoreland	119	White Oak Point	945 ± 70 BP (cal 2 σ AD 975 to 1252)	Waselkov 1982
DIC-1765	Westmoreland	119	White Oak Point	440 ± 75 BP (cal 2 σ AD 1324 to 1643)	Waselkov 1982

Chapter 10

Woodland Period Research in Eastern Virginia in the Context of the Broader Chesapeake

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Introduction

Although conducted nearly twenty years ago, investigations of the Potomac Creek site represent the beginning of a conceptual shift in the study of the late "prehistory" of Virginia's Coastal Plain. Not long after the publishing of the Woodland period Council of Virginia Archaeologists (COVA) volumes (Reinhart and Hodges 1991; Reinhart and Hodges 1992), Blanton and colleagues explored the complicated history of the Patawomeke community, a case study that brings into focus several prominent themes in the current archaeological literature of the Chesapeake (Blanton et al. 1999). Their study (1999:92) traced a history whereby 250 to 300 "uncomfortable immigrants" constructed a large, compact settlement during the 14th century AD that was surrounded by a double palisade, rectangular bastions, and an encircling ditch. During the 15th century, the immigrants, possibly originating from Owasco communities of the upper Susquehanna, created a "flourishing Tidewater culture" as the village lost its defensive orientation and its settlers interred ancestors in collective ossuaries (Blanton et al. 1999:96). A century later, Potomac Creek residents established a second village nearby that was home to the local weroance (or political leader) and central to the social landscape of the Patawomekes, an Algonquian-speaking people who figured prominently in the Chesapeake's early colonial history. From Patawomeck, or "trading place" (Barbour 1971:296), and related settlements along the Potomac, the Patawomekes were a counterweight to the Powhatan paramountcy that exercised authority across coastal Virginia during the early colonial era (Potter 1993:170–175, Rice 2007). Today, descendants of the Patawomekes remain in the Chesapeake region, are engaged in the archaeology at Potomac Creek, and have drawn on this research in their successful effort to gain official status as a recognized tribe.

As a prominent example of recent Chesapeake archaeology, the Potomac Creek research highlights themes that have become more important in the region during the last two decades: explanations of cultural change a shaped by historical contingency and social interaction; population movements that introduced new traditions and social conflicts amid a diverse Precontact setting; persistent places that became centers of resource procurement, feasting, ritual, and social ranking; exchange cycles that connected disparate communities within and beyond the Chesapeake; and research that spans historical archaeology and "prehistory" in order to track links between Precontact developments and Colonial-era events.

Until fairly recently, the Precontact archaeology of Eastern Virginia and the broader Chesapeake has been characterized as a parochial backwater where researchers have been reticent to join the discipline's epistemological debates (Mouer 1997; Waselkov 1997). Much of the archaeology conducted in the region has aimed at describing diagnostic artifacts and at understanding adaptive changes to environmental settings. Although the best examples of such efforts have provided effective frameworks for material culture, settlement patterns,

and subsistence regimes, it is also clear that these approaches have placed interpretive constraints on the region's archaeology. The prominent role played by avocationalists in the study of native sites, particularly in Virginia (MacCord 1990) but also in Maryland (Curry 1999), has resulted in extensive excavation along with archaeology that is at times less attuned to developments influencing other North American regions. Late Woodland archaeology and early colonial accounts together have made the Chesapeake "the laboratory to explore the archaeological fingerprint of complex societies" on the Atlantic coast (Stewart 1995, p. 195), yet chiefdom studies in the Chesapeake have had, at best, mixed success at identifying archaeological patterning to balance colonial accounts (e.g., Binford 1964; Gallivan 2003; Potter 1993; Rountree and Turner 1998; Turner 1986).

Since the publishing of the previous Woodland period COVA volumes (Reinhart and Hodges 1991, 1992) researchers have begun to push against these limitations. As is the case elsewhere in North America, an eclectic range of theoretical perspectives has taken root in the Chesapeake (Means and Klein 2003), including those that highlight Native American materiality (e.g., Hantman 1990; Potter 2006), body symbolism (e.g., Pietak 1998; Shephard 2016), social hybridity (e.g., Dent 2005; Moore 1993), landscape and emplacement (e.g., Gallivan 2007; Knepper et al. 2006), poststructuralist analysis of ritual (e.g., Dunham 1999), Braduelian temporalities (e.g., Jirikowic 1995; Klein and Sanford 2004), world-systems theory (e.g., Hall and Chase-Dunn 1999; Stewart 2004), Darwinian evolutionary theory (e.g., Boyd 2004a), and indigenous perspectives (e.g., Clark and Custer 2003; Hantman et al. 2000). Researchers have begun to consider historically oriented interpretations that foreground particular configurations of exchange networks, ideology, tradition, ritual, and agency. Efforts to understand the social significance of artifact styles, cultural boundaries, and ceremonial centers have opened the possibility of a new era in which Precontact Chesapeake archaeology could become the basis for a long-term history of native societies that crosses the Contact/Precolonial divide in a seamless way (cf. Hodder 1987; Nassaney and Johnson 2000). Cultural ecological approaches remain in place, but these are increasingly informed by more nuanced climate histories (e.g., Stahle et al. 1998), geoarchaeological models (e.g., Monaghan et al. 2004), paleoecological records (e.g., McWeeney and Kellogg 2001), and subsistence data (e.g., Messner 2008) that highlight localized conditions and the complex relationships that link environment, culture, and history (e.g., Rice 2009). There appears to be a shift, however, in the growing influence of historical ecology among regional researchers (e.g., Herlich 2016). These studies counter environmental determinism and its legacy by recognizing that although humans and societies are changed by their environments, they too modify, shape, and disrupt the landscapes within which they reside—historical dynamics that play out over broad geographic and temporal scales. Many of the recent interpretive shifts have been enabled, in part, by an expanded evidentiary base generated by CRM (e.g., Stewart 2000). Several leaders of the more historically oriented archaeology beginning to emerge in the Chesapeake had, in previous years, been advocates of systemic models of culture, neo-evolutionary typologies, and adaptationist explanations.

This chapter reviews eastern Virginia research from the past two decades, but also situates regional research within the broader Chesapeake, focusing selectively on Woodland period studies that address these themes. We depend on several regional summaries (e.g., Custer 1994a; Dent 1995; Hantman and Gold 2002; Little 1995; Stewart 1995) and a series of period-based reviews including previously published COVA volumes (Blanton 2003; Hodges 2004; Klein 2003a; Reinhart and Hodges 1991, 1992; Turner 2004). With the exception of the internationally significant investigations of the pre-Clovis Cactus Hill site (McAvoy and McAvoy 1997), much of the recent archaeology conducted in the region that has broader importance centers on the Woodland period and on early Colonial contact.

Where archaeological studies of the Chesapeake have typically focused on the rise of native polities cast as archetypal chiefdoms (e.g., Potter 1993; Rountree and Turner 2002; Turner 1976), the richly detailed archaeological evidence from recent field research highlights historical processes not easily accommodated within existing social typologies. In conjunction with the area's voluminous early colonial accounts, the Chesapeake is now poised to become one of the primary regions in North America in which archaeologists foreground historical processes of native social construction that cross the colonial/prehistoric divide. Of broad significance for

the archaeology of native North America are Chesapeake cultural landscapes (Strickland et al. 2016) and related social dynamics of the Woodland period that come into sharper focus during the early historic era as Native American communities developed distinctive responses to colonial incursions.

The Indigenous Chesapeake

Virginia's Coastal Plain is a key component of the broader Chesapeake region, which is defined in large part by the Chesapeake Bay, the largest estuary in the United States and home to rich and diverse ecological systems and ecotonal settings (Curtin et al. 2001; Rountree et al. 2007). The region is drained by rivers flowing into the Bay, including the Susquehanna, Choptank, Nanticoke, Patuxent, Potomac, Rappahannock, York, and James, and extends as far north as New York's Finger Lakes and as far west as the Great Appalachian Valley (Figure 10.1). Particularly after the 1971 establishment of the Middle Atlantic Archaeological Conference, the Chesapeake has been subsumed within a Middle Atlantic region that stretches along the Atlantic coast from New York to Virginia and west to the Ridge and Valley province (Custer 1994a). For those favoring a culture-area approach, the Chesapeake suffers along with the Middle Atlantic from uncertainty as to whether it belongs with the Northeast or the Southeast culture area; at different points in the Precontact sequence, one or the other regional affinity seems more appropriate (Custer 1994:329; Hantman and Gold 2002:271). Researchers going back to Holmes (1897:19–20) nonetheless have argued persuasively that the Chesapeake represents a coherent natural and cultural unit within eastern North American archaeology (Dent 1995:2)

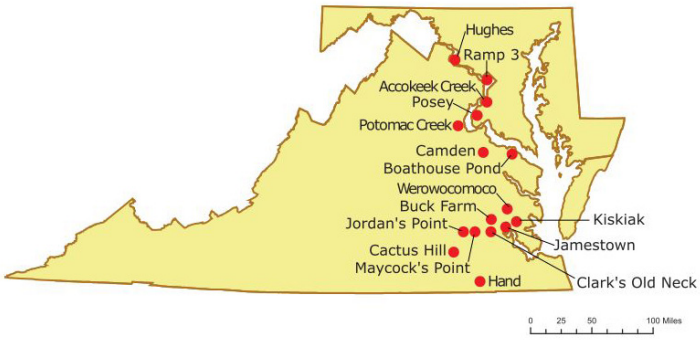

Figure 10.1. Archaeological Sites from Virginia and Maryland Mentioned in Overview.

The archaeological record beginning c. 1200 BC points to the salience of cultural traditions and social networks within a "Chesapeake" region that includes the Coastal Plain and Piedmont provinces of Virginia, Maryland, and Delaware. Recent summaries of Chesapeake natural history (e.g., Dent 1995:69–95; LeeDecker 1991; Miller 2001), drawing on analyses by Carbone (1976), Brush (1986, 2001), and others, provide the ecological parameters framing the region's culture history. Marine transgression triggered by the rising sea levels of the Holocene formed the Chesapeake Bay and its extensive estuary, a process that was essentially complete by 3,000 years ago (Dent 1995:83–84). At roughly the same time, c. 1200 BC, steatite-tempered Marcey Creek pottery appeared throughout the Coastal Plain and Piedmont regions from Delaware south to the James River in Virginia (Egloff and Potter 1982:95), highlighting the emergence of social networks and, possibly, shared ceremonial practices (Klein 1997) of the Chesapeake. Shell-tempered Mockley ceramics appeared c. AD 200 across coastal Chesapeake, introducing a fall-line boundary between the Coastal Plain and the Piedmont and a smaller area marked by a shared ceramic tradition (Egloff 1985). While Chesapeake archaeology typically focuses on the Coastal Plain after the appearance of Mockley pottery, continuing links into the Piedmont have long been recognized in the archaeological and ethnohistorical records (e.g., Hantman 1990; 1993; Kavanagh 1982; Mouer 1983; Rountree 1993). By the 16th century, a circum-Chesapeake exchange sphere that conveyed locally produced shell beads and copper objects from beyond the region is apparent archaeologically (Klein and Sanford 2004:58–64; Shephard 2015). The Chesapeake region includes the history of coastal Algonquians as well as Iroquoian and Siouan speakers of the interior who were impacted by early European colonization on the Atlantic coast. The archaeological record of Virginia's Coastal Plain can only be understood in terms of its place within the broader Chesapeake region surrounding the bay. Unpacking the region's indigenous social history requires accepting that the Chesapeake was, prior to the arrival of Europeans, an area with both artificial and permeable limits and considerable internal diversity, and that the area does have clear historical and cultural coherence during the final three millennia of prehistory.

Archaeological study of the broader Chesapeake has

a long and storied past that includes work by Jefferson (1787), Holmes (1890, 1897), Binford (1964), and prominent figures of historical archaeology (e.g., Deetz 1996; Leone 1995). Research here has played a role in the beginnings of problem-oriented archaeology in Jefferson's excavation of a Monacan burial mound (Hantman and Dunham 1993), an early case study in processual archaeology (Binford 1991), innovative studies of native social complexity that combine archaeology and ethnohistory (e.g., Rountree and Turner 2002), and excavations at the early English colonial settlement of Jamestown (e.g., Kelso 2006). The Chesapeake also benefits from pioneering programs of archaeological research associated with outdoor museums (e.g., Brown and Edwards 2006; Miller 2007) and urban areas (e.g., Cressey and Vinton 2007, Leone 2005), though these programs typically focus on non-native histories. In fact, the prominence of historical archaeology across the Chesapeake often overshadows the region's Native American past. Prior to the 1990s, efforts to characterize the archaeological record of the region's native societies focused on cultural-ecological frameworks and neoevolutionary models (e.g., Custer 1989; Gardner 1982). During that era of research, settlement pattern studies took center stage (e.g., Potter 1982; Turner 1976), often emphasizing a Woodland period focused on productive estuarine and riverine environments, and cultural developments understood as adaptations to changes in Holocene environments.

More recently, Dent (1995) has provided a comprehensive summary of research in the region and the authoritative reference on the region's culture history. Writing in the early 1990s, Dent highlighted a handful of efforts to consider the importance of cultural actors, agency, and symbolism in the archaeology of the Chesapeake, themes that already had considerable influence outside of the region. Dent (1995:66) was heartened by the appearance of archaeological and ethnohistorical research, including studies by Haynes (1990), Jirikowic (1990), and Williamson (1979), that began to broaden the then-standard reliance on paleoenvironmental discontinuities to explain social configurations and culture change in the Chesapeake. Adding his own voice, Dent (1995:277–284) proposed that the rise of chiefdoms in the Chesapeake coincided with an internal reordering of social life during the 16th century triggered by the balkanization of regional groups, population movements, European-introduced disease, and elites' usurpation of ancestral power. In his review of Middle Atlantic archaeology, Custer (1994a:347) similarly noted sporadic signs of increased social complexity, or "flashes in the pan," from the Late Archaic through contact periods that failed to accord in any simple way with environmental parameters. Picking up on this theme, Hantman and Gold (2002:289) noted that the Middle Atlantic region was characterized after 1200 BC by a long-term cyclical pattern whereby competition for rank "was defined by the ability to access nonlocal prestige goods and distinctive mortuary ritual." We borrow from this line of thought, traceable through Dent, Custer, Hantman, and Gold, to organize this review.

Early Woodland

Although small ephemeral sites dating to the Early Woodland period (1200-500 BC) are identified with some frequency during cultural resource management surveys, the time period has seen relatively limited study by academics within the Chesapeake. Recent research has, however, applied innovative interpretations to the study of early ceramics, settlement organization, and floodplain geoarchaeology (Klein 2003a:207). The general point of departure for most Early Woodland research in the Chesapeake is a fusion–fission settlement model based on seasonal oscillation between macrogroup/habitation sites and microgroup/temporary camp sites (Custer 1989:198). Increasing population and sedentism between 1100 BC and 500 BC have been tied to more efficient exploitation of resources in localized areas of natural food diversity (Klein and Klatka 1991; Turner 1976). During this period, hunter-foragers also developed new storage and container technologies within large, semisedentary base camps during a "Transitional period," hinting at things to come (Mouer 1991).

The Early Woodland period in the Chesapeake is marked by the adoption of Marcey Creek pottery and a number of similar "experimental" wares by hunter-foragers who constructed vessels from slabs of clay molded by hand into trough or bowl shapes (Dent 1995:225; Egloff 1991; Egloff and Potter 1982:95–97). Marcey Creek ceramics were tempered with crushed steatite and typically had vessel forms mimicking the shapes of soapstone vessels that moved through Late Archaic exchange networks. In the Chesapeake, soapstone bowls

appeared sporadically and in small numbers, suggesting limited access (Blanton 2003). A concentration of Late Archaic and Early Woodland soapstone vessels in northeastern Maryland bearing unusually elaborate decorations may signal that the area served as a "gateway zone," or cultural boundary area, between the distinct social spheres of the Chesapeake and of the Pennsylvania Uplands (Shaffer 2008).

Klein (1997:147, 2003a:218–219) has presented evidence that Chesapeake soapstone vessels were used for indirect cooking, stone boiling, and serving meats and ritual teas rather than for generalized cooking. His model for the subsequent adoption of ceramics in the Chesapeake is an example of Early Woodland research foregrounding regional interaction, social agency, and the social import of material culture. Drawing on similar arguments from Sassaman (1993) and ethnographic evidence pointing to the use of soapstone vessels as specialized containers, Klein argues that the movement of Marcey Creek vessels across the Chesapeake signaled efforts to maintain a ceremonial sphere linked by exchange ties involving soapstone. Marcey Creek ceramics occur in high frequencies on a limited number of sites (e.g., Mouer 1991:40), suggesting the presence of individuals or communities who controlled access to soapstone and who coordinated feasting and ceremony associated with the bowls (Hantman and Gold 2002:278). Marcey Creek ceramics appear to represent an attempt to extend such practices that originated with earlier soapstone bowls. The subsequent shift to coil constructed, quartz- and sand-tempered wares (including Accokeek Creek) made ceramic vessels more widely available. The widespread adoption of quartz- and sand- tempered wares may have resulted from efforts to develop expedient container technologies that were independent of the social networks and ceremonial spheres through which soapstone flowed. Accokeek Creek vessels from the Early Woodland period were generally limited to intensively reused macrogroup base camps in ecologically attractive settings (Stewart 1998a:2). Such places include some of the earliest evidence of residential architecture in the region (e.g., McLearen 1991b), indicating that sedentism and aggregation created conditions that led to the production of expedient containers (Klein 2003a:219). This historical process may well be implicated in the disruption of older, ceremonial exchange networks involving soapstone.

Recent work on Virginia's Eastern Shore has indicated that shell tempered ceramics, traditionally thought to be a Middle Woodland innovation, likely have a deeper history within the region. Radiocarbon dates of shell tempered Waterlily and Mockley sherds recovered from Savage Neck Shell Midden indicate that shell tempered wares were being produced on the Eastern Shore by 1100 BC (Rick et al. 2015), which is comparable to uncalibrated ages of Waterlily Plain and Currituck sherds recovered from a site in coastal northern North Carolina (Painter 1977). Herbert contends that shell tempering may have emerged in a limited area in northern North Carolina as early as 800 BC, after which it disappears for several centuries before reemerging as Mockley ware at about AD 700 (Herbert 2008:273-274). Evidence for the early production of shell-tempered ceramics between the coastal Virginia and North Carolina suggests social interaction between the two areas and complicates the narrative that the spread of Mockley ceramics beginning around AD 200 was the result of an inmigration of Algonquian speaking communities from the north (Custer 1989:308).

Efforts to characterize Early Woodland settlement forms have benefited from studies of hunter- forager aggregation sites that exhibit high artifact concentrations and intact features (e.g., Blanton 2003; Mouer 1991). Drawing on data from large, densely occupied settlements in the James River Piedmont, Mouer (1991, p. 70) has argued that "sedentary, village-dwelling societies developed in Virginia much earlier than was previously believed," during the terminal Late Archaic when a shift to riverine adaptations triggered changes in subsistence, technology, site size, and site density. Piedmont sites near the Fall Line zone exhibit extensive artifact concentrations, platform hearths for large, seasonal food preparation events, and an array of pit features. Artifact assemblages from these sites include concentrations of grooved axes, steatite vessels, and stone gorgets tied to land clearing, exchange, and expressions of identity.

Subsequent Early Woodland research has indicated that such sites were, in fact, places of intensive, seasonal occupations of hunter-foragers rather than settlements with large, permanent populations (e.g., Custer 1994b). Concentrations of hunter-forager aggregation sites dating to the Late Archaic and Early Woodland periods have been identified in several parts of the Chesapeake, including the western rim of the Dismal Swamp (Blanton

2002; Lichtenberger et al. 1994) and on the Delmarva Peninsula (Custer 1989, pp. 185–248). Excavations at the Clyde Farm site on the Delmarva Peninsula identified a concentration of contemporaneous features dated c. 1000 BC that comprised a "household cluster," including a rectangular pit house, an external storage pit and hearth, and an area containing lithic tool production debris (Custer 1989:196–198; Custer et al. 1987). Blanton (2003:187) describes an almost continuous concentration of Late Archaic and Early Woodland sites at the edge of the Dismal Swamp that exhibit similar signs of residential stability, including pit features, large hearths, and cemetery areas. Only one of these sites has been excavated systematically (Blanton 2003), though others are known from surface collections. Recovered artifacts reflect a wide array of projectile point styles within single, apparently contemporaneous, contexts, and dense concentrations of groundstone tools, grooved axes, bola weights, and roller-type pestles.

Much of this material may be understood in terms of an "intensification" of settlement and subsistence-related activities within resource-rich wetland settings (Blanton 2003:188). The numbers and diversity of nonlocal stone artifacts within these Early Woodland settlements also highlight newly expanded social networks animated by large gatherings of hunter-foragers from distinct cultural traditions (e.g., Custer 1989:235–247). In such settings, the density and variety of elaborately crafted "bannerstones" (i.e., spear-thrower weights) may, in fact, parallel expressions of "assertive identities" by distinct individuals, as noted in other places of hunter-forager aggregation near the Atlantic Coast (Sassaman 1998, 2005).

Locations with evidence of large-scale gatherings, specialized containers, and large food preparation facilities also likely played a role in the Early Woodland Chesapeake as places of seasonal aggregation and feasting. Archaeological studies of feasts emphasize that such events served diverse ends, ranging from social reproduction to social stratification (Joyce and Henderson 2007), and incorporated strategies that include establishing alliances for war and marriage, mobilizing labor, creating political power and economic advantages, and redistributing wealth (Dietler and Hayden 2001). Feasting can sometimes be recognized in the archaeological record by unusual types and quantities of food, elaborate food preparation techniques and facilities, and unusual serving vessels (e.g., Potter 2000; Spielmann 2002). Of course, not every roasting platform, decorated pot, and dense food deposit identified in the Chesapeake represents a feast, yet the co-occurrence of such evidence in places of large-scale gatherings points to the feasting and social negotiation that accompanied seasonal aggregation in the region.

The construction of houses and cemeteries and the reuse of favored locations reflected in artifact accumulations also point to the growing importance of "persistent places" (Littleton and Allen 2007; Schlanger 1992) and related changes in the relationship between people and landscape. Persistent place are locations that are used repeatedly during the long-term occupation of a region (Schlanger 1992:92) that may result from the unique qualities of particular locales, from built environments that focus reoccupations, or from repeated revisitation over the long term (Littleton and Allen 2007:296). Understanding the social integration and status competition that occurred in these locations during the Early Woodland period requires a great deal more intensive fieldwork in places like the Dismal Swamp and the Delmarva Peninsula.

Middle Woodland

While the archaeology of Early Woodland aggregation sites remains poorly understood, the Chesapeake's Middle Woodland archaeology offers a more fully developed record that points to population movements, hunter-forager interaction, cycles of social ranking, and the establishment of ceremonial centers. Recent studies of these developments in the Chesapeake have combined new methods of chronology construction, ceramic stylistic analysis, ethnobotanical research, and historical linguistics that have broad significance beyond the region. The Middle Woodland period in the Chesapeake (500 BC–AD 900) has been characterized as a period of "technological homogenization" (Dent 1995:235) during which the use of shell-tempered Mockley ceramics by native peoples spread rapidly across much of the coastal Chesapeake (Blanton 1992:74–76; Custer 1989:276–277; R. Stewart 1992). Whether this change was the result of population replacement or a new focus on estuarine resources remains unclear. The "Mockley spread" coincided with a settlement shift toward estuarine zones in the outer Coastal Plain and a "burst of human activity" apparent in the dramatically increased numbers of sites in coastal Maryland and Virginia (Blanton and Pullins 2004:69). Some Outer Coastal Plain sites exhibit shell middens covering several hectares (e.g., Dent

1995:240–241; Opperman 1992; Waselkov 1982). Excavation of such sites near the mouth of the James River exposed large burial grounds, deep storage pits, and communities that were fully sedentary or nearly so (Hodges 1998:200–201). The Middle Woodland, then, emerges as the period when a shift to increased reliance on estuarine resources coincided with the regional spread of shell-tempered pottery, developments that may have resulted from the arrival of new populations and/or the adoption of new adaptations by indigenous communities. Mockley ceramics first appeared on Maryland's Eastern Shore and subsequently spread throughout the Chesapeake, apparently heralding the arrival and spread of Algonquian-speaking populations ancestral to those present at contact (Herbert 2008:273–274). Complicating this scenario of simple population replacement, though, are indications that Mockley sites coexisted alongside those exhibiting localized wares (McLearen and Mouer 1989:22), pointing to the movement of distinct populations within overlapping territories (Hodges 1998:190).

Recent research in the region has added studies of ceramic technology, settlement patterns, exchange networks, historical linguistics, population movements, and interaction between culturally distinct hunter-forager communities. Klein's (1994) "absolute" ceramic seriation offers substantial improvements over the use of ware/type classifications, particularly for purposes of chronology construction. Drawing from Braun's (1985) ceramic engineering model and a suite of radiocarbon-dated features in Virginia, Klein developed regression equations that estimate the date of Middle Woodland through Contact period assemblages on an absolute scale. The equations depend on attributes such as sherd thickness, temper size, and vessel morphology and generate more precise temporal predictions than possible with diagnostic artifacts in phase-based dating on a relative scale. This technique has produced more fine-tuned dating of archaeological deposits and along with long-term environmental data has allowed researchers to draw connections between shifting subsistence patterns and periods of drought, as exemplified in Richmond's (2016) study of ceramics from the Kiskiak site located along the York River.

Settlement pattern models proposed for the Middle Woodland include modified versions of Binford's (1980) collector model and a related "fusion–fission" pattern centered on macroband base camps (Blanton 1992). Potter's (1993) survey of Middle and Late Woodland settlements on Virginia's Northern Neck fleshes out these possibilities with a detailed, local study. From AD 200 to 550, hunter-forager groups there moved seasonally between small interior camps and intermediate-sized shell midden sites in riverine and wetland areas. Much larger shell midden sites, including Boathouse Pond, appeared after AD 550; such locations served as places of hunter-forager aggregation for several centuries thereafter.

Persistent places and far-flung networks are particularly well expressed in the Delmarva Adena phenomenon from 500 BC to AD 1 (Custer 1987, 1989:249–275, Stewart 2004:343–345). A small number of sites on the Delmarva Peninsula dating to this interval contain trade items that originated in the Midwestern Adena. Distinctive Adena artifacts include tubular pipes, copper beads and gorgets, and Flint Ridge chalcedony bifaces. Most Delmarva Adena sites were locations of elaborate mortuary rituals that included secondary burials and cremations. At the Pig Point site along the Patuxent River, for instance, Midwestern flint blades, quartz blades, pipes, pots, and human bone appear to have been ritually "killed" or shattered and intermingled with one another ceremonially (Luckenbach 2013). Delmarva Adena may have entailed sporadic, ritualized exchange between select Chesapeake groups and those in the Ohio Valley (Custer 1989:262) or, perhaps, the migration into the area of lineages with ties to Adena ceremonialism. Under Stewart's (2004:341) model of Middle Atlantic exchange, Delmarva Adena is a primary example of the "focused" networks that arose sporadically across the Middle Atlantic through which entrepreneurs or lineages insinuated themselves within informal trade networks to obtain exotica. The geographically circumscribed distribution of these sites and the quantities of imported items raise the possibility that Delmarva Adena sites are high-status burial grounds that asserted social ranking and "big man" status (Custer 1989:268).

A second example that appears, on first glance, to reflect focused exchange is the distribution of Abbott zoned-incised pottery. Abbott ceramics, which include elaborate combinations of incised lines unlike other ceramics in the region (Cross 1956:144), have been recovered in substantial numbers from Middle Woodland deposits at the Abbott Farm site in New Jersey, from at least six sites in coastal Virginia, and from a handful of other northeastern locations (Stewart 1998b:173). Stewart (1998b) argues persuasively that Abbott vessels played a role in ceremonial feasting, particularly in aggregation locations that were well positioned to

exploit seasonal, anadromous fish runs. The Maycock's Point site on the James River contains Abbott zoned-incised pottery in shell middens dating from AD 200 to 900 (Gregory 1983; Heinsman and Duncan 2006; Opperman 1992). The presence of Abbott ceramics at Maycock's Point raises the possibility that these materials record long-distance trade with groups 400 km to the north in the Delaware Valley.

Analysis of vessel morphology supports the inference that Abbott zoned-incised vessels from Maycock's Point were serving vessels with sizes and shapes distinct from the Mockley ceramics that dominate the assemblage (Duncan and Gallivan 2006). Faunal remains record the consumption of considerable quantities of fish, oyster, deer, and wetland tubers at the location, and possibly a year-round occupation (Barber and Madden 2006). Trace element analysis of Abbott zoned incised pottery from Maycock's Point and Abbott Farm indicates that the two assemblages were produced independently from local clays, despite the presence of identical decorative motifs (Steadman 2008). Rather than focused exchange, the ceramics at Maycock's Point apparently highlight the regional movement of feasting practices and, possibly, of Middle Woodland populations.

Recent linguistic research provides some context for this finding. Drawing on earlier efforts (e.g., Goddard 1978; Luckenbach et al. 1987; Siebert 1967, 1975), Fiedel (1994:1,1999) has used glottochronology and protolexicon reconstruction to make the case that "a unified Proto-Algonquian linguistic community existed as late as the Middle Woodland period." The reconstructed Proto-Algonquian vocabulary includes cognate terms for smoking pipes, earthworks, bows, and arrows, items that became prominent in the Northeast during the Middle Woodland period. Combining these linguistic patterns with abrupt changes in artifact sequences and settlement orientations, Fiedel (1999, p. 199) sees evidence for the initial development of Proto-Algonquians in southern Ontario and their outward movement between 500 BC and AD 900. Under this scenario, population movement into the Middle Atlantic region and the Chesapeake occurred during the Middle Woodland. Protowords for town, chief, ceremonial attendant, and fellow clan member also occur across different Algonquian languages, implying that traditional social structures included large villages, totemic clans, ranked lineages, and hereditary chiefs (Fiedel 1994).

Fiedel's reconstruction of Proto-Algonquian and his use of glottochronology are by no means universally accepted. This is partly due to processual archaeologists' general distaste for migration as an explanatory tool (Cobb 2005:565), though other serious questions do arise. Stone tool technologies, pottery styles, and mortuary practices frequently crossed social and linguistic boundaries within the Chesapeake during the Contact period, making it difficult to isolate evidence of migration in the archaeological record, particularly prior to contact. The spread of shell tempering across the Chesapeake may, in fact, result from adaptive advantages inherent in this production method. Darwinian archaeologists also have highlighted problems of essentialism inherent in the use of culture-historic taxa (e.g., Kipp Island phase) as direct correlates of ethnic or language groups in the Middle Atlantic (Hart and Brumbach 2003:750). Some historical linguists (e.g., Campbell 2004:200–210) doubt the efficacy of glottochronology's methodological and analytical principles, particularly in the absence of other corroborating evidence. Nonetheless, glottochronology does play a role in recent studies of migration (e.g., Bellwood and Renfrew 2002) and the spread of domesticates (e.g., Brown 2006) that combine archaeological, biological, and linguistic data sets.

On the whole, Fiedel's linguistic analysis provides an intriguing line of evidence with which to consider the c. AD 200 "Mockley spread" and the subsequent appearance of ceremonial centers (e.g., Stewart 1998b), earthwork enclosures (e.g., Gallivan 2007), and chiefly lineages (e.g., Woodard 2008) in the Chesapeake. Moreover, as archaeologists develop detailed late prehistoric sequences in the Eastern Woodlands, migration is emerging as a "viable alternative" to explanations rooted in "gradualist assumptions" about culture change in the region (Snow 1995:59). Efforts to develop more nuanced models of population movements that draw from ethnohistorical analysis and detailed archaeological sequences also are beginning to appear in the Chesapeake (e.g., Dent 2005), adding to the growing body of studies that draw on migration, conflict, and long-range interaction to explain culture change in the Precontact Eastern Woodlands (e.g., Nassaney and Sassaman 1995).

Cordage twist direction as reflected in ceramic surface treatments offers a potentially useful method for detecting population movements in the Chesapeake. Once learned, cordage twist direction usually remains unchanged throughout a person's lifetime, so patterning

in this attribute may be interpreted as the product of different learning networks of weaver-potters (Carr and Maslowski 1995:321). Johnson and Speedy (1992) proposed that abrupt changes in cordage twist at the end of the Middle Woodland paralleled the migration of new populations along the coastal James. Complicating such evidence though is the possibility that learning networks during late Precontact centuries were shaped by increased sedentism and resulting social boundaries rather than by population movements (Klein 2003b). When sample sizes are small or the ceramics come from temporally mixed deposits, it also can be difficult to rule out the impact of handedness on cordage twist (Custer 2004).

Studies that have posited evidence of a Middle Woodland Algonquian intrusion into the Chesapeake region have been conducted at the Island Field site (Custer et al. 1990) and at the Ramp 3 site in Washington, DC (Knepper et al. 2006). Beginning in 1968, excavations at the Island Field site near the Delaware Bay identified several hundred burials dating from AD 410 to 1180 (Custer et al. 1990:200). Sections of these burial grounds were incorporated into an on-site museum that publicly displayed human remains and associated grave goods. Protests by the Nanticoke tribal leadership led to analysis and reburial of the remains. This study produced several significant archaeological results and contributed to a reorientation of Delaware archaeological practices toward the inclusion of descendant communities (Custer 2005; Petraglia and Cunningham 2006). The site also exhibited traits associated with the Kipp Island phase of the Point Peninsula complex (AD 500–800), including ceramics, grave good assemblages, and mortuary patterns (Ritchie 1994). Centered in New York and Ontario, Kipp Island-related sites also have been identified in New Jersey, Delaware, and Virginia. The mortuary complex at the Island Field site appeared at a time of other discontinuities in ceramics, settlement, and exchange patterns in Delaware, prompting Custer and colleagues (1990:207) to posit that the site records a migration of Algonquian speakers into the region.

Research on the Potomac River's Inner Coastal Plain has brought to light additional evidence of relationships between Chesapeake communities of the terminal Middle Woodland and peoples and practices to the north. Knepper and colleagues (2006:204–206) identified a feature at the Ramp 3 site in Washington, DC, containing an antler comb, antler disks, perforated shark teeth, groundstone pendants, a stone phallic effigy, a wooden bead, and charred textile fragments, materials also associated with the Kipp Island tradition. The Kipp Island connection may correspond with the spread of Algonquian cultures through the Middle Atlantic and into the Chesapeake from the Northeast during the Middle Woodland (Knepper et al. 2006:235). Extending these ideas, Potter (1999) has suggested that the mortuary ceremonialism at Ramp 3 and related sites represented "route markers" for Middle Woodland Algonquian immigrants moving south. The identified materials do indeed represent linkages to communities and practices north of the Chesapeake at a time when shell-tempered ceramics spread rapidly across the region. By the Late Woodland, the archaeological record of these populations may be seen in the distribution of Townsend complex sites surrounding the Chesapeake Bay and in the closely related Colington complex of the Carolina sounds region.

Research on the James–York Peninsula has offered evidence that beginning at the time of these postulated population movements, hunter-foragers from distinct traditions coexisted and interacted, perhaps for as long as several centuries (Blanton and Pullins 2004:89–91). Grit-tempered Varina and Prince George ceramics have a long history in the area, most often on interior sites that lack midden deposits. Shell- tempered Mockley ceramics appear after AD 200 and generally occur at midden sites in estuarine locations. Such differences in pottery production techniques may simply correspond to the tempering agents available to hunter-forager groups in different parts of a settlement round, though there are other indications that the pattern relates to two distinct social traditions that came into contact c. AD 200. While either Mockley ceramics or grit-tempered pottery dominated each assemblage, ceramics from both wares co-occur in feature deposits (Blanton and Pullins 2004:78). The evidence raises the possibility that "a Mockley-using population emerged, coexisted for a time with already-present Varina/Prince George ceramic users, and then effectively replaced the latter population" (Blanton and Pullins 2004:88). Mockley vessels on interior sites and deer bone in estuarine shell middens point to exchange, intermarriage, and the "mutualism" of Middle Woodland hunter-foragers in the area (Blanton and Pullins 2004:91).

Prompted as much by new evidence as by a theoretical reorientation, Middle Woodland research in the Chesapeake is now more open to interpretive frames that foreground population movements, powerful places, and local histories of social interaction. A recent study pushes the boundaries of this interpretive trend and postulates that Middle Woodland mortuary centers near the Potomac River fall line may be best understood best in terms of Algonquian cultural landscapes (Knepper et al. 2006:236–243). Drawing from characterizations of Eastern Algonquian cosmology and a view-shed analysis, Knepper et al. (2006:238) suggest that "beyond general strategic advantage, the river terraces would have represented favorable, even propitious symbolic locations, particularly for mortuary purposes, being near water and exhibiting commanding unobstructed paths for the dead." Whether all researchers agree with this interpretation, it is clear that Middle Woodland archaeology will continue to benefit from studies aimed at tracing the social construction of places and landscapes.

Late Woodland period

The Late Woodland period (AD 900–1600) has been the focus of archaeological research in the Chesapeake that traces the settlement of large, permanent towns, the adoption of horticulture, and the emergence of chiefly political structures. Recent studies have considered the implications of boundary formation, warfare, and mortuary ritual, while in the process highlighting the political dynamics behind the emergence of chiefdoms documented by European colonists. The ability to construct narrative histories of these polities that reach well into the Precontact era heightens the broader significance of the Chesapeake's Late Woodland record.

Many Late Woodland studies have aimed at producing "an understanding of the evolutionary processes that transformed Early and Middle Woodland societies of the Middle Atlantic into the cultures observed at the time of European Contact" (Custer 1986:9). The archaeology of hierarchical societies in the Chesapeake—including the Powhatan, Monacan, Piscataway, Patawomeke, and Nanticoke—has emphasized explanations whereby Middle Woodland (500 BC–AD 900) "harvesters of the Chesapeake" increased in population, developed circumscribed social networks, and became Late Woodland (AD 900–1500) village horticulturalists (Potter 1993:139; see also Binford 1964; Turner 1976). Binford's (1964) seminal study provided foundations for this effort by combining ecological parameters, settlement patterns, and ethnohistorical interpretation. Potter's (1982, 1993) analyses of Algonquian cultural development in the Potomac contributed a richly textured local context for tracing the history of a Native American group. In a series of publications emphasizing environmental productivity, demography, and neo-evolutionary models, Turner (1976, 1992, 1993) has linked Tidewater archaeology to Powhatan ethnohistory. Rountree and Turner's (2002) interpretation of the Powhatan chiefdom as a pyramidal political structure comprising the paramount chief who dominated the Tidewater region, weroances who controlled regional districts, councilors who influenced weroances, and commoners who paid tribute remains the region's standard sociopolitical model.

More recent research has added to and, at times, challenged these studies by emphasizing regional diversity, social conflict, the symbolic and political force of ritual, and the movement of people and material across the landscape. Stewart's (1993) comparison of Late Woodland societies in the Delaware, Potomac, and Susquehanna valleys builds on an earlier comparative study (Custer 1986) that emphasized regional variability. The role of cultigens varied widely in this area, as did community patterns that included dispersed hamlets, palisaded villages, and nucleated towns. Broad ecological factors account for few Late Woodland developments, Stewart (1993:163) argues, whereas regional interaction played a prominent role in the configuration and transformation of societies across the Middle Atlantic. For example, Stewart notes that the absence of defensive communities, settlement nucleation, and population displacements in the Delaware Valley may have resulted from relationships between communities there and Owasco societies to the north. The archaeology offers indications that the historic-era role played by the Lenape as middlemen between Iroquois and Algonquian groups may have also existed during the Late Woodland period, structuring historical developments in the Delaware Valley (Stewart 1993:173, 1998b:177).

Where researchers do foreground the environmental and geographic parameters of Late Woodland social histories, there has been a turn toward detailed studies of more localized settings and a serious consideration

of the reciprocal relationship between natural and cultural landscapes (e.g., Blanton et al. 2005; Rice 2009; Strickland 2012). A recent study of Potomac Valley history probes the relationship between long-term environmental history and local culture history by tracing developments in the drainage from the earliest native settlement through the 18th century (Rice 2009). In his effort to explain why parts of the Potomac River basin were uninhabited on the eve of colonization, Rice (2009:7–10) emphasizes three related narratives that unfolded in the region: the changing relationship between environmental conditions and cultural adaptations, the history of Native American social interaction, and the social implications of landscapes constructed by previous generations. Rice (2009:255) argues persuasively that the Precontact transition to horticulture resulted in demographic patterns among native societies that influenced the early history of colonial settlement and subsequent patterns of agrarian and urban development. Stickland (2012) has recently demonstrated the interpretive strength of Geographic Information Systems (GIS) for exploring the connection between settlement/subsistance and environmental selection parameters favored during the Late Woodland period, while further emphasizing the limitations of rigid typologies that downplay "more diverse uses of sites and spaces" (2012:69).

A comprehensive survey on the James–York Peninsula documented local environmental conditions and cyclical changes in settlement that culminated with the development of the Kiskiak polity, one of the communities encompassed within the Powhatan chiefdom by 1607 (Blanton et al. 2005:238). Settlements dating after AD 1300 record a sharp population increase and a shift to dispersed communities comprising small, distinct enclaves. Such settlements, including the village of Kiskiak, were well positioned to take advantage of the richest estuarine resources rather than areas with particularly productive soils for agriculture. Maize and other domesticates were incorporated quite late, likely during the 16th century, and even then played a modest role in subsistence. The research calls into question approaches that rely on coarse-grained models of Chesapeake cultural ecology (Blanton et al. 2005:238–240), indicating that understanding the emergence of chiefly political structures will require close attention to local histories, diverse environmental settings, and distinct economic practices.

A recent shift toward emphasizing indigenous cultural landscapes and long-term settlement of the region has both updated predictive models of Native settlement using modern GIS technology and produced interpretive strategies for presenting these findings to a broader public audience. Indigenous landscape studies take into account indigenous knowledge and oral history held by contemporary communities and recognize the inseparability of culture and the environment in the creation of a dynamic, historically contingent cultural landscape (Sullivan et al. 2013). In a study of 552 acres within the Rappahannock watershed, an analysis of ecological data and the locations of known village sites and those mapped by Zúñiga in 1608 revealed alternative interpretations of Late Woodland settlement patterns within the region (Strickland et al. 2016). Traditionally, the distribution of Rappahannock settlements along the northern shore of the Rappahannock River have been attributed at efforts to avoid Powhatan by placing a natural boundary, the river, between the two groups (Speck 1925:36; Turner 1976:161). The presence of prime agricultural soils, access to marshes, transportation tributaries, and clay for the manufacture of pottery identified on the northern bank of the Rappahannock, however, suggest that the settlement history of the Rappahannock community could have been more heavily influenced by ecological, rather than political factors (Strickland et al. 2016:iii-iv).

A broad rethinking of the relationship between culture and the environment within North American archaeology in recent years has influenced regional scholarship and provided for new interpretations of subsistence and resource management. Where perspectives stemming from cultural ecology (i.e., Steward 1955) emphasized human adaptation to the natural environment, the growing influence of historical ecology and the recognition of humans as active agents that consciously alter and manipulate the environments within which they dwell, has sketched human-environmental change as multi-directional (Balée 2006). Through an analysis of carbonized macrobotanical remains, phytolith residues from soil sediments, and starch grain residues from artifacts, Herlich's analysis of Middle and Late Woodland deposits from the Kiskiak and Werowocomoco sites along the York River and the Gouldman Oyster Shell Midden on the Potomac, explores the transformation of labor regimes among

hunter-fisher-gatherer communities in the Tidewater (2016). She argues that what may have been perceived as open, unmanaged terrain by European chroniclers, was actually a consciously managed landscape that developed over many generations—a product of gendered labor divisions and taskscapes centered around horticultural practices and shellfishing (Herlich 2016:7-10). Evidence of conscious subsistence strategies by the occupants of the Kiskiak site have also indicated conscious restrictions on oyster harvesting practices, which prevented the wholesale collapse of oyster reefs, allowing for their regeneration (Jenkins 2013). Such strategies included an increasing reliance on channel oysters, which represent an increased labor investment than the harvesting of nearby sand and bed oysters. Evidence of these strategies span the Middle Woodland period to the Late Woodland I periods, coinciding with the introduction of maize, beans, and squash horticulture, whose adoption may have been influenced by efforts to sustain valuable aquatic resources (Jenkins 2013:7). Further evidence suggests that oysters harvested from offshore reefs may have held symbolic import, incorporated into feasting events and acts of diplomacy that were distinct from day-to-day consumption practices (Jenkins 2017).

Recent, large-scale excavations have documented Late Woodland community forms. Gallivan's (2003) study of James River settlements identified changes in domestic production, community organization, and regional exchange that coincided with the establishment of large and permanent village communities between AD 1200 and 1500. The arrangement of features within domestic spaces suggests that households increased in size and began to exert greater control over the storage of food during this period. Select communities across the drainage erected palisades and began to use large roasting pits for multicommunity feasts. Ceramic styles reflected social networks that were considerably more bounded after AD 1200. These changes, I have argued, resulted in a riverine landscape susceptible to the rise of chiefly political structures.

As referenced above, researchers at the Potomac Creek and Accokeek Creek sites in the Potomac River's Inner Coastal Plain see evidence of population movements, fortification, and mortuary centers (e.g., Blanton et al. 1999, Dent and Jirikowic 2001). Both sites exhibit concentric ditch features and multiple palisade lines surrounding a plaza with ossuaries and primary interments (T. Stewart 1992). Potter (1993:126–148) has elegantly framed competing hypotheses for the origins of the Potomac Creek complex in terms of a Piedmont emigration, an Eastern Shore homeland, and in situ development. He argues in favor of a scenario in which Piedmont migrants from the Montgomery complex established the Potomac Creek and Accokeek Creek villages during the 14th century AD. Blanton et al. (1999:102) also see evidence of population movement behind Potomac Creek but point to Owasco origins farther to the north.

Closely related to these developments, Late Woodland archaeology in the Potomac Piedmont reveals heightened social conflict after AD 1200 in the form of palisaded settlements, cultural disjunctures, and village abandonments (e.g., Dent 2005, Jirikowic 1995; MacCord et al. 1957). Montgomery complex villages were abandoned c. AD 1400 with the arrival of settlers from the Keyser complex (Dent 2005:46). Jirikowic's (1995) study of the Hughes site, a Keyser village, traces the history of an economically self- sufficient and apparently egalitarian community whose mortuary rituals signaled distinct lineages marked by social distance. The Potomac Valley emerges from this research as a highly fluid landscape: "New groups arrived, old groups dispersed, and diverse people coalesced and defined themselves" (Dent 2005:47). Rather than movements of entire communities en masse, there are hints that the Middle Potomac's archaeology records "serial migrations" (Bernardini 2005:15) whereby individuals, families, or lineages moved across the landscape, establishing new settlements in some places and testing the hospitality of existing communities in others (Dent 2005:47). The resulting communities are likely to have been multilingual places with considerable social diversity (Dent 2005:47; Moore 1993).

South of the Potomac, most Late Woodland settlements in the Chesapeake were large, dispersed communities located near rivers and arranged around wetlands and embayed areas (Turner and Opperman 1993). Excavations in the Chickahominy drainage have offered a sense of Virginia Algonquian settlement forms during the Late Woodland period that include small farmsteads and dispersed villages containing several ossuaries (Gallivan et al. 2009; McCary and Barka 1977). Several unusual Late Woodland settlements also appeared along the Chickahominy River. The Clark's Old Neck

site features massive roasting pits, debris from largescale food preparation events, and highly decorated pottery. The Buck Farm site is defined by trenches and palisades surrounding a compact, 200-m2 area that contained several animal burials, a unique arrangement pointing to the special nature of the settlement (Figure 10.2). Ethnohistorical parallels raise the possibility that the site represents a 16th-century Chickahominy quioccosan, or priestly compound (Shephard 2008). Together, the sites excavated by the Chickahominy River Survey offer anchor

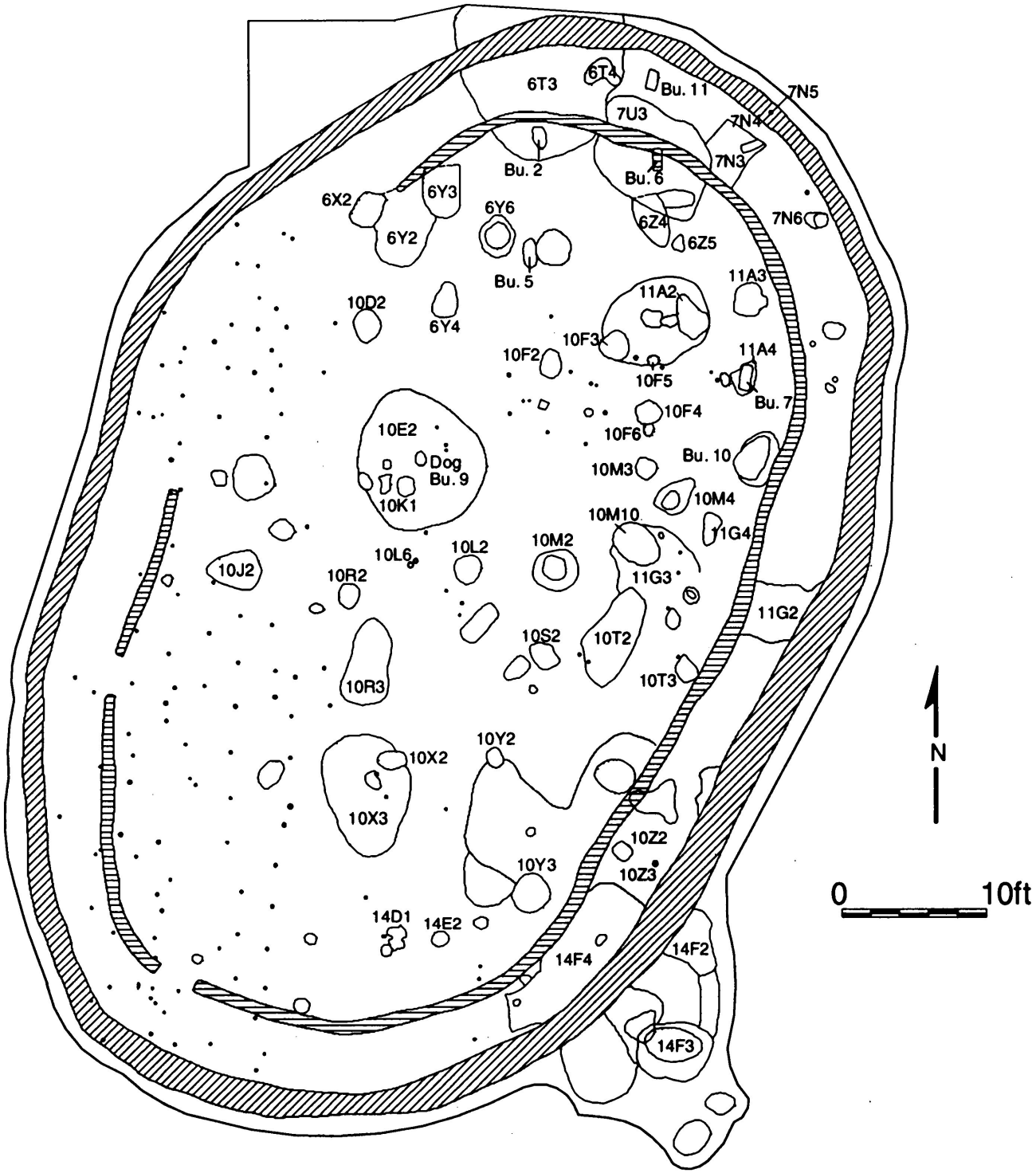

Figure 10.2. Plan of Palisaded Buck Farm Site, Charles City County, Virginia.

points for a narrative that includes dispersed farmsteads, feasting locales, and a palisaded compound. The survey records the emergence of a Late Woodland landscape after AD 1100 comprising residential communities as well as places that were important to social solidarity and community construction. In short, we see hints of the built environments, imagined communities, and lived spaces through which the residents of the river drainage became the Chickahominies (Gallivan 2009).

In contrast with the settlements along the Chickahominy, which reflect continuous use of Townsend ceramics from AD 800 through the 17th century, palisaded settlements that appeared along the James River during the 14th century are generally associated with Roanoke and Gaston ceramics linked to North Carolina traditions (Turner 1993). Near the mouth of the James, excavations at the Great Neck site identified a 16th-century palisaded settlement with an unusually large longhouse structure and burials with associated copper grave goods (Hodges 1998). The settlement, likely a political center tied to the Chesapeake Indians, contained both Roanoke and Townsend ceramics. The size, condition, and context of the ceramics at Great Neck suggest that that the 16th-century Roanoke occupation replaced an earlier Townsend component, possibly corresponding to colonial accounts of Precontact warfare between Algonquian groups and subsequent population replacement (Hodges 1998:195–198).

Studies of Chesapeake subsistence are quite limited (Barfield and Barber 1992), particularly prior to the Late Woodland period, though several do call into question a uniform transition to maize-based horticulture. Bioarchaeological analysis in nearby coastal North Carolina indicates that groups there relied on maritime resources without adopting corn during the Late Woodland (Hutchinson 2002). A similar study of Virginia Piedmont burial mounds (Gold 2004) identified a pattern of local autonomy among Late Woodland villages reliant on maize farming and wild food resources. Changes in Middle to Late Woodland faunal assemblages suggest a focus on deer and riverine resources (Levine 2006), whereas deer procurement strategies intensified even further at the Chesapeake's western and northern margins to supply the early Colonial market for hides (Fausz 1988; Lapham 2004). Archaeobotanical analysis has documented considerable regional variability in Late Woodland subsistence (Gallivan and McKnight 2008; McKnight and Gallivan 2007), including patterns west of the Blue Ridge Mountains that conform to the model for North America's middle-latitude riverine zone where the domestication of native starchy and oily seed- bearing plants appeared during the Late Archaic. East of the Blue Ridge, there is no convincing evidence of horticulture prior to the sporadic archaeological appearance of maize c. AD 1100. This pattern places the Chesapeake within a broader geographic zone lacking pre-maize agriculture that runs along the Atlantic seaboard (Gremillion 2002:490). The distribution of the earliest maize in the region suggests episodic incorporation into select communities across the Chesapeake. Maize was apparently adopted by people who did not participate in the pre-maize Eastern Agriculture complex and, perhaps, not primarily to fill a dietary "need." Several of the sites with the earliest maize are places of seasonal aggregation, large-scale food consumption events, and burial grounds. Archaeobotanical patterning pointing to maize's use in ritual contexts has been identified at the western edge of the Chesapeake (VanDerwarker and Idol 2008); such practices also may have been at work east of the Blue Ridge after AD 1100.

A considerable body of research has illuminated Late Woodland cultural boundaries and social interaction across them. In coastal Virginia, the increasingly limited distribution of Late Woodland ceramic wares marks rising territoriality related to the emergence of regionally distinct native polities (Turner 1993). Several scholars have identified evidence of Late Woodland interaction across the fall line, a division that separated coastal Algonquians from interior Siouan groups during the early colonial era. The fall line may have comprised a deer exploitation area between these groups (Turner 1978), a political buffer against armed conflict between the Powhatans and the Monacans (Mouer 1983), a frontier of interaction and periodic occupation by groups from both sides (Egloff 1989), or a place of exchange through which prestige items flowed (Hantman 1990). Placing such interaction in a broader, regional and historical context, Hantman (1990) has suggested that Algonquian–Siouan interaction across the fall line played a fundamental role in shaping Native American political strategies during the early colonial era. To the north, the Potomac River fall line represented a conduit for migrating populations at the end of the Middle Woodland period and a boundary area visited by diverse groups during the Late Woodland

(Knepper et al. 2006:231).

Building on earlier characterizations of Southside Virginia's Late Woodland archaeology (Hodges 1998; Phelps 1983; Turner 1993), a recent study has suggested that the area between the Chesapeake and the Albemarle drainages represented often-violent borderlands between culturally distinct traditions from AD 1400 to the 17th century (Gallivan et al. 2008). By the early colonial era this region was home to rival Algonquian weroances, powerful Iroquoian traders, Siouan cultural influences, as well as people and objects that moved across these communities and categories. During the Late Woodland period, towns in the region were surrounded by palisades with a greater frequency than communities to the north. The archaeological record points to social practices—notably simple stamping of ceramics, the use of communal ossuary burial features, and exchange in rare objects of body adornment—that crossed cultural and linguistic boundaries. Several Southside settlements dating to this period appear to represent multilingual communities. Other sites provide evidence of the violence, warfare, and population replacement that characterized the borderlands on the eve of contact. Both documentary and archaeological evidence indicates that the Powhatan chiefdom, which emerged during the 16th century, was shaped by these social dynamics on the southern edge of the Chesapeake region.

The localized control over the procurement, production, and long distance exchange of "prestige goods" has long been considered a hallmark of chiefly societies (see Peregrine 1991). Although relatively few recent publications have tackled the issue within the Chesapeake, researchers have generally considered wealth objects to have been actively consumed in the production and appropriation of elite identities (Potter 1989; Klein and Sanford 2004; Blanton and Hudgins n.d.). More recent explorations of the development of chiefly political structures within the Chesapeake has focused on the long-term materialities that defined and underscored notions of authority and subjection (Shephard and Gallivan 2017). Where the archaeology of indigenous societies within adjacent regions (e.g., Mississippian societies) has underscored the fundamental role that production has played in the development of complex political systems (i.e., Yerkes 1989), small craft production within the coastal Maryland, Virginia, and North Carolina appears to have been virtually non-existent prior to the postcolonial era (Shephard 2015).

It has been argued that the uncanny origins of shell and copper bodily adornment may have been a primary component of their perceived value. Shephard's study of the precolonial economy and the development of chiefly authority within the southern Middle Atlantic suggests that as foreign objects shell and copper ornamentation embodied the Algonquian concept of *Manitou*, an animate and active class of humans and objects that held sway over experiences of prosperity, misfortune, and/or balance to the lived world (2017:76-78). Although individuals and communities deployed these objects in a variety of ways, their associated with the human body directed the flow of power across the coastal Algonquian political economy. The frequency of archaeological sites yielding shell and copper adornment steadily increased from the 12th through 17th centuries (Shephard 2016:143; Figure 10.3), coinciding with the construction of palisades throughout the region (Blanton et al. 1999; Hodges 1998; Shephard 2009), a move toward more sedentary horticultural lifeways (Gallivan 2003), and large-scale manipulations of the built environment associated with powerful and persistent places (Gallivan 2007). Relying on the constant flow of potent foreign objects, the precolonial indigenous economy proved

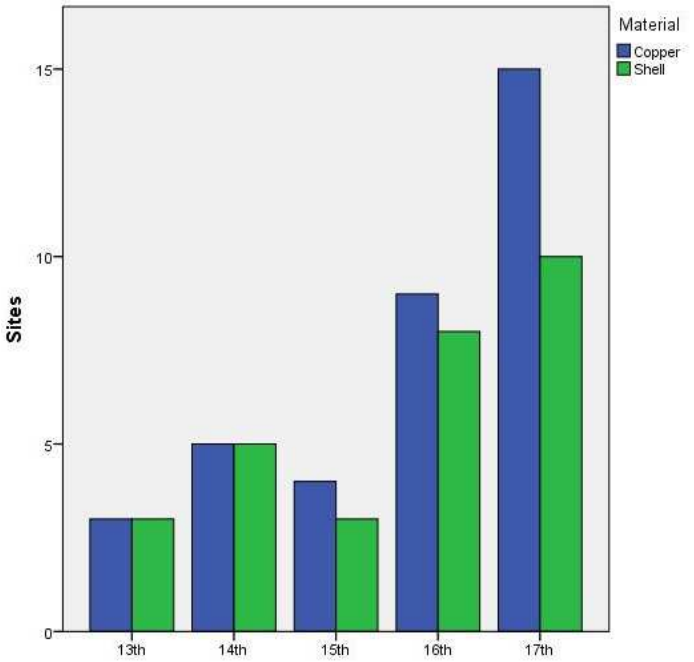

Figure 10.3. Histogram Depicting Coastal Plain Sites of Maryland, Virginia, and North Carolina Yielding Shell and Copper Ornamentation by Century (Shephard 2016:143)

unstable and easily subverted, with the emergence of new exchange networks and a localized craft industry during the 17th century fundamentally redefining relationships of authority and subjection (Shephard 2016:263-264).

Relatedly, the analysis of ossuaries and communal mound burial practices of the Late Woodland have illuminated demographic patterns, subsistence practices, and the symbolic and political dimensions of mortuary ritual (e.g., Blick 2000; Curry 1999; Dunham 1999; Dunham et al. 2003; Gold 2004; Jirikowic 1990, 1995; Shaffer 2005). Ossuary burial in the coastal Chesapeake involved collective, secondary deposits of human remains, typically after initial processing of bodies elsewhere. For the Nanticokes, remains interred in ossuaries were sometimes moved when a community was displaced during the colonial era (Shaffer 2005). Potomac ossuaries were often quite large, sometimes containing hundreds of disarticulated remains (Curry 1999). By contrast, ossuaries to the south in coastal Virginia generally contained a much smaller number of individuals, pointing to differences in mortuary practices, social organization, and population densities (Blick 2000). Researchers have noted parallels between Chesapeake ossuaries and the Huron Feast of the Dead, a periodic ceremony in which the remains of the deceased were gathered from several communities and interred collectively amid feasting and ritual (Curry 1999).

With their inclusivity and uniform treatment of the dead, Tidewater ossuary burials appear to be remarkably egalitarian, yet, as Jirikowic (1990:370) suggests "this negation of individuality and the elaboration of collective unity and continuity illustrate how mortuary rituals may create the illusory natural and eternal order which is maintained by 'traditional authority.'" In a similar way, Piedmont burial mounds marked by uniform treatment of the dead may record a hierarchical political order, with power manifested in historical associations between ancestors and territory (Dunham et al. 2003; Hantman 1990:684). Dunham (1999:128) reads Monacan burial mounds in terms of a ritual process shaped by tropes, symbolic constructs that established a triadic relation between mounds, territories, and social groups: "By subsuming the randomness of death itself within a predictable and regulated framework, the collective mortuary sequence would have effectively functioned as a 'time-space organizing device.'"

Studies of Late Woodland mortuary practices in the post-NAGPRA era also open new possibilities for expanded engagement between archaeologists and contemporary native communities while bringing to the fore disagreements concerning cultural affiliation and archaeological prerogatives. A study of Virginia burial mounds (Dunham et al. 2003; Hantman et al. 2004) has established that a connection between the mounds and the contemporary Monacans of central Virginia is most "parsimoniously concordant" with the archaeological and documentary evidence, whereas Boyd (2004b) has countered that the mounds cannot be associated confidently with any known Native American group. Another recent study, prompted by a repatriation request from the Nansemond tribe, has concluded that human remains from the 17th-century Hand site located on the Nottoway River in Virginia exhibit more affinities with Iroquoian practices than with those associated with the Nansemonds' Algonquian ancestors (Mudar et al. 1998)

Clearly each of these positions has substantial consequences for archaeologists and for descendant communities. The interpretation of Hand site burials as Iroquoian is based on the presence of cremations, bundle burials, and primary interments containing associated grave goods, a pattern that contrasts with mortuary evidence from Algonquian sites that generally include ossuaries with few if any related grave goods. While elegant, this interpretation relies on a rather monolithic characterization of Algonquian burial practices, which, at times, included primary interments and bundle burials alongside ossuaries. Native history during the 17th century also complicates the effort to assign a cultural affiliation to the Hand site, as one group of Nansemonds responded to colonial violence by moving nearby to the Nottoway River where they lived for a time alongside Iroquoian speakers (Vest 2003:790). In addition to the complicated histories of multilingual, coalescent communities, bioarchaeologists seeking to retain access to human remains also must navigate the political aspirations of contemporary descendant communities seeking to reassert a measure of control over ancestors' remains. Determining the cultural affiliation of human remains in the Chesapeake, as elsewhere, is clearly fraught with a number of serious challenges.

Conclusion

In 1995, Dent (p. 68) spotlighted a handful of studies that began "to fill an existing vacuum where processual explanations have clearly been questioned." Here, we have expanded this roster with a list of publications that offer

a glimpse of what could become a new era of Chesapeake research. A growing number of studies of the Woodland and Contact periods have uncovered particular native histories of social interaction, population movements and persistent places, meanings embedded in materials and practices, and colonial strategies masking native actors and indigenous landscapes. Interpretive frames have widened considerably beyond approaches emphasizing cultural ecology, systems theory, and cultural materialism. Where environmental histories are incorporated into recent Chesapeake studies, researchers have recognized the importance of precise temporal sequences, diverse local conditions, and the intertwined histories of natural and social landscapes.

Although the few academic researchers who study the Native American archaeology of the Chesapeake have made important contributions to recent developments, much of the recent innovative interpretation and collaboration has occurred outside the academy in cultural resource management. This is encouraging given that the vast majority of archaeology in the Chesapeake is and will be conducted in this setting. It also is of some concern given that the results of much of this work can be difficult to access. Efforts by historic preservation officials to make CRM's "gray literature" more readily available are limited in the Chesapeake, though Delaware's Department of Transportation, Maryland's Historic Trust, and the District of Columbia's Historic Preservation Office have led the way in responsibly beginning this process on the web. The Virginia Department of Historic Resources' various report series also offer a particularly valuable contribution to the regional literature. Supported by several state agencies and nonprofit historic preservation institutions, the Comparative Archaeological Study of Colonial Chesapeake Culture represents an impressive model of digital archaeology centered on 17th-century colonialism (King et al. 2006). Hopefully, efforts such as this one are just the beginning of a trend toward creative data sharing that fosters diverse interpretation through digital technologies.

While it is difficult to predict the future course of native archaeology of the Chesapeake, there are indications of at least some of the questions that will play a role. Early and Middle Woodland research has demonstrated that substantial changes in hunter-forager settlement and subsistence occurred amid new patterns of regional interaction and qualitatively different forms of residential stability. Is it possible to trace the long-term histories of Algonquian societies that apparently came to settle in the estuarine Chesapeake during this era? Understanding the diverse social traditions of these periods will require intensive investigations of aggregation locations and nodes within long-distance exchange networks.

Late Woodland archaeology in the Chesapeake has long benefitted from direct historical approaches linking documented societies to archaeological complexes. Might we benefit from jettisoning generic chiefdom models in the effort to trace the development of complex societies of the Chesapeake and to understand their histories on their own terms? Moving beyond the limitations of neo-evolutionary typologies and toward historically oriented approaches will require more precise chronological methods as well as detailed studies of local cultural sequences and environmental dynamics spanning the Late Woodland through the contact period.

Contact period archaeology has demonstrated that native strategies in the face of the colonial encounter were closely connected to the cultural structures of the Precontact world and were more varied than European documentary sources allow. How did the new forms of social interaction that emerged during this period reflect both colonial agendas and native social strategies? Answers to this question will require more effort to bridge the historical and Precontact archaeology of the Chesapeake as well as a more intensive focus on native archaeology that postdates early contact.

Descendant communities have come to play a more prominent role in Chesapeake archaeology, presenting new challenges and opportunities for archaeologists working in the region. Can archaeologists and native communities develop means of sharing power over research agendas and archaeological practices that produce positive results? The expanded involvement of descendant communities in Chesapeake archaeology will, we suggest, reconnect the Native American past, present, and future in ways that begin to challenge accepted narratives of American history (Gallivan 2016).

Chapter 11

Late Woodland (AD 900 TO 1650) Over the Blue Ridge: Piedmont to Mountains in Southern Virginia

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Introduction

The Native American cultures that lived in southern Virginia from the Fall Line of the Roanoke River westward to the Tennessee River drainage between AD 1000 and 1650 were town farmers who possessed a horticultural system of growing corn, beans, and squash, supplemented by the hunting and gathering of animals, aquatic resources, and plants. The rich bottomlands became the focus of large permanent towns for the ever-expanding population. Evidence of small exploitative encampments of hunting and gathering activities is found across the entire Piedmont and mountainous region. The socio-political complexity of their societies was greater in the upper Tennessee River watershed, but less than it was among the contemporaneous Mississippian chiefdoms of the central Tennessee River valley. The main cultural traditions represent Siouan-speaking groups, such as the Occaneechi, Saponi, and Totero with limited manifestations of the Cherokee, and Fort Ancient. Archaeology may be the only way of learning about the Native Americans of the region because early historic records contain scant references to them. However, the indigenous people left archaeologists with a record that is unparalleled and culturally quite diverse. Much of the information in the southwest Virginia section is drawn from "The Late Woodland Period in Southwestern Virginia" (Egloff 1992).

Environmental Setting

Piedmont

The Piedmont province is a high plateau of rolling hills bounded on the east by the Fall Line and on the west by the Blue Ridge Mountains. The outer Piedmont, that portion closest to the Fall Line, is a broad upland with low to moderate slopes with elevations of 75 to 90 meters in the east. The foothills or inner Piedmont just east of the Blue Ridge Mountains, is a region of rugged terrain with broad rolling hills and moderate slopes. Elevations range from 125 to 300 meters with peaks rising to 460 to 760 meters. The Roanoke River, called the Staunton River in the Piedmont, originates in the Ridge and Valley province, and flows through the southern Piedmont to the Fall Line. The Dan River, one of its major tributaries, dips south, and provides direct access to peoples living in North Carolina.

Native vegetation in the Piedmont and southwest Virginia regions consists of a mixed upland hardwood forest including oak, chestnut and hickory. Such forests provide rich mast, attractive to both animal and human populations. Native faunal species in this region include white-tailed deer, bear, squirrel, raccoon, turkey, migratory waterfowl, and elk in the mountains. A wide variety of fish and shellfish are available.

Southwest Virginia

The region is located within Central Appalachia and includes parts of the Blue Ridge, Ridge and Valley, and

Appalachian Plateau physiographic provinces. Major river drainages include the New River, originating in North Carolina and flowing northward into West Virginia. Just west of the New River are the headwaters of the Holston, Clinch, and Powell rivers that flow southwest into the Tennessee River. To the east of the New River the Roanoke and the James rivers flow southeast through the Blue Ridge and across the Piedmont to the Fall line.

Outside cultural influences entered the region along five avenues: 1) from the north by way of the Shenandoah Valley, 2) from the east and the Piedmont by way of the Roanoke and the James rivers, 3) from the south and North Carolina by way of the New River, 4) from the southwest by way of the Tennessee River system, and 5) from the northwest and the Ohio Valley by way of the New River. This created a fascinating mosaic of blended cultures. In terms of Native American culture, southwest Virginia was the central hub, or nexus, of the woodlands of eastern United States.

Southern Piedmont of Virginia Review of Past Investigations

1870s to 1960s

The Valentine family in the 1880s recovered abundant material, including pipes and whole vessels, from a scoured town site in Halifax County in the area along the Staunton River known as the 'Coves,' possibly site 44HA0081. The files and artifacts, housed at the Valentine Museum in Richmond never have been professionally examined, although the vessels appear to be Dan River ware.

By 1940, Joffre L. Coe (1938, 1952), an archaeologist with the University of North Carolina, and James Griffin (1945), an archaeologist with the University of Michigan, believed there was a Siouan connection between the Ft. Ancient Culture of the Ohio Valley and the Tutelo-Catawba groups of the Piedmont of Virginia and North Carolina. After reviewing Coe's ceramic and site evidence from his survey of Siouan town sites in the Clarksville area, Griffin saw no direct connection between the two regions by way of the New River.

Carl Miller (1949, 1957 and 1962; Holland 1983) conducted a reconnaissance survey in 1947 followed by data recovery in 1952 and 1953 at the John H. Kerr Reservoir area, uncovering evidence for Paleoindian, Archaic, and Woodland peoples. He identified 34 town sites, many of them from the Late Woodland period. The Clarksville site (44MC0014) was the largest town that he investigated. There he recovered Clarksville ware, ceramic ladles and miniature vessels, and pottery sherd discs. Bone and antler artifacts, shell beads and pendants, and rolled tubular copper beads were also recovered. He noted that many examples of the inverted carapace of a box turtle occurred in the graves, suggesting the totemic emblem of a clan. Two types of pits occurred: storage pits and mussel-shell-filled pits with an unknown purpose. Although a few post molds were noted, no house pattern could be discerned. The appendix includes a detailed report by Lucile Hoyme and William Bass on the human skeletal material, including the 78 burials from the Clarksville site. Most of the infants and poorly preserved burials were left in the field.

Carl Miller, from 1962 to 1963, as part of the Smith Mountain Project, recorded 46 sites in the Smith Mountain and Leesville Reservoirs for the River Basin Surveys of the Smithsonian Institution. Two sites, Anthony Ford, and Tolers Bridge, were tested, while two others, Booth Farm (44FR0090) and Hales Ford (44FR0003) were extensively excavated. This major investigation was never published.

Archeological Society of Virginia and Virginia State Library

Robert Carroll (1955) and John Reeves, biology professors at Virginia Military Institute and members of the Archeological Society of Virginia, conducted test excavations in 1953 at Conner's Midden (44HA0011) along the Staunton River just west of the sharp bend in the river known as the 'Coves.' The site appears to be a deep midden with intact strata and features representing a sizable town. They recovered abundant artifacts, including well-preserved animal bone, triangular points, ceramics, including the majority of a large storage vessel 14 inches across by 18 inches high, ceramic spoons or ladles and pipes, one dog burial, and adult and child burials. A child burial contained shell beads and small ceramic vessels.

The Abbyville site (44HA0065), a complex of archaeological sites in the John H. Kerr Reservoir, Halifax County, was investigated by John Wells (2002). From 1966 to 1970, Wells led members of the Roanoke River Chapter of the Archeological Society of Virginia

in rescuing site information, making detailed notes and maps. Approximately 100 human graves were recorded. It is undoubtedly the most important complex of Late Woodland towns in the southern Piedmont of Virginia. The site complex consists of seven locations which yielded substantial evidence of Late Woodland and Historic period occupations. They were not seen during Coe's or Miller's surveys. They were submerged by the waters of the John H. Kerr Reservoir and exposed by erosion as lake levels fluctuated during the late 1960s. A surprise discovery was the presence at three loci of 25 graves containing European trade goods and very thin shell-tempered cord-marked vessels, not consistent with other wares from Virginia. The glass beads, copper pendants, and shell-tempered pottery suggest a movement of people down from western Pennsylvania around AD 1640. Many of the artifacts from the site are in the South Boston-Halifax County Museum in South Boston, Virginia.

John Wells (1969) also tested the Hardage site (44MC0108), the Smith Creek Island site (44MC010) (Wells 1970), and the Mussel Shell Island site (44MC0114) (Wells 1971). The Hardage site was discovered while sand was being removed, passed through a large screen, and used in the asphalt mixture to resurface Interstate 85. As the sand passed through the screen, workmen picked out the larger Native American artifacts. A very dark, 12-inch humus layer contained the concentration of pottery and other artifacts. The pottery was similar to that found at the Clarksville and Gaston sites. Smith Creek Island is the most easterly of a chain of six islands, stretching more than one mile, forming the south bank of the Roanoke River. In September 1966, 700 square feet was examined to a depth of 30 inches, revealing 21 features, including16 refuse-filled pits, one fire pit, one dog burial, and three human burials. Bone and shell preservation was very good. Pottery pipes and ladles were recognized. The pottery from the site was described as being similar to that found at the Gaston site. In 1967, testing was performed at the Mussel Shell Island site, before it eroded into the Gaston Reservoir. Excavation could not extend below a foot without encountering water. A black, greasy-feeling midden revealed 58 features, including 25 refuse-filled pits, nine shell dumps, five fire pits, one dog burial, 16 human burials, and 18 postmolds. Bone was well preserved, illustrating the production of bone awls, fishhooks, antler tine projectile points, and turtle carapace-bowl sections. Clay objects included portions of 21 pipes. The pottery appears to include the Middle Woodland, Vincent and Clements wares, and the Late Woodland, Clarksville ware.

The Dan River Chapter of the Archeological Society of Virginia tested the Keatts site (44PY0022) in May 1967 (Gosnell and MacCord 1998). The test, consisting of 38 5-foot squares, revealed the plan of a house pattern, 18 by 16 feet in size. Four pit features were excavated uncovering Dan River ceramics, a clay bead and a clay bird-head effigy.

In 1978, Tom Stevens (1979) recovered material from the flood-damaged Wade site (44HA0034) in Halifax County along the Dan River. The site, a sizable town, saw repeated scouring of the surface, completely sweeping away a large portion of the site. The pottery is mainly Dan River with some Clarksville ware. Two other nearby town sites, also located on sandy alluvium terraces, were also heavily scoured by the 1975 and 1978 floods.

Howard A. MacCord, Virginia State Library

Howard MacCord directed the testing and salvage by avocational archaeologists from the Archeological Society of Virginia on numerous Native American town and hamlet sites in the southern Piedmont of Virginia. In 1963, MacCord (1965) conducted tests at site 44PE0001 near a historic plantation called 'Buffaloe' along Little Buffalo Creek in Prince Edward County. In the only feature pit he encountered, he recovered a mix of late 18th century historic artifacts and sandy-paste locally-made plain pottery. This local pottery, a form of cottage ware, is an important addition in the ongoing discussion of Native American and African American ceramic production.

The Elm Hill site (44MC0078) along the Staunton River in Mecklenburg County was tested by MacCord (1968) in 1964. By then, the site had a long history of relic collecting and burials being plowed and dug out. Forty-six five-foot squares were excavated for a total of 1,150 square feet. The site is noted for its richness of cultural material and the unusual three-foot deep black midden soil. Thirty-six features were uncovered including nine burials. Shell beads made from olivella, marginella, and conch were found associated with two of the burials. The ceramics recovered from the deep midden represent a wide range of wares: Hyco ware, the earliest pottery for

the region; later Middle Woodland ware, perhaps related to Clements; and the Late Woodland Clarksville ware.

Thirty-one five-foot squares were excavated by MacCord (1966) in 1965 at the Brookneal Landing site (44CP0002) Campbell County. Five features were uncovered including four refuse-filled pits, containing mainly cord-marked sand-tempered sherds and a few sherds that were net-impressed. The sherds represent either Dan River or Clarksville ware.

MacCord supervised excavation begun in 1965 at the Red Hill site (44CH0007) located in Charlotte County along the Staunton River, sponsored by the Weyanoke Chapter of the Archeological Society of Virginia (Segall and MacCord 1999). The total area uncovered was 800 square feet divided into thirty-two five-foot units, forming two trenches that met at right angles. Forty-five features pits and several hearth features were uncovered. A small percent of the sherds is tempered with sand and crushed granite or shell. However, the majority of the sherds are Dan River ware with a few sherds of Hillsboro ware. This suggests a conservative ceramic technology, which is common at many sites in the southern Piedmont of Virginia. Alison L. Segall, in 1980, while an anthropology student at the College of William and Mary, was the first to analyzed material from twenty-three features. Her report is included in the above reference.

During a weekend in May 1968, MacCord (1971a) excavated twelve five-foot squares at the Meadow site (44FR0012) in Franklin County, uncovering two burnt-earth hearth features. Dan River Net-Impressed sherds are in the majority at the site.

MacCord (1970) conducted limited excavations at the Brubaker site (44FR001), in Franklin County, opening up fifteen five-foot squares in 1969, uncovering evidence for three features including two pits and one arc of eleven post molds. Mainly Dan River Net-Impressed sherds were recovered from the site.

The Onion Field site, 44CP0001, lies on the Staunton River near the boundary between Campbell and Charlotte counties. In 1969, MacCord and Jane Williams tested the site by uncovering 790 square feet in two trenches forming a right angle (MacCord and Williams 1994). The features included two graves, two fire-cracked-rock hearths, eighteen pits, probably used for storage, including one bell-shaped pit, and a scattering of post molds. The site is a typical Dan River phase town that was probably 90 meters in diameter and surrounded by a palisade. The Dan River pottery is a mix of cord and net-impressed, followed by plain, with a few sherds of simple stamped, corncob, and complicated stamped. Twenty sherds are limestone-tempered and illustrate contact with southwest Virginia. The absence of European trade items and one radiometric date of AD 1490 place the site in time. In 1977, Joseph Williams, no relation to Jane Williams and a student in anthropology at the College of William and Mary, undertook a preliminary analysis of material from nine squares and six features (Williams and Barber 1986).

In 1974 and 1975, MacCord supervised salvage excavations at the Reedy Creek site (44HA0022) in South Boston along the Dan River. The fieldwork was conducted by Gary Coleman (1982) on the Middle and Late Woodland Clements and Clarksville phase town site before the expansion of the sewage treatment plant facilities. Nine human burials were encountered. A palisade line, a circular house pattern, a ditch, a refused-filled pit, and a large subterranean basin were investigated. Ceramic artifacts, other than Clements and Clarksville pottery, included pipes stems and bowls, game discs, spoons, one adorno, daub, and pottery production waste. Bone artifacts included awls, chisel, engraver, hair ornament, fishhook and residue, and turtle shell cup fragments. The site produced a substantial amount of faunal material, mainly deer. Two cultigens, corn and beans, along with hickory and acorn shell, and seeds from the persimmon, maypop, and grape, and one cherry pit were identified from the water-screened samples.

MacCord (1976b) salvaged two pit features at the Waugh site (44BE0005) in Bedford County along the James River in 1976. This site is important due to the three recovered simple-stamped vessel fragments with added rim strips, unusually far north for this type of surface treatment and rim treatment. However, MacCord (1964 and 1974a) made note of simple-stamped pottery with punctated rim strips as far north as the Bolton site, 44NE0001, and Wingina site, 44NE0004, along the James River in Nelson County. The vessels are reminiscent of wares, such as Jenrette, Oldtown, and Gaston found either further to the south in North Carolina or east along the Fall Line.

Richard P. Gravely

Richard Gravely, from 1964 to 1985 under the auspices of the Patrick Henry Chapter of the Archeological Society of Virginia, tested nine Late

Woodland Dan River phase (AD 1250 to 1450) towns in Henry County. One of those sites, Philpott, 44HR0004, also contained evidence of 17th century settlement. The only other site in Henry County that has produced European trade artifacts is the Gilbert Rea site, 44HR0018. While Gravely found slight evidence of Contact period sites along the Smith and Mayo Rivers in Virginia, he noted ample evidence along the Dan River just a few miles south in Stokes County, North Carolina. The artifacts and field notes from the investigations were donated in 1983 to the Research Laboratories of Archaeology at The University of North Carolina, Chapel Hill. Artifacts include a rich array of pottery, lithic tools, bone tools, pipes, and shell ornamentation. Within the Research Laboratories of Archaeology reports, the classification scheme used for exterior surface decoration on pottery, originally developed for the Box Plant site, was systematically applied to decorated sherds from all other sites in the upper Dan River drainage. Variation in decorative techniques may distinguish subareas of Dan River occupation. Likewise, all other sites and artifacts were described and analyzed in similar fashion and presented in a standard format to facilitate comparative study (Davis et. al. 1997a). The westernmost towns, Philpott and Dallas Hylton, 44HR0020, produced more strap handles as well as several New River ware potsherds, illustrating closer cultural interaction with people west of the Blue Ridge.

The Belmont site (44HR0003) was excavated by Gravely between 1964 and 1966 uncovering a Dan River phase town on the Smith River near Martinsville. The site appears to be a palisaded town approximately 90 meters in diameter. Excavations exposing 30,000 square feet of the site, discovered over 200 features and over 100,000 artifacts. The radiometric dates and the density of features suggest a long period of occupation, or multiple occupations, that date from the late thirteenth to the mid-fifteenth centuries. The features include twenty burials, 88 refuse-filled pits, six bell-shaped storage pits, five hearths, and one dog burial (Davis et. al. 1997c).

The Box Plant site (44HR0002) was excavated by Gravely between 1964 and 1973 uncovering a Dan River phase town located on the Smith River near Martinsville. Over 100 features and 29,000 artifacts were recovered. About half of all excavated features were probably cylindrical storage pits. A few large, bell-shaped storage pits were also discovered. No post molds were identified, probably due to the sandy nature of the subsoil. Therefore, nothing is known about town structure, the number and distribution of houses and palisades. Four burials were recorded, but it was not possible to recover any of the skeletal remains because of poor preservation (Davis et. al. 1997a).

The Philpott site (44HR0004) on the Smith River near Bassett was excavated by Gravely on at least four occasions between 1965 and 1985 uncovering a Dan River phase palisaded town with evidence of the Historic period. At least 158 five-foot units were dug, recovering over 90,000 artifacts. At least 25 features, 22 burials, and two palisade ditches were uncovered. Evidence from the two ditches suggests the town was circular, 92 meters in diameter, and palisaded. Two of the 22 burials contain European trade artifacts, as did two other features (Davis et. al.1998b).

The Dallas Hylton site (44HR0020) was excavated by Gravely in 1968 and 1973, uncovering evidence for a Dan River phase town located on South Mayo River. Over 200 features were identified, forming a large oval 45 by 60 meters, representing a town that was probably palisaded. Because the excavation was a salvage operation, no post molds were identified. Thus, there is no direct evidence for town structure, house patterns or palisade alignments. Twenty-seven features were classified as pits, 69 as bell-shaped pits, both types undoubtedly used for storage. Twenty-nine features were classified as basins, most probably used for either cooking or for recovery of clay. One burial was encountered (Davis et. al. 1998a).

The Stockton site (44HR0035), was excavated by Gravely in 1969 and 1970 uncovering a Dan River phase town in an unusual location - on an upland knoll adjacent to Leatherwood Creek. At least 66 features, including 23 human burials, were excavated and over 28,000 artifacts recovered. The site is approximately 60 meters in diameter and may represent a palisaded town. Radiometric dates suggest the town was occupied twice from AD 1000 to 1450 with the primary occupation in the 14th century. Although 250 post molds were mapped, only one alignment eight feet in diameter probably represents a small structure (Davis et. al. 1997b).

The Wells site (44HR0009) was excavated by Gravely in 1971 and 1972 uncovering a small Dan River phase town located on the Smith River near Martinsville. The site is approximately 53 meters in diameter, with no evidence of a palisade. Excavations exposed 2,600 square

feet, uncovering 25 features and recovering over 8,000 artifacts. Five features are cylindrical or bell-shaped storage pits, four features could be storage pits, and five features were probably used as roasting pits or cooking facility. Although the artifact assemblage is remarkable similar, two radiometric dates indicate that the site was occupied at least twice between the late twelfth and early fifteenth centuries (Davis et. al. 1997d).

The Gravely site (44HR0029) was excavated initially by Gravely in 1969 uncovering a small Dan River phase town located on the North Mayo River near the town of Spencer. Excavations exposed 1,600 square feet, uncovering 18 features, and recovering about 7,700 artifacts. The site was revisited in 1991 by the Research Laboratories of Archaeology, Chapel Hill, exposing an additional 2,800 square feet, 23 additional features, and collected over 33,000 artifacts. Two radiometric dates place the primary occupation in the early 15th century. Six features are bell-shaped storage pits, 13 straight-sided pits are probably storage pits, and 13 bowl-shaped features may have served as either shallow hearths or clay pits (Davis et. al. 1997e).

The Koehler site (44HR0006) a palisaded Dan River town dating AD 1300 to 1400 and located in Henry County on the bank of the Smith River, was first tested by Gravely in 1966 and again in 1968. In 1976, Gary Coleman (Coleman and Gravely 1992) conducted salvage excavations at the site prior to the construction of a sewage treatment plant. The site was first thought to contain a 17th century Contact-period Native American component. However, the historic artifacts, which date to the 1750 to 1850 time period, negate this interpretation of the site. During the 1976 excavation, all soil from features was dry-screened and most of the soil was water-screened through fine mesh screens recovering unusually rich samples of artifacts, faunal, and floral remains. A noteworthy clay pipe of finely rouletted series of lines forming a geometric pattern around the bowl was recovered from the site. Most of the ceramics at the site were Dan River (83% net, 9% plain, 6% cord, and 2% corncob); although a few earlier Clements and Uwharrie sherds and a few New River types occurred. The 1966 and 1968 excavation uncovered 96 features and three burials. The 1978 excavations uncovered 141 features and eight burials. Two large basin features were used in food preparation and five other features are interpreted as hearths. Fifteen bell-shaped and thirteen cylindrical-shaped storage pits were identified. Six small shallow-basin pits, containing blue-grey clay probably used by potters, were identified. Three shaft-and-chamber burials were recognized, one chamber walled off from the main shaft with large rocks.

During 1968 and 1969, Gravely conducted excavations at the Leatherwood Creek site (44HR0001) a Dan River Phase town. The site is located on a southern sloping hillside along a minor stream, Leatherwood Creek, in Henry County. He excavated about 25% of the 90-meter diameter town. Eighteen features were investigated at the site including large food preparation facilities or earth ovens and storage pits. Seven houses were uncovered and nine human burials encountered, some with shell artifacts and in shaft-and-chamber type pits. A few burials illustrate organic mat lining, possibly consisting of woven bark. Three of the houses were rectangular, 3.8 to 4.1 meters wide by 3.3 to 7 meters in length, with internal support posts and central hearths. Four of the houses were circular, ranging from 4.9 to 5.5 meters in diameter, with storage pits and hearth features. Two radiometric dates from the site suggests that two different Dan River phase occupations occurred at the site, the earlier with rectangular house patterns and the later with circular house patterns, perhaps representing a change in organization of households (Gallivan 1997). The second interpretation offered is paired winter and summer houses at the site. A third hypothesis is that the rectangular structures served a special communal or ceremonial function.

Virginia Department of Historic Resources

The Clark site (44PK0015), a horticultural hamlet in Patrick County, was tested by Wayne Clark (2001) in 1975. The excavations revealed four features of which three may date to the period of Grayson ware, ca. AD 600 to 1000, and one may date to the later Dan River phase. The site provided the only Grayson dated feature, AD 1015, known in Virginia. Wet-screening the feature fill of the Grayson ware storage pit provided evidence for corn horticulture and a continuing reliance on mast production.

The Leggett site (44HA0023) is located in Halifax County on the bank of the Dan River. Wayne Clark in May 1976 directed the salvage of a portion of the site after land-leveling and clearing activities with a bulldozer at the edge of a cultivated field, revealed a Dan River

phase occupation (Egloff et al. 1994). Twenty-five features were identified including some bell-shaped storage pits. Two human burials were recognized from fragmentary bone left on the surface of the ground after land leveling. All feature soil was dry-screened. Samples of feature soil were water-screened, resulting in a rich array of faunal remains. Four radiometric dates range between AD 1155 and 1495. Internally dispersed hamlets like Leggett seemed to have coexisted with palisaded towns, suggesting a hierarchical nature to the settlement pattern. These site differences suggest that in the southern Piedmont of Virginia communities were economically and socially interdependent.

The Otter Creek site (44FR0031) a small hamlet, was tested in 1984 by Keith Egloff (Egloff et al. 1987) with the assistance of the Archeological Society of Virginia. The site is located on a remote upland spur of the Blue Ridge escarpment. A human burial was identified along with possible post molds. The fired lumps of pottery clay and coil fragments, suggest on-site manufacture of the finely made elaborately decorated Dan River ware and pipes. The great variety of well-preserved faunal remains in association with floral remains is unusual for such a remote site. The site was radiometric dated to AD 1320 +/-50.

The VDHR made possible two periods of test excavations at site 44PY0043, the remnant of a Dan River Phase Late Woodland town seriously eroded by the rising and falling of Leesville Lake as part of a pump storage electrical production system (Blanton et al. 1996). The site is on an island that was once part of a natural levee. Trenching in 1994 by Dennis Blanton, William and Mary Center for Archaeology, failed to find any evidence of a palisade but numerous post molds were noted and a few possible pits identified. Due to erosion, the extent of the site is unknown, but the site originally covered an area of approximately 80 by 95 meters, as determined from the soil discoloration evident in an early aerial photograph. The second test was conducted in May 1995 by Clifford Boyd (1997) of Radford University. He excavated three blocks, uncovering evidence for seven features and 27 post molds, thus confirming that at least a portion of the site remains. Boyd estimates that 90% of the site has been destroyed.

University Research

As part of the Siouan Project 1972 until 1990, the Research Laboratories for Archaeology, Chapel Hill, excavated at fifteen Late Woodland towns in the adjacent region of North Carolina (Ward and Davis 1993; Davis et al. 1998c). They created a cultural sequence from Dan River phase through Early, Middle and Late Saratown phases covering a time period of AD 1000 to 1710. The Research Laboratories compared their results along the Dan River with their work along the Eno and Haw River drainages further south in the Piedmont of North Carolina.

Gregory Waselkov, graduate student at the University of North Carolina, studied Dan River hunting strategies using data from the Smith Mountain Project, research conducted by Carl Miller from 1962 to 1963. For his study, Waselkov (1977) randomly chose 25 features each from Booth Farm (4FR0090) and Hales Ford (44FR0003) sites, identifying all of the animal and plant remains. Fifteen features with the largest number of bones were then selected for complete analysis of all artifacts. Virtually all of the pottery was Dan River ware. Today, the Smith Mountain Project, the collection housed at the Smithsonian, remains the largest Late Woodland project in Virginia that lacks a report.

Jack Wilson (1983), graduate student from the University of North Carolina, looked at ceramics from Reedy Creek (44HA0022) and Leggett (44HA0023) in Virginia and compared them with ceramics from "Lower Saura Town" (31RK1) the type site for Dan River ware along the Dan River in North Carolina. Reedy Creek ceramics were identified originally as Clarksville Ware and Leggett as Dan River ware. His analysis showed that folded rims were the major attribute for delineated Clarksville ware from Dan River ware when comparing these two sites. The cross tabulation of surface finish with rim type, in general, does not produce any differential from the two sites. From both components of 'Upper Saura Town" (31SK1 and 31SK1a), Wilson defined the Oldtown Series for the Historic period ceramics of the Dan River drainage, representing the last stage of the Dan River Ware Group.

Ned Woodall (1999), a professor at Wake Forest University, has conducted research since 1974 in the upper Yadkin River in the Piedmont of North Carolina adjacent to Virginia. In 1990, 1991, and 1997 he investigated the Porter Site, a Late Woodland site in Wilkes County, uncovering evidence of a possible public building and two burials containing Lamar affiliated grave goods, suggesting the extension of Mississippian cultural influence to that northern location. The first

burial, a young woman in a shaft-and-chamber pit, contained two spatulated celts, a shell gorget, and copper tubular beads. The second burial, a young child in another shaft- and-chamber pit, contained a shell gorget with a rattlesnake design, representing the Citico style, a late 15th century shell gorget with a snake motif. However, the pottery from the site is conservative with 50% net, 30% plain surfaces, and only a small minority of complicated stamped Lamar influenced sherds. Seventy percent of the pottery is tempered with steatite and is equivalent to Smyth ware defined in Virginia, and 30% tempered with sand and crushed quartz and is late Dan River. A radiometric date suggests an age of AD 1500 to 1600. Downstream and east from the Porter Site for a distance of 70 kilometers, Woodall identified 140 Late Woodland sites, containing little evidence of Lamar traits. Apparently, they remained committed to the old and conservative ways of ceramic manufacture and human burial. However, from the Smithsonian Institution mound survey in the late 1800s, it is clear that Mississippian affiliated communities engaged in mound construction, elaborate burial ritual, and the production of stamped pottery and settled as far north as Caldwell County along the upper Yadkin River (Thomas 1894).

From 1998 until 2018, Brian Bates (2003, 2010), professor at Longwood College, has conducted investigations at the Wade site (44CH0062) located on a natural levy along the Staunton River in Charlotte County. The Late Woodland town dates from within the period of AD 900 to 1425. The well-preserved site contains an extensive occupation midden, numerous pit features, including trash-filled storage pits and human burials, post molds, and hearth areas. The artifacts, representative of the Dan River phase, include triangular points, pendant, and basalt celt; ceramic pottery, pipes and discs; bone punches, awls, numerous fishhooks, pendants, beads, and turtle shell cup; and various sizes of shell beads. The trash-filled pits and midden contained thousands of pieces of animal bone, representing deer, elk, fox, Eastern box turtle, and various fish species, and large quantities of gastropods and bivalves. The site represents the occupation of the probable ancestors of the Saponi Indians.

Contract Archaeology

William Gardner (Barse and Gardner 1983) conducted test investigations in 1983 at an upland horticultural hamlet, 44HR0118, along the upper reaches of Leatherwood Creek in Henry County. One feature, interpreted as a shallow fire pit, two nearby post molds, and three distinct areas of sheet midden were encountered. Excellently preserved animal bone and shell was recovered along with marine shell beads and more than 8,000 Dan River sherds. Hamlets of this type are underrepresented in the archaeological records, and may occur in far greater numbers.

The Hurt Power Plant site (44PY0144) on the Staunton River across the river from the town of Alta Vista, was tested by Michael Barber in 1993 prior to the construction of a pump house and pipe line associated with the generating facility (Barber et al. 1996). Water-screening and flotation was routinely done on feature and midden soil. The report includes detailed zooarchaeological and ethnobotanical studies. Ten radiometric dates range from AD 1400 to 1830. Fifty-nine refuse-filled pits were examined, many of them probably originally used as storage pits. Ten fire-cracked-rock hearths were recorded. Seventeen human burials were investigated, and a number of features from flood chute episodes. Two hundred and forty-three glass beads, 59 pieces of copper, and one iron artifact were recovered indicating European contact. The dominance of Dan River ware (net 58%, cord 30%, plain 4 % and corn cob 1.5%) is interpreted as representing a conservative ceramic industry, unlike the ceramic industry from contemporary sites in North Carolina. Shell-tempered ceramics (5%) also seen on other Dan River sites further west indicate contact with the New River area. Other ceramic artifacts commonly found on sites in this region are miniature vessels, ladles or spoon, elbow smoking pipes, and sherd discs.

On behalf of Appalachian Power Company, Louis Berger completed archaeological evaluations, conducted in November 2008, of 20 sites associated with Leesville Lake. Nine Late Woodland camps or towns, associated with the Dan River and Clarksville ceramics, were considered eligible for the National Register (LaBudde et al. 2009). Pee Dee and Hillsboro ceramics were found in small amounts. The Smith Mountain Gap was a natural conduit for travel in the region and the area provided evidence of interactions among groups in Virginia, North Carolina, and possibly Tennessee.

Southwest Virginia Review of Past Investigations

1870s to 1960s

In the early 1870s, Lucian Carr (1877), Assistant Curator of the Peabody Museum of Archaeology and Ethnology at Harvard Museum, tested the Ely Mound (44LE0012) in Lee County. From this work, and from examining historical references, Carr was one of the first anthropologists to link the Native Americans at the time of European contact with mound centers.

Henry Mercer (1894) in the early 1890s, conducted the first archaeological survey in the region along the New River. He was looking for evidence of "early man" and expected to find it in the rockshelters along what was considered one of the oldest rivers in the east. Also in the early 1890s, Gerard Fowke (1894) recorded the Gala site (44BO0048) in Botetourt County during his survey of the James River. A retired Navy captain, Robert Wainwright (1914), who worked as a volunteer for the Bureau of American Ethnology, reported on village sites in Tazewell County.

Waldo R. Wedel (1951), of the National Museum of Natural History, in 1940 saw surprisingly beautiful and varied items from towns and burial caves in southwest Virginia. The richness of artifacts from southwest Virginia, including huge stone pipes, richly decorated ceramic vessels, copper and spatulated celts, awed him. He suggested that a research program in archaeology for the region would be most promising.

By the mid-20th century, the burial caves in Russell and Tazewell counties had been investigated by a number of people (Caldwell 1951; Newman 1951; Robertson 1951). The construction of the nearby Bluestone Dam in West Virginia prompted Ralph Solecki (1949), working for the Smithsonian Institution River Basin Survey, to conduct a reconnaissance survey of Giles County in 1948.

Clifford Evans' (1955) landmark report on Virginia ceramics reviewed earlier work and defined the New River and Radford wares for southwest Virginia. He suggested that the region was part of his larger Allegheny Ceramic Area that included all of western Virginia.

In 1963 C. G. Holland (1970) conducted survey and limited test on sites in southwest Virginia for the Smithsonian. He refined Evans' earlier ceramic analysis and defined the additional wares of Grayson, Lee, Smyth, and Wythe counties. He also noted the richness of the artifacts, many of them exotic, recovered from burials, and discussed the extent of the economic aspect of digging for marketable artifacts, an activity conducted intensely since the 1930s. He presented two new concepts: 1) southwest Virginia as a cultural hub, or nexus, of the eastern United States, mainly due to the rivers that originate and flow through, and 2) upland towns.

Harvard Ayers (1965) conducted a reconnaissance survey for the Smithsonian Institution River Basin Survey along the New River in Grayson County at two proposed dam sites. Holland (1969) continued Ayer's survey. A third survey of the area, conducted by William Gardner (1976), found Late Woodland components on young flood plain and in rockshelters.

Archeological Society of Virginia and Virginia State Library

The earliest highway salvage work in Virginia was conducted by John Reeves (1958), a biology professor at VMI, at the Draper site (44PU0010) in Pulaski County in 1958. Local residents knew the site as an Indian town marked with a circle of dark earth. Reeves uncovered your typical town debris and three burials, one a child's burial with shell beads. He also noted shell beads associated with child's burials at the Conner's Midden site in Halifax County. He hypothesized that people often placed funerary items with children, particularly shell beads. Recently, Howard MacCord (2002) looked at the artifacts from the site and noted that the ceramics were almost all net-impressed with 70% limestone-tempered and 30% sand-tempered.

Stuart Carter (Carter and MacCord 1968) from 1965 to 1966 excavated 47 features at the Lauderdale site (44BO0003) near the James River in Botetourt County, identifying eleven hearths, four human burials, 32 storage pits, and a circular house pattern. In 1965 Carter (MacCord 1997) tested the Mt. Joy site (44BO0002) along Looney Mill Creek with 15 squares uncovering evidence for hearths, human graves and refuse-filled storage pits. The predominant pottery at both sites is Dan River ware.

Two sites in 1972 and 1973, both containing Late Woodland components, were tested by the Roanoke Chapter of the Archeological Society of Virginia before being threatened by construction. Unfortunately, the field notes and the artifacts from both investigations

remain missing. The Wise Avenue site (44RN0004) contained about 30 subsurface features and numerous post molds (Klatka 2001). The Jamestown Plaza site (44RN0005), revealed portions of two house patterns and numerous subsurface features (Klatka 2002).

Excavations by the Wolf Hills chapter of the Archeological Society of Virginia from 1975 to 1977 at the Browning site (44WG0040) along the Holston River in Washington County, uncovered a rectangular house pattern (Charles Bartlett, personal communication 1990). Nearby, the Cornelius site (44WG0035) was investigated from 1974 to 1991 revealing a multi-component stratified Paleoindian to Late Woodland site with more than one thousand excavated features (Deitrick 1999). The features included 90 hearths, 71 fire pits, 588 storage pits, 215 trash-filled pits, and 40 burials. The site is one of the most thoroughly excavated Late Woodland towns in southwest Virginia. The combination of Pisgah traits on numerous examples of local Radford ceramics is significant, illustrating close contact with cultures to the south.

In 1977, William Buchanan (1980) salvaged a portion of the Hall site (44MY0033) along the South Fork of the Roanoke River in Montgomery County, which was disturbed by recent floods. The excavation uncovered two possible circular house patterns, two storage pits, burials, and a hearth. Further damage to the site was caused by floods in 1985. Subsequent salvage work, conducted by David Rotenizer (1992) and Joey Moldenhauer, revealed ten storage pits, seven fire hearths, and possibly five human burials.

Howard A. MacCord, Virginia State Library

Howard MacCord directed the testing and salvage of avocational archaeologists from the Archeological Society of Virginia at numerous Native American towns and hamlet sites. At the Lurich site (44GS0010) along the New River in Giles County, Lewis Collins (1973) from 1965 to 1966 uncovered a depression filled with midden soil, storage and hearth pits, and post mold patterns of houses, and a possible palisade. Collins (1989) conducted limited testing from 1970 to 1972 at the Snidow site (44GS0006) also along the New River, revealing one circular house pattern within a palisaded town. Fourteen human burials were uncovered, five of the shaft-and-chamber type.

From 1968 to 1969, the Lipes Site (44BO0001) along the James River in Botetourt County was tested by MacCord (1971c). Nine features were uncovered, including three burials and perhaps portions of two house patterns. In the same year, MacCord (1972) tested Thompson's Shelter (44GS0021) in Giles County along the New River. The shelter was first explored by Mercer in 1894 and contains strata to a depth of nine feet representing the Late Woodland through Archaic periods.

In 1970 MacCord tested the Martin site (44WY0013) before the construction of a septic tank and drain field, revealing numerous features from an Indian town (MacCord 1998). A total of 32 human burials may have been encountered, but information is available on only nine. Of the more than 16,000 sherds, the majority are Wythe ware, a local variant of Dan River, with some Radford and only a few New River and Smyth ware sherds represented. A few complicated stamped sherds were identified. Preservation of bone and shell was generally good. One rolled copper bead was found.

Extensive highway salvage excavation at the Crab Orchard site (44TZ0001) along the North Fork of the Clinch River, was conducted from 1971 to 1973 by MacCord (MacCord and Buchanan 1980). The site, last plowed in 1916, is a large palisaded town. More than 280 features were investigated including 145 human burials, 74 storage pits, 14 burnt-clay subsoil hearths, 13 circular house patterns, five fire-cracked-rock hearths, three smudge pits, two dog burials, and a gate house along the palisade.

The Sullins site (44WG0012) located in Washington County along Town Creek, was excavated by MacCord (1981) in 1972. The palisaded town contained evidence for seven house patterns, 72 storage pits, 21 human burials (17 disturbed by looting), seven burnt-clay subsoil hearth areas, two smudge pits, and two fire-cracked-rock hearths. In the same year, MacCord (1976a) tested the Thomas site (44MY0018) located in Montgomery County along the Little River. Information was gathered on three house patterns, two human burials, and 29 storage pits.

The following year MacCord (1974b) tested the Fox Farm site (44SM0004) located in Smyth County along the Middle Fork of the Holston River. While investigating an area of approximately 590 square feet, he uncovered a section of a palisade line and four human burials.

The Trigg site (44MY0003) was completely excavated from 1974 to 1975 by MacCord and William Buchanan before the development of a recreational park for the city of Radford (Buchanan 1986). Although 20% of the palisaded town was damaged by previous floods of the New River, more than 760 features were excavated, including 422 storage pits, 278 human burials, 15 combination storage/burial pits, 40 burnt-clay subsoil hearths, five smudge pits, and a fire-cracked-rock hearth. One rectangular and 10 circular structural patterns formed two or more rows between the palisade and central plaza. Glass or copper artifacts were recovered associated with 42 of the burials. The glass beads led MacCord and Buchanan (1975) to believe that the Trigg site was occupied during the first quarter of the 17th century. Patricia Sternheimer (1983) studied the grave goods from the site for her thesis, dating the site to a similar time period. However, Heather Lapham's (2005:40) bead study and recent radiometric analysis dated the site to ca. AD 1620s to1650s.

In 1977, MacCord (1979) conducted highway salvage on a portion of the Flanary site (44SC0013) located along the Clinch River in Scott County. The excavations revealed a section of palisade, a possible house pattern, seven human burials, two burnt-earth hearths, and a storage pit. Exotic ceramic vessels, representing the Mississippian Shell-Tempered Tradition and Cherokee Qualla Ware, were recovered from two burials.

Joseph Benthall, Virginia State Library

Joseph Benthall of the Virginia State Library conducted excavations at the Daugherty's Cave (44RU0014), Shannon (44MY0008), Litten (44WG0004), and Stroubles Creek (44MY0007) sites from 1966 to 1968. Daugherty's Cave (Benthall 1990) is a stratified rock shelter along Big Cedar Creek in Russell County. The Late Woodland Zone A revealed charred corncob, an increase in mussel and aquatic shells from the Middle Woodland, and one sheet brass projectile point. In the Middle Woodland levels, 500 BC to AD 900, Benthall identified ceramics that demonstrating close contact with cultures to the south in Tennessee and northern Alabama. This affirmed Holland's idea of southwest Virginia as a nexus of cultural interaction.

The Shannon site (Benthall 1969), located along the headwaters of the North Fork of the Roanoke River in Montgomery County, is an elliptical palisaded town with two entrances; one funnel-like and the other formed by the overlapping walls. More than 195 features were investigated in 1966, including 11 circular structures, storage pits, refuse pits, fire pits, hearths, burned areas, and 100 burials, most of which were located near the palisade. In February 1968 Benthall and MacCord watched as the site was destroyed, rescuing human remains from an additional 27 burials (MacCord and Benthall 1998). Benthall noted the ceramic similarity and mixing between three different wares, Clarksville, Radford, and New River, distributed from the Piedmont in the east to the Clinch River drainage in the west. These wares have identical vessel shapes, surface treatment, and decorations but different temper. He felt that the wares probably represented the joining together of two or more Siouan groups possessing slightly different pottery traditions. In general, Benthall's excavation enhanced the cultural 'nexus' theory and richness of the region, and questioned the assumption that a pottery ware, as defined by temper, could be equated to a cultural group.

Benthall (1971) tested the Litten site near the Middle fork of the Holston River in Washington County, recovering information on storage pits, structure patterns, hearth pits, and two human burials. The Stroubles Creek site was tested by Benthall (2000) in 1968, revealing numerous Late Woodland features, including a post mold pattern, a burial, and 14 pit features. The artifact assemblage, including ceramics, was identical to those of the Shannon site. All three wares Radford, New River and Dan River were found at the site. Bone and antler artifacts were common. A large sample of animal bone, mainly deer, turkey and box turtle, was recovered. Plant remains included maize, bean, hickory and black walnut shell, persimmon and black cherry seeds. Later, in 1993, the William and Mary Center for Archaeology under the direction of Dennis Blanton with Steven Pullins serving as field supervisor evaluated the significance of the town site, uncovering 38 additional features and a possible segment of a palisade trench (Pullin et al. 1994). Two radiometric dates from the 1968 excavation and three dates from the 1993 excavation ranged from AD 1120 to 1480.

Emory E. Jones

Emory Jones, a member of the Archeological Society of Virginia that lived in Bluefield, West Virginia, excavated at a number of sites in Virginia. As an avocational

archaeologist, his field work and record keeping were decidedly above average. In 1968, Jones (1999b) along with a Mr. Shigley, excavated several five-foot squares in the Gillespie Site (44TZ0007) a large town site in Ward Cove in Tazewell County. Holland was the first to record the site and mentioned that many human burials were dug into by collectors. Jones noted post molds, a hearth marked by fire-burned clay and overlain by two limestone slabs, and a refuse-filled pit with a human burial at the base. The majority of the ceramics are Radford Net-Impressed with some plain and corncob-impressed. A few sherds, 3.4%, are shell-tempered.

In 1970, Howard MacCord (1971b) with the assistance of Emory Jones completed a highway salvage excavation at the Brown Johnson site (44BD0001) a palisaded town. Overlapping sections of the palisade formed two gates, and a structure, perhaps a bastion/watch tower, stood along one side of the palisade. Eleven circular house patterns were found within the town. Other features included 30 storage pits, some used also as burial pits, 14 human burials, and hearth areas of burnt-clay subsoil.

Near the head waters of the North Fork of the Clinch River in Tazewell County, Jones (Jones and MacCord 1989) tested a portion of the Dunford site (44TZ0015) in 1971, first reported by Wainwright in 1914. He uncovered a line of post molds suggestive of a palisaded town.

From 1970 to 1973, Jones (1999a; 2001) conducted excavations at the Newberry Tate site (44BD0002) along Walker Creek in Bland County, investigating 12,000 square feet, or about 60% of the small town. He found evidence for two palisades, 16 dwellings, six guard tower-gate house structures,35 storage-refuse pits, 19 hearths, nine burned basins, seven small storage structures, five storage pits with structures, three large shallow pits with rocks, and twelve human burials of which four had stones placed in the grave fill directly over the body. Three small pits found inside and outside house patterns were filled with unique blue-gray clay, which he believed was used for pottery manufacture. In three instances, storage pits were lined with stones. Most of the funerary items were made from shell except a human fibula pin and a turtle carapace. More than 9,500 potsherds were recovered from the site, 71% Radford, 2% New river, and 20% Wythe/Dan River.

Jones (n.d.) conducted salvage work at the Higginbotham site (44TZ0019) from 1972 to 1973, a small hamlet adjacent to the Crab Orchard site along the North Fork of the Clinch River. Forty-eight features were excavated including post molds, pits, hearths, and three shaft-and-chamber burials.

In 1972, Jones visited the Gilbert Site (44TZ0016) in Wright's Valley, Tazewell County. The following year Dr. Charles L. Tyer, president of the Appalachian Highlands Chapter of the Archeological Society of Virginia, arranged for students of Bluefield College, of which he was also president, to test the site under his supervision. Jones (1989) wrote a report base on his first-hand knowledge of the site and from Dr. Tyer's field notes. Features found in the 1500 square foot excavated area included eleven fire-burned areas, one fire-smudge pit, three storage pits, and superimposed post mold patterns for sevens structures, used as either dwellings or storage structures, and five areas of midden. The majority of the ceramics from the site are limestone-tempered Radford ware, with some sand, and shell-tempered sherds. The archaeological evidence suggests a small sedentary hamlet.

The Hoge site (44TZ0006) first identified by Wainwright 1914, is an unplowed palisaded town located in the middle of beautiful Burkes Garden in Tazewell County. Some 251 features were uncovered by Jones (2001) at the site from 1976 to 1990, including two well-defined palisades and up to three additional intermittent lines, 22 round or oval house patterns with one rectangular pattern, 75 storage pits, 19 storage structures, 70 hearths and fire-related features, 31 small clay storage pits, and 39 human burials of which 17 were vandalized. More than 56,200 potsherds were recovered of which 97.4 % were tempered with limestone, 1.2 % with sand, and 1% with shell. More than 135 clay pipe fragments and three whole pipes, a small number of clay beads, and a wide array of bone artifacts were retrieved from the soil.

Virginia Department of Historic Resources

The Virginia Department of Historic Resources conducted investigations at the Buzzard Rock (44RN0002), Crab Orchard (44TZ0001), Hansonville (44RU0007), Richlands Hospital (44TZ0051), Thomas-Sawyer (44RN0039), Bonham (44SM0007), Graham-White (44RN0021), and Fox Farm (44SM0004) sites. Many of these excavations were conducted as part of their Threatened Sites Program.

In 1977, highway salvage work at the Buzzard Rock site (44RN0002) along the Roanoke River within the city of Roanoke, revealed two circular house patterns, one longhouse pattern, a section of a windbreak, and a possible sweat lodge feature. From the correlation of alkaline and high phosphorus soils with artifact classes and feature types, Wayne Clark hypothesized butchering and hide preparation areas. Radiometric samples place the site in the 11th century. In 1983, Joey Moldenhauer uncovered additional artifacts and feature data with later, 13th century, more acceptable radiometric dates (Egloff 1992; see Virginia C-14 dates on the DHR web site, https://www.dhr.virginia.gov/arch_DHR/archaeo_index.htm). Dan River phase ceramics with a few earlier Grayson ware sherds and a small percentage of New River and Radford wares, indicated interaction with people to the west. Storage pits were linked to the circular houses and not to the elongated structure, similar to that at the Bessemer site (Clark et. al. 2005).

During the 1978 investigations of the Crab Orchard site (44TZ0001), prior to the proposed construction of a social service building, three circular house units, evidence of three palisades, a large semi-subterranean structure, hearth areas, human burials, and storage pits were uncovered. Highway savage had been conducted at the site by MacCord in 1971 to 1973. The large semi-subterranean structure is interpreted as a communal meeting house for secular and sacred activities (Egloff and Reed 1980).

Drain field salvage excavations at the Hansonville site (44RU0007) in Russell County in 1979 revealed evidence for human burials and two separate town occupations. Keith Bott (1981) hypothesized that the site, over 185 meters from the headwaters of Big Moccasin Creek and located near a major gap, served as a strategic link in a regional transportation network. He also showed that upland soils, in some cases, are more productive than river terrace soils. Bott hypothesized the evolution of functionally diverse towns and hamlets that developed complex interdependencies.

The Richlands Hospital site (44TZ0051), tested in 1982 during the construction of a parking lot, was a small town strategically located on a promontory overlooking the largest expanse of floodplain along the Clinch River in Tazewell and Russell counties (Egloff and Turner 1988). A copper effigy pendant and cone tinkler were recovered from the site, along with shell-tempered, plain-surface pottery that appears to be related to the Blue Stone Phase of Fort Ancient.

Starting in 1987, Michael Barber (Barber and Barber 2004) salvaged portions of the Thomas-Sawyer site (44RN0039) in Salem, following earlier testing in 1983 by the Archeological Society of Virginia. He uncovered evidence of repeated occupation along the terrace, a palisade line, and storage pits holding Dan River ceramics. At Area B, interpreted as a year round settlement of a household or small hamlet dating to AD 1620 to 1635, he recovered copper items, glass beads, iron artifacts, wampum beads, and shell and bone small disc beads.

Testing and excavations in 1989 and 1990 at the Bonham site (44SM0007) along the Middle Fork of the Holston River, uncovered multiple palisade lines, 22 human burials, and storage and shallow basin pits (Boyd et. al. 2005). The 1989 test trenches uncovered 25 features, including five with human bones, and provided evidence that at least two major town sites overlapped. Most of the site area was protected from impending development by the Deer Valley Industrial Park with a layer of protective filter cloth and a cap of fill dirt. However, the unprotected area of the site was subjected to salvage excavations in 1990. Twenty-five pit features, mainly storage pits, and 26 burial pits were partially or completely excavated. Only three small and shallow infant burials had not been looted. Ceramics were predominantly grit and/or sand (63%), limestone (16%), or gastropod shell-tempered (20%) with knotted-net-impressed surfaces. Burnished sherds, appliqué strips on rim sherds, and diagonal chevron incised rim sherds suggest contact with Mississippian groups to the southwest.

In the same summer, salvage work at the Graham-White site (44RN0021) along the Roanoke River in Salem prior to the construction of a soft ball complex, revealed 111 features and scattered post molds. The 38 excavated storage, basin-shaped, and rock-cluster features contained an extremely rich assemblage of artifacts, including trade items of iron and glass beads (Klatka and Klein 1998). Historic trade items, Dan River and Fredricks Check Stamped ceramics, and radiometric dates for the site suggest a late seventeenth century occupation. However, one earlier date and other artifact classes suggest a Late Woodland occupation. The association of marginella shell beads with the Late Woodland occupation, and the association of cylindrical shell beads, both white and

purple and similar to "wampum," and the very small and delicate disc beads with the historic trade items further support the hypothesis of two occupations. While the Dan River ceramics show no change through time, deer exploitation increased during the historic occupation, as illustrated by the increase in bone beamers, stone scrapers, and the faunal analysis (Moore and Lapham 1997).

In 1994, limited investigations were conducted at the Fox Farm site (44SM0004) by Thomas Klatka (1995) prior to the construction of a house and septic field. The site had been tested by MacCord in 1973. Thirty-two features were identified including seven burials (five disturbed by vandalism), a sub-rectangular structure 23-by-28 feet with two internal support posts, a palisade line, and eleven refuse-filled pits. The large sub-rectangular structure may represent a rare communal structure used for secular and sacred activities. The majority of the ceramics represent Radford ware with lesser amounts of Limestone/Gastropod Shell ware and Wythe ware.

University Research

Paul Gardner (1992), a graduate student at the University of North Carolina, conducted limited test excavation at Daugherty's Cave (44RU0014) starting in 1982, searching for evidence of early subsistence, particularly the introduction of maize. His dissertation includes both an exhaustive discussion on subsistence modeling and a description of the artifacts he recovered, particularly the maize, nuts, fruit, greens, annuals, mussels, animals, and fish. Unlike Benthall's earlier work, Gardner emphasized water-screening and flotation recovery methods. He uncovered evidence for four Native American components placed in time with fourteen radiometric dates: 1) Late Woodland/Mississippian with New River ceramics, 2) Middle Woodland with Candy Creek ceramics, 3) Early Woodland with Longbranch ceramics, and 4) Late Archaic with Savannah River points.

In 2000, Thomas Whyte an archaeology professor at Appalachian State University, wrote about the Late Woodland period of the adjacent mountainous portion of North Carolina and stated "…my area represents the western, high altitude extent of Dan River culture who were speakers of a Siouan language." Whyte's work at site 31WT330 dated to the AD1300s and uncovered circular house patterns and quartz-tempered net-impressed sherds similar to Dan River ware, except they occasionally exhibited Pisgah-like rims. The site is similar to the fourteenth-century occupation at the nearby Ward site. The question he posed is "Does the site represent Cherokee people or Siouan people?" Twenty-five years ago people suggested that the pottery from the Ward site be called Dan River Net-impressed, variety Watauga. By looking at the total constellation of traits, rather than just the Pisgah-like rims, he believes 31WT330 represents a Dan River phase Siouan site with a thin overlay of influences from people to the south--Cherokee or Catawba.

In 2003, Cliff Boyd (2003) an archaeology professor at Radford University, conducted limited test excavations at the Worthy High School site (44SM0025), largely destroyed by the construction of the school in the 1950s. Eight one-meter units were excavated. Samples of soil were saved for fine water-screening and all soils from features were retained for flotation. Post molds, a Middle Woodland circular hearth, and a Late Woodland midden 50 to 60 cm thick were identified.

Using data from the Trigg, Crab Orchard, and Hoge sites, Heather Lapham (2005), a graduate student at the University of Virginia, discussed changes between the Late Woodland and Historic periods. She researched how the 17th century deer skin trade altered traditional Native American economic organization, mortuary practices, social relations, and political systems. She looked at faunal remains, bone tools, and non-local material, mainly European glass beads and copper alloy artifacts.

David Fuerst (2007) a graduate student at the University of Kentucky, is looking further into the Bluestone Phase of the Fort Ancient culture originally defined by John Marwitt in 1982 and elaborated upon by William Johnson in his 1984 dissertation. The phase is based on material excavated between 1977 and 1979 from sites located along the New River in the Bluestone Reservoir area of southern West Virginia. This research area is important to this discussion because it is adjacent to Virginia. The phase has a high percentage of plain mussel-shell-tempered pottery decorated on the lip, rims, necks, and strap handles with fine incising and rows of punctuates, in a style reminiscent of pottery from the upper Ohio River valley. Low percentages of limestone-tempered pottery and mussel shell-tempered pottery with net and cord-marked surface treatments

occur, illustrating influences originating from Virginia.

In recent years, Darla Spencer (2009 and 2011) has been researching, from a West Virginia perspective, the original question raised by Griffin and Coe in 1930s - the extent of relationship or cultural interaction between the Fort Ancient people of the Ohio Valley and the Siouan people of North Carolina. Her recent ceramic research on pre-European Native American sites in southern West Virginia, in addition to early ethnohistoric accounts, oral traditions, and comparative linguistics, provides a compelling argument for Siouan occupation of the Kanawha Valley and southern West Virginia at this time, and their interaction with people from southwest Virginia.

In 2007 and 2008, the University of Kentucky archaeology field school, under the direction of graduate student Maureen Meyers (2011), conducted investigations at the Carter Robinson mound and town site (44LE0010) in Lee County. Four structure areas were identified, suggesting two methods of construction: post structures with larger central support posts, and one structure with wall trenches. Large amounts of daub were found associated with some of the structures, suggesting that clay was used in their wall and smoke-hole construction. Carter Robinson is a Mississippian frontier site engaged in trade with local groups, represented by Radford ceramics, during the Middle Mississippian period. Remains excavated at the site suggest that in a relatively brief period, people moved in and aligned themselves with local groups in order to access trade routes. Shell-tempered plain and cord-marked pottery, similar to Dallas, predominates at the site. Some Radford and Pisgah wares occur, suggesting interaction with local people and people in western North Carolina. Exchange between Mississippian people with local people is explained in two ways: first, material goods exchange, specifically, Mississippian pottery, cannel coal beads and pendants, and perhaps salt; second, exchange of women, as marriage partners, to formally cement trade relations.

U.S. Forest Service

Beginning in 1976, the Jefferson National Forest (Barber 1983, 1987) conducted numerous surveys and tests of upland locations throughout the region, particularly the rockshelters in the Coeburn Exchange in Wise County. This research was tied closely to cultural resource management, with an emphasis on prediction of site locations. In 1976, Harry Piper (1977), through Emory and Henry College, conducted survey for the Forest Service of the highest upland region in Virginia, the Mount Rogers National Recreation Area. Both the rockshelters and upland areas revealed evidence for Late Woodland occupation. The U.S. Forest Service continues to conduct surveys and tests prior to timbering activities and land exchange.

Contract Archaeology

Although there have been many surveys and test excavations conducted throughout southwest Virginia since 1975 as a result of the increased activity of contract archaeology, only a few of these projects revealed noteworthy Late Woodland occupation. In 1977 and 1987, James Madison University salvaged portions of the Bessemer site (44BO0026) in Botetourt County along the James River, prior to highway expansion (Geier and Moldenhauer 1977; Whyte and Thompson 1989). The excavations uncovered a section of palisade line and accompanying ditch, 10 human burials, circular, elliptical and longhouse structures, storage pits, and hearth areas. The site, dated by 14 radiometric samples from AD 1200 to 1400, illustrated a frontier blending of Page and Dan River components.

William Gardner (1979) surveyed portions of Poor Valley and Hidden Valley in Washington County in connection with the proposed construction of two hydroelectric facilities. He found that the following factors seemed important in site prediction: low topography, proximity to streams, south exposure, distribution of chert, a clastic versus a carbonate geological setting, and soil association.

Charles LeeDecker (1983) uncovered two fire pits at 44WG0248 in Washington County as part of the installation of a natural gas line. The pits contained a mixture of ceramic wares and extensive samples of charred nuts and weed seeds. One feature was dated to AD 1580.

The Virginia Commonwealth University Archaeology Research Center conducted research on sites prior to the expansion of Route 58 in Lee County, the Cumberland Gap Region of southwest Virginia. A Late Woodland hamlet at the Edd's Mill #2 site (44LE0099) was identified in 1991. Five conjectural overlapping cabana-type shelters, marked by small and large post molds, and pit hearths were described (Egghart 1991).

No ceramics were found at the site, but ten triangular points suggests Middle to Late Woodland occupation. In 1992 they conducted investigations at the Wheeler site (44LE0133) associated with a radiometric date of AD 960. Douglas McLearen (1994) identified a post mold pattern interpreted as a possible shelter, and cooking and storage pits. Ceramics from this component consist of cord-marked, plain, and smoothed-over cord-marked limestone-tempered wares interpreted as local and probably a late variant of Candy Creek ware.

William Reid (1997) of Louis Berger & Associates documented the Late Woodland occupations at 44LE0121 and 44LE0129 in 1995 prior to the Route 58 improvement. At site 44LE0121 a post mold from a large oval structure containing a possible heath feature and associated triangular points was dated to AD 1420 +/- 80 BP. From 44LE0129, triangular points and shell-tempered Dallas ware were recovered. A radiometric date of AD 1220 +/- 80 BP was obtained from Feature 4, a shallow basin-shaped pit that produced evidence of maize, but no other artifacts. Louis Berger & Associates in 1995 also performed data recovery at the Station Creek site, 44LE0211. A Mississippian component was identified on the basis of Pisgah sand-tempered and Hiwassee Island shell-tempered pottery. Two shaft-and-chamber burials, one of which was dated to AD 1035-1245, were uncovered along with evidence for nutshell, pumpkin/squash, goosefoot, and maize (Voigt et. al. 2000).

The William and Mary Center for Archaeological Research (Pullins et al 1999) also worked on the Route 58 project, conducting data recovery at 44LE0165. From a pit feature with two radiometric dates of AD 645 to 880 and AD 780 to1000 they recovered limestone-tempered cord-marked pottery, probably related to Candy Creek, in association with hickory and walnut shell, and the earliest dated corn kernels from Virginia.

In 1998, Louis Berger & Associated (Rinehart 2000) conducted salvage excavation at the Hinman site (44RN0311) in Roanoke County. Seven radiometric dates suggest four separate periods of occupation during the Late Woodland. The lack of a palisade, the limited number of pit and hearth features, evidence for only one circular structure, and only one human burial suggests that the site was a seasonal camp rather than a hamlet. Pit Feature 239 contained a mixture of New River, Dan River, Radford, and Grayson ceramics, suggesting that the four wares, as defined by archaeologists, are somewhat contemporaneous.

Gray and Pape conducted research at the Gala site (44BO0048) in 2001, identifying a mound-less ceremonial center. The site contains mainly Page ceramics with some Dan River ware. Page ceramics predominate along the upper James River drainage north of the Gala site while Dan River ceramics predominate further south in Botetourt County along the James River at the Lauderdale and Lipes sites. Bradley Bowden (2003) has described this area along the James River as a transition zone between Dan River cultures to the south and Page culture people to the north.

The research of TRC Environmental Corporation, Inc. as part of the Roanoke River Flood Reduction Project recovered evidence for intact cultural deposits or features at sites 44RN0002, 44RN0070/0072, 44RN0219, and 44RN0220. These sites are part of the larger Buzzard Rock Site Complex (Idol et. al 2004, Idol et. al 2006). It appears that Late Woodland remains once stretched continuously along the banks of the Roanoke River in this area, but the area is characterized by substantial natural and historic site modification and destruction, resulting in the scattered remnants of occupation. Dan River ceramics appear throughout the lower and upper levels at 44RN0002. Grayson, Dan River, and New River wares are found together at 44RN0219, but the frequency of the types varies across the site by level and feature context. This suggests that multiple discrete occupations are present. There is limited evidence in Trench 18 at 44RN0220 that Dan River wares may postdate New River ceramics at that location. The general low artifact density during the early Dan River phase AD 1000-1300, suggest a series of short-term occupations, or specialized activity areas associated with residential areas. Data recovery at Maher Field site (44RN0221) uncovered Late and Middle Woodland components (Idol 2008). The Late Woodland component contained a majority of Dan River ware, but with a mix of Radford and New River. Research on the American Viscose Plant site (44RN0348) revealed evidence for a relatively permanent settlement in use from ca. AD 1300 to 1650. Fifty-five features were investigated: 41 storage pits, five rock clusters, one possible post mold, and eight human burials. Dan River ware dominated the ceramic inventory with a small amount of New

River pottery. A few complicated and check stamped sherds were recovered. Cultigens include maize and bean; hickory, walnut, acorn, and hazelnut were evident (Stanyard 2008).

Independent Researcher

Lately, Jim Glanville (2004), a retired chemist from Virginia Tech while researching the Saltville Valley, was exposed to the rich Native American culture of the region. He stumbled upon the Spanish connection to the region that other researchers had documented. Two 16th century Spanish expeditions may have entered southwest Virginia. Hernando de Soto marched an army through the southeast United States from 1539-1542, and, while going through Tennessee, some of his men may have explored Lee County in 1540. Juan Pardo (1566-1567) left Santa Elena, South Carolina and entered the mountains of western North Carolina. The Spanish were looking for riches and followed whatever lead they uncovered. They must have heard of the wealth of the Native American culture along the Holston in southwest Virginia. One of Pardo's lieutenants, Hernando Moyano, probably attacked one of the towns in the Chilhowie-Saltville region. A Native American woman who came from the interior, probably from the Saltville region, married a Spanish soldier, and became known as Luisa Menendez (Glanville 2004).

Glanville emphasized the suitability and importance of Native Americans trading salt from the Saltville valley. Although he and others recognize that there exists no proof that Native Americans mined and traded salt from Saltville, the circumstantial evidence is compiling. The local Native American towns and material culture, referred to by Glanville as Holstonians (2007b), were extremely rich, perhaps based, in part, on the production and trade of salt. According to the historic record, both Luisa Menendez and another Native American woman came from a land where there were three or four bodies of water from which the Indians made salt.

Glanville continues his research on shell gorgets, stone pipes, and effigy vessels, documenting nearly 200 engraved marine shell gorgets from Washington and Smyth counties. The gorgets exhibit a wider range of styles than first thought, and establish the Holston River valley as an extremely rich cultural sub area, although devoid of mounds (2007c). He further documented the extensive local artifact collecting in the mid-20th-century and the trafficking in funerary items, particularly engraved shell gorgets and stone platform pipes. He described the long-term close relationship between a collector, Rufus Pickle from Smyth County, and a buyer, Ralph Space, from New Jersey (2007a). His artifact detective work uncovered further examples of appliqué lizard and snake effigy vessels, documenting the extend of these vessels from the Madisonville site, 33HA36, in Ohio, at the Orchard site, 46MS61, in West Virginia, at various sites in southwest Virginia, to Upper Sauratown, North Carolina (2007d personal communication).

Material Culture

Ceramics

For years, archaeologists have defined ceramic wares as if they represented a particular group of people that were linguistically, socially, and politically connected. The association of ceramic wares with linguistic or political units is fraught with difficulties, especially when one is faced with so many ceramic wares and so few historic references to Native American groups. However, they do represent the increasing regionalization of cultures in the Late Woodland period and may reflect the type and intensity of interaction within and between socially connected groups.

Native American ceramics in the southern Piedmont and in southwest Virginia are a complex mosaic of ceramic use and cultural interaction that include three major ceramic traditions and a blending of their attributes. The predominant pottery is from the Eastern Woodland Tradition, a cord-marked, net-impressed, or corncob-impressed pottery with either sand, shell, limestone, or soapstone temper. Clearly the distribution of this pottery is associated with the documented Siouan-speaking Occaneechi, Saponi and Totero Indians. Southern Appalachian Complicated Stamped Tradition, a rectilinear-and-curvilinear-impressed pottery with sand temper, occurs rarely in extreme southwest Virginia. These ceramics are associated with the Iroquoian-speaking Overhill Cherokees. The Mississippian Shell-Tempered Tradition, a plain or cord-marked pottery, is associated with both the Muskogean-speaking people in eastern Tennessee and the Overhill Cherokee. We are left with the conclusion that the linguistic, political, and social distinctions between the various groups are not

consistently mirrored in their pottery.

Research into the Siouan question of the Carolina and Virginia Piedmont was initiated in the mid-1930s as part of a project to relate them to the people represented by the Fort Ancient Aspect of the central Ohio Valley. The investigation was led by Griffin, who had analyzed the Fort Ancient materials, and assisted by Coe. A direct result of the effort was the identification of a number of ceramic wares for the Carolina and Virginia Piedmont. They were named Dan River, Clarkesville, Caraway, Hillsboro, Elkin, and Linwood. The southern Siouan tradition, represented in the Protohistoric period by the Caraway and Hillsboro wares found along the lower Catawba and lower Yadkin Rivers, is marked by profound influences directly from the Mississippian Pee Dee culture as represented by Town Creek. Hillsboro pottery is found rarely in the southern Piedmont of Virginia and is characterized by thin, hard walls; fine-sand tempers; and burnished or stamped exteriors. Vessels often take the shape of cazuela or hemispherical bowls. The northern Siouan division, represented by Dan River and Clarksville wares, maintained a conservative tradition of net-impressed surface finishes. After a couple of years, Griffin (1945:328) concluded that there was little connection between Fort Ancient and the Siouan material from Virginia and North Carolina. However, Coe believed that the strap handle and its distinct punctated decoration came from the Fort Ancient Culture as did the occasional shell-tempered pottery in the Dan River area.

Dan River ware, defined by Coe and Lewis (1952), was thought to represent the historic Sara Indians and dated to circa AD 1625 to 1675. Coe saw Dan River pottery as an intermediate stage between the Middle Woodland Uwharrie ware and the Protohistoric Caraway and Hillsboro wares. The simple incised bands around the neck of the Uwharrie vessels changed to more complicated incising, punctations, finger pinches, and notches. The large crushed-quartz temper gradually dropped out and river sand became the acceptable temper. The scraped interior characteristic of the Uwharrie pottery became smooth. This transition from Uwharrie to Dan River to Hillsboro was gradual and proceeded at different rates in different regions. The North Carolina representation of Dan River changed fastest being the closest to the Catawba-Lamar influences, while the Virginia portion of Dan River pottery was always more conservative.

In 1955, Evans defined many Native American ceramics from Virginia. All late sand-tempered wares from the southern Piedmont he called Clarksville. All shell-tempered wares from southwest Virginia he called New River. All limestone-tempered wares from southwest Virginia he called Radford. Keyser and Page wares from the Shenandoah Valley he saw as local expressions of New River and Radford wares and placed them in the Northern Division of his Allegheny Ceramic Area (1955:56-60). We now treat New River and Radford as separate wares from Keyser and Page.

The next major synthesis of pottery from southwest Virginia was Holland's survey (1970). He defined an additional four wares: Grayson, Wythe, Smyth, and Lee. Grayson ware is comparable to Uwharrie ware defined in the Yadkin River valley of North Carolina (Mathis and Moore 1984). In Virginia, a radiometric date of AD 1015 was obtained on Grayson/Uwharrie ware from the Clark site (44PK0015) in Patrick County (Clark 2001). Holland's definition of Wythe ware is almost identical to the definition of Dan River ware and is now seen as a western variant.

The soapstone-tempered Smyth ware is found long the New and Holston rivers. Other ceramics tempered with soapstone, like the Burke Series, are found further to the south in North Carolina in the upper Yadkin, Watauga, Nolichuck, and upper Catawaba river valleys (Mathis and Moore 1984; Ward and Davis 1999; Moore 2002). Smyth Ware is very rare in southwest Virginia except in Smyth County.

Lee ware is a sand-tempered, rectilinear-stamped pottery identical to the Pisgah Series, part of the Southern Appalachian Stamped Tradition defined in North Carolina (Dickens 1976). Lee ware is located only in extreme southwest Virginia along the Powell and Clinch rivers. Egloff (1987:27) and Mathis and Moore (1984) have noted the distinctive Pisgah rims on shell- and-limestone-tempered, net-and-cord-marked pottery. This is an example of typological 'blending' of the Eastern Woodland Tradition with the Southern Appalachian Stamped Tradition. Later curvilinear-complicated-impressed ceramics, similar to the Qualla Series defined in western North Carolina, occur seldom in southwest Virginia and may be tempered with sand, soapstone, limestone, or shell.

Holland accepted Evan's definitions of Radford and New River wares. However, Egloff and Hodges

(1982:14-23) indicate that Keyser Cord-Marked and Page Cord-Marked, as defined in the Shenandoah Valley should not be considered a part of either the New River or Radford wares. Furthermore, fabric-impressed ceramics should not be placed within either the New River or Radford wares. Benthall (1990:41-50) has demonstrated at Daugherty's Cave (44RU0014) in Russell County that limestone-tempered, fabric-impressed sherds are Long Branch Fabric-Marked and were associated with the Middle Woodland Period.

Page ware (Geier 1985; Manson, MacCord, and Griffin 1944), originally defined in the Shenandoah Valley as a limestone-tempered, cord-marked pottery with a distinctive thickened and decorated rim, occurs as far south as the Bessemer site (44BO0026) in Botetourt County (Whyte and Thompson 1989). A few sherds were found along the New River in Giles County and in the Bluestone Reservation (Maslowski and King 1983). At the Bessemer site, the ware blends with Dan River ware and exhibits a net-impressed surface treatment.

In 1980, MacCord (1989) placed the Indians of southwest Virginia into a distinct complex, Intermontaine Culture, based primarily on the distribution of limestone-tempered Radford ware. He also included town sites in Bath County containing Page ware, but did not include other sites containing Page ware in the Shenandoah Valley. Equating one ceramic ware with one culture would seem to be a simplistic approach of explaining the complex ceramic and ethnic diversity which occurred throughout Virginia.

Paul Gardner (1980) looked at the uniformity of Dan River ware across not only time but through a large geographic region, and compared it to the similar and adjacent Clarksville and Wythe wares. He hypothesized that the societies of the southern Piedmont and some of southwest Virginia were conservative, loosely bounded units sharing a common culture and language. Gardner felt that relatively free unstructured social interaction, such as visiting or trading between people of separate groups, will tend to homogenize their material culture. Sharply demarcated ceramic types with distinct social boundaries are unlikely to develop, rather clinal variation is the norm. This situation is represented by these three similar ceramic wares listed from east to west: Clarksville, Dan River, and Wythe. Clarksville pottery is generally net-impressed, with looped varieties predominating. Cord-mark pottery is rare. Rims are folded to give a collar, and the bottom of the rim folds are tacked down with punctated decorations. Some scraping of interiors occurs, but it is not widespread. Dan River ceramics, on the other hand, possess more decorations and more complicated incised designs. Finger pinching, incising, and slashing occurs on lips, rims, and especially the neck. Lips are usually notched, and punctations are present. Cord-marked surface finishes are an important minority type. Knotted net is used more frequently in Dan River ware.

Gardner proposed two temporally significant varieties of Dan River ware, recognizable by differences in temper, and one variety group. The first, Dan River Variety, is tempered with crushed quartz and sand, and fits the original type definition of Coe and Lewis. The second, Stokes Variety, lacks the inclusions of crushed quartz and only has river sand as temper. Gardner grouped the eastern Clarksville ware with the Stokes Variety of Dan River Ware. Gardner suggests that Stokes Variety came later in time, and was followed by Hillsboro Ware, which exhibits either a fine river sand or no temper in the paste. Wythe Ware was demoted to the Wythe Variety Group of Dan River ware and was identified by its western geographical range. Whatever happens in the future with the divisions of Clarksville, Dan River, and Wythe wares, these very similar ceramics are spread widely from the Fall Line on the east to west of the Blue Ridge and from the Piedmont of North Carolina to the southern bend of the James River in Botetourt County.

In 1983, Jack Wilson, a graduate student at the University of North Carolina, defined the Oldtown ware for the Historic period ceramics of the Dan River drainage. The ware represents the last stage of the Dan River pottery tradition. Many of the attributes implicit in the Stokes Variety Group of the Dan River ware created by Gardner are subsumed within the Oldtown ware. The general course of this development is a decrease in the size of the sand and in the overall amount of sand used as temper; the virtual disappearance of cord-marked surface treatment; a gradual rise in the occurrence of smoothing as a surface finish until it finally replaces net impressing in the late 1600s; a rise in frequency of flat lips as opposed to rounded lips; and a change from scraped interiors to those that are smoothed or burnished. Also noted is the incorporation of complicated stamped designs, an increase in non-fingertip punctations as decorations, and the appearance of cazuella and hemispherical bowls forms.

Although Coe first defined Dan River pottery in 1952, the first description of the archaeological manifestation of the culture was presented by Roy Dickens, Trawick Ward and Stephen Davis in a 1987 summary of the University of North Carolina's Siouan Project. Soon thereafter, Ward and Davis in 1993 presented a complete archaeological description of the Siouan Indian communities of the North Carolina Piedmont from AD 1000 to 1700. The Dan River phase is now dated to AD 1000-1450 along the Dan River drainage in North Carolina. Along the Eno River drainage in North Carolina the Jenrette phase (AD 1600-1680), represented by the predominately plain and simple-stamped Jenrette series, is a direct development out of the earlier Hillsboro phase (AD 1400-1600), characterized by Hillsboro series ceramics. The Fredricks phase (AD 1680-1710), representing the Occaneechi, is characterized by the predominately plain and check stamped Fredricks series.

Egloff's (1987) analysis of ceramics from along the Clinch and Powell rivers in southwest Virginia refined existing ceramic definitions, and recorded a blending of attributes, specifically limestone/gastropod shell temper, and distinctive Pisgah rims on shell or limestone-tempered, net or cord-marked pottery. Radford ware, restricted to the Late Woodland period, is predominantly cord-marked and net-impressed with plain and corncob-impressed types increasing in popularity before European Contact. He subdivided New River ware into a number of shell-tempered wares: Limestone/Gastropod Shell ware, Gastropod Shell ware, Dallas ware, and Mussel Shell ware. In general, the data suggest that during the latter stages of the Late Woodland period people were tempering their vessels with either crushed limestone or gastropod shell and that the preference for gastropod shell increased through time. However, both Limestone/Gastropod Shell and Gastropod Shell wares declined in popularity with the introduction of Mussel Shell ware which has predominantly plain surfaces. Dallas ware, of the Mississippian Shell-Tempered Tradition, exhibits mussel shell temper with either cord-marked or plain surface treatments. Dallas ware has been identified at substructure mound sites in Lee County.

The mixture of Eastern Woodland Tradition wares—Radford, New River, and Wythe—at numerous sites in southwest Virginia (44BO0001, 44GS0006, 44GS0010, 44MY0003, 44MY0008, 44MY00018, 44RN0002, 44SM0004, and 44WG0004) has spurred much speculation about the social organization of the groups responsible for these mixed assemblages. Benthall in 1969, noting the ceramic similarity and mixing between Radford, New River, and Clarksville (Dan River) wares at the Shannon site listed three hypotheses: 1) women taken as captives, 2) Siouan groups possessing pottery of three ceramic traditions, and 3) the joining together of two or more Siouan groups possessing different pottery tradition. In the late 1970s, Clark (Clark et al 2005), from ceramic evidence at the Buzzard Rock site and Geier (Geier and Moldenhauer 1977:120) from evidence at the Bessemer site, hypothesized that patrilocal residence occurred. Thus, the mixed ceramic assemblage was explained by the pottery-making women moving with their husbands to new towns. MacCord (2001) discussed the distribution of Dan River culture and ceramics west of the Blue Ridge along the upper Roanoke River, the James River, and the middle course of the New River. He also noted that many of the western sites contain a mix of Dan River, Radford, and New River ceramics. The author believes that the Eastern Woodland Tradition ceramics from the southern Piedmont and from southwest Virginia, exhibiting similar vessel shapes, surface impressions, and decoration but tempered with different materials, represents the regionalization of a socially connected group that shared a common culture and the Siouan language.

In 1992 Jeffrey Hantman and Michael Klein, a professor and graduate student at the University of Virginia, discussed the evolution of pottery in the Piedmont, specifically the reduction of vessel wall thickness, the shift away from ceramics containing large amounts of aplastics, and the shift to tempering materials, like shell, with low thermal expansion coefficients to increase the pot's ability to withstand repeated heating and cooling. The progressive reduction of vessel wall thickness and the increasing reliance on constricted neck forms of globular vessels also suited cooking. Shell temper increased vessel efficiency by providing thermal expansion rates similar to clay. The shell particles align parallel to vessel walls, decreasing fractures caused by the different thermal properties of clay and aplastic. Shell temper also formed a more effective barrier to the spread of cracks initiated by blows.

Klein (1994) analyzed ceramics recovered from radiometric-dated features across Virginia, creating regression equations predicting the date of features

from the attributes of the pottery. Specifically, the regression equation for the James and Roanoke rivers mathematically modeled changes in sherd thickness, temper size, and surface treatment over time. The equation applies to quartz-and-sand-tempered sherds from vessels with estimated diameters between 15 and 75 cm. Many archaeologists have noted that ceramic thickness and temper size changed slowly through the Late Woodland periods from large temper/thick sherds to fine temper/thin sherds. Klein established an equation to measure this change through time. Within the study region of this chapter he looked at the following sites: Graham-White site (44RN0021), Onion Field site (44CP0001), Otter Creek site (4FR0031), Reedy Creek site (44HA0022), and Leggett site (44HA0023). Klein applied the equation to pottery from the Trigg site (44MY0003) along the New River with moderate success. When comparing vessels from feature fill and those associated with burials, differences were noted. Burnished and plain vessels appeared more commonly as grave goods than other surface treatments. The vessels in burials were smaller and exhibit a wider range of tempering materials. He concluded '…that burials represent a highly diverse subset of the general categories of pottery produced by the community, but one produced primarily for use as burial goods rather than the inclusion of everyday cooking and storage pots in burials" (Klein et al. 2003).

Recent work by David Fuerst and Darla Spencer continue to illuminate the relationship of Ft. Ancient ceramics of West Virginia with the Eastern Woodland Tradition of the southern Piedmont of Virginia. Fuerst (2010) gives an historic perspective on the New River ware pottery and briefly discusses its relationship to the mussel-shell-tempered pottery of the Bluestone Phase in southern West Virginia. He also named and discussed the Crab Orchard ware pottery, named after the Crab Orchard (44TZ0001) site in Tazewell County, where it was first identified. Crab Orchard ware was tempered with crushed snail-shell or crushed-snail-shell-and-limestone tempering. Its other attributes closely mirror contemporaneous limestone-tempered Radford pottery (Fuerst 2011). Spencer (2009 and 2011) has identified net or corncob-impressed ceramics on sites from southern West Virginia, suggesting a strong connection with sites in Virginia.

In 2009, Gregory LaBudde, an archaeologist for Louis Berger & Associates, as part of their research at Leesville Lake Development, documented the occurrence of Clarksville and Dan River pottery in the same contexts at multiple sites. This, as well as an early radiometric date for Clarksville sherds, suggests that Clarksville pottery dates to the Dan River Phase (AD 1000-1450). The contemporaneity of Dan River and Clarksville ceramics is further supported by the fact that Uwharrie ceramics were found in association with both wares during the investigations. The occurrence of New River pottery at Leesville Lake sites exemplified the Piedmont connection to southwest Virginia.

A few summary statements can be made about the distribution of ceramic traits, first studied by Griffin and Coe in the 1930s, from the Piedmont of North Carolina up the New River valley into West Virginia. First, the attributes of complicated stamp and burnished surface finishes, rim appliqué strips, cazuella bowl forms, and elaborate incised designs originate to the south from Pee Dee and Catawba cultures, where they occur first. Second, Jenrette simple-stamped pottery and Fredricks check-stamped pottery appear late in time in the Eno River drainage and rarely in Virginia. Third, cord- and net-impressed ceramics predominate late in the Dan River region, particularly in Virginia. Traditional notches, fingertip punctuated, and linear incised decorations on conoidal bowls and jars remain. Fourth, the Clarksville, Dan River, and Wythe potteries are distinguishable as collections, but are still more similar to each other than to surrounding wares. Fifth, the sand-, limestone- or shell-tempered ceramics, with similar surface treatments and decoration from southwest Virginia, probably represent closely connected Siouan cultures that were very similar, if not identical, to each other. Infrequent limestone or shell-tempered ceramics in the Piedmont suggest interaction with southwest Virginia. Sixth, net or corncob-impressed ceramics do occur in minor amounts in southern West Virginia suggesting interaction with southwest Virginia.

Bone Artifacts

Michael Barber (2003), while an archaeologist working for the United States Forest Service, documented a wide array of bone tools and ornaments made by people from the Dan River culture area. He studied bone tools from 30 sites mainly along the middle and upper Roanoke River, but also from sites located as far north as

Bath County along the James River, as far west as the New River in Bland County, and as far south as sites in North Carolina along the Dan and Eno/Haw rivers dating from the period AD 1000 to 1700. Barber studied an amazing number of modified bone, 2360, dividing them into two groups: working tools and ornaments. He created a table summarizing their geographic and chronological distribution within the study area.

The bone industry may be viewed as a window into the wood technology that doesn't survive. Both bone and wood technology used splitting, grooving, hole-boring, whittling, and grinding/sanding to form implements. Barber defined 35 bone tool types. Common bone tools include: beamers made from bear femurs and tibiae or deer metapodials; awls made from turkey tarsometatarsals, deer ulnas, or splinter bone; fishhooks made from bird long bones or deer antler, ulnas, or toe bones; hoes made from elk antler; picks or grubbing tools made from antler tines; flaking tools from bear bacula; points from deer phalanges and antler tines; needles from deer ribs; and small triangular serrated scrapers. Cups were made by trimming the overhanging lip and scraping away the vertebral processes of turtle carapaces. Cylinders, or gaming pegs, were made from antler tines.

Barber defined 15 ornamental bone types, mainly beads. They include ulnar/radial beads, turkey wingtip beads, elongated cylinder bird beads of various species, and drilled black bear canines and incisors. Less common ornamentation includes deer scapula hairpins; drilled eastern box turtle femurs; drilled wolf, raccoon, or dog canines; squirrel mandible beads; mountain lion claws beads; and cottontail rabbit innominate beads.

Bone artifacts probably used by shamans included two medicine tubes made from the mid-section of human femurs, and mountain lion claws recovered from a human burial thought to be a shaman. A few very sharp turkey awls were identified and may have been used for scarification, tattooing, and the opening of wounds in curing ceremonies. Perforated grey and fox squirrel mandibles may fall within the realm of shaman use due to their uniqueness and limited distribution.

Bone musical instruments are extremely rare and include a notched elk scapula and turkey bone flutes.

From a regional perspective, only minor differences were found between the sites located in the core Dan River culture area: including the Dan River, the middle Roanoke River and the middle James River drainages, and the Trigg site on the New River. Sites further afield on the Eno/Haw rivers, those on the upper James, and the remaining sites on the New River can be seen as sharing some traits but are fundamentally different.

Most of the working bone tools were probably used by women, thus they are gender indicators. Female tools included beamers, awls, blunt-ended weaving tools, and ribs for weaving. The male oriented tools included antler projectile points. Thus the bone industry was mainly female owned and made. This required women to maintain a lithic tool kit in order to modify bone into tools.

Barber looked at the distribution of modified bone as clan indicators, since many clan creators were animals. He analyzed modified bone from burials at the Shannon site (44MY0008) and arrived at six possible clan animals: white-tailed deer, black bear, wolf, mountain lion, turkey, and turtle. Radical changes did occur at the end of the Late Woodland when native people were heavily affected by Europeans. Seeking trade goods, the people bartered deer skins, increasing their use of bone beamers and weaving tools. Bone beads declined in frequency and became more culturally passé with the introduction of European glass beads (Lapham 2005).

Shell Artifacts

Shell was widely used by native people before and after European contact for beads and pendants. Precontact beads included numerous marginella and rare olivella shell beads, and beads fabricated from segments from the central column of the conch. These columella segments are common and vary greatly in lengths, thicknesses, and shape. After European contact, the early Dutch and English colonists manufactured shell beads and pendants for trade to the natives. This practice lasted throughout North America for more than 350 years until the late 19th century. At the Wall and Fredericks sites in the Piedmont of North Carolina, Julia Hammett (1987) identified three types of shell beads from the context of 1680-1710: runtees, barrel/cylinders, and wampum. Hammett research suggests that both runtees and barrel/cylinders replaced the columnella segments used by natives before European contact, and that wampum replaced the traditional use of the marginella shell bead. On sites thought to be of the European contact period, extremely small, delicate disc beads, resembling small glass beads, are commonly found. These extremely small beads are thought to be

made with the aid of iron, obtained from Europeans. At the Graham-White site (44RN0021) these beads were associated with European artifacts, but never associated with marginella beads (Klatka and Klein 1998).

Southwest Virginia is well known for circular, fenestrated, and face gorgets made from the whirl of the conch. Darla Spencer (2001) documented the spread of rattlesnake shell gorgets, shell face gorgets and shell maskettes across a wide region that includes southwest Virginia. After AD 1450 engraved shell ornaments began showing up at sites in West Virginia, entering the region from southwest Virginia via the New River. As Dallas phase groups flourished in eastern Tennessee, it appeared that settlements in Virginia and West Virginia enjoyed increased interaction with these groups, as indicated by the distribution of shell gorgets. Glanville (2007c) continued the fenestrated shell gorget research in southwest Virginia, documenting more than 200 coming from Washington and Smyth counties, a far greater number and range of styles then previously imagined.

Pearls are known from only one site in Virginia, the Trigg site in southwest Virginia. Modified mussel shells, either notched or left smooth and used as knives, spoons or scrapers, were also found at the Trigg site and rarely at other sites throughout the study region (Buchanan 1986).

Lithic Artifacts

One of the characteristics of Piedmont sites, for all time periods, is the predominant use of quartz in lithic technology. Only in the southern Piedmont near the North Carolina border is there a high occurrence of metavolcanic triangular points because the geological deposits known as the Caroline Slate beds continue into Halifax and Mecklenburg counties. In southwest Virginia, black and gray cherts, and chalcedony is the common lithic for stone artifacts (see the Projectile Point and Lithic Type web module on the Department of Historic Resources web site, http://www.dhr.virginia.gov/arch_DHR/archaeo_lpc.htm).

Parker (1989) observed that, while the diversity of raw material used declined in the Late Woodland Piedmont, some 12% of all Late Woodland points found on Piedmont sites are made of nonlocal cherts, most likely obtained from the Blue Ridge area. This figure is a significant increase from the 4% figure which characterizes earlier Woodland and Archaic contexts. Of particular interest is the fact that other bifaces do not show this pattern, suggesting an exchange sphere focused on small triangular points made from chert or jasper. This could represent the ceremonial exchange of goods, in this case arrows, that accompanies social interaction and trade as suggested by William Kelso work at historic Jamestown (Kelso et al. 2001). Researchers there noted that 'small triangular points made of jasper and dark chert, both non-local materials, have been recovered intact significantly more often (47 percent) than those made of other materials (11 percent).' This suggests that these points from the western portion of Virginia found their way into a colonial context as gift arrows. Kelso quotes John Smith's 1608 exploration of the Chesapeake Bay, where he was presented with 'venison, beares flesh, fish, bowes, arrows, clubs, targets, and beareskins' by the Massawomeck Indians. The Susquehannock Indians on the same trip 'came downe with presents of venison, Tobacco pipes, Baskets, Targets, Bowes and Arrows.' Parker observed that while the geographic pattern of chert use follows an even falloff pattern from the probable source area in the Blue Ridge to the east, a few Piedmont sites deviate from this pattern with unusually large amounts of chert, suggesting some local control over the trade of these nonlocal materials.

At the Graham-White site (44RN0021) the evidence suggests that triangular points with serrated edges occurred in the 17th century replacing the straight-sided triangular points from the Late Woodland (Klatka & Klein 1998). Sites with early historic components within the Roanoke River valley, both the Hurt Power Plant (44PY0144) and the Thomas-Sawyer (44RN002144RN0039) sites yielded triangular points with serrated blades. To the south in North Carolina, sites such as Fredericks, Wall, Mitchum, and Early Upper Saratown, produced serrated triangular points. The evidence suggests that serrated triangular points are diagnostic of the AD 1500-1700 period, while straight bladed triangular points occur throughout the Late Woodland and early historic periods.

Copper and European Artifacts

Copper and European artifacts are rare in the study area. Much of the following information is derived from Mary Ellen N. Hodges (1993), 'The Archaeology of Native American Life in Virginia in the Context of European Contact: Review of Past Research.' In the southern Piedmont of Virginia, European artifacts

were found at the Philpott (44HR0004) (Davis et al. 1998b), Arey (44PY0021) (MacCord 1989ba), Abbyville (44HA0065), and 44HA0069 (Wells 2002) sites. Glass beads, pieces of copper, and one iron artifact were recovered at the Hurt Power Plant site (44PY0144) (Barber et al. 1996).

European artifacts recovered by collectors have been reported from a number of sites in southwest Virginia. Artifacts recovered from 44TZ0009, a burial cairn, are reported to include two glass beads and 20 'brass' beads (Holland 1970:41). Two 'bronze' ear plugs, red and tan glass beads and an iron axe were reported from 44SM0008, the Chilhowie School site (Holland 1970:35). One burial looted from the Mendota site (44WG0010), one of the largest town sites in southwest Virginia, is reported to have had an iron axe (Holland 1970:43). Collectors reported glass beads at 44TZ0001 and 44SM0008, and a copper celt from 44SC0013.

Glass beads were recovered at 44RN0039 and 44RN0021, while 348 beads, their dates clustering ca.AD1620s to1650s, were found associated with human burials at the Trigg site, 44MY0003. A flat machine-rolled copper disc and half of a hawk bell also were recovered at Trigg, while a sheet brass projectile point was found at 44RU0014. A trigger assemblage from a snaphaunce firearm, four other iron fragments, six fragments of copper alloy of European manufacture, and glass beads were recovered from the Graham-White site (44RN0021) (Klatka and Klein 1998).

Copper from two sites, 44TZ0001 and 44TZ0005, including an effigy pendant and a cone tinkler, were spectrographically tested and found to be native copper (Virginia Department of Historic Resources, Crab Orchard, 44TZ0001, site files). Untested copper shaped into strips has been recovered from 44RN0039; and rolled tubular beads, cone tinklers, small effigy claws, and triangular pendants were found at the Trigg site. Recently Christopher Stevenson (Deraisme et al. 2008) conducted compositional analyses using LA-ICP-MS and EPMA, and visual observations using SEM-EDS and optical microscopy on a collection of copper artifacts from sites dating between the 16th and 18th centuries, including the Trigg and Hurt Power Plant sites. The study identified native copper, smelted copper, and brass. The study showed that composition and microstructures are correlated and that native people adapted their techniques to the use of European metals.

Subsistence

Vertebrate and Fish Remains

Eugene Barfield and Michael Barber (1992), archaeologists working for the United State Forest Service, looked at seven southern Piedmont sites that show a consistent pattern for the Late Woodland period. The Piedmont pattern emphasized terrestrial animal populations, with fishing augmenting the resource base. In the Piedmont pattern, the meat total for white-tailed deer, turkey, beaver, and raccoon form the prime exploitation group. Box turtles were also taken in large numbers. The pattern for southwest Virginia mirrors the southern Piedmont pattern, with deer, turkey, and raccoon augmented with dog, squirrel, and mountain lion, plus the addition of larger mammals like black bear and elk. Although the numbers taken were small, the large body size supplied quantities of protein.

In the Late Woodland period white-tailed deer were by far the dominant game animal, and, most likely, throughout history. Beyond meat, deer provided skins for clothing, shelter, and trade; bone and antler for tools; grease and brains for tanning; hooves and hide for glue; and sinew for strong cordage. Other animals such as squirrel, rabbits, turtles, passenger pigeon, ducks, geese, and various fish provided dietary variety as opposed to substantial amounts of meat.

Carbonized Plant Remains

Justine McKnight, an independent archeobotanist, and Martin Gallivan, a professor at the College of William and Mary, have summarized the evidence of carbonized plant remains from archaeological sites in Virginia (McKnight and Gallivan 2007, Gallivan and McKnight 2008). The earliest maize cupule fragment (cal. AD 1021) in Virginia was recovered from the Arrington site (44WG0027) in Washington County. Direct dates on maize from across the state cluster in the early 12th century. The dates document the widespread and sudden appearance of maize across a large geographic area. Maize farming intensified by the 13th century. The disparity between radiometric dates on associated wood charcoal and direct dates on maize from the same feature can reveal dates differing by as much as five centuries. Thus, direct AMS dates on cultigens are preferred. The earliest indirect date on beans is in the 13th century and squash became increasing visible at this time.

Maize was not introduced uniformly across Virginia. The data from the Appalachian Plateau and Ridge and Valley region of Virginia conform generally to the model for the Tennessee, Ohio and Mississippi rivers of North America. By 1500 BC to AD 200, the record shows the development of horticultural economies based on native crops, the Eastern Agricultural Complex (EAC). These crops include the oily-seeded sunflower and sumpweed, starchy-seeded annuals maygrass, chenopodiun, and knotweed. In the eastern United States maize first appear circa AD 200 but remained a minor crop until its increased use by AD 800. In Virginia there is convincing evidence of the EAC only in sites in the Ridge and Valley province from Lee and Roanoke Counties. Evidence for tobacco is limited to Protohistoric contexts in Roanoke (44RN0021) and Smyth County (44SM0007).

East of the Blue Ridge, there is no archaeobotanical evidence of any pre-maize horticulture, similar to patterns observed in parts of New England. Maize appears on sites in the Piedmont and the Coastal Plain at essentially the same time, at strategically placed towns. This means that the introduction was sudden and may have had ceremonial significance. The people in accepting to a new kind of food had to make difficult choices. They became food growers, changing their tools, habits, social customs, and rituals.

Archaeobotanical studies indicate a steady decline in the presence of deciduous wood and nutshells from sites across the state during the Woodland period. This reflects changing forest cover and a declining contribution of nuts to the diet and coincides with the introduction and increased cultivation of crop plants.

Skeletal and Mortuary Patterns

In 1992, Donna and Clifford Boyd, anthropology professors at Radford University, reviewed burial data from nearly 100 Virginia sites representing over 1000 burials. The sites were allocated to one of four geographic provinces: southwest Virginia, Shenandoah Valley, Piedmont, and the Coastal Plain. In 2000, they updated their summary of burial data from town sites and burial caves from southwest Virginia. Mortuary variability--differences in burial location, mode of interment, body orientation, and form and frequency of grave goods--reflect status positions held in life and the organizational complexity of societies.

In the southern Piedmont, the Boyds looked at 120 burials from seven sites. Burials were generally single interments within town areas, although five of 72 burials at the Clarksville site (44MC0014) contained multiple interments. Over 77% were in simple oval or circular pits, with the remainder in refuse-filled pits. Nearly 56% of the individuals were loosely-flexed; however, extended burials also occurred. For the Clarksville burials, all 78 individuals represented secondary burials with defleshing cut marks on most bone. These semi-flexed burials were likely interred after the flesh was removed but while the ligaments still articulated the skeleton. The extended burials (most infants) were also defleshed and buried shortly after death. Most grave inclusions were items of adornment, mainly shell beads and necklaces.

Donna and Clifford Boyd (2000) examined the skeletal remains of nearly 150 Late Woodland individuals from 20 southwest Virginia sites and combined it with existing skeletal data, resulting in a total of 1274 individuals from 62 sites. The biological characteristic of people in southwest Virginia has been a question for many years, specifically along the lines of ethnic affiliation, sociopolitical integration, and degree of interaction with neighboring groups.

Biological data attests that equal numbers of male and females were buried within the towns. At Trigg (44MY0003), 63% of all individuals were under18, while 40% of all individuals were aged 0-4 years. This high infant mortality equates to a significantly lower life expectancy at birth at Trigg, 15.75 years, compared to 25.8 years at Shannon (44MY0008). It probably reflects the stresses associated with the European contact period at Trigg.

Caries rates are comparable to other late prehistoric agriculturally dependent societies in the southeast United States. For example, dental caries were noted for 100% of the adults at Shannon, with a caries rate of 32.5%. At Hoge (44TZ0006), 76.5% of all individuals showed evidence of caries. Tooth loss and abscess were also common at most sites.

Infectious lesions resulting from traumatic injury or other factors, such as disease, produced high rates of periostitis on long bones at Shannon and Hoge. Three out of four adolescents and over 42% of all adults manifested periosteal lesions at Shannon, while 45% of the Hoge site inhabitants manifested this condition. In four individuals, a more severe bacterial infection in

the form of osteomyelitis was recorded. At the Bonham site (44SM0007), individuals also showed equivalent frequencies of chronic infectious conditions.

Stress indicators at Hoge include enamel hypoplasia lines and pits on the dentition of 65% of the population. Porotic hyperostosis was noted on 37% of individuals. At Trigg, degenerative arthritis was seen on 32% of adult males and 21% of adult females. Comparable frequencies have been noted at other southwest Virginia towns.

Five possible cases of healed trauma, fractures of the tibia and ribs, were recorded at Hoge. At Shannon, two adult males with embedded projectile points, one in the occipital and the other in a rib, showed signs of healing. One adult male showed healed cranial trauma. In addition, a total of 15 individuals manifested healed fractures.

Most people were buried near structures or just inside the palisades. Burials within structures were rare. Over 72% of the burials were tightly or semi-flexed, while 23% (primarily infants or children) were extended.

Of the 36 Late Woodland burial caves in southwest Virginia, only one has been tested by professional archaeologists. The majority of the bones from the other caves were removed by looters. All ages and both sexes were represented at this site. Pathologies for these individuals are comparable to those from town sites, with high rates of dental caries and antemortem tooth loss, porotic hyperostosis, and degenerative osteoarthritis. However, frequencies of non-specific infections were low.

Available mortuary data from southwest Virginia does not suggests that individuals inherited rank as was done at other sites in Tennessee, western North Carolina and in the southeast United States. The absence of distinct clusters of site burials containing a preponderance of exotic artifacts suggests that the few adult individuals with exotic artifacts earned them rather than inherited them. The high frequency of decorative items, specifically shell artifacts and later copper and European glass beads, with infant burials may reflect a religious value of interring the very young with the most sumptuous items. Utilitarian items were association most commonly with adults.

In conclusion, the assemblages from southwest Virginia that express variability in ceramic and burial forms, and frequencies of exotic goods suggests an indigenous regional variant of the Siouan Dan River culture that is socio-politically decentralized, similar to what is found in the southern Piedmont of Virginia.

Community Organization

Towns

An oval to circular palisade from 40 to 125 meters in diameter enclosed many towns. Gates formed where the palisade overlapped. Less common rectangular gate houses were identified at the Crab Orchard (44TZ0001), Trigg (44MY0003), Brown Johnson (44BD0001), and Newberry Tate (44BD0002) sites. Domestic structures, located just inside the palisade, left a central area, called the plaza, empty of structures. The palisade served more as a visual barrier than a protective wall, demarcating the extent of the planned town in the same manner as a brick wall delineates a church yard. Within the palisade, the plaza, houses, specialized structures, burials, and storage pits were arranged in a socially prescribed fashion that suggests a high degree of community organization and complexity.

Houses

Vertical posts set individually in the ground formed the walls of homes. The buildings were either circular from 4 to10.4 meters in diameter, or oval from 4 and 6.7 to 5.2 and 7.9 meters in size. Many sites, such as Crab Orchard (44TZ0001) have evidence of considerable wall reinforcement through post replacement and rebuilding. This indicates the importance to the people of maintaining a permanent town in a strategically and/or ceremonially important place. An unusual cabana-type shelter was identified at 44LE0099. The only example of a wall trench structure was identified at the Carter Robinson mound (44LE0010).

Central hearths and storage pits are found inside the houses. Human burials occur normally between the houses and the palisade. There is no evidence of clay plaster common found on other sites in the southeast United States. Probably matting, bark, or thatch was used to cover their homes.

Specialized Structures

A large semi-subterranean structure was uncovered just outside the palisade at the Crab Orchard site. The rectangular structure measured 19.5 meters long. Its western half was 9.1 meters wide, flaring to 11.9 meters wide on its eastern half. The original floor of the

structure lay 23 centimeters below the surface of subsoil. Various internal features, including human burials, wall and support post molds, and large hearth pits, suggest at least two and possibly three building periods. The large size of the structure and the bench configuration along the inner wall suggest that it served a special purpose, perhaps as a public meeting house for secular and ceremonial activities (Egloff and Reed 1980:132).

Two longhouses, 6 by 14 meters and 6.1 by 15.3 meters, perhaps used seasonally as domiciles or as community council houses, were uncovered at the Buzzard Rock (44RN0002) and Bessemer (44BO0026) sites. At the Leatherwood Creek site (44HR0001), three of the houses were rectangular, 3.8 to 4.1 meters wide by 3.3 to 7 meters in length, with internal support posts and central hearths. Four of the houses at this site were circular, ranging from 4.9 to 5.5 meters in diameter, with storage pits and hearth features. Two radiometric dates from the site suggests that two different Dan River phase occupations occurred at the site, the earlier with rectangular houses and the later with circular houses. Two interpretations are offered: paired winter and summer houses at the site; or two temporally different house styles, rectangular first, representing perhaps a change in organization of households (Gallivan 1997). Another hypothesis is that the rectangular structures served a special communal or ceremonial function.

Rectangular structures were identified also at the Carter Robinson mound (44LE0010), Browning (44WG0040), Trigg (44MY0003), Hoge (44TZ0006), and Fox Farm (44SM0004) sites. These structures typically have larger internal support posts.

A large subterranean basin with a branching ditch extension was investigated at the Reedy Creek site (44HA0022). Due to soil elevations, drainage, evidence of fluvial erosion, and general appearance, the feature complex is interpreted as a possible 'dry well' or a drain for carrying water away from an adjacent house.

Burials

People buried dead in their towns. The normal pattern was to bury the dead near the home, inside the palisade. Although burials are found within homes, they are rare and are commonly infant burials. Four burial pit shapes have been identified for the study region: simple pit, central-chamber, shaft-and-chamber, and abandoned storage pits. Abandoned storage pits were an alternative pit type, perhaps used in the winter when the ground was frozen too hard to dig suitable burial pits. Most burials are shallow, primary, single, and flexed. However, extended, secondary bundle, defleshed, and multiple burials have been encountered in simple pits.

Dog burials were identified at the Conner's Midden (44HA0011), Smith Creek Island (44MC0107), Mussel Shell Island (44MC0114), Belmont (44HR0003), and Crab Orchard (44TZ0001) sites.

Storage Pits

The Native American wood, mat, or basket-lined storage pit served a purpose equivalent to the historic "root cellar." Almost all Late Woodland sites in the southern Piedmont and southwest Virginia had storage pits, either cylindrical or bell-shaped. At the Crab Orchard site, large, 2 by 1.5 meters, wood-floored storage pits located near the palisade were probably used for bulk storage of food items and material, while small, cylindrical, 60 to 90 centimeters, basket-shaped, and bell-shaped pits located within the houses held items for daily use.

Hearth Pits and Burned Areas

Hearth areas occurred centrally positioned within each house and adjacent to them. They are identified by patches of burnt-subsoil clay, all that remains of hearth pits after destruction from plowing. Two burnt-earth hearth areas were found at the Meadow site (44FR0012). A hearth inside a house probably was kept burning all year to reduce moisture, drive off insects, and vermin, and also for heating in the winter. At the Crab Orchard site, hearths were located behind the houses near the palisade, evidence for outside cooking. At the same site, two extremely large, oval, basin-shaped hearth pits, 2.3 by 1.5 meters, were found in the center of the semi-subterranean structure. The thick layer of white ash and black charcoal indicate repeated large fires around which many people met.

Fire-cracked-rock hearths in shallow basin pits were identified at the Trigg (44MY0003), Sullins (44WG0012), Wells (44HR0009), Onion Field (44CP0001), and Hurt Power Plant (44PY0144) sites. These functioned as roasting pits. Small charcoal-filled pits, probably functioning as smudge pits to create smoke to cure and waterproof hides or to repel flying insects, were uncovered at a few sites.

Clay Pits

Small circular pits containing refined blue-grey clay were uncovered at the Hoge (44TZ0006), Newberry Tate (44BD0002), and Koehler (44HR0006) sites. The clay, mined from along creeks in the area, was stored in pits found both inside and outside of house patterns. Since the volume of clay was not great, pipes and small vessels were probably fashioned from the clay.

Burrow Pits and Ditches

Burrow pits are normally irregularly-shaped shallow pits dug through the topsoil into the clay subsoil. They are common on sites and had various functions. But, the assumed goal was to obtain clay. The clay may have been used for making pottery, for making a raised hearth, or lining a hearth pit. The semi-subterranean structure at the Crab Orchard site was surrounded by many burrow pits. In this case, clay was needed in the construction and maintenance of the structure, whether it was place against the wall, on the roof of the structure, or around the smoke hole. Trench-like ditch features may be found associated with palisades, as at the historic Philpott site (44HR0004). The dirt and clay in this case was piled up against the palisade to support its base.

Settlement Pattern

The expanding Late Woodland population made use of all environmental zones. Large towns are found near the major rivers, smaller house clusters or individual households, are found along interior streams or on upland locations. Barber (1987) documented a heavy use of upland rockshelters, while Piper (1977) demonstrated that even the highest upland region of Virginia, the Mount Rogers National Recreation Areas, contains habitation. Research showed that level terrain took precedence over the immediate availability of water; southern and eastern exposures were preferred; artifacts were associated with camping and quarrying activities; mica and ceramics foreign to the region appeared in isolated upland areas, and sites were located in gaps, saddles, and along ridge tops where presumed trails existed.

Some archaeologists hypothesize that changes in subsistence and the development of the nucleated, palisaded town, and thus a change in the basic settlement pattern, occurred in response to climatic change. Records show a cooling that began about AD 1100 and reached a temperature minimum at about AD 1600. The cooling after AD 1200 may have resulted in decreased agricultural productivity. This in the face of increase populations may have exacerbated competition for arable land. Prior to AD 1300, settlements were a series of small household clusters arranged in a linear pattern along a river. After that date, inter-tribal hostilities may have been so severe that populations clustered for defense, leading to the creation of the nucleated, palisaded town.

Another hypothesis, one held by the author, is that increased population, spurred by subsistence development, go hand-and-hand with socio-political evolution. Many socio-political constructs must be in place before nucleated, palisaded towns can evolve. In fact, environment challenges increase the importance of creating socio-political constructs in order to mitigate the impact of drought or conflict.

People, once they conform their town to a good location, want to remain there. Many town sites show evidence of considerable house and palisade wall reinforcement through post replacement and rebuilding. This indicates the importance to the people of maintaining a permanent town near prime agricultural soil, in a strategic location for trade and communication, or, with the passage of time, for social and ceremonial significance.

Towns

The basic Late Woodland settlement pattern consists of autonomous towns, perhaps moved periodically as agricultural lands were used up, that served the political, social, economic and residential needs of the local community. In southwest Virginia, due to the influence of Mississippian culture, a more permanent town settlement pattern may have developed, one where larger civil and ceremonial towns were the focus of political, religious and economical control for a region, and included smaller, dependent secondary towns.

Within the Ridge and Valley Province, towns as well as earlier Woodland occupations, were located not only on floodplains, but also on gently sloping valley floors, ridges, hills, and plateaus (Holland 1970:114). This is explained by two environmental conditions: 1) colluvial upland soils formed on gentle slopes from nearby limestone, sandstone, and shale are often more agriculturally productive than the floodplain soils, and 2) gaps between formidable ridges or at the head of a

major drainage create strategic links in regional trade and communication networks (Bott 1981:38-45). Keith Bott was the first to discuss hierarchical settlement patterns in terms of town size and upland vs. bottomland location. This led to the concept of ranked towns and the possibility of a chiefdom.

For comparison, William Johnson and colleagues (1989) during the 1980s studied the settlement pattern of Monongahela Culture in mountainous west Pennsylvania and arrived at similar conclusions. They identified upland soil as agriculturally productive, upland towns as strategically located along trails and drainage divides and not as refuge locations for remnant groups, and added one new concept: some higher elevations have more frost free days than the nearby valleys.

As expected, in southwest Virginia the wide bottomlands along the major rivers supported large towns. Such sites include: Mendota (44WG0010), Bonham (44SM0007), Fox Farm (44SM0004), Snidow (44GS0006), Lurich (44GS0010), and Cornelius (44WG35) along the Holston and New Rivers; Buzzard Rock (44RN0002), Thomas-Sawyer (44RN0039), and Graham-White (44RN0021) along the Roanoke River; and Bessemer (44B0026), Lipes (44BO0001), and Lauderdale (44BO0003), along the James River. Many of these towns are located on well-drained higher terraces with southern exposures.

Many towns, especially those within the Tennessee River drainage, were situated near fertile upland soils along major trail networks, perhaps controlling access through nearby gaps. They also were located near drainage divides where upland valleys coalesced. Such sites include Hansonville (44RU0007), Castlewood (44RU0011), Keywood (44WG0001), Sullins (44WG0012), Crab Orchard (44TZ0001), and Shannon (44MY0008). Other towns located in upland valleys at elevations greater than 640 meters include Elk Garden (44RU0001, 2, and 3), Brown Johnson (44BD0001), and Newberry Tate (44BD0002). The Hoge site (44TZ0006), in Burkes Garden is located at an elevation of greater than 915 meters.

Piedmont towns, many palisaded, are recognized after AD 1300. They include Red Hill (44CH0007), Wade (44CH0062), Onion Field (44CP0001), Conner's Midden (44HA0011), Reedy Creek (44HA0022), Wade (44HA0034), Abbyville Complex (44HA0065), Leatherwood Creek (44HR0001), Box Plant (44HR0002), Belmont (44HR0003), Philpott (44HR0004), Koehler (44HR0006), Wells (44HR0009), Dallas Hylton (44HR0020), Gravely (44HR0029), Stockton (44HR0035), Hales Ford (44FR0003), Booth Farm (44FR0090), Clarksville (44MC0014), Elm Hill (44MC0078), Leesville Lake (44PY0043), and Hurt Power Plant (44PY0114) sites. Before AD 1300 hamlets existed, small clusters of a few households. While large towns are found along the major rivers, the hamlets may be along the rivers or along lower order streams (Hantman & Klein 1992). Gardner (Barse and Gardner 1983) identified an upland horticultural hamlet, 44HR0118, along the upper reaches of Leatherwood Creek, while Clark (2001) worked at another hamlet, the Clark site (44PK0015). Hamlets of this type are underrepresented in the archaeological records, and may occur in far greater numbers. One example of an individual household is the Otter Creek site (44FR0031), situated on a mountain ridge in Franklin County.

Rockshelters

Rockshelters commonly occur in the limestone formations of southwest Virginia. These shelters were not only used during early periods, but often were used as hunting and procurement camps by people living in nearby towns. An excellent example of a rockshelter is Daugherty's Cave, 44R0014 (Benthall 1990). People also buried their dead in rockshelters (Clark 1978).

Mounds

A series of substructure mounds along Indian Creek in Lee County represent the main towns of a related settlement system. These mound sites are separated by approximately seven miles and include the Carter Robinson (4LE0010) and Ely (44LE0012) mounds and site 44LE0014. One mound, 44LE0017, is known from along the Powell River.

In the southern Piedmont, one accretional burial mound, the Leesville Mound (44CP0008), in Campbell County has been reported (Davenport 1952; MacCord 1986). Since no other mound is know from the region and very little information is known about this mound, it is difficult to discuss its occurrence.

Vertical-Drop Burial Caves

Most vertical-drop burial caves are located in

the limestone formations in Lee, Scott, Washington, Smyth, Russell, and Tazewell counties. They are usually small and intimate, having vertical or sloping drops of less than 35 meters in depth. Only one burial cave has been investigated by archaeologists before looting by collectors. The bodies appear to have been dropped into the cave from the surface. In some cases, over 100 individuals were reported from one cave. Both sexes and all age groups are represented. Many of these vertical-drop burial caves are located near towns where people have been buried. Human bone from the Higginbotham Cave (44TZ0005), was dated to AD 1415 (Clark 1978; Willey and Crothers 1986). Associated artifacts include marine shell beads and gorgets, monitor stone pipes (bowl set on a flat base perforated as a stem), ceramic pipes, celts, and triangular points.

Pictographs

Two pictograph sites are known from Virginia. Paint Lick Mountain (44TZ0013) in Tazewell County contains a wide variety of glyphs, including concentric circles, a thunderbird, human forms, and the sun. The red glyphs, drawn with iron oxide, are located on the face of an isolated mountain cliff. Little Mountain Pictographs (44NT0013), located in Nottoway County, consists of a single human handprint, a cluster of handprints or a sunburst, and a solitary turkey foot (Little Mountain Pictograph Site, National Register of Historic Places Registration Form, DHR file No. 67-107). The well-preserved pictographs are presumed to date from late within the Late Woodland period. Undoubtedly, they held important ceremonial meaning to their makers, who may include shamans, priests, leaders, and young men seeking vision quests (Hranicky 1987).

Economic Trade Patterns

As societies become more populous and more territorially constrained, participation in local and far-reaching trade networks became an important mechanism for acquiring nonlocal resources and for supplementing the needed resource productivity of local subsistence system. Trade may have been spurred by two needs: 1) quantities of goods more necessary for survival, such as corn and meat, may have been traded for during times of local drought, over hunting, or conflict, and 2) exchange of exotic items representative of religious belief and political values and strength. Many trails existed that spurred this trade, but two are especially noteworthy, the Warriors Trail in the Ridge and Valley region and the Great Trading Path, the Occaneechi Trail, in the vicinity of the eastern Piedmont.

Trade of basic foods items such as corn or meat has not been documented archaeologically, but exotic items have. Darla Spencer and Jim Glanville discussed the abundance, stylistic variation, distribution, and defining nature of marine shell gorgets found either emanating from or passing through southwest Virginia. Gorgets are a very important artifact found throughout eastern North America that illustrated patterns of interaction between people in southwest Virginia and the Fort Ancient groups to the north, Siouan groups to the east, and Mississippian groups to the south. Michael Barber, while with the U.S. Forest Service, in 1992 proposed an example of a needed material, salt, from Saltville, that may have acted as a pivotal item in regional trade (Barber and Barfield 1992). The trade may have been a factor in the development of a petty chiefdom in the Late Woodland society located in Washington and Smyth counties. Myers (2011) discussed the importance of trade in the establishment of the frontier Mississippian settlement at the Carter Robinson mound and town site in Lee County.

Parker (1989) observed that 12% of all Late Woodland points found on Piedmont sites are made of nonlocal cherts, most likely obtained from the Blue Ridge area. This figure is a significant increase from the 4% figure which characterizes earlier Woodland and Archaic contexts. Of particular interest is the fact that other bifaces do not show this pattern, suggesting an exchange sphere focused on small triangular, chert and jasper points.

Widespread trade is suggested by the Batts and Fallam expedition in 1671. Starting at present day Petersburg and ending up in West Virginia, they needed only three Indian guides during their 250 plus mile adventure through thick woods, along numerous rivers, and across endless ridges and steep mountains Briceland 1987). This suggests close familiarity, probably due to social and economic interaction, between Native Americans living throughout the southern Piedmont and mountains of southwest Virginia.

Social and Political Patterns

Locally Conservative Tribal Societies

The dramatic increase in the number of small towns suggests that population was expanding rapidly during the Late Woodland period. To mediate the impact of increased population and unstable food production caused by climatic fluctuations or conflict, Native Americans developed more complex economic, social, and political systems. Thus, the Late Woodland period is characterized by the emergence of ranked societies. These ranked societies developed into the complex tribes and perhaps chiefdoms encountered by the Europeans in the late 16th century. While many villagers of the southern Piedmont and southwest Virginia remained conservative, changing slowly in response to increased population, others accepted new ideas from the nearby Mississippian world system. These influences entered the study area from the south along two avenues: from the Pee Dee culture penetration into the North Carolina piedmont, and up the Tennessee River drainage.

The southern Piedmont and southwest Virginia have traditionally been viewed as culturally conservative area. Paul Gardner (1980), while looking at the uniformity and conservative nature of Dan River ware, hypothesized that the societies of the southern Piedmont were rather loosely bounded units sharing a common culture and language. He stated that relatively free unstructured social interaction, such as visiting or trading between people of separate groups, will tend to homogenize their material culture. Sharply demarcated ceramic types are unlikely to be developed. While the Pee Dee culture deeply influenced the Piedmont of North Carolina, the adjacent area of Virginia remained virtually untouched with only minor ceramic influence of some simple-stamped and check-stamped pottery, and then only very late in time.

Howard A. MacCord (1989a) introduced the concept of Intermontaine Culture to describe the conservative indigenous Late Woodland culture of southwest Virginia. MacCord (2001) and Egloff (1992) accepted Gardner's earlier hypothesis and extended it further west, across the Blue Ridge. Egloff believe that the Eastern Woodland Tradition ceramics from the southern Piedmont and southwest Virginia, exhibiting similar vessel shapes, surface impressions, and decoration but tempered with different materials (sand, shell, limestone, soapstone), represents the regionalization of a rather conservative, socially connected group that shared a common culture and language, probably Siouan. The numerous river valleys and mountain ridges subdivided the region, creating pockets of closely related people that tempered slightly differently their similar pottery.

In general, many features of the Eastern Woodland cultural tradition were similar in the southern Piedmont and southwest Virginia. Town layout and round house shape are nearly identical for both regions. Both regions have similar approaches to burials: simple pit, central-chamber, and-shaft-and chamber. In both regions, people hunted, gathered and planted much the same resources. However, southwest Virginia is an immense region dissected by mountains and rivers that create distinct sub-areas. Ft. Ancient influence came from the north along the New River to the border of Virginia. The Powell and lower Clinch rivers show strong Mississippian influence. The Holston Valley due to its rich agricultural soils and strategic location developed, over hundreds of years, a unique archaeological imprint.

Ranked Tribal vs. Chiefdom Societies in Southwest Virginia

The socio-political complexity of the Native American groups in southwest Virginia has been an issue of discussion for the past thirty years. Bott (1981:44-45), Turner (1983:280), Egloff (1987:45-47), and Barber (1992) have discussed the archaeological indicator which by themselves, or in combination, are characteristic of a ranked society, perhaps a chiefdom. Although the cultural tradition of the region is undoubtedly Eastern Woodland, the influx of Mississippian influence from Tennessee deeply affected the evolving local tribal societies. Some areas, especially along the north, middle, and south forks of the Holston River, contain a very high percentage (16%) of first-class agricultural soils, making possible large populations and cultural complexity.

A great variation in house size and shape, communal structures, and storage pits exists not only between sites but also within them. This suggests not only different cultural sources and functions for the structures, but also social ranking between inhabitants. Also, the variation of special function sites, including burial and glyph caves, and pictographs, are expressions of an elaborate culture.

A series of at least three substructure mounds along

Indian Creek in Lee County may represent the main settlement of a hierarchical settlement system of a ranked society intrusive from Tennessee (Egloff 1987:45). These mounds are only 40 km north of the mounds identified by Web (1938) in Norris Basin, Tennessee. Furthermore, a hierarchical settlement pattern may be represented by the floodplain-upland town dichotomy (Bott 1981:45) and in the variation in hamlet and town size (Turner 1983:275).

The size, complexity, and rebuilding of some of the towns in the region suggest a rather elaborate, stable social organization. The palisades, plazas, homes, burials, and storage pits were arranged in a social prescribed fashion, suggesting a moderate degree of community organization and complexity. Larger circular, rectangular, or semi-subterranean structures probably functioned as public town houses for secular and ceremonial activities. The community organization at some of these sites suggests at least a complex ranked tribal society, perhaps evolving into a chiefdom society (Egloff 1987:46).

The wide variety of burial methods and the various burial pit types suggest a rather diverse and elaborate mortuary complex. Local informants and archaeologists have reported a variety of exotic artifacts from sites, some from burial contexts: fenistrated gorgets, copper celts and effigy pendants, black slate effigy pendants, exotic ceramic vessels, columella pendants, and a large biconcave sandstone chunkey stone (Egloff 1987:47). Although further evidence for ascribed status is lacking, the mortuary complex and these exotic artifacts presumably with differential distribution, suggest that social ranking was present.

Egloff (1987:49) described the socio-cultural complexity and variation in southwest Virginia by suggesting four levels of cultural interaction between the indigenous conservative tribal people and the chiefdom society of eastern Tennessee. These are:

1. The Dallas and Pisgah ceramics and series of substructure mounds in Lee County indicate a cultural intrusion into the area of a tightly connected Mississippian chiefdom from Tennessee with limited mixing, probably for trade and perhaps marriage, with local, tribal people.
2. The mixture of Dallas, Pisgah, and Mussel Shell wares with Radford, Wythe, and Gastropod Shell wares on sites located further north in Scott and southern Russell counties and further east in Washington and Smyth counties suggest direct trade between and some social mixing of Mississippian and/or Cherokee populations with the local people.
3. The high percentage of Radford and Wythe wares with some Mussel Shell ceramics at sites near the headwater of the Clinch and Holston Rivers indicates an indigenous culture which had limited interaction with Mississippian and/or Cherokee people, and then only very late in time.
4. Sites containing only the local Radford, Wythe, and Gastropod Shell wares, including earlier Late Woodland sites, or later sites located in the more remote areas and further north along the Clinch River and east along the Holston drainages, suggest tightly connected indigenous society with little or no direct contact with Mississippian and/or Cherokee cultures.

Conclusion

Given the lack of historic documentary information on Native Americans for the southern Piedmont and southwest Virginia, archaeological studies will always be important in the study of the continuity and change during the Late Woodland and Historic periods. Over the last sixty years, a mix of cultural concepts have been presented to explain the great variety of settlements in the study region: 1) exotic, rank-denoting artifacts of copper, shell, stone and ceramic, 2) cultural subareas, 3) strategically placed towns, 4) upland vs. valley towns, 5) large towns vs. small hamlets, 6) Class 1 upland and bottomland agricultural soils, 7) frost free days for agricultural in upland vs. valley locations, 8) difficulty in equating a ceramic ware, as defined by temper, to a cultural group, 9) identification of a series of substructure mounds, 10) Mississippian influence from the south on indigenous Late Woodland cultures, 11) trade in and trade out, 12) ranked society as an expression of the social structure, and 13) tribal vs. chiefdom as expressions of the political organization.

Future Research Directions

Continue progress and research in all of the areas listed below:

1. Document and preserve the full range of sites used by people before modern society destroys

the rich heritage left by Native Americans.

2. Document the exotic artifacts from sites in Virginia that are in private collections, before the collections are dispersed.
3. Study the transition from hunter and gatherer semi-permanent hamlets to permanent agricultural towns, especially the introduction and contribution of domesticated plants.
4. Study the relationship of increased population, intensification of horticultural practices, stronger centralized political systems, and greater reliance on regional exchange systems.
5. Document the facie change in Clarksville-Dan River-Wythe ceramics from the Fall Line in the East to west of the Blue Ridge. The tendency is to think of archaeological constructs, such as the Dan River culture, as moving en masse from one location to another or changing en masse through time. This is never true. Instead, cultural elements evolve or are introduced, accepted or rejected, on case by case bases.
6. Study in greater detail the Ohio Valley to Virginia-North Carolina Piedmont connections first proposed by Griffin and Coe in the 1930s.
7. Study the heavy upland use of the mountains by agriculturalists for encampments, hamlets, and towns.
8. Tease apart the cultural subareas in southwest Virginia, perhaps by using the distribution of ceramics. The mountains of southwest Virginia did not constitute a formidable obstacle to cultural interaction, but rather channeled trade and social communication along valleys and through mountain gaps. This created, within an expanding population, a complex mosaic of blended cultures set in a varied upland environment.
9. Study the occurrence of ethnically diverse towns. The mixing at the same site of Eastern Woodland, Southern Appalachian Complicated-Stamped, and Mississippian Shell-Tempered tradition ceramics, as well as the mixing of the various temper groups of the Eastern Woodland Tradition, present many avenues for research. Study the intercultural and interregional contacts among peoples
10. Continue to discuss the Mississippian chiefdom influence on local tribal societies in southwest Virginia, particularly in Lee County and in the Saltville-Chilhowie area.

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Appendix 1

Selected Artifact Types

1

Christopher Egghart
Virginia Department of Environmental Quality

Photo 1. (Paleo-Indian) Paleo Fluted. First and Second from Left: Clovis (Reproduction); Third from Left: Clovis-like, Last: Possible Mid-Paleo point. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 2. (Paleo-Indian) Hardaway Dalton. Left and Right: Ogle Collection Nottoway River Fall Line Environs Sussex Co.; Second from Left: Robertson Collection Mecklenburg County; Third from Left: Reproduction

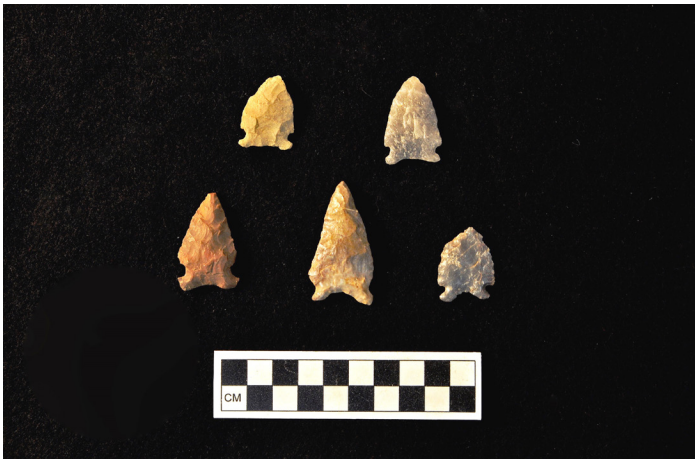

Photo 3. (Paleo-Indian) Hardaway Side Notched Top Row: Ogle Collection Nottoway River Fall Line Environs Sussex County; Bottom Row: Robertson Collection Mecklenburg County

Photo 4. (Early Archaic) Kessel Side Notched and Charleston. Left Two: Kessel Side Notched; Right Two: Charleston

Photo 5. (Early Archaic) Palmer. Top Row: Ogle Collection Nottoway River Fall Line Environs Sussex County; Bottom Row: Robertson Collection Mecklenburg County

Photo 6. (Early Archaic) Decatur. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 7. (Early Archaic) Big Sandy. Robertson Collection Mecklenburg County; Third from Left: Reproduction

Photo 8. (Early Archaic) Fort Nottoway. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 9. (Early Archaic) Kirk Corner Notched. Top Row: Ogle Collection Nottoway River Fall Line Environs Sussex County; Bottom Row: Robertson Collection Mecklenburg County

Photo 10. (Early Archaic) Kirk Stemmed Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 11. (Early Archaic) MacCorkle. Top Row: Ogle Collection Nottoway River Fall Line Environs Sussex County; Bottom Row: Second from Left VCU Collections, Henrico County; First, Third and Fourth from Left Robertson Collection Mecklenburg County

Photo 13. (Middle Archaic) LeCroy. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 15. (Middle Archaic) Kirk Serrated. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 12. (Early Archaic) St. Albans. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 14. (Middle Archaic) Kanawha. Top Row: Robertson Collection Mecklenburg County; Bottom Row: Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 16. (Middle Archaic) Stanly. Top Row: Ogle Collection Nottoway River Fall Line Environs Sussex County; Bottom Row: Robertson Collection Mecklenburg County

Photo 17. (Middle Archaic) Morrow Mountain I. Ogle Collection Nottoway River Fall Line Environs Sussex County

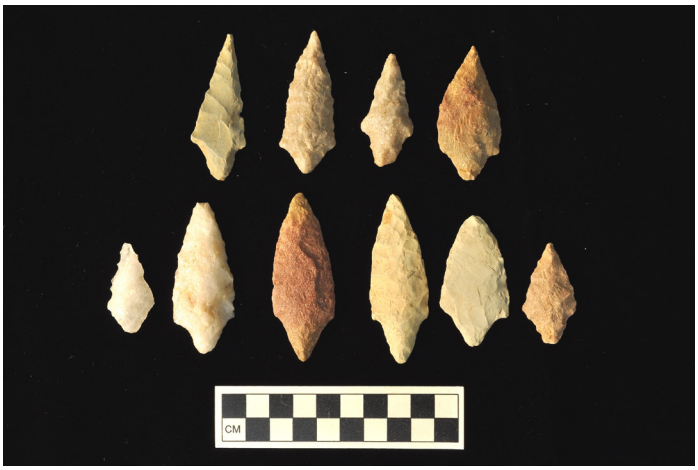

Photo 18 .(Middle Archaic) Morrow Mountain II. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 19. Brewerton Eared Triangle 44SX0405

Photo 20. (Middle Archaic) Guilford. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 21. (Late Middle Archaic) Halifax Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 22. (Late Middle Archaic) Rowan /Otter Creek. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 23. (Late Middle Archaic) Brewerton Corner Notched. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 24. (Late Middle Archaic) Cedar Creek. Top Row: Ogle Collection Nottoway River Fall Line Environs Sussex County; Bottom Row: Robertson Collection Mecklenburg County

Photo 25. (Late Middle Archaic) Slade. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 26. (Late Middle Archaic) Clagget. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 27. (Late Archaic) Lamoka. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 28. (Late Archaic) Normanskill. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 29. (Late Archaic) Poplar Island. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 30. (Late Archaic) Bare Island. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 31. (Late Archaic) Savannah River. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 32. (Late Archaic) Savannah River Narrow Blade. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 33. (Late Archaic) Savannah River Cattle Run Variant. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 34. (Late Archaic) Perkiomen. Top Row: Ogle Collection Nottoway River Fall Line Environs Sussex County; Bottom Row: Robertson Collection Mecklenburg County

Photo 35. (Late Archaic) Susquehanna. Top Row: Ogle Collection Nottoway River Fall Line Environs Sussex County; Bottom Row: Robertson Collection Mecklenburg County

Photo 36. (Early Woodland) Fishtail. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 37. (Early Woodland) Small Savannah River. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 38. (Early Woodland) Piscataway. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 39. (Early Woodland) Calvert. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 40. (Early Woodland) Wills Cove. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 41. (Early Woodland) Vernon. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 42. (Early Woodland) Badin Triangle. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 43. (Early Woodland to Middle Woodland) Adena. Robertson Collection Mecklenburg County

Photo 44. (Early Woodland to Middle Woodland) Rossville. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 45. (Middle Woodland) Fox Creek. Left Two: Robertson Collection Mecklenburg County; Right Two: Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 46. (Middle Woodland) Potts. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 47. (Middle Woodland) Jacks Reef Pentagonal and Jacks Reef Corner Notched. Robertson Collection Mecklenburg County

Photo 48. (Middle Woodland to Early Late Woodland) Yadkin Triangle. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 49. (Late Woodland) Small Triangle. Ogle Collection Nottoway River Fall Line Environs Sussex County

Photo 50. BannerstonesVDHR Robertson Collection Mecklenburg Co

Photo 51. Groundstone Axes L to R: 44SX0405

Photo 52. Steatite Vessel in Rough Unknown Site Albemarle County

Photo 53. Steatite Vessel.Unknown Site Nansemond County

Photo 54. Steatite Vessel

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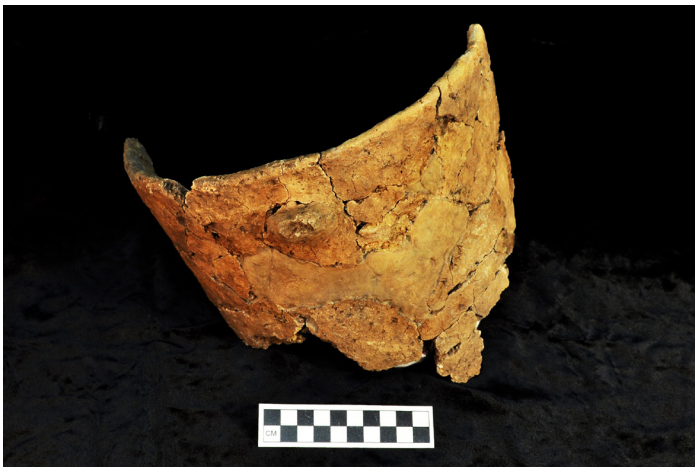

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