

STEPHEN ROBERT POTTER. An Analysis of Chicacoan Settlement Patterns
(Under the direction of Joffre Lanning Coe).

Ethnohistorical data and archeological manifestations dating between A.D. 200 and 1650, from 56 sites, were analyzed in order to develop a diachronic model of areal settlement patterning for one Tidewater Virginia locality. The locale studied corresponds to the territory of the small Algonquian chiefdom of Chicacoan, located in the Northern Neck peninsula between the Potomac and Rappahannock Rivers, near the confluence of the Potomac and Chesapeake Bay.

The settlement pattern from A.D. 200 to 900 -- composed of small and intermediate shell middens and small interior upland sites -- reflects the seasonal fission and fusion of a local or regional band. In general, these people had developed a focal adaptation based on the molluscs and fish found in the estuarine and riverine habitats of the Virginia Coastal Plain, coupled with transition area wildlife, such as white-tailed deer, turkey, and box turtle, found along the deciduous forest edge. Near the end of the period, large midden sites were located in the necklands. These sites are interpreted as villages where a local or regional band gathered during seasonally optimum times, with, perhaps, part of the group resident throughout most of the year. It is suggested that such sites served as a means of preadapting to a more sedentary existence necessary for intensive plant husbandry. This shift in the settlement pattern coincided with the end of the Sub-Atlantic/Scandic transition; a period of possible climatic stress during which temperatures were lower and dryness increased.

Between A.D. 900 and 1300, there were no large village sites, an

increase in the number of intermediate sites along the necklands of the Coan River, and a decrease in the total number of small sites in the Chicacoan locality. Such a pattern is interpreted as a change from one large village to several smaller villages. The shift in settlement pattern may be indicative of an intensification in plant husbandry, an adjustment to a climatic episode of increased dryness around A.D. 1080, and/or a change in the focus of the population from the Coan River area.

After A.D. 1300, the areal settlement pattern was similar to the early seventeenth century pattern observed by the English colonists. The sixteenth and early seventeenth century werowance's (chief's) village of Chicacoan was a large, internally dispersed village located in the necklands along the east bank of the Coan River, with outlying intermediate and small shell middens within a 2-km radius of the village. Some of the intermediate shell middens may represent the location of small clusters of houses, while others resulted from repeated visits to temporary collecting sites. Beyond a 2-km radius of the village were a number of small sites indicative of the exploitation of interior and estuarine resources.

The following factors of site catchment are proposed to have been involved in the selection of a site for a werowance's village of the estuarine Coastal Plain: (1) location on the broad necklands of the first and second terraces; (2) location adjacent to a cove, embayment or the mouth of a tributary of a major estuary; (3) proximity to freshwater springs; (4) location in areas where significantly high percentages (relative to the subregion as a whole) of soil associations were concentrated which contained Matapeake, Mattapex, Woodstown, State, Wickham, or Tetotum as the major soil type; and (5) within 4 or

5 km of marshlands. It is suggested that sociopolitical considerations determined the approximate distance between neighboring werowance's villages, with an 85% probability that the sociopolitical boundaries of each chiefdom's territory, within the Northern Neck, were located at least 11 km from the werowance's village.

AN ANALYSIS OF CHICACOAN SETTLEMENT PATTERNS

by

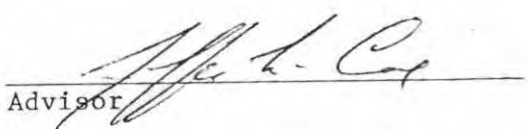
Stephen Robert Potter

A Dissertation submitted to the faculty of
The University of North Carolina at Chapel Hill
in partial fulfillment of the requirements for the degree
of Doctor of Philosophy in the Department of Anthropology

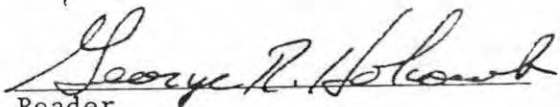
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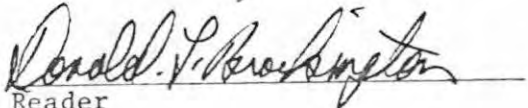
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Dedicated to the memory of
Clifford Evans,
teacher, friend, colleague

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INTRODUCTION

a) Statement of Purpose

In A.D. 1607, a great quilt of Algonquian-speaking groups blanketed Tidewater Virginia. Dotted John Smith's famous map of "Virginia" (1612) are nearly 200 symbols indicating places of native settlement. Of this total, about 140 villages were located in what is now the state of Virginia. These villages, in turn, were divided among some 30-odd separate sociopolitical groups. At least 11 to 19 of these groups were organized into a larger, centralized polity, or chiefdom, ruled by a paramount chief named Powhatan (Speck 1928:Plate 1; Binford 1964:74; Garrow 1974:16; Feest 1978a:255-256). Those groups not directly incorporated into the complex Powhatan chiefdom were, themselves, petty chiefdoms consisting of from one to 10 villages (Potter 1976a:29; Feest 1978a:256).

It is the purpose of this study to develop a diachronic, areal settlement pattern model for the territory of one small, coastal Algonquian chiefdom. The first recorded name for this group was Cecocawone (or Secacawoni), but by the mid-seventeenth century Chicacoan was the most commonly used name. It is the latter name that will be used herein. The territory of the Chicacoan was located in the peninsula between the Potomac and Rappahannock Rivers, near the confluence of the Potomac River and Chesapeake Bay. This peninsula is

referred to as the Northern Neck of Tidewater Virginia. The temporal span under consideration covers approximately 1,450 years, from A.D. 200 to 1650.

b) Approach and Assumptions

The approach of this study is both ethnohistorical and archeological. While there are several definitions of ethnohistory (Washburn 1961:31; Sturtevant 1966:6; Lantis 1970:5), "the distinguishing approach has continued to be the same, namely the fundamental reliance on the examination of written records" (Wedel 1976:6). Although a relative wealth of written and cartographic source material exists for the Virginia Algonquians in general, specific references to the Chicacoan are somewhat sparse until circa A.D. 1652, when the Chicacoan and the adjacent Wicocomoco were combined into a single sociopolitical group (Potter 1976a:45). In order to overcome the lack of a wide range of specific ethnohistorical data on the early seventeenth century Chicacoan, it was necessary to generalize and extrapolate from the historical documentation on other Northern Neck chiefdoms, as well as from the Virginia Algonquians as a whole. Therefore, whenever possible the ethnohistorical data are examined at three levels: (1) the Virginia Algonquians in general; (2) the chiefdoms of the Northern Neck Peninsula; and (3) the petty chiefdom of the Chicacoan.

The archeology is wedded to the ethnohistory by analyzing the ethnohistorical data in terms of archeological correlates -- that which is manifest archeologically by certain cultural practices known

from ethnohistory. Through the use of historical sources and environmental data, hypotheses concerning historic, aboriginal settlement patterns in the estuarine Coastal Plain of Virginia are formulated for archeological testing. In conjunction, attempts are made to identify and isolate posited protohistoric and historic components by comparing the archeological assemblages to known historic, cultural assemblages from archeological sites in surrounding localities, and by examining written and cartographic sources.

There are comparatively few detailed local chronologies available for the Chesapeake Bay-Tidewater area. The Virginia Coastal Plain, in particular, has suffered from a dearth of local cultural chronologies and no reliable published settlement pattern studies dealing with the Middle and Late Woodland Periods. If one is to attempt to learn how societies functioned and changed through time, then the resolution of chronological and typological problems must go hand-in-hand with the delineation of cultural patterns and the study of cultural process.

The study of settlement patterning has usually been considered at three levels: (1) the individual structure and feature; (2) the community layout or the arrangement and functional interrelationships of structures and features within single settlements; and (3) areal patterns or the manner in which communities are distributed over the landscape, both within a single cultural and environmental system, and between such systems (Trigger 1978:169; Dickens 1978:115). In this particular scheme, the word community or settlement is most commonly taken to mean the place of habitation of 'the maximal group of persons

who normally reside together in face-to-face association' (Murdock 1949:79; cf. Trigger 1978:176). There are three problems with this definition in the context of the aforementioned settlement pattern scheme. First, it indicates contemporaneity, and only rarely will it be demonstrable that two or more archeological sites were occupied at the same time (see Clarke 1968:145). Second, such a definition cannot be applied to sociocultural groups who may split or fuse depending upon seasonal resource availability, or in areas of dispersed settlement (Trigger 1978:176). And third, it excludes from study other sites of human activity such as cemeteries, quarries, shellfish gathering sites, kill sites, etc. (Clarke 1977:9; Zimmerman 1977:4, 6).

Therefore, for the purposes of this study the three-level settlement pattern scheme will be modified and made operational for archeological use. The first level, that of the individual structure or feature, will be retained. The community layout will be referred to as the site layout, defined as the arrangement and functional interrelationships of structures and features within a site. A site is defined as the locus of any past human activity which leaves empirically observable evidence that is preserved. Archeologically, an areal settlement pattern is defined as the manner in which the constituent components of a particular temporal unit are arranged within a locality. A component is a single, specified cultural manifestation observable at a site (e.g., an assemblage from a cultural zone within a site or an assemblage from a surface site). An archeological cultural assemblage is "an associated set of

contemporary artefact-types" (Clarke 1968:230). Thus, components having similar assemblages found in the same locale and dating to the same temporal unit make up an areal settlement pattern.

I have refrained from applying the phase concept to the archeological data from the lower Northern Neck. The phase, as conceived by Willey and Phillips (1958:22), was defined as

an archeological unit possessing traits sufficiently characteristic to distinguish it from all other cultures or civilizations, spatially limited to the order of magnitude of a locality or region and chronologically limited to a relatively brief interval of time.

In essence, the phase was assumed to represent the archeological remains of a particular cultural system or a number of similar cultural systems. Yet, it has been quite common in the Middle Atlantic Region, and elsewhere, to discuss phases solely in terms of ceramic evidence. Archeologically, if a cultural system is to be viewed as more than a bunch of similar pots, phase definition should include data representative of several subsystems abstracted from a given cultural system. Rather than compounding confusion by adding more phase names to the list of those defined primarily on the basis of ceramics, sets of components having similar assemblages found in the same locale or region will be grouped into temporal units, and not archeological phases.

Underlying this study are several assumptions regarding cultural systems and the distribution of archeological remains. Cultural systems are viewed as complex, dynamic equilibrium systems, such that changes in one realm of a cultural system will produce further

adjustments in other aspects of the system (Clarke 1968:95; Trigger 1978:148). Further, cultural systems have to adapt to a total environment made up of both natural elements and other cultural systems (Trigger 1978:147).

The patterned behavior of the members of an extinct society is reflected in the quantity, type and distribution of archeological remains. The spatial patterning of the material remains of human activities indicate, either directly or indirectly, the manner in which the society organized itself and the manner in which the society adjusted to its environment (Clarke 1977:18; Trigger 1978:148). "A settlement pattern is the product of a variety of factors, some of which reinforce certain trends, others of which are opposed to one another" (Trigger 1978:149). Thus, the diachronic study of areal settlement patterns within a locality, through the determination of settlement patterns for each temporal unit, enables an archeologist to observe internal variations of cultural systems, as well as the development and interaction of adaptive strategies.

c) Organization of the Study

The study begins with a discussion of the natural geography of the Northern Neck, emphasizing the estuarine portion of the peninsula. Only environmental data relevant to further discussions of settlement and subsistence are presented. This is followed by a chapter on ethnohistorical data pertaining to historic Algonquian polity, population, settlement and subsistence. From an analysis of these data, an ethnohistorical sketch of the Chicacoan, circa A.D. 1608,

is presented and hypotheses are postulated for archeological testing. Next, the history of archeological research in the Northern Neck and the cultural chronology are outlined prior to describing the archeological survey of the Chicacoan locality and neighboring areas. Subsequently, detailed descriptions and analyses of excavations at four archeological sites in the Chicacoan locality are presented. The final chapter integrates the data from the previous chapters and provides an analysis of settlement patterns in the Chicacoan locality, from circa A.D. 200 to 1650.

CHAPTER I
THE LAND BETWEEN TWO RIVERS

INTRODUCTION

The purpose of this chapter is to outline the natural geography of the Northern Neck and the Chicacoan locality, in particular. The chapter is not meant to be an exhaustive treatment of the natural geography. Rather, only environmental information relevant to further discussions of native settlement and subsistence is presented. This will be done by briefly describing the climate, hydrography and topography, soils, vegetation and fauna.

The Coastal Plain of Virginia is drained by four major rivers flowing generally from northwest to southeast into the Chesapeake Bay. From north to south these rivers are the Potomac, Rappahannock, York and James. The four rivers divide the Coastal Plain into four main subregions: from north to south they are the Northern Neck, Middle Peninsula, Virginia Peninsula (commonly referred to as "The Peninsula"), and Southside Virginia (Figure 1).

Excluding the Potomac River, southern Maryland's next largest drainage system is that of the Patuxent River, whose mouth lies about 34 km north of the confluence of the Potomac River and Chesapeake Bay. The Bay separates Tidewater Virginia from the Eastern Shore by 24 to 40 km. South of the James River are several drainage systems

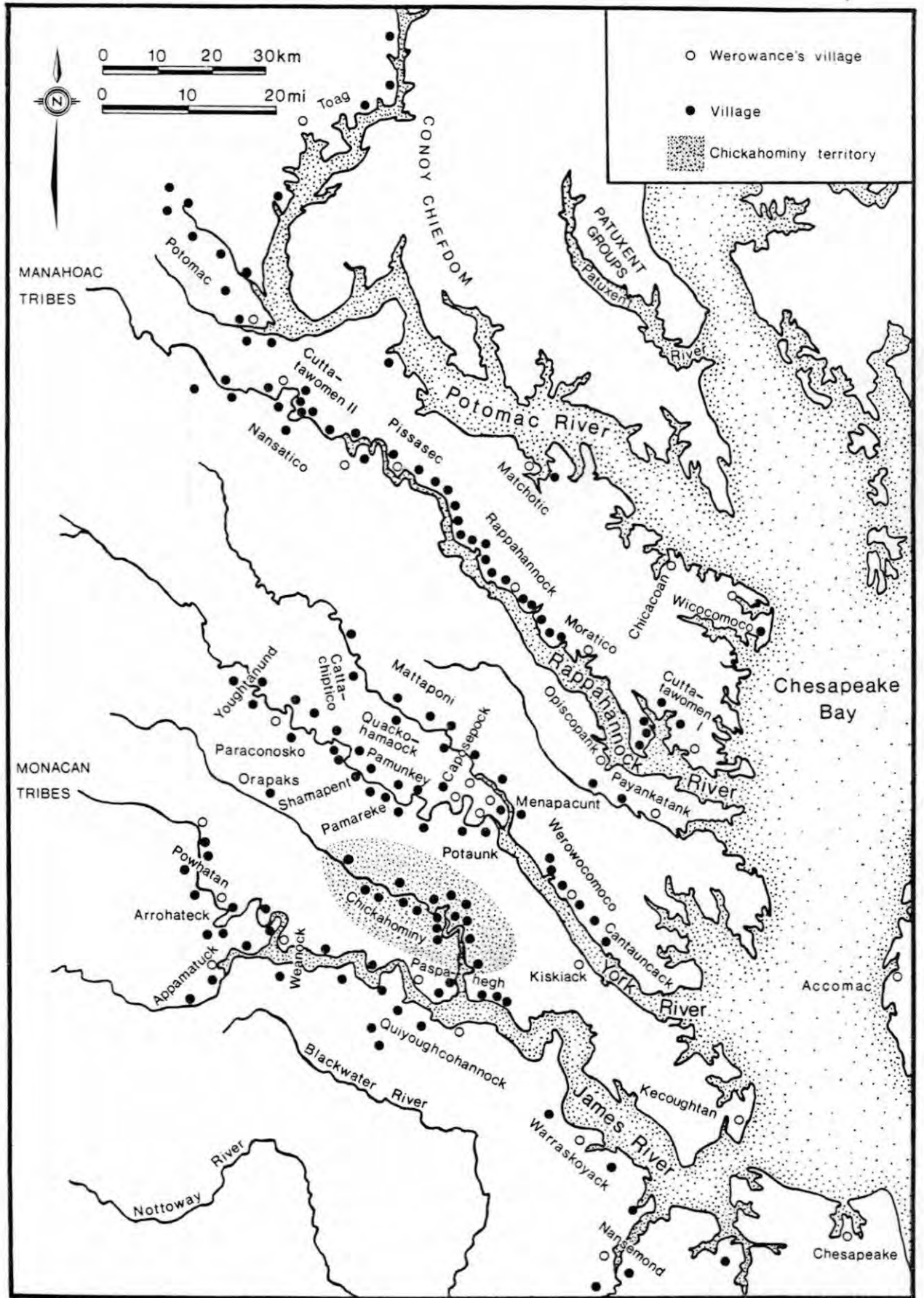


Figure 1. Map of the Algonquian groups in Tidewater Virginia, circa A.D. 1610 (after Smith 1612 and Feest 1978a).

which flow into the Albemarle and Pamlico Sounds of North Carolina. The western boundary of the Virginia Coastal Plain is the fall line: a belt of metamorphic crystalline rocks which mark the eastern periphery of the Piedmont Plateau.

The Northern Neck of Tidewater Virginia is so named because it consists of a long, narrow peninsula that trends east to west, bounded by the Potomac River on the north, the Chesapeake Bay on the east, the Rappahannock River on the south, and the fall line on the west. The Northern Neck includes the counties of Northumberland, Lancaster, Westmoreland, Richmond, King George and Stafford.

In A.D. 1608, the territory of the Chicacoan was along the south shore of the Potomac River, only about 13 to 16 km upriver from where the Potomac meets Chesapeake Bay. Four streams, all flowing from south to north into the Potomac River, make up the heartland of the Chicacoan: from east to west they are Hull, Presley, and Cod Creeks, and the Coan River. This locality is in Northumberland County, the northeasternmost county in the Northern Neck (Figure 2).

1. CLIMATE

The Northern Neck has a humid, mesothermal climate (Waggoner 1975:10). Commonly, summers are warm and winters relatively mild. The weather conditions are mainly influenced by the adjoining bodies of water and the Appalachian Mountains to the west. Moist tropical air from the Atlantic Ocean blows in during the warmest months, moderating the climate. The mountains tend to divert and modify some

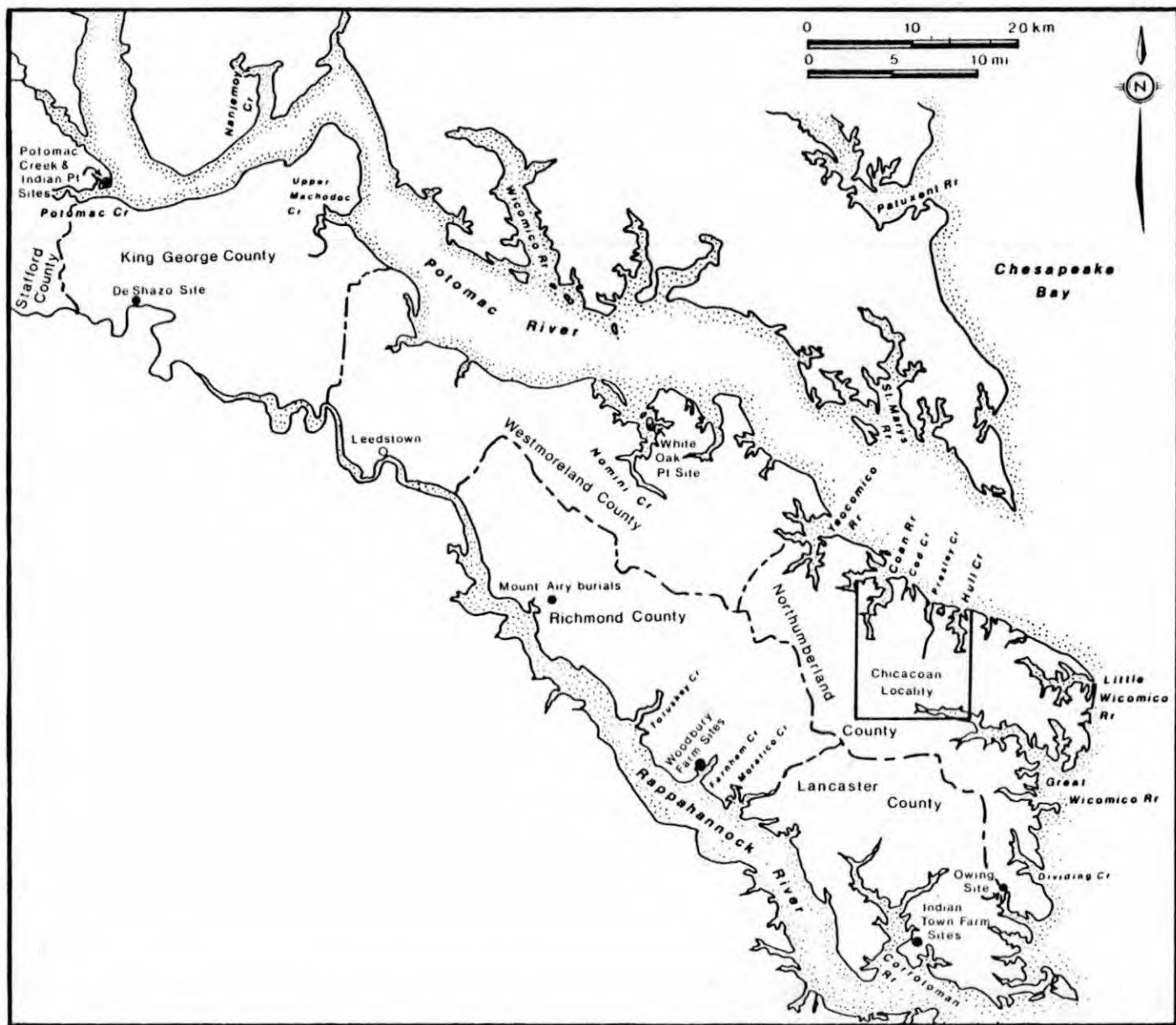


Figure 2. Map showing the Chicacoan study area and selected archeological sites in the Northern Neck.

of the cold winter storms (Rice 1963:2; Bailey 1974:121).

Average annual temperatures vary slightly about 57° F. July is commonly the warmest month of the year, averaging 77° F. In the lower Northern Neck, adjacent to Chesapeake Bay, the coldest month is February, with an average temperature of 36.8° F. (Rice 1963:2). The coldest month in the upper Northern Neck, next to the Piedmont, is January, with temperatures averaging 37° F. (Bailey 1974:122).

The length of the growing season, defined as the period between the average dates of the last freezing temperature in the spring and the first freezing temperature in the fall, is 194 days in the lower Northern Neck and 222 days in the upper Northern Neck. Differences in local topography cause some minor variations in freezing temperatures. A greater freeze hazard exists in the necklands and other low areas where cold air may settle, than on ridges and higher elevations (Rice 1963:2; Bailey 1974:122).

Rainfall varies considerably for any given month from year to year. When the growing season starts, if the soil is saturated, crops will have enough moisture until the middle of May. Generally, summer is the wettest season and fall the driest. Although greater rainfall occurs during the summer, evaporation and transpiration often exceed the rainfall, resulting in one or more periods of insufficient soil moisture for crops from June through September (Rice 1963:2; Bailey 1974:122).

Periods of deficient rainfall in the summer and fall cause droughts which damage crops about one out of every three years (Rice

1963:2). Seldom does a drought last long enough to affect all the crops of a growing season. However, there are occasional periods when several dry years occur in succession, resulting in serious crop loss. Excessive periods of precipitation also occur, but these are less of a threat than drought (Bailey 1974:122; Rice 1963:2).

Paleoenvironmental studies in the Middle Atlantic Region, indicate that two climatic episodes of possible environmental stress occurred during the 1,450 years under consideration in this study (A.D. 200 to 1650). From approximately 1740 to 1305 years B.P. (A.D. 210-645), the Sub-Atlantic/Scandic transition resulted in lower temperatures and increased dryness. Another climatic episode of increased dryness occurred at about 870 years B.P. (A.D. 1080), with the Neo-Atlantic/Pacific transition (Carbone 1976:200; 1978:21).

2. HYDROGRAPHY AND TOPOGRAPHY

As stated earlier, the Northern Neck Peninsula is defined by three bodies of water: the Potomac River, Chesapeake Bay, and the Rappahannock River. The Potomac is a trans-Blue Ridge River, with its headwaters far to the west in the Appalachian Plateau. The Great Falls of the Potomac occur just above Washington, D.C., and below the city the river lies entirely in a drowned channel in which the tide ebbs and flows. At Maryland Point, opposite the mouth of Potomac Creek, Virginia, the minimum tidal value is 37 cm. The river is about 1.6 km wide near Washington, D.C., and over 10 km wide where it enters Chesapeake Bay. The brackish water zone extends upriver to

about Nanjemoy Creek, Maryland (Wentworth 1930:11, 15, 17).

The Chesapeake Bay is the drowned mouth of the Susquehanna River, formed by the rise in sea level which accompanied global warming and the melting of the continental ice sheets, circa 14,500 - 14,000 B.P. This has resulted in dramatic changes in the shoreline of the Bay over a short span of geologic time (Kraft and Chacko 1978; Edwards and Merrill 1977). A study of the submerged New Jersey coast indicates a rate of post-Pleistocene sea level rise of 3.0 m per 1,000 years between 6,000 and 2,600 years B.P., while during the last 2,600 years the average rate has slowed to 1.2 to 1.4 m per 1,000 years (Stuiver and Daddario 1963:951). Another study from the Eastern Shore of Virginia supports the general proposition of a rapid rise and subsequent deceleration of the rate of submergence, with the latter occurring between 2,500 and 350 years ago. Extensive saltmarsh development has occurred only during the last 2,500 years of decelerating sea level rise (Newman and Rusnak 1965:1464-1466). At approximately the same time as the beginning of extensive saltmarsh development, or about 500 B.C., the Chesapeake Bay marine-estuarine system had reached conditions similar to those observed by the invading Englishmen in the early 1600s A.D.

The Rappahannock River has its headwaters on the east slope of the Blue Ridge, in the Piedmont Plateau. The tide flows inland all the way to the fall line of the river, with a minimum tidal value of 46 cm near Leedstown, in Westmoreland County. Most of the Rappahannock's tributaries are small; usually 16 km or less in length

(Wentworth 1930:11, 16). At its mouth, the Rappahannock River is almost 5 km wide. The river is brackish about 64 km from its mouth.

The brackish water zone in the Potomac and Rappahannock Rivers fluctuates seasonally, depending upon the amount of freshwater flowing into the rivers. The area to the east of the brackish water zone, or the freshwater-saltwater transition, is the estuarine portion of the Coastal Plain. The interior Coastal Plain is the area west of the brackish water zone and east of the fall line.

There is a marked difference between the relative lengths of the minor streams draining the opposite sides of the Northern Neck Peninsula. The east-west divide of the Northern Neck lies closer to the Potomac River than it does to the Rappahannock. As a result, the southward-flowing streams feeding the Rappahannock River are longer, have greater drainage areas, descend from the upland in easier stages, and have more open valleys (Clark and Miller 1912:56).

The four streams in the Chicacoan locality, flowing northward into the Potomac River, are very short (see Figure 2). Hull Creek is about 4 km long. Presley and Cod Creeks are about 2 km long, and, the Coan River is approximately 8 km long.

Of all the subjects relating to the hydrography and topography of the Northern Neck and the Chicacoan locality in particular, the most difficult one to deal with is shoreline erosion. "Shore erosion is the process of detachment and transportation of sediment particles from the shore, resulting in the landward retreat of the land-water boundary" (Byrne and Anderson n.d.:2). The degree of shoreline

erosion which a particular site undergoes is dependent upon four major factors: (1) the strength of the wave action and exposure to strong tidal currents; (2) the type of sediments at the site and the amount of vegetative cover, specifically marsh grass, protecting the shoreline; (3) the supply of sand moving along the shoreline either from other eroding shorelines or from streams along the shoreline; and (4) the slope of the land adjacent to the shoreline and the slope of the nearshore bottom (Byrne and Anderson n.d.:2). Although the rate of sea level rise has slowed down, as previously mentioned, it is still a factor in shoreline erosion, primarily because it translates the erosive power of the waves further inshore.

The location of the Chicacoan study area makes it particularly vulnerable to shoreline erosion for two reasons. Due to the northwest-southeast orientation of the Potomac River, any intense wave action created by northwest winds affects the south shore more than the north, causing somewhat greater erosion along the southern Potomac shore (Byrne and Anderson n.d.:2). Further, the Chicacoan locality is only 13 to 16 km upriver from the confluence of the Potomac and the Chesapeake, an area which experiences strong tidal currents (see Wentworth 1930:19).

The effects of erosion on the shores of the Chicacoan locality, for the period A.D. 200 to 1650, are difficult to assess in any detail. Currently, no data exist which would allow for prehistoric reconstructions of the shoreline. Both John Smith's map of A.D. 1612 and Augustine Herrman's map of A.D. 1673 are of too large a scale and

lack sufficient detail to allow one to even attempt an early historic reconstruction. However, data have been compiled on shoreline erosion in the Chicacoan locality for the late nineteenth and early twentieth centuries.

The basic information for this study was derived from two topographic maps dating to A.D. 1868 and 1942. By comparing the high water shoreline positions at the two times, measurements of areal changes for individual small segments of the coastline (called reaches) were calculated. The resulting statistics are averages over a 74-year time span. These statistics mask the short-term variation in shoreline erosion, but are of value in understanding the extent of the problem since 1868 (Byrne and Anderson n.d.:1, 12).

The data for the Chicacoan locality are presented in Table 1. Six segments or reaches of coastline were measured, from Walnut Point at the mouth of Coan River to 0.4 km east of the mouth of the Hull Creek (see Figure 5). The reach at Walnut Point is an example of shoreline accretion. It is a non-marsh which built up 0.45 ha of shoreline over the 74 years from A.D. 1868 to 1942. The length of shoreline measured was 183 m. The total accumulation along this stretch of shoreline averaged 23 m, or an annual rate of 30.48 cm. On the other hand, reach 72, from Balls Creek to Cod Creek, illustrates the great amount of erosion which has occurred at some sites. This shoreline is non-marsh, which has 25.5 ha of land over 74 years. The length of shoreline measured was 1,036 m. An average length of 240.3 m of land was lost along this reach, from 1868 to 1942, at a rate of 3.2 m per year.

Table 1. Potomac River Shoreline Erosion in the Chicacoan Locality (Byrne and Anderson n.d.).

Reach Number	Description	Shoreline Type	Erosion Hectares	Accretion Hectares	Shoreline Length (m)	Mean Length (m)	Rate M/Yr	Height Meters
70	Walnut Point	Nonmarsh		0.45	183	23.33	0.30	1.52
71	Walnut Point to Balls Creek	Nonmarsh	7.17		1250	57.12	0.76	1.52
72	Balls Creek to Cod Creek	Nonmarsh	25.47		1036	240.30	3.23	1.83
73	Cod Creek to Presley Creek	Nonmarsh	26.81		2042	130.42	1.74	2.13
74	Presley Creek to 0.8 km west of Hull Creek	Nonmarsh	20.21		2286	87.54	1.16	2.74
75	0.8 km West of Hull Creek to 0.4 km east of Hull Creek	Nonmarsh	8.95		1250	70.29	0.94	2.44

The data from this study cannot be projected back to a prehistoric, or even an early historic, seventeenth century dateline, however. The forest clearance, farming, water traffic, shoreline construction and population increase, which occurred during the 300 years from the first European settlement in the Potomac Valley to the year A.D. 1942, intensified the problem of shoreline erosion. Given these changes in the use of the environment, it would be invalid to project modern shoreline erosion or accretion rates back several hundred or several thousand years into a prehistoric setting. Too many dynamic factors negate the possibility of assuming a constant yearly rate of erosion or accretion beyond the period for which we have empirical data.

It is quite obvious that land has been lost to shoreline erosion in the Chicacoan locality since late Middle Woodland times. Because this has been a dynamic process, accelerated by the last 300 years of Euro- and Afro-American settlement, an incalculable number of archeological sites have also been lost. However, this does not prevent one from being able to make substantive statements concerning the settlement patterns from A.D. 200 to 1650. Some statements concerning the settlement types found along the Potomac River nearshore environment during this time can be made, based on a combination of ethnohistorical data and site-specific archeological and environmental data. Therefore, further discussion of this matter is deferred to future chapters.

Underlying the Northern Neck, and all of the Coastal Plain, are a

series of rock formations. The earliest formation is a buried, closely folded mass of Precambrian igneous and metamorphic rocks consisting primarily of granite, gneiss, schist, and quartzite, and early Paleozoic sedimentary rocks. The formation dips at high angles in a northeast-southwesterly direction and is an extension of the rocks of the Piedmont Plateau. Overlying this is a slightly indurated, overlapping series of Cretaceous and Tertiary sediments which make up the majority of the Coastal Plain formations. Plio-Pleistocene and recent deposits of sand, clay, peat and gravel mantle the older deposits (Wentworth 1930:xiii, 25; Clark and Miller 1912).

Most of the Northern Neck consists of upland, which is a tableland of winding and branching divides heavily dissected by streams. In the western part of the Neck, near the Piedmont Plateau, the upland is an area of rolling to hilly topography. Broad areas of level to gently sloping river terraces are found along the Rappahannock River in King George County, while other broad, low-lying areas occur around Brents Point and Marlboro Point in Stafford County, and in northeastern and eastern King George County. Elevations range from 6 m along the Potomac and Rappahannock Rivers to 142 m in the Piedmont Plateau portion of western Stafford County (Isgrig and Strobel 1974:120-121).

Traveling east down the Northern Neck, the lower terraces along the Potomac and Rappahannock Rivers become wider. By the time one reaches the Coan River-Hull Creek locale, the distinctions between upland and neckland are well defined. In general, this distinction corresponds to a series of geological terraces. The terraces forming

the neckland are the Princess Anne, 0 to 4.5 m above sea level and the Dismal Swamp (Pamlico) 3 to 7.6 m above sea level. In the Chicacoan locality, the slopes from the necklands to the uplands occur most sharply between 9 to 15 m (the 30- and 50-foot contour intervals) and approximately correspond to the Chowan geological terrace of 9 to 14 m above sea level. Those terraces forming the upland are the Wicomico, 18 to 27 m above sea level, and the Sunderland, 30 to 61 m above sea level (Elder et al. 1963:1).

Minerals are scarce in the Northern Neck and in most of the Virginia Coastal Plain. Copper and soapstone, in particular, do not occur locally in the Tidewater. Both of these items were important at various times to the prehistoric inhabitants of the region, and were brought in from sources to the west.

Lithic resources are available only from gravel deposits found principally in bands at the base of the Wicomico and Sunderland geological terraces. Generally, as one approaches the western portion of the Northern Neck, the diversity and abundance of gravel deposits increase. However, large cobbles of over 10 cm are found in fair numbers in the coarsest gravel deposits running in a narrow band along the Potomac River, from Nomini Bay to the Chesapeake (Clark and Miller 1912:241; Wentworth 1930:43-45, Figure 22). The Chicacoan study area is located in this band. Subangular and moderately well-rounded cobbles of quartzite, vein quartz, chert and yellow jasper can be found in Chicacoan, with chert and jasper comprising probably 5% or less of the locally available materials.

3. SOILS

The soils in the lower Northern Neck are predominantly fine sandy loams and silt loams. The broad ridgetops of the uplands consist primarily of well-drained, fine sandy loams underlain by sand and loamy sand. The necklands are composed mainly of moderately well-drained nearly level, fine silt loams, sandy loams, or local alluvium. The parent material of the fine sandy loams and silt loams is unconsolidated marine sediment consisting of sand, silt and clay, with occasional thin beds of marl. In places, some of the sand has been consolidated to form thin layers of sandstone, visible in terrace escarpments and river bluffs. Consolidation of some clay and marl has formed shale and lime rock, respectively (Elder et al. 1963:13-21, 44).

By the time one moves up the Northern Neck toward the fall line, the soils are formed from either a continuation of the fluviomarine parent materials of unconsolidated marine sediments, or from alluvium. The parent material for the alluvium is of local origin along the smaller streams and drainageways, and of local and general origin along the Rappahannock River just below the falls. Due to the wide variety of igneous and metamorphic rocks, and fluviomarine deposits, the alluvium has a mixed lithology and widely varying textures. The better farming soils in the upper Northern Neck are the well-drained soils formed in medium-textured to moderately fine-textured alluvium along the Rappahannock River. The soils of the broad ridges of the upland are mostly well-drained, sandy loams (Isgrig and Strobel 1974:4, 114-115).

The suitability of certain soils to maize husbandry is important in a discussion of historic Algonquian agricultural practices and settlement patterns. Therefore, more detailed information concerning soils will be presented in Chapter II, Section 5a.

4. NATURAL VEGETATION

a) The Main Species of Trees

The original forest of the Northern Neck, circa A.D. 1600, was an oak-hickory climax forest (Dierauf 1963:30). The tree growth consisted of mixed stands of white oak, chestnut oak, southern red oak, post oak, scarlet oak, black oak, northern red oak, and hickory. Scattered throughout these hardwood stands, mainly in areas of disruption, were Virginia pine and loblolly pine. In general, shortleaf pine was uncommon or nonexistent in the Coastal Plain forests. Areas of poorly drained soils were covered by mixed stands of sweetgum, blackgum, red maple, white ash, and loblolly pine (Kempf 1974:63; Dierauf 1963:31).

European settlement in Chicacoan, circa A.D. 1635-40, marked the beginning of extensive alterations in the climax oak-hickory forest. An effort was made to reconstruct the early seventeenth century vegetation patterns in the Coan River area by examining the notes and records made by surveyors from A.D. 1650 to 1700. It was hoped that enough data could be obtained on the location and species of witness trees used to mark the boundaries of land tracts. However, only a small number of trees were recorded by very general common names (e.g., oak, pine) during this time.

b) Wetlands

The Northern Neck has many marshes of great diversity, from salt estuarine bay marshes along the Chesapeake to estuarine river marshes along the Potomac and Rappahannock Rivers in the upper Neck. An equally diverse flora and fauna inhabit these marshes.

In the Chicacoan study area, seven different marsh types occur: the saltmarsh cordgrass community, the saltmeadow community, the black needlerush community, the saltbush community, the big cordgrass community, the cattail community, and the brackish water-mixed community. Of these marsh types, those having the highest estimated total environmental value per hectare are the saltmarsh cordgrass and brackish water-mixed communities. Of only slightly lesser value are the big cordgrass and cattail communities. The major difference between the latter two types compared to the former two is that detritus produced in big cordgrass and cattail marshes is less readily available to the marine environment due to higher elevations and, consequently, less tidal action to flush the detritus into adjacent waterways (Silberhorn 1975:4-7, 65-80).

The Coan River system (from Cod Creek west to the Glebe) has the greatest number of hectares of marshland of any section of Northumberland County. Three large, low-salinity wetlands are found in the upper reaches of the Coan River. These marshes consist of stands of narrow-leaved cattails, big cordgrass, and water hemp. It is uncommon to find such large stands of these species in the county. Of particular value is water hemp. Seeds from this plant are one of

the favorite foods for waterfowl. During the fall, a single stem may produce up to a liter of seeds (Silberhorn 1975:75).

5. FAUNA

During the pre-contact period, the diversity and frequency of the fauna in the Northern Neck was much greater than today. Several animals which were mentioned in the historic sources are either no longer present in the region, or are rare (Turner 1976:70). These include black bear, gray wolf, eastern bobcat, and the beaver, to name a few. The passenger pigeon once roosted in the area in abundant migratory flocks. Now, it is extinct. On the other hand, changes in modern land use have allowed the red fox to reoccupy its former range (which includes the Northern Neck), an area it had abandoned at the end of the Pleistocene (Waselkov 1977:70).

Some of the fauna which were common to the Chicacoan study area in the early seventeenth century A.D., as well as those still common today, have been grouped for the purposes of this study into several, very generalized, preferred habitats. These habitats are wetlands, woodlands, and transition areas. It must be kept in mind, however, that the distribution and abundance of fauna are dependent upon local habitat variations and seasonal variability in the productivity of their food sources. The faunal data were gathered from the following references: Gilbert 1973:61-65; Waselkov 1977:76-77; Dugan 1974:77; Lippson 1973:20-23, 26-29, 32-43; and Roberts 1979:75-82, 101-104.

Wetland wildlife refers to birds, mammals and certain turtles that

normally live in such wet areas as swamps, marshes, or open water. Examples are mallards, black ducks, canvasbacks, Canada geese, great blue herons, whistling swans, minks, muskrats, river otters, painted turtles, and snapping turtles.

Woodland wildlife refers to birds, mammals and turtles which live in wooded areas and along forested streams. Examples of woodland wildlife include eastern box turtles, passenger pigeons, wild turkeys, gray squirrels, southern flying squirrels, opossums, raccoons, beaver, eastern bobcats, gray wolves and black bears.

Transition area wildlife are those birds and mammals that prefer forest-meadow ecotones, meadows or areas of shrubby growth. Examples are the bobwhite, white-footed mouse, meadow vole, woodchuck, fox squirrel, striped skunk, eastern cottontail, gray fox, and white-tailed deer.

The waters of the study area are no less abundant in fauna. Some estuarine species are oysters, soft-shell clams, ribbed mussels, Gulf periwinkles and the blue crab. Anadromous fish (i.e., those fish that leave the ocean to spawn in fresh waters) common to the Northern Neck are the American shad, alewife, menhaden, and sturgeon. The white perch is very prevalent in the area and is a semi-anadromous fish. Available marine fish in the lower Northern Neck include rockfish, bluefish, spot, croaker, and weakfish. Of the freshwater fish, small- and large-mouthed bass are found in the lower Northern Neck, while yellow perch, catfish, and small- and large-mouthed bass are found in fresh and low-salinity waters located mainly in the upper Northern Neck.

CHAPTER II

THE ETHNOHISTORY: POLITY, POPULATION, SETTLEMENT AND SUBSISTENCE

INTRODUCTION

This chapter presents historical data on the early seventeenth century Virginia Algonquians and relates them to the Chicacoan and other Northern Neck petty chiefdoms. In order to set the stage, the first section is concerned with European explorations in the Northern Neck and the number and approximate locations of the petty chiefdoms. This is followed by discussions of the political organization, population estimates, features of settlement, and subsistence. Each of these aspects of a cultural system is treated with one end in view -- the presentation and analysis of data pertinent to an understanding of the protohistoric and historic site and areal settlement patterns in the Chicacoan locality and the Northern Neck. The section on subsistence, for instance, is not an in-depth treatment, nor is it meant to be. It is designed to deal with the relationship of soils and slash-and-burn cultivation to maize production and village location, and to present a general model of the seasonal round based on the ethnohistorical data. A more detailed treatment of seventeenth century Virginia Algonquian subsistence can be found in Turner (1972, 1976). The section on the Chicacoan synthesizes and applies the earlier discussions and analyses to the reconstruction of the

political organization, population size, settlement and subsistence of the Chicacoan for circa A.D. 1608. Based on the ethnohistory, observations are made concerning the nature of the expected archeological remains of the historic Chicacoan. The final section presents hypotheses on settlement patterns derived from the ethnohistory.

1. EUROPEAN DISCOVERY OF THE NORTHERN NECK

Although European explorations of Chesapeake Bay may have begun as early as the first quarter of the sixteenth century A.D. (Lewis and Loomie 1953:10-11), the Northern Neck was probably not explored until about 60 years later. In June 1588, Menéndez Marquis sent a small packet boat under Captain Vincente González to carry out a reconnaissance of Chesapeake Bay. The purpose of the reconnaissance was to locate any English settlements in the area. González worked his way up the western estuaries of the Chesapeake all the way to the mouth of the Susquehanna River and then down the eastern shore (Quinn 1977:301-302). While he found no trace of English settlements in the Chesapeake region, he did take two Indian youths captive: one apparently from the northern Tidewater region of Virginia, not far from the Potomac River, and the other from the Eastern Shore (Lewis and Loomie 1953:56). On his return trip, González put in at the Carolina Outer Banks and accidentally discovered signs of the abandoned Roanoke Colony (Quinn 1977:302).

In A.D. 1604, evidence seems to indicate that an English vessel entered the Rappahannock River. The captain of the ship caused a

native chief of Toppahannock (also known as the Rappahannock) to be killed and some of his people taken captive (Barbour 1969:184, 482; Smith 1910a:18). The captain has never been identified, although speculations exist that it was Bartholomew Gilbert (Stith 1747:33), or Christopher Newport (Barbour 1964:440).

The earliest detailed account of the Indians of the Northern Neck are the observations of John Smith and other members of the Jamestown Colony who accompanied Smith on his explorations of Chesapeake Bay. On June 16, 1608, Captain Smith and a party of fourteen men first entered the Potomac River aboard a two-ton open barge (Smith 1910b:109, 112). For 30 miles (48 km), no natives were seen. Then, near Nomini Bay, two natives guided Smith's party up a small creek, where the English were ambushed by 300 or 400 Indians of the Matchotic chiefdom (Figure 3). Smith had some of his men fire toward the natives, and the noise of the guns plus the bullets hitting the water caused the Indians to put down their weapons. They exchanged hostages as a sign of good faith and "James Watkins was sent 6. myles up the woods, to their kings habitation" (Smith 1910b:112).

The size of the force which attacked Smith can be questioned, since he himself estimated the number of bowmen in the territory of the Matchotic as only 100 (1910b:52). Furthermore, in A.D. 1624 his revised estimate of the attacking force increased to 3,000 or 4,000 (Smith 1910c:417). Regardless of the actual count, estimates made under the stress of conflict must be considered with caution. It is also not unreasonable to assume that in later years Smith may have

increased the number of attacking Indians in an effort to glorify his own exploits. Even if the lower figure of 300 or 400 warriors is accepted, it would indicate that other chiefdoms were assisting the Matchotic in the attack.

Supposedly, Powhatan directed the Matchotic to assault Smith's party (Smith 1910b:112). This may well have been, but one should keep in mind that the ability of the English and Indians to understand one another was very limited, especially in these early encounters. It is just as probable that Smith and his men were attacked because of the Matchotic's memory of a Rappahannock chief's murder four years earlier. The like can be said for the initial belligerent responses Smith received at Chicacoan and Patawomeck (a village of the Potomac chiefdom) (Smith 1910b:113).

It is interesting that the Chicacoan are mentioned after the encounter with the Matchotics, since Smith's barge went by Chicacoan territory on its way upriver to Nomini Bay (see Figure 3). If Smith stayed in the center of the Potomac River channel, then it is understandable how he could bypass the Chicacoan, given the breadth of the river at this point. On the other hand, if Smith was following the southern shoreline, then the observation that no inhabitants were seen for the first 30 miles (48 km) takes on additional importance. Apparently, no native villages were visible to the English along the first 30 miles (48 km) of immediate Potomac River shoreline. More will be said of this later, in a discussion of village location in the section on settlement.

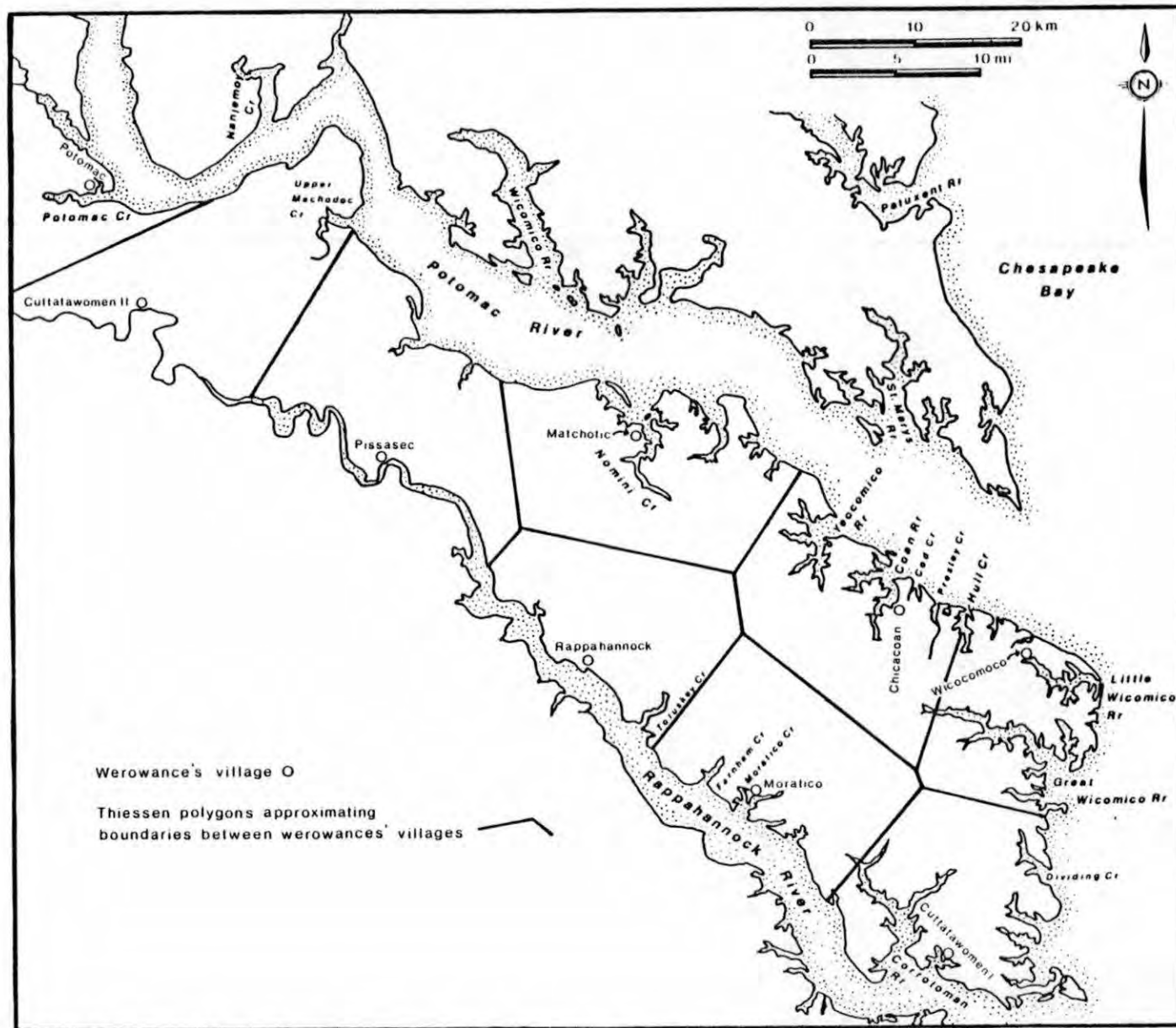


Figure 3. Map of the Algonquian petty chiefdoms of the Northern Neck (after Smith 1612 and Feest 1978a).

In contrast to the belligerent receptions, Smith (1910b:113) was well received at Tauxenent (a village of the Toag, near Mount Vernon, Virginia) and at Moyaons and Nacotchtank (villages of the Conoy chiefdom on the north side of the Potomac River). Although not specifically mentioned in the accounts of the first explorations of the mouth of the Potomac River, the Wicocomoco (not to be confused with a tribe of the same name of the Eastern Shore) were also contacted by Smith's party. This meeting probably took place after the ambush near Nomini Bay, but before Smith proceeded to the village of Patawomeck (see Smith 1910b:113; 1910c:424), indicating he may have backtracked downriver.

Thus, at least five separate chiefdoms were recognized by Smith during his initial exploration of the south shore of the Potomac River (see Figure 3). Starting just below the Potomac's entrance into the Chesapeake Bay and going upriver to just below the falls, these groups were the Wicocomoco (Wighcocomoco), Chicacoan (Secacawoni), Matchotic (Onawmanient), Potomac (Patawomeck), and Toag (Tauxenent) (see Feest 1978a:268-269 for a more detailed synonymy of Algonquian chiefdom names). It had been Smith's intention to explore the Rappahannock River on this journey, but an accident at the mouth of the river prevented him from doing so (Smith 1910b:114).

On July 24, 1608, Smith set out to complete his exploration of Chesapeake Bay. He did not stop at any of the villages of the Cuttatawomen I, the first chiefdom on the north side of the Rappahannock River (see Figure 3). He did go ashore at Moraughtacund,

a village of the Moratico chiefdom, where Smith and his men were kindly received. Quoting from Smith (1910c:424), "here we incountered our old friend Mosco, a lusty Salvage of Wighcocomoco upon the river of Patawomek. . . ."

At the time of Smith's arrival, relations between the Moratico and the adjacent Rappahannock chiefdom were strained. Recently, the Moratico had stolen three of the Rappahannock chief's women. When Smith told Mosco of his intention to visit the Rappahannocks, Mosco advised Smith not to go because the Rappahannocks would kill him and his men for being friends with the Moratico. Ignoring this warning, Smith went to the Rappahannock's territory and was attacked. However, he and his men, including Mosco, escaped unharmed (Smith 1910c:424-425).

Smith had been in Rappahannock territory on an earlier occasion, in December 1607, after having been taken captive by Opechancanough, brother to Powhatan, the paramount chief of the largest Virginia Algonquian chiefdom. He was brought to the Rappahannocks for them to see if Smith was the European captain who had killed one of their chiefs back in A.D. 1604 (Smith 1910a:17-18). Another version of this story has Smith being taken to the Matchotic, as well (Smith 1910c:398).

After escaping the first attack by the Rappahannocks, Smith's group continued their ascent of the Rappahannock River. The villages of Pissacoack, Matchopick, and Mecuppom (actually, Wecuppom) were passed, all three situated atop high, white clay cliffs along the river's north side. Once above the Rappahannock chiefdom, Mosco

helped Smith by introducing him to the district chiefs of the Pissasec, Nansatico (also Nandtaughtacund), and Cuttatawomen II. Of these chiefdoms, only the Nansatico were located on the south side of the Rappahannock River (Smith 1910c:426; Barbour 1971:291, 301-302).

Near the falls of the Rappahannock River a hunting party of Siouan-speaking Manahoac Indians attacked Smith's group (Smith 1910c:426-429). The Manahoac tribes inhabited the Piedmont Plateau, west of the fall line, around the upper waters of the Rappahannock, but occasionally hunted and fished along the fall line -- the natural physiographic divide separating them from their Algonquian-speaking enemies in the Tidewater (Swanton 1946:148-149).

Thus, at the conclusion of Smith's voyage up the Rappahannock River at least five separate Algonquian chiefdoms were recorded as existing along the north bank of the river, from its mouth to below the falls (see Figure 3). Starting at the river's mouth, these chiefdoms were the Cuttatawomen I, Moratico (Moraughtacund), Rappahannock (Toppahannock), Pissasec (Pissaseck), and Cuttatawomen II. Another chiefdom, the Appamatuck, is mentioned in Smith's first chronicle in A.D. 1608 (1910a:18). They are mentioned again in A.D. 1669 (Feest 1973:76). It is not known whether both references are to the same group and, if so, which side of the Rappahannock the group inhabited. It is also possible that Appamatuck may be a synonym for one of the known chiefdoms, just as Toppahannock and Rappahannock refer to the same chiefdom.

2. POLITICAL ORGANIZATION IN THE VIRGINIA-MARYLAND TIDEWATER

In A.D. 1608, the largest centralized polity in Tidewater Virginia was the Powhatan chiefdom. The apical status position of paramount chief (referred to as Mamanatowick, meaning great king) was occupied by Wahunsonacock, or Powhatan, from about A.D. 1572 until his death in A.D. 1618 (Smith 1910c:539; Wright and Freund 1953:56; Feest 1978a:254). Subordinate to Powhatan were the werowances, or district chiefs, of the petty chiefdoms controlled by the paramount chief (Smith 1910b:79). Within the territory of each werowance there could be one or several villages. If there was more than one village in a given werowance's territory, sometimes each village was governed by a "lesser werowance," or sub-chief. These lesser werowances were, of course, subservient to the werowances (Wright and Freund 1953:64).

This hierarchical political organization is reflected on John Smith's famous map of Virginia. On the map some villages are designated as "Kings howses," while others are marked "Ordinary howses." The symbol of a king's house apparently represented the village where the werowance of a petty chiefdom resided. These have been likened to territorial, or district, capitals. With the exception of the Chicakahominy group, ordinary houses most commonly represent minor villages ruled by a "lesser werowance," within the territory of a werowance. The Chickahominy were the only group of Virginia Algonquians not governed by a werowance -- hence, no king's house is shown on Smith's map in their territory. They were ruled by a council of eight priests and/or elders and, consequently, only the

symbol for ordinary villages is shown in Chickahominy territory (Feest 1973:67-68).

The positions of Mamanatowick (or Great Werowance) and werowance were hereditary, with succession occurring matrilineally (Smith 1910b:81). Subordinate to the chiefs was the nonhereditary position of cockarouse (Feest 1966:71). A cockarouse was an advisor to a werowance and was appointed to the position by the latter (Wright 1968:226; Binford 1964:91-92). Other important nonchiefly positions were those of shaman (or conjurer) and priest. Both acted as healers, performed various weather ceremonies, served as counselors, and frequented the mortuary temples. However, the priests alone were considered sacred and were viewed as being superior in rank to the shamans. Priests were also in charge of maintaining the mortuary temples (Turner 1972:119-120).

The social and political structure of the Powhatan chiefdom can be summarized at two levels: that of the paramount chief and that of the petty chiefdom. At the paramount chief level there was the position of Mamanatowick, his family (including his brothers who would succeed him, other matrilineal relatives, and his wives and children), his seven chief priests who maintained the principal mortuary temples at Uttamussack, his cockarouses, and his personal bodyguard. At the petty chiefdom level there was the position of werowance, his family, lesser werowances and their families, priests, cockarouses, shamans, commoners, and war captives.

It is appropriate at this point to define what is meant by status,

power and authority. Status is a ranked position conferring unequal privileges within the cultural system (Sahlins 1958:x). As defined by Bohannan (1963:268), "power is . . . the ability to produce intended effects, on oneself, on other human beings, and on things."

Consequently, an individual is powerful in so far as he can produce intended results. When these power relationships are considered legitimate, right and natural, as rules for maintaining the society successfully, then a change in the quality of the power has occurred and the product of this transformation is called authority (Bohannan 1963:269).

As paramount chief, Powhatan had absolute authority of life and death and was viewed by those of lower status as possessing a certain degree of divinity (Smith 1910b:81). Werowances, likewise, held similar authority but were subordinate to the authority of Powhatan (Wright and Freund 1953:77). The only major limitation to the authority of the paramount, and other chiefs, was in declaring war. The priests advised the paramount and his chiefs concerning war, and commonly had the final word (Wright and Freund 1953:104).

Other chiefly privileges included having attendants and bodyguards, and deference shown to chiefs through the performance of elaborate obeisance by those of lower status (Smith 1910c:370, 458; Quinn 1967:16; Spelman 1910:cxiii). According to Spelman (1910:cxii), the paramount chief -- and possibly the other chiefs, as well -- did not participate in the planting and harvesting of his fields. It was also among the chiefs that the practice of polygyny was common,

primarily because they could most readily afford it. While a commoner could have more than one wife, certain economically restrictive practices were enforced by the chiefs and their advisors which served to limit the amount of wealth and level of status a commoner could achieve through war deeds and economic ventures. Chiefs had as many wives as they could afford, and Powhatan supposedly had more than 100 (Smith 1910a:22; Wright and Freund 1953:61).

Although the position of werowance was ascribed, social ranking in this Algonquian polity was based on the accumulation of wealth. Indeed, the Algonquian word "werowance" has been variously interpreted as meaning "he is rich," "he is of influence," or "he is wise" (Gerard 1905:229-230; Barbour 1972:46-47; Tooker 1905:525). The primary means of wealth acquisition by the paramount chief and the chiefs of the petty chiefdoms was through a hierarchical system of tribute collection. Items received by Powhatan as tribute from his petty chiefs included "skinnes, beades, copper, pearle, deare, turkies, wild beasts, and corne" (Smith 1910b:81). Strachey discusses tribute collection in some detail in an oft-cited passage (Wright and Freund 1953:87):

Every Weroance knowes his owne Meeres and lymitts to fish fowle or hunt in (as before said) but they hold all of their great Weroance Powhatan, unto whome they paie 8. parts of 10. tribute of all the Commodities which their Countrey yeildeth, as of wheat, pease, beanes, 8. measures of 10. (and these measured out in little Cades or Basketts which the great king appoints) of the dying roots 8. measures of ten; of all sorts of skyns and furrs 8. of tenne, and so he robbes the poore in effect of al they have even to the deares Skyn wherewith they cover them from Could, in so much as they dare not dresse yt and put yt on untill he have seene yt and refused yt; for what he Comaundeth they dare not disobey in the least thing.

Whether or not the tribute levied was as stiff as Strachey mentions, it is certain that great amounts of the economic yields were paid to the chiefs. The goods collected were usually stored in or near the house of each chief. Powhatan's main storehouse was located a mile (1.609 km) from the village of Orapaks, near the fall line (Smith 1910b:80; Wright and Freund 1953:62). Tribute items were used to support the chiefs, their families and the priests. The chiefs used luxury items such as beads, pearls, and copper to reward warriors for bravery, to repay those individuals who aided in planting and harvesting their fields, and to possibly dispense to needy people after certain funeral rites. In addition, the paramount chief and the chiefs of petty chiefdoms used tribute goods for entertaining important personages, supporting communal feasts and religious activities, and as payments to other petty chiefdoms for their assistance in warfare (Feest 1978a:261; Binford 1964:94; Turner 1976:108).

Service (1962:114) states that a tribe is an egalitarian society, lacking political hierarchies, with no political offices containing real power -- "a [tribal] 'chief' is merely a man of influence." However, a chiefdom differs from tribal political organization in that a chiefdom "is not just greater chiefs but a system of chieftainship, a hierarchy of major and minor authorities holding forth over major and minor subdivisions of the tribe: a chain of command linking paramount to middle-range and local level leaders. . . ." (Sahlins 1968:26). Thus, the political organization of the Powhatan was that

of a ranked, kin-oriented society in which the positions of status were limited, and the status and administrative structure was arranged hierarchically.

The bounds of the Powhatan chiefdom are not precisely known. Sometime in the 1570s Powhatan inherited a number of small chiefdoms along the James and York Rivers. Following Smith (1910b:79), these chiefdoms were the Powhatan proper, Arrohatock, Appamatuck, Pamunkey, Youghtanund, and Mattaponi. Strachey mentions all of the groups listed by Smith and adds three more: Orapaks, Kiskiack and Werowocomoco (Wright and Freund 1953:43, 57). The territory inhabited by these groups formed a large crescent going from the south bank of the James River, near the fall line, north-northeast to the Pamunkey and Mattaponi Rivers and down them to the point where they join to form the York River; thence down the York about half its length (see Figure 1).

From this core area, Powhatan expanded his chiefdom eastward to the coast. By the end of A.D. 1608, through intimidation and warfare, Powhatan controlled almost all of the petty chiefdoms on the James and York Rivers, from the fall line to the Chesapeake Bay. A notable exception to his conquests were the Chickahominies, who continued to thwart Powhatan's efforts to appoint a werowance to rule them (Smith 1910b:82; 1910c:527-528; Wright and Freund 1953:44, 67, 104).

Beyond the York and James Rivers, Powhatan's authority diminished and the limits of his chiefdom become more difficult to discern. This is due to several factors. The greatest ambiguity arises from the

many different historical estimates of the number of petty chiefdoms controlled by the larger polity. Interpretations of these estimates range from 10 to 36 petty chiefdoms (Speck 1928:Plate 1; Newport 1607:376; Barbour 1969:153; Garrow 1974:16; Mooney 1907:133; Kingsbury 1933 (III):707-708; Turner 1973:57). As a result, students of Virginia Algonquian ethnohistory are divided primarily into two camps on the matter of the limits of the Powhatan chiefdom: those who believe the chiefdom encompassed almost all of Tidewater Virginia and the southern Eastern Shore, and those who think the chiefdom consisted of the native groups along the James and York Rivers and their branches. Some of the individuals who argue for the former include McCary (1957:1-2), Mooney (1907:129-130), Mook (1944:194), G. Smith (1971:169-170), and Turner (1976:133-135). On the other hand, a sampling of persons who make a case for the latter include Feest (1978a:254-256), Speck (1928:Plate 1), Binford (1964:74), Garrow (1974:16) and Potter (1976a:15-24).

In some instances, the authors of the historical documents made a one-to-one equation of werowance to petty chiefdom, or modern researchers have made this misinterpretation for them. For example, Strachey listed 32 werowances of Powhatan and their territories (Wright and Freund 1953:63-69). He did not list 32 individual petty chiefdoms (Garrow 1974:39). Thus, a given group such as the Nansamund has a great werowance listed, as well as three "lesser werowances" of Nansamund (Wright and Freund 1953:66).

Other problems are due to conflicting accounts or lack of

documentation concerning whether or not a particular petty chiefdom paid tribute to Powhatan, or acted independently of the dictates of the paramount chief. Even if a petty chiefdom paid tribute to Powhatan, it did not mean that particularly strong ties existed, as in the cases of the Accomac and Acohanock of the Eastern Shore (Feest 1978a:253; Turner 1976:133).

Basically, all of these varying and sometimes conflicting accounts are attributable to one thing: the rapid and recent expansion of the Powhatan chiefdom, which precipitated fluctuating networks of alliances and intergroup relations of varying degrees of stability. This was apparently true of the petty chiefdoms located in the Northern Neck.

Detailed data on the political relationships between most of the individual Northern Neck groups and the Powhatan chiefdom are somewhat scanty. The available data are presented below in abbreviated form. More detailed discussions on the limits of the Powhatan chiefdom and political relations with marginal groups can be found in Potter (1976a:16-24) and Turner (1976:127-135).

There is no positive evidence to indicate that the Cuttatawomen I, Moratico, Pissasec or Cuttatawomen II were part of the Powhatan chiefdom (Turner 1976:130). Settlement pattern data from John Smith's map of Virginia have been used as indirect evidence in favor of these groups being politically autonomous from Powhatan (e.g. Speck 1928:227, 232-233). More will be said of this in the section on features of settlement. As for the remaining chiefdom along the north

bank of the Rappahannock River -- the Rappahannocks -- they were engaged in a conflict with the Moratico at the time of John Smith's A.D. 1608 explorations. Turner (1976:130) considers such conflict as being indicative of "areas that had not been fully consolidated into the [Powhatan] chiefdom." While Smith was the captive of Powhatan's brother, Opechancanough, in the winter of A.D. 1607-08, he was taken to the Rappahannocks' territory. This has been interpreted as probable evidence for the inclusion of the Rappahannocks in the Powhatan chiefdom (Turner 1976:130-131). However, Smith felt he was shown to the Rappahannocks so that they could see for themselves if he was the European who had killed one of their chiefs sometime earlier (Smith 1910a:18).

The information on the groups along the southern Potomac River points to much between-group variation in their political dealings with the Powhatan chiefdom. In A.D. 1622, Opechancanough, now paramount of the Powhatan chiefdom, was plotting to attack the English settlements along the James River. The Wicocomoco initially agreed to aid in the attack, while their neighbors, the Chicacoan, refused to participate (Smith 1910c:586). The next group upriver, the Matchotic, attacked Smith's exploration party in A.D. 1608, supposedly on Powhatan's orders. This incident, as well as Smith's being presented to them while Opechancanough's captive during the winter of A.D. 1607-08, probably means the Matchotic were allied with the Powhatan chiefdom. The Potomacs were the largest and most powerful of the petty chiefdoms along the southern Potomac River and ostensibly more

autonomous in their political relations with the Powhatans. In A.D. 1611, Lord Delaware wrote: "The last discovery, during my continuall sicknesse, was by Captain Argall, who hath found a trade with Patomack (a King as great as Powhatan . . .)" (Tyler 1907:213). Stith (1747:240) said that the werowance of Potomac was "a Person of great Interest and Authority, throughout the whole River, being a Kind of petty Emperor there, and unwilling to own Subjection to the other Emperors, whom he always affected to treat, rather as Brethern than Superiors." The Potomacs aided Henry Spelman in his escape from Powhatan, assisted Captain Argall in kidnapping Pocahontas (a daughter of Powhatan), and were not involved in Opechancanough's attack against the English in A.D. 1622 (Spelman 1910:ciii; Hamor 1615:14-16; Smith 1910c:591). Also Powhatan apparently sent emissaries to trade with the Potomacs rather than getting the articles he wanted by enforcing tribute payment as he did among the groups of his chiefdom (Hamor 1615:4). There are no data to assess the political relationship between the Toag and the Powhatan chiefdom.

The English invasion, begun in A.D. 1607, interrupted the expansion of the Powhatan chiefdom at a time when the paramount chief did not have a firm political grasp on all the Northern Neck groups. Based on this brief review of the limited data available, it is suggested that there was great variation among these groups in their allegiance to the Powhatan chiefdom. Some, such as the Rappahannocks and possibly the Matchotic, may have been part of the larger polity, while others, such as the Potomacs, appear to have dealt with the

Powhatan chiefdom on equal terms. Most were probably marginal, semi-autonomous political units. As Hudson (1976:205-206) has noted for the Southeast in Mississippian times, if powerful chiefdoms existed

. . . they were probably not very stable, as is the case in such societies elsewhere in the world, the reason being that their local communities remained almost completely self-sufficient. Thus if a village, town, or affiliated chiefdom were cut off from the seat of power, it probably made little difference in the day-to-day lives of the people.

Each one of the Northern Neck groups was itself a petty chiefdom, acting independently of one another. Their social and political structure was the same as the petty chiefdoms controlled by the paramount chief, Powhatan (Feest 1978a:256). Each petty chiefdom in the Northern Neck was ruled by a werowance, who held absolute authority of life and death over his people. In chiefdoms with more than one village, lesser werowances governed those minor villages where the werowance did not reside. The Potomac chiefdom, for example, possessed 10 villages. Several of the nine minor villages were governed by Japazaw (or Japazeus), a lesser werowance and brother to the werowance of Potomac (Feest 1973:73). At the other end of the spectrum, cartographic evidence seems to indicate that the only petty chiefdom in the Northern Neck with one village was Chicacoan. The name of the werowance of the Chicacoan in A.D. 1608, or those of his lesser werowances or advisors, is not known.

North across the Potomac River there were a number of Algonquian-speaking groups living in what is now the Tidewater portion of southern Maryland. These groups were organized into a larger political entity known by their Iroquoian name, the Conoy. With the

exception of the Patuxents, all the native groups living in southern Maryland in A.D. 1608 were part of the Conoy. These groups were the Anacostank, Piscataway, Pamunkey (not to be confused with the Virginia Pamunkey), Nangemeick, Potopaco and Yaocomaco (Feest 1978b:240-243; MacLeod 1926:302).

The individual Algonquian groups which formed the Conoy were ruled by a chief, or wizoe. The wizoos, in turn, recognized the authority of a paramount chief, or tayac, who governed all the groups. The tayac of the Conoy was assisted by a council composed of the wizoos, and possibly others (Feest 1978b:245).

At the time of European contact, the Iroquoian-speaking Susquehannocks and "Massawomecks" (probably the Seneca) were raiding the Conoy, though on occasion they also trade with them. The Anacostank, in particular, served as middlemen in the trade between the Five Nations and other Potomac Valley groups (Feest 1978b:243). The Conoy, in turn, were at war with the Potomac chiefdom. The Potomacs were also fighting off "Massawomeck" raids, as well as warring with the Siouian-speaking Manahoac, who lived to the west of the Potomacs in the Piedmont Plateau (Spelman 1910:ciii; Smith 1910b:71; 1910c:427-429, 586; Wright and Freund 1953:107-108).

3. POPULATION ESTIMATES

Virginia Algonquian population estimates are based upon census-like figures drawn up by John Smith (1910b:51-53; 1910c:347-349) and William Strachey (Wright and Freund 1953:45-47,

63-69). Smith's figures come from his personal observations during the course of exploring the Virginia Tidewater and Chesapeake Bay in A.D. 1607-08. It should be mentioned that Smith was most familiar with the James and York Rivers and his figures for these river basins are probably more reliable. Strachey copied Smith in some instances, while in others he supplemented Smith's figures with data collected from native informants and Strachey's own limited firsthand observations.

The conditions under which Smith's observations were made should also be mentioned. Many of Smith's encounters with the Indians were hostile, and any calculations made during such interactions must be viewed with caution. Thus, most of his dealings were with "warriors" and not with the full spectrum of the native populations, which may have given Smith a false perception of the ratio of warriors to the total population. And, just as important, Smith's understanding of the Algonquian language was rudimentary at best. While signs were used extensively by both Indian and European, Smith's exact translations of Indian speech are on par with his census data -- both are informed guesses.

Another point which must be discussed is depopulation. Smith's and Strachey's estimates are based on early seventeenth century observations and are not to be considered as estimates of the late prehistoric, aboriginal population. Powhatan is supposed to have told John Smith that he had seen the death of all his people three times (Smith 1910b:135). This has been interpreted by some researchers

as a reference to native depopulation resulting from European contact prior to the establishment of Jamestown (Feest 1973:66; Turner 1976:142). Given the difficulties of communication in the initial meetings between the natives and the English, this could also refer to Powhatan having witnessed the passing of three generations.

Depopulation as a result of drought and famine was noted by Father Quiros in A.D. 1570 for the native groups living in the York and James River basins; the very territory where the Powhatan chiefdom was located in A.D. 1607. Two years after Quiros's observations, Father Rogel stated that the Indian populations for the same region were greater than in any other place he had been and the people more sedentary than other southeastern tribes with which he was familiar (Lewis and Loomie 1953:39-41, 55, 89, 274). It is probable that by A.D. 1572 some of the population -- reported by Quiros to have moved to other regions due to a six-year drought -- had returned to their former territories.

In southern Maryland, studies of Late Woodland, pre-contact aboriginal populations indicate rapid expansion prior to the seventeenth century (Ubelaker 1974:68). Apparently, while some depopulation had occurred among native groups to the south of the Rappahannock River in the late sixteenth century, the aboriginal populations of the Potomac River are thought to have been increasing.

Both Smith's and Strachey's population estimates are for "bowmen" or "warriors" only. To arrive at the total population of a specific group, a ratio of warriors to total population has to be calculated.

This has usually been derived from a statement of John Smith's:

"Within 60 miles of James Towne there are about 5000 people, but of able men fit for their warres scarce 1500." Using this information, Mooney (1907) and Mook (1944) assumed a 3:10 ratio of warriors to total population. In a later work, Mooney (1928) did not use a fixed ratio. Rather, his population estimates were computed by multiplying Smith's warrior counts by figures of 3.5 to 5 (Turner 1973:58).

Research by Ubelaker (1974, 1976) Feest (1973), and Turner (1973, 1976) indicates that earlier population estimates for the Virginia-Maryland Algonquians are much too conservative. Feest (1973:67) suggests a ratio of 1:4 is preferable to a 3:10 ratio, in part because warriors were probably overrepresented in Smith's own ratio. Turner (1976:143-144) uses a ratio of 1:4.25. This was derived by averaging the warrior to overall population ratios for Ossuaries I and II from the Late Woodland Period Juhle Farm Site (18CH89), on Nanjemoy Creek in southern Maryland (Ubelaker 1974:69). Although they use a fixed ratio, Feest (1973) and Turner (1976) make some adjustments in their population estimates when there are discrepancies between the estimates and other historic data which are potentially indicative of a group's size (e.g., houses per village or villages per group).

Population estimates for the chiefdoms of the Northern Neck are presented in Table 2. The columns under Smith's and Strachey's names represent their estimates for the number of warriors per chiefdom. All the figures are the same, except for the Potomac chiefdom. Smith (1910c:348) revised his A.D. 1624 count for Potomac warriors upward

Table 2. Population Estimates for the Northern Neck Petty Chiefdoms.

Chiefdom	Smith 1612	Smith 1624	Strachey 1610/1611	3:10 ratio	1:4 ratio	1:4.25 ratio	Turner 1976
	"bowmen" or "warrior" estimates			total population estimates			
Cuttatawomen I	30	30	30	100	120	127	210
Moratico	80	80	80	265	320	340	340
Rappahannock	100	100	100	335	400	425	520
Pissasec	-	-	-	-	-	-	≈300
Cuttatawomen II	20	20	20	65	80	85	210
Wicocomoco	130	130	130	435	520	552	550
Chicacoan	30	30	30	100	120	127	130
Matchotic	100	100	100	335	400	425	425
Potomac	160	>200	160	535	640	680	850
Toag	40	40	40	135	160	170	170

from his A.D. 1612 estimate. Feest (1973:67) considers this revision and others done in A.D. 1624 as an attempt by Smith to improve the accuracy of his earlier report. The other columns represent total population figures for each chiefdom, computed on the basis of three different fixed ratios: 3:10, 1:4, and 1:4.25. A column of population figures based upon Turner's (1976:153-157) calculations are also presented.

Turner's population estimates need to be discussed briefly. For Wicocomoco and Chicacoan, Turner merely rounded down and up, respectively, to the nearest ten-digit number. The remainder of Turner's estimates for the southern Potomac chiefdoms are in agreement with the figures computed by a 1:4.25 ratio. With the exception of the Moratico, Turner's population estimates for the chiefdoms of the north bank of the Rappahannock River are higher than those computed with a 1:4.25 ratio. This is due to disparities between the total number of villages for each petty chiefdom and the number of warriors Smith estimated for each chiefdom. Using a 1:4.25 ratio, Turner (1976:153-155) reasons the overall population figures are too low for the number of villages shown on Smith's map of Virginia. He is supported in this view by Feest (1973:73). Indeed, because Smith gave no warrior estimate for the Pissasec on the north bank and Opiscopank on the south, and one group -- the Appamatuck -- may have been omitted, Feest states that the true early seventeenth century population of the Rappahannock River may have been between 2500 and 4000. Turner's estimates are based on the assumption that each

village had a population of 40 persons. This assumption accords well with other approximations (Feest 1973:72-73), and results in very probable and, indeed, conservative figures.

The sole source for the number of Virginia Algonquians per household comes from John Smith, who stated from six to 20 people lived in a longhouse (Smith 1910b:67). In A.D. 1699, the Algonquian-speaking Piscataway (Conoy) had a total population of just above 300 people (80 or 90 warriors) living in 27 longhouses. This would result in an average of 11 people, or slightly more, per household (Feest 1973:68). In arriving at conservative estimates for various villages, Feest (1973:69) assumes a mean house size of eight, while Turner (1976:144) uses an average of 10 persons.

Applying the above information to the Chicacoan, an overall population range of from 120 to 130 is highly probable for the year A.D. 1608. This range is based on a ratio of one warrior to four people of the overall population for the lower figure, and Turner's estimate for the upper limit. With each household averaging between eight and 10 persons, we might expect the total number of households for the Chicacoan to range between 11 and 16.

4. FEATURES OF SETTLEMENT

A) Individual Structures

The basic structure common to all places of Virginia Algonquian habitation was the longhouse. Smith's (1910b:67) brief description will serve as the nucleus for further discussion:

Their houses are built like our Arbors of small young springs bowed and tyed, and so close covered with mats or the barkes of trees very handsomely, that notwithstanding either winde raine or weather, they are as warme as stooves, but very smoaky; yet at the toppe of the house there is a hole made for the smoake to goe into right over the fire.

Entrance was gained through two doors, hung with mats, located at each end of the longhouse. Inside, the walls were lined with sleeping platforms built a foot or more off the ground. Hearths were apparently located in the center of the dwelling. A commoner's longhouse consisted of a single room, with no interior divisions. Storage scaffolds made of saplings and reeds were usually found adjacent to the longhouses (Wright and Freund 1953:78-79; Smith 1910b:67; Spelman 1910:cvi).

There are no measurements for Virginia Algonquian longhouses in the early seventeenth century. Harriot, a chronicler of the Roanoke Colony, reported lengths of 12 to 16 yards (11 to 15 m), and more rarely 24 yards (22 m), for North Carolina Algonquian longhouses of the late sixteenth century. The length was usually twice the width (Quinn and Quinn 1973:67).

While the general form of the werowance's, or chief's house was the same as those of the commoners, it was much larger. The paramount chief, Powhatan, had longhouses 30 to 40 yards (27 to 38 m) in length (Smith 1910b:79). Spelman (1910:cvi) relates that the king's houses had "many darke windinges and turnings before any cum wher the Kinge is," indicating the werowance's longhouses had interior partitions, unlike the commoner's dwellings.

The werowances had arbor-like storehouses, usually found in their

villages of residence. Goods received through tribute payment were stored here. These items included corn, animal skins of various kinds, copper, beads, pearls, and dyes (Smith 1910b:80; Spelman 1910:civ-cv). Powhatan's "treasury" was located about a mile (1.609 km) from the village of Orapaks, which became Powhatan's place of residence soon after the English settled at Jamestown. This storehouse was 50 to 60 yards (46 to 55 m) in length. In each corner, a post with a carved image was set. Only the chief priests and werowances could attend to Powhatan's principal storehouse (Wright and Freund 1953:62).

Also located in or near the werowance's village of each petty chiefdom was a mortuary temple. It was here that the prepared remains of deceased werowances were kept. These structures were from 60 to 100 feet (18 to 30 m) long and about 20 feet (6 m) wide, with one door opening to the east. Inside, at the western end of the mortuary temple, was a raised platform upon which the remains of the werowances and their burial goods were placed. Various carved posts with images of their gods were found inside the mortuary temple. The temples were maintained most commonly by two or three priests, although Powhatan's three mortuary temples at Uttamussak, in the heartland of the chiefdom among the Pamunkey, were cared for by seven chief priests. White's watercolor drawings for the North Carolina Algonquians show mortuary temples located within the villages, while reports on the Virginia Algonquians place the mortuary temples away from the villages, out of the sight of commoners. Only priests and werowances could enter the

mortuary temples (Smith 1910b:75; 1910c:371; Wright and Freund 1953:88-89).

Additional structures associated with Virginia Algonquian villages were sweathouses and menstrual huts. The sweathouses were small structures, probably oval in ground plan with a domed roof, able to hold six to eight men (Turner 1972:67-68). Strachey briefly mentions the existence of menstrual huts, but does not give a description of their form (Wright and Freund 1953:74). During the communal winter deer hunts, small huts covered with mats were erected by the women (Smith 1910b:70). Other small, round or conical structures probably existed, as well, in the villages (Turner 1972:66).

b) The Villages

The size of villages varied greatly according to contemporary documents. Smith's first estimate for the number of houses in a village was from two to 100 (1910b:67). Later, he modified the original estimate to read from two to 50 houses (Smith 1910c:363). Strachey wrote that "their howses are not manie in one towne, and those that are stand dissite [set apart] and scattered, without forme of a street, far and wyde asunder" (Wright and Freund 1953:77-78). In his discourse on the massacre of A.D. 1622, Smith (1910c:577) writes: "these wilde naked natives live not in great numbers together; but dispersed, commonly in thirtie, fortie, fiftie, or sixtie in a company. Some places have two hundred, few places more, but many lesse. . . ."

Gabriel Archer provides us with one of the earliest descriptions of Virginia Algonquian villages along the James River:

. . . they dwell as I guesse by families of kindred and allyance some 40tie or 50tie in a Hatto or small village; w'ch townes are not past a myle or half a myle asunder in most places (Archer 1969:103).

Henry Spelman, who lived with members of the Potomac chiefdom for approximately one year, describes native settlements in that region in the following manner: "Places of Habitation they have but feaw for ye greatest tounes have not above 20 or 30 houses in it" (1910:cvi).

Archeological excavations at a protohistoric village of the Potomacs revealed that the site was surrounded by a possible defensive ditch and palisades (Schmitt 1965:6-8). For this reason, Feest (1973:67) notes that Spelman's account might refer to palisaded villages.

Apparently, the most basic distinction to be drawn concerning Virginia Algonquian villages relates to whether or not a werowance, or district chief, resided in the village. If he did, then such a village would consist of the werowance's longhouse, the werowance's storehouses, the mortuary temple, perhaps a separate council house which may have served as quarters and a place of entertainment for visiting personages, and the houses and associated structures of commoners. If a village was not the seat of the werowance or district chief, it lacked all of the foregoing except the commoners' residences, and functionally specific structures such as household storage units, sweathouses and menstrual huts, which were common to all places of settlement. This distinction between the village of a werowance and an "ordinary" village or hamlet is nowhere more apparent than on John Smith's map of Virginia; a subject previously discussed in the section on political organization.

Binford (1964:85) incorporates the attribute of size in his definitions of "village" and "hamlet," the two settlement types he proposes as being characteristic of the Powhatan chiefdom. His lengthy definition of a "village" boils down to the settlement where a werowance lived, with from 12 to 40 houses. A "hamlet" lacked the werowance's longhouse and storehouse(s) and the mortuary temple found in a "village" and contained two to 10 longhouses (Binford 1964:85). Problems exist with both definitions. There are no ethnohistorical data to support the proposition that a district chief's, or werowance's, village always had 12 or more houses. Nor are there data which indicate that 10 was the maximum number of houses ever found in settlements lacking a resident district chief.

Turner (1976:138) equates the term village with John Smith's "Kings howses," and hamlet with Smith's "Ordinary howses." As long as the distinction drawn by these two terms serves to define settlements where a werowance did and did not live, they are useful in at least reducing Smith's unwieldy descriptive phrases to two concise words. However, "hamlet" and "village" so defined can be considered only relative indicators of small and large settlements, respectively, since there is ethnohistorical evidence to indicate the existence of small villages and large hamlets (Smith 1910a:11-12; 1910b:91-92). Because of the overlap in the number of houses found in the two settlement types, hamlets and villages are regarded "'as the small and large ends of a size continuum'" (Flannery 1976:164).

Although the political import carried by the two terms, "hamlet"

and "village," can be demonstrated with ethnohistorical data, there is difficulty in attempting to apply the terms to archeological sites in Tidewater Virginia. First, to know whether a werowance lived at a particular archeological site, the entire site would have to be excavated in order to compare the size, function and association of the structures. From our ethnohistorical knowledge of individual Algonquian structures, it is hypothetically possible to discriminate archeologically between a werowance's house and a commoner's house. As a matter of practical application, it would be very difficult. The same can be said for identifying the werowance's storehouse, and especially the mortuary temple, which was usually located away from the village.

Secondly, to identify a given archeological site as a historic Virginia Algonquian hamlet or village one can compare the location of the archeological site with the location of settlements shown on John Smith's map, or the Zuniga map (cf. McCary and Barka 1977). However, this would have to be done in conjunction with detailed archeological and ethnohistorical studies. In order for the archeological site and the historical location of a hamlet or village "to be proven to be one and the same, they must be shown to conform to each other in as great detail as possible in date, geographical location and layout" (Trigger 1969:306). Merely demonstrating proximity based on a comparison of the archeological site location on a modern map with that of settlements on John Smith's map is not enough.

A third problem to consider, certainly in regard to coastal

settlements, is the difficulty of determining a settlement's boundary. Earlier settlement descriptions quoted from Strachey (Wright and Freund 1953:77-78) and Smith (1910c:577) suggest that the houses of a settlement were widely scattered. If so, how would an archeologist know if his cluster of houses was a hamlet, or if it was part of another cluster containing a possible werowance's house a half a mile (0.8 km) away? Proving contemporaneity would not be easy.

In light of the archeological difficulty of discriminating effectively between a hamlet and a village, in all possible cases, the term "village" will be used in a generic fashion. For the purpose of this study, a village is defined as a spatially independent settlement occupied for extended periods of time during the total settlement and subsistence cycle.

Based on an ethnohistorical analysis, Turner (1976:137-138) identified five criteria apparently used by Virginia Algonquians in selecting a village location. First, villages were found near rivers or streams. As Smith (1910b:67) noted: "Their buildings and habitations are for the most part by the rivers or not farre distant from some fresh spring." Strachey (Wright and Freund 1953:77) adds to Smith's observations:

Theire habitations or Townes, are for the most parte by the Rivers; or not far distant from fresh Springes comonly upon the Rice of a hill, that they maie overlooke the River and take every smale thing into view which sturrs upon the same. . . ."

The second and third criteria used by the Indians in selecting a habitation site were mentioned in the previous quote by Strachey: that is, ridges or hills and nearby freshwater springs. Archer

(1910:xliv), in his description of the village of Powhatan, near the falls of the James River, writes: ". . . it is scituat upon a highe Hill by the water syde, a playne between it and the water." A fourth criterion was nearness to marshlands. Smith's (1910:11-12) passage describing the Chickahominy village of Manosquosick illustrates the interplay of four determinants for village location:

This place is called Manosquosick, a quarter of a mile from the river, conteining thirtie or fortie houses, uppon an exceeding high land: at the foote of the hill towards the river is a plaine wood, watered with many springes, which fall twentie yardes right downe into the river. Right against the same is a great marsh, of 4. or 5. miles circuit, devided in 2 Ilands, by the parting of the river, abounding with fish and foule of all sorts. . . .

The final determinant of village location mentioned in the historical sources is proximity to land suitable for slash-and-burn subsistence cultivation. A good example of this comes from Smith's (1910a:32) account of the discovery of Nansemond:

. . . the river divideth in two, the neck a plaine high Corne field, the wester bought a high plaine likewise, the Northeast answerable in all respects. In these plaines are planted abundance of houses and people; they may containe 1000. Acres of most excellent fertill ground. . . .

In summarizing the discussion of villages, a number of points need to be made. It would seem from the ethnohistorical data that have been quoted that the houses of most villages (at least in the estuarine Coastal Plain) were probably dispersed. As Smith (1910c:363) states:

Their houses are in the midst of their fields or gardens, which are small plots of ground. Some 20 acres, some 40, some 100. some 200. some more, some lesse. In some places from 2 to 50 of those houses together, or but a little separated by groves of trees.

One would also expect most of the native villages in the Coastal Plain, near the Chesapeake Bay, to have been situated on broad necklands, along the smaller estuaries. Smith's passage concerning the settlements of the Nansemond vividly illustrates this. An examination of Smith's map of Virginia (see Figure 1) shows that many of the coastal villages were located on the tributaries of the major rivers, and were not found along the banks of the mouths of the major rivers. All of the four major Tidewater rivers are quite broad at their mouths. Any village situated directly on the banks of the four major rivers, along the lower reaches near their mouths, would have been more exposed to storms and wind, and would have experienced colder temperatures in the winter. Therefore, it is unlikely that a major Late Woodland or Historic period village in the Chicacoan locality would have been located along the Potomac River nearshore environment.

Very little has been written about fortified or palisaded villages. Only one ethnohistorical reference is known for the earliest period of English-Indian contact in Tidewater Virginia. In August or September of A.D. 1609, the English purchased the village of Powhatan and surrounding lands (Smith 1910c:481-482). The village is described as a ". . . Salvage Fort, readie built, and prettily fortified with poles and barked of trees, sufficient to have defended them from all the Salvages in Virginia, dry houses for lodgings, and neere two hundred acres of ground ready to be planted. . . ." (Smith 1910c:483). Binford is of the opinion that the village of Powhatan

was fortified by the Indians after Newport's visit there in the spring of A.D. 1607 (Archer 1910:xlīii) and before the English bought it in the fall A.D. of 1609 (Binford 1964:86). I do not believe this to be the case. The village of Powhatan was located at the fall line of the James River. The Piedmont Plateau to the west was the homeland of the Siouan-speaking Monacan Indians, who were enemies of the Powhatan chiefdom (Smith 1910a:25; 1910b:71). Indeed, the werowance of the village of Powhatan told Gabriel Archer (1910:xlvi) ". . . that the Monacah was his Enmye, and that he came Downe at the fall of the leafe and invaded his Countrye." It is, therefore, just as probable the palisade surrounding the village of Powhatan was of protohistoric construction, built originally to ward off Monacan raids.

A few other palisaded villages have been discovered through archeological excavations. The Buck Site, in Charles City County, Virginia, represents a small palisaded village in Chickahominy territory. A number of trade goods were found at the site (McCary and Barka 1977:83). Part of an aboriginal palisade was excavated at site 44PG3, along the south shore of the James River (Edwards 1978:75). No further information on this structure has been published. Already briefly mentioned was the Potomac Creek Site, located near the confluence of Potomac Creek and Potomac River, in Stafford County, Virginia. This site was apparently enclosed by a ditch and several palisade lines. It is protohistoric and represents a village of the Potomac chiefdom (Schmitt 1965:6-8). Bushnell (1937:61-62), in his surface survey along the Rappahannock River, noted a shallow ditch and

embankment near the posited site of the historic village of Cuttatawomen II. Part of this site, known archeologically as the De Shazo Site (44KG3), was excavated in 1964. No mention was made of Bushnell's embankment and ditch in the report on the 1964 excavations (MacCord 1965:98-104). A large village site (the so-called Moyaone village of the Accokeek Creek Site) with multiple palisade lines was excavated on the north shore of the Potomac River, just below Piscataway Creek, Maryland, across from Mount Vernon, Virginia (Stephenson et al. 1963:52-53). The site probably dates around A.D. 1550 (Potter 1980:4).

All of these palisaded sites are located along sociopolitical boundaries. The large palisaded village at the Accokeek Creek Site is protohistoric Conoy and is located astride the northern boundary of the protohistoric Toag and Potomacs. The village of Powhatan, the Potomac Creek Site and the De Shazo Site represent the western boundary of the Virginia Algonquians, abutting the fall line. The Siouan-speaking Monacans were just west of the James River fall line, and the Siouan-speaking Manahoac were just west of the fall line of the Rappahannock River. The Buck site probably represents a protohistoric or early historic Chickahominy palisaded village, and finding a fortified village here should come as no surprise. In A.D. 1607, the Algonquian-speaking Chickahominy were a sociopolitical island in a sea of Algonquian groups apparently under the control of the paramount chief, Powhatan (cf. Feest 1978:255). As for the palisaded site of 44PG3, it is located in the territory of the historic Weanock and may

represent a defensive reaction to the formation of the core area of the Powhatan chiefdom, which abutted the Weanock's western border.

c) The Problem of Village Movement

Just as important as the factors involved in village selection were those factors involved in village movement. No specific, early seventeenth century sources, of which I am aware, describe the process of relocating a Virginia Algonquian village to a new site. Nonetheless, it is likely that villages did shift from time to time to new locations.

One of the factors which may have necessitated village location was soil exhaustion. According to Smith (1910d:952), overworn fields were few because the ground was very fertile, for the most part. However, using extant data on grass and weed growth, insect infestation, and natural soil fertility, Turner (1976:192-195) has calculated that agricultural soils in the Tidewater would have required a slash-and-burn cycle with fallow periods of 21 to 42 years, if used for two to three consecutive years of planting.

Another problem, in conjunction with soil exhaustion, was weed control. The difficulty of keeping the agricultural plots free from weeds is related by Strachey (Wright and Freund 1953:114) and Smith (1910b:49, 56). The distance one would have to walk to gather firewood is a third factor. Smith (1910c:363) observed that "Neare their habitations is little small wood or old trees on the ground by reason of their burning them for fire." Other conditions which might have precipitated village movement, discussed by Heidenreich

(1971:213-216) in his study of the Huron, are fear of enemy attack, social tension arising from too large a village populace, and/or increases in the number of village pests, especially field mice.

It should be noted that all of these factors are relative and must be weighed differently in each case. How they might have affected the relocation of a particular Virginia Algonquian village would have depended, among other things, upon that village's total population, its storage capabilities, the degree of dispersion or nucleation of the village's longhouses, the extent of the village's potential agricultural lands within its catchment area, and the frequency and intensity of warfare.

d) Settlement Patterns

Examining John Smith's map of Virginia (see Figure 1), one is struck by the disproportionate number of villages along the north bank of the Rappahannock River, as opposed to the south bank. On the south bank of the Rappahannock River, which is the bank closest to the Powhatan chiefdom, only five villages and two werowances' villages are denoted on the map. Along the north bank of the Rappahannock, which is the southern border of the Northern Neck, 29 villages and five werowances' villages are shown along the same length of the river.

Upon examination of this settlement pattern, Speck (1925:36) suggested that "it is conceivable that the pressure of Powhatan made it advantageous for the Rappahannock River bands to place the waters of the river between themselves and Powhatan central groups for their better protection." By such a postulation, Speck (1928:227, 232-233)

differentiated between the Powhatan culture area, which was inhabited by all the Algonquian petty chiefdoms of Tidewater Virginia, and the Powhatan political group, which included 11 petty chiefdoms along the York and James Rivers. Unfortunately, Speck never elaborated further upon this distinction.

Mook (1944:200) concurred with Speck's idea, stating that due to Powhatan's threat of power "the Rappahannock River seems to have been chosen as a natural geographical line of protection." Nevertheless, Mook did not draw Speck's distinction between a Powhatan culture area and a Powhatan political group. Rather, he noted "that the more removed tribes of the Potomac River and the Eastern Shore carried on their affairs more independently of Powhatan than the more southern groups. . . ." (Mook 1944:200).

Data suggestive of population movements from the lower Middle Peninsula, north across the Rappahannock, to the lower Northern Neck are provided by Turner (1976:160-161) in revision of his earlier estimates (Turner 1973:57-65). A population density computed for the lower Northern Neck is 124 people per 100 km², the highest density for all the Virginia Algonquian groups. A similar computation for the lower Middle Peninsula, south of the Rappahannock River, yields 26 people per 100 km², which is the lowest population density within the Coastal Plain (Turner 1976:158-161). Since the average number of individuals per 100 km² is 64 for the coastal groups, and 79 for all the Virginia Algonquians, Turner (1976:162) concludes that his data indicate "the high density recorded for the lower Northern Neck was a

recent phenomenon resulting from the rapid expansion of the [Powhatan] chiefdom."

If one considers village and hamlet as reflecting the werowance's settlement and a settlement without a resident werowance, respectively, then the settlement pattern observed on John Smith's map along the northern Rappahannock River conforms to Binford's (1964:87, 145) "village-hamlet continuum" (see Figure 1). The map delineates the relatively even spacing of the werowances' villages for five petty chiefdoms, with intervening villages and house clusters or hamlets. The Wicocomoco and Matchotic settlement patterns represent village-hamlet clusters (Binford 1964:87, 145), each consisting of a werowance's village and single, nearly satellite village or hamlet. The settlement pattern of the Potomac and Toag chiefdoms reflects a dispersed, linear stream pattern of a werowance's village and several outlying hamlets. The Potomacs' village and nine hamlets were found on both banks of Potomac Creek and Aquia Creek. The Toags' village and three hamlets were situated along the southern shore of the Potomac River, in the vicinity of present-day Alexandria, Virginia. The werowance's village of the Chicacoan represents a village isolate, lacking any satellite villages or hamlets (Binford 1964:145).

5. SUBSISTENCE

a) Slash-and-Burn Subsistence Cultivation, Soils, and Corn Estimates

In A.D. 1607, the subsistence economy of the Algonquian chiefdoms existing in the Coastal Plain of Virginia was based, in part, on

slash-and-burn cultivation. Varieties of maize, beans, squash, pumpkins, gourds, sunflower, and tobacco were grown by the natives, with the greatest emphasis on maize production (Feest 1978a:258; Wright and Freund 1953:118-121). The best land for plant husbandry was "known by the vesture it beareth, as by the greatnesse of trees or abundance of weedes, etc." (Smith 1910a:49).

The Virginia Algonquians prepared their fields by girdling the trees near the roots and then scorching the trunks with fire to prevent any further growth (Smith 1910b:49). Once dead, most large trees were cut down (Spelman 1910:cxi). However, not all dead trees were cut down, as observed by Smith (1910d:952):

Betwixt those trees they plant their corne, whose great bodies doe defend it from extreme gusts, and heat of the sunne; what that in the plaines, where the trees by time they have consumed, is subject to both: and this is the most easie way to have pasture and corne Fields, which is much more Fertile than the other.

After a year, the area around the dead trees and stumps was worked up by the men, with a wooden hoe-like tool (Smith 1910b:62). Then, using a dibble, or digging stick, the women made holes in the prepared ground in each of which four maize kernels and two bean seeds were dropped (Smith 1910b:62). This practice of planting beans and maize together would have aided in replenishing the nitrogen content of the soil. Hans Jenny has noted that "continuous cropping of corn has a destructive effect on soil fertility, whereas the intensive use of legumes will preserve the original nitrogen content or may even increase it" (1941:257). The Virginia Algonquians never manured their overworn fields, which were few, because the ground was so fertile,

for the most part (Smith 1910d:952).

It is doubtful that more than superficial destruction occurred to the humic material and soil micro-organism population due to the low-intensity, controlled firing of the plots being prepared for cultivation. Any burning of the humus which did occur contributed to the immediate availability of nutrients, and the death of micro-organisms would result in the release of their materials as nutrients and humic resources (Limbrej 1975:118-119). Erosion was retarded by allowing some dead trees to stand, and leaving stumps in place. The roots and stumps decaying in the soil would have also provided a longer period of reserve nutrients, being released slowly into the soil over a number of years and compensating for the losses due to forest clearance and cropping (Limbrej 1975:124).

There were two types of fields maintained for plant husbandry by the Virginia Algonquians. The larger fields ranged from 20 to over 200 acres (8 to 81 ha) per community, according to Smith (1910b:67; 1910c:363). In these fields were planted maize and some beans. The small plots, or household gardens, were from 100 to 200 feet on a side (30 to 61 m) and contained the other cultigens grown by the Indians (Wright and Freund 1953:79). These gardens were commonly interspersed between the individual dwellings.

Due to the heavy dependence by the Algonquians on maize production, it is of interest to examine the soil characteristics most suitable to its growth. Although maize can grow in soil with a pH from 5.0 to 8.0, yields are usually adversely affected by acidity

below a pH of 5.5 (U.S.D.A. 1938:757-758). In terms of natural fertility, moderately heavy clay loam, silt loam, or fine sandy loam is best suited for maize agriculture in most areas (Wilson 1955:647).

From the perspective of prehistoric technology, clayey soils would not have been suitable for digging stick and hoe cultivation. Nor would extremely light, sandy soils have been conducive to aboriginal maize production because of the necessity of adding commercial fertilizers and their low capacity to retain water (Ward 1965:43).

It has been proposed (Turner 1976:31) that the soils most suited for late prehistoric agriculture within the Virginia Coastal Plain were the Class I soils. These are presently the best agricultural soils in the region. The Class I soils have few limitations that restrict their use and are moderately deep, well-drained and nearly level. In addition, they are easily worked and have a moderately high capacity to hold moisture. The soils are medium to low in organic matter, and can be maintained at high productivity under continuous cultivation if adequate fertilization and good management are followed (Elder et al. 1963:24). Good management practices include crop rotation and the application of fertilizer and lime, none of which were practiced by the Virginia Algonquians (the addition of wood ash to the soil as a by-product of slash-and-burn techniques may have increased pH, but this was not a conscious management practice and the ash was not spread over the plots).

Turner (1976:31) posits that the distribution of Class I soils, currently restricted "to a very large extent to narrow strips bordering

the major rivers and streams of the region," confined the late prehistoric settlements of the Tidewater to these areas. In Northumberland and Lancaster Counties, the Class I soils are the Kempsville fine sandy loam, nearly level (1.4% of the total soil in the county), Matapeake silt loam, nearly level (5.9% total soil), and Sassafras fine sandy loam, nearly level (10% total soil) (Elder et al. 1963:24). Most of the Class I Kempsville fine sandy loam, nearly level, and the Sassafras fine sandy loam soil occur in the uplands, and not in the necklands containing the first and second terraces bordering the streams and rivers. It would seem therefore, that the use of soil class as a predictive device for late prehistoric settlement locations in the lower Northern Neck is too general. On the other hand, the soil type, in most instances, is too specific. The soils have evolved since A.D. 1607; and, while the Indians used general criteria for the selection of agricultural soils, they did not use Sudbury soil test kits.

However, the concept of soil association would seem to be of some value in predicting late prehistoric site locations. A soil association is a group of defined and named soil units, containing a few major soil types and several minor ones, which occur together in a characteristic, though not strictly uniform, pattern. The soil associations are named for the major soil types within them. The major soil type for one soil association may also be present in other areas, but in a different pattern and proportion (Elder et al. 1963:18).

Using John Smith's map of Virginia, an attempt was made to correlate the approximate locations of historic Algonquian village

sites with the soil associations on the general soil map for Northumberland and Lancaster Counties. Three soil associations containing soils favorable to slash-and-burn maize cultivation are found in the vicinity of the general village locales in significantly higher proportions relative to their overall distributions within the two-county area. These associations are the Mattapex-Bertie, Matapeake-Mattapex, and Woodstown-Dragston. The Mattapex-Bertie association covers 10% of Northumberland County and 7.5% of Lancaster. It is made up of the following soil types: 35% Mattapex, 25% Bertie, 15% Woodstown, 10% Steep and Sloping lands, and 15% other soil types. The Matapeake-Mattapex association covers 7.5% of Northumberland and a few small areas in the southeastern part of Lancaster County. This association includes 60% Matapeake, 25% Mattapex, 5% Bertie, 5% Steep and Sloping lands, and 5% other soils. The Woodstown-Dragston association covers 10% of Northumberland County and 15% of Lancaster County, and is composed of 35% Woodstown, 20% Dragston, 15% Mattapex, 10% Steep and Sloping lands, and 20% other soils (Elder et al. 1963:20-21).

The approximate location of the Chicacoan village, near or east of the L-shaped bend in the Coan River, is in an area of the Mattapex-Bertie association. The village of Wicocomoco was situated near the head of the Little Wicomico River. The soil association in this area most conducive to slash-and-burn maize agriculture is the Matapeake-Mattapex association. The satellite village of Cinquack was located along Cockrell Creek, an area of Mattapex-Bertie association.

The five villages of the Cuttatawomen I were apparently distributed along the banks of the lower half of the Corrotoman River and along Carter Creek and Eastern Branch. This area consists mainly of the Woodstown-Dragston and Mattapex-Bertie associations.

Turner's statement (1976:31) that the Class I soils occur mainly along the second alluvial bottoms, bordering the rivers and streams, does not hold for Northumberland and Lancaster Counties. The soils here which occur with the greatest frequency in the necklands containing the first and second terraces are the Class II soils. Such soil types as the Mattapex silt loam, Woodstown fine sandy loam and Local alluvial land (all Class II soils) occur exclusively in the necklands, along with the Class I Matapeake silt loam soil. The remaining Class I soils occur in the uplands (Elder et al. 1963:24).

Relatively speaking, most Class I soils, taken as a whole, are more productive than most Class II soils; but the category of soil Class is so broad, it masks important similarities and differences. Reference to Table 3 will reveal that for Northumberland and Lancaster Counties the three best Class II soils match the corn yields for the three best Class I soils, regardless of land management. An important difference between certain Class II and Class I soils is in their productivity during periods of drought. In the lower Northern Neck, the Class II Mattapex and Woodstown soils "are among the best soils in the area, and they may be cropped intensively" (Elder et al. 1963:25). Although they are slightly less well-drained than the Sassafras and Kempsville Class I soils, in dry years the Mattapex and Woodstown

Table 3. Comparison of Estimated Productivity Ratings of Corn for the Three Best Class I and Class II Soils (Elder et al. 1963).

Class I soils	Corn 100=50 bushels per acre	
	Ordinary land management	Improved land management
Kempsville fine sandy loam, nearly level	120	170
Matapeake silt loam, nearly level	130	200
Sassafras fine sandy loam, nearly level	120	180
Class II soils		
Mattapex silt loam	120	180
Woodstown fine sandy loam	120	170
Local alluvial land	130	200

soils are more productive of corn and soybeans. They are medium in natural fertility, easy to cultivate, and slightly to strongly acid, with the Mattapex soil having a higher pH that is more suitable for optimum corn growth. Similarly, the Matapeake Class I soil is particularly favorable for corn because it has a greater capacity to supply the moisture corn needs during the growing season (Elder et al. 1963:24-25).

Deficient rainfall in the summer and fall seriously damage crops in the lower Northern Neck one year out of every three, as previously discussed in Chapter I. Such droughts seldom last long enough to affect all crops grown in a particular season. Yet, longer periods of drought do occur. An historical account documents a six-year drought in Tidewater Virginia, during the late 1560s to about A.D. 1570, which forced the native populations to disperse (Lewis and Loomie 1953:39-41, 89). Another "great drought" was recorded by Samuel Argall and John Rolfe for the year A.D. 1618 (Smith 1910c:536).

"A basic principle of ecological analysis states that communities of organisms adapt to the minimum life-sustaining conditions in their habitats rather than to average conditions" (Harris 1975:239). If droughts occurred in the frequency of one out of every three years during the Protohistoric-Historic Period, as they do today in the lower Northern Neck, then the Indians would have had to adapt to such agriculturally limiting environmental conditions. One means of doing so would have been to locate the majority of their agricultural plots in the necklands where the Mattapex-Bertie, Matapeake-Mattapex and

Woodstown-Dragston soil associations occur. These associations contain the greatest percentage of easily tilled loams that are more productive of corn during periods of drought. They also contain the greatest percentage of loams yielding the largest amount of corn of any of the soils found on the stream terraces of the coastal necklands. Therefore, it is posited that the agricultural fields and villages of the Chicacoan, Wicocomoco, Cuttatawomen I, and Moratico were located mainly on the broad terraces of the necklands, in catchment areas containing high percentages of the Mattapex-Bertie, Matapeake-Mattapex and Woodstown-Dragston soil associations, relative to their occurrence in the subregion as a whole (and taking into consideration other determinants of village location).

As one moves up the Northern Neck, toward the fall line, some of the soil associations change. However, soil associations having properties similar to those already discussed for the soil associations of Northumberland and Lancaster Counties are proposed to have been chosen for slash-and-burn maize cultivation for the same reasons. In Richmond and Westmoreland Counties, soil associations containing significantly high percentages of State and Tetotum soils would have been best (John C. Nicholson 1979:personal communication). In King George and Stafford Counties, the Wickham-Altavista-Dogue and Tetotum-Bladen-Bertie soil associations would probably have been best for slash-and-burn subsistence cultivation (Isgrig and Strobel 1974:5-7).

To estimate maize yields, Turner (1976:182-187) used data from primary historical sources. His computations were designed to give

conservative estimates. A figure of 0.75 acre (0.3 ha) of land under cultivation per person per year seemed to him the most reasonable approximation when compared to Smith's accounts (Turner 1976:182-184; Smith 1910b:67; 1910c:363, 541). For the Chicacoan, with a population of 120 to 130, this would mean between 90 to 100 acres (36 to 41 ha) under cultivation per year.

To derive an estimate for the amount of maize per acre, Turner's primary data come from observations by John Smith and William Strachey. Smith (1910b:62) mentions that one stalk of corn averaged two ears, bearing between 200 and 500 grains. Strachey (Wright and Freund 1953:118) writes that the corn plants were spaced four or five feet apart. Utilizing this information, Turner (1976:184-185) assumed each maize plant was spaced four feet apart, produced two ears, and yielded 300 kernels per ear (this is a conservative estimate, since four kernels were planted per hole and more than one corn plant can grow in the same hole). This results in 20 bushels (705 l) of shelled maize per acre, or 15 bushels (529 l) of maize per person per year. In turn, this accords well with Smith's (1910c:541) estimates of 12 to 32 bushels (423 to 1,128 l) of maize per acre, which averages out to 22 bushels (775 l) of maize per acre. Applying the estimate of 15 bushels (529 l) of maize per person to the Chicacoan population of from 120 to 130, a range of 1,800 to 2,000 bushels (63,428 to 70,476 l) of maize would have been produced on an average, each year.

It is clear from Turner's (1976:182-187) analysis that maize contributed 50% or more to the yearly subsistence of the Virginia

Algonquians. Conservatively, it can at least be said that Algonquians in Virginia's Coastal Plain were observed consuming maize, in various forms, throughout most of the year (Turner 1976:179-182). In addition, when the English could not get all the maize they wanted from the Powhatan chiefdom, they found it easier to get it from groups outside the Powhatan chiefdom, such as the Chickahominy, the chiefdoms along the Potomac River, or in Southside Virginia (Feest 1966:74-75).

The English observations on the scarcity of maize in the Powhatan chiefdom during late winter and spring may have resulted from several factors. Although the most obvious factor would appear to be insufficient crop yields, perhaps, the effects of heavy tributes to the werowances and to Powhatan may have drained off any surpluses from the commoners, leaving them with no extra maize to trade with the English, and still sustain themselves (Feest 1966:80). Or, as Turner (1976:181) has suggested, member groups of the Powhatan chiefdom "may have, on occasion, intentionally misled the English about the availability of maize and other domesticates since they may have had enough for year-round consumption though not sufficient for extensive trade with the English."

b) The Seasonal Round

The Virginia Algonquians divided the year into five seasons. The winter was called Popanow; the spring was Cattapeuk; the summer was Cohattayough; the "earring" of the maize was Nepinough; and the harvest and fall of the leaf was Taquitock (Smith 1910b:61).

Late fall and winter was the time of the major deer hunts. They

usually took place inland, near the fall line, since deer were less plentiful in the coastal areas (Smith 1910b:59, 69-70). Once a favorable hunting spot had been chosen, the women followed after the men and set up the base camp. Apparently, some of the children also went along. Articles brought by the women included mats for the hunting lodges and wooden mortars, as well as provisions such as maize and acorns. The temporary living quarters consisted of small, arbor-like and circular structures covered with mats. These were erected by the women (Wright and Freund 1953:82; Smith 1910b:70). Sometimes as many as 200 or 300 men from different petty chiefdoms participated in communal deer hunts. Drives and fire surrounds were the most common techniques employed (Smith 1910c:365-366).

Other animals known to have been taken during the late fall and winter were rabbits, bears, turkeys and a multitude of waterfowl, such as swans, cranes, geese, ducks and mallards (Smith 1910a:13, 23; 1910b:133; 1910c:449-450; Turner 1972:71). Strachey (Wright and Freund 1953:128) notes that oysters were smoked for year-round consumption. Similarly, Smith (1910b:63, 68) mentions the smoking or drying of fish, which preserved it a month or more. The consumption of oysters, both fresh and dried, is documented for December, January and February, while fish were served at feasts during December and January (Smith 1910c:449).

Walnuts, chestnuts, acorns and chinquapins harvested during the fall were dried to keep and served as staples through the winter and into spring (Smith 1910b:57, 68; Archer 1910:xlvi). Bread made from

the flour of maize was served to the English on occasions in December and January (Smith 1910b:133; 1910c:359, 449-450). English expeditions throughout the territories of the Tidewater Algonquians acquired corn, either by trade or force, during November, December, January, February and even into early March (Smith 1910a:11-12, 31; 1910b:103, 138, 146-147; 1910c:404-406, 451, 454, 542).

"In March and Aprill they live much upon their fishing weares; and feed on fish, Turkies and squirrels" (Smith 1910b:68). Solitary deer were also taken (Smith 1910a:31). In the latter part of April and into May and June, strawberries, raspberries, blackberries and huckleberries were gathered (Smith 1910b:58, 68; Wright and Freund 1953:121). Herbs were also collected during this time (Smith 1910b:58).

Percy (Quinn 1967:8-9) wrote that on April 27, 1607,

We came to a place where they [the Indians] had made a great fire, and had been newly roasting oysters. When they perceived our coming, they fled away to the mountains, and left many of the oysters in the fire. We ate some of the oysters, which were very large and delicate in taste.

April and May were probably the peak months for catching anadromous fish, although accounts of considerable numbers of anadromous fish are mentioned for June (Smith 1910b:113). They would have remained an important dietary item through August, although sturgeon runs are noted until mid-September (Smith 1910b:68; Turner 1972:73). Marine fish would have been most abundant from March through September (Binford 1964:42-44).

"In April they begin to plant, but their chiefe plantation is in May, and so they continue till the midst of June" (Smith 1910b:62).

During the month of May, Archer (1910:xlⁱⁱ, xl^{viii}, xl^{ix}) mentioned the following items as being served by the Indians to the English: walnuts, mulberries, strawberries, raspberries, parched maize, "sodd" beans, "wheate [maize], beanes and mulberyes sodd together," dried oysters, tortoise, fish and deer. The walnuts, maize and beans would have had to have been stored items harvested the previous year, since walnuts are gathered in the fall, and the maize and bean crops were planted in May (Smith 1910b:62; Archer 1907:375). Smith (1910b:68) wrote: "In May and June they plant their fieldes; and live most of Acornes, walnuts and fish. But to mend their diet, some disperse themselves in small companies, and live upon fish, beasts, crabs, oysters, land Torteyses, strawberries, mulberries, and such like." Edible wild roots, called Tuckahoe, were gathered in the marshlands from June through August. Green maize was also eaten during this time (Smith 1910b:68; 1910c:363).

As the summer months wore on, more plant domesticates were gathered. By the end of July, squashes, gourds and beans were available. These same crops were also available through August and into September, along with pumpkins (Smith 1910b:63; Wright and Freund 1953:79; Archer 1907:375).

"From September untill the midst of November are the chiefe Feasts and sacrifice. Then have they plenty of fruits as well planted as naturall, as corne greene and ripe, fish, fowle, and wilde beastes exceeding fat" (Smith 1910b:61). Mature maize was harvested in September and October. Acorns, chestnuts, hickory nuts, walnuts and

other nuts were gathered and stored for the winter. By late October and November, waterfowl, deer, turkeys, rabbits and bear were, once again, taken in greater numbers (Smith 1910a:11-12, 13; 1910b:57; Turner 1972:71).

Thus, the village was the center of most social and cultural activities from September through the middle of November. In the latter half of November the village population broke up, with mainly old men, women and children staying in the village, while the men, with some women and children, established hunting base camps in the interiors of the peninsulas, near the fall line. Such winter hunts among the Powhatan chiefdom involved men from several petty chiefdoms. When John Smith was taken captive by Opechancanough in December, 1607, Opechancanough was leading a hunting party of 200 men from Paspahugh, Chickahominy, Youghtanund, Pamunkey, Mattaponi, and Kiskiack (Smith 1910a:15, 37). It is not known if such large, communal hunts took place among the petty chiefdoms of the Northern Neck.

Although the major hunts occurred primarily during the late fall and winter months, hunting parties from particular villages are mentioned for other times of the year. Percy (Quinn 1967:17) recorded the following for May 19, 1607: "At length we came to a savage town, where we found but few people. They told us the rest were gone a hunting with the Werowance of Paspaha [Paspahugh]." In a similar vein, several of the Jamestown colonists noted that the people of Payankatank, a coastal chiefdom of the Middle Peninsula, "were most a hunting, save a few old men, women and children, that were tending

their corne. . ." (Smith 1910c:430). This observation was made during late August or early September of 1608. Several days later, but prior to September 7, 1608, the same party of Englishmen went to a village of the Nansemond, where they were told by a native that most of the people were away hunting. It is possible this was a ruse on the Indians' part, since shortly after being told this the English were attacked by a large party of Indians, further upriver (Smith 1910c:432-433).

By late winter or early spring, the majority of the people would return to the villages. The agricultural fields and garden plots were worked up, and the men probably cleared any new agricultural lands at this time. Once most of the planting was under way, part of the village populace would break up into smaller groups, to subsist upon fishing, and gathering oysters, berries and opportunistic quarry, such as terrapins and tortoise. From the accounts previously mentioned, some group hunting was conducted during late spring and late summer. If the hunting, fishing, or gathering activities were taking place farther than a convenient day's journey to and from the village, or were going to last awhile, camps were established. Most of the village populace would, again, be resident by the latter half of September.

6. THE CHICACOAN, CIRCA A.D. 1608: A SUMMARY

The first person to attempt to determine the location of the Chicacoan (Secacawoni or Cekekawwon) village shown on John Smith's map was Thomas Jefferson (1802:128-129). He proposed a location somewhere

along the Coan River. Following Jefferson's lead, Swanton (1952:69) and McCary (1957:6) placed the werowance's village on the Coan River. Barbour (1971:299), however, put the Chicacoan on Cherry Point Neck, which is to the west of the Coan River. No explanation was offered for this departure from Jefferson, Swanton, and McCary, but it can be refuted on two counts. First, comparing Smith's map of Virginia to a modern map (Figure 4), it will be observed that the Chicacoan village is located east of the first major drainage upriver from the mouth of the Potomac, which is the Coan River. Or, one can use Nomini Creek and Bay as a point of reference, the distinctive outline of which is readily recognizable on Smith's map. The werowance's village for the Matchotic (Onawmanient) was located along the west bank of Nomini Creek, which Barbour (1971:294) also agrees was the site of this village. Counting Nomini Creek as the first drainage and then proceeding down the Potomac to the fourth drainage, one is, again, at the Coan River. Also, historical accounts indicate that the first permanent English settler in Northumberland County settled along the east bank of the Coan River, on land he bought from the werowance of the Chicacoan Indians (Potter 1976a:40).

Chicacoan political organization was based on kinship. The major status position was that of werowance, or chief, which was inherited matrilineally. Although no satellite villages or hamlets are recorded for the Chicacoan, it is still possible that positions of lesser werowance, or sub-chief, existed. The nonchiefly status positions were cockarouse or advisor to the werowance, shaman, and priest. The

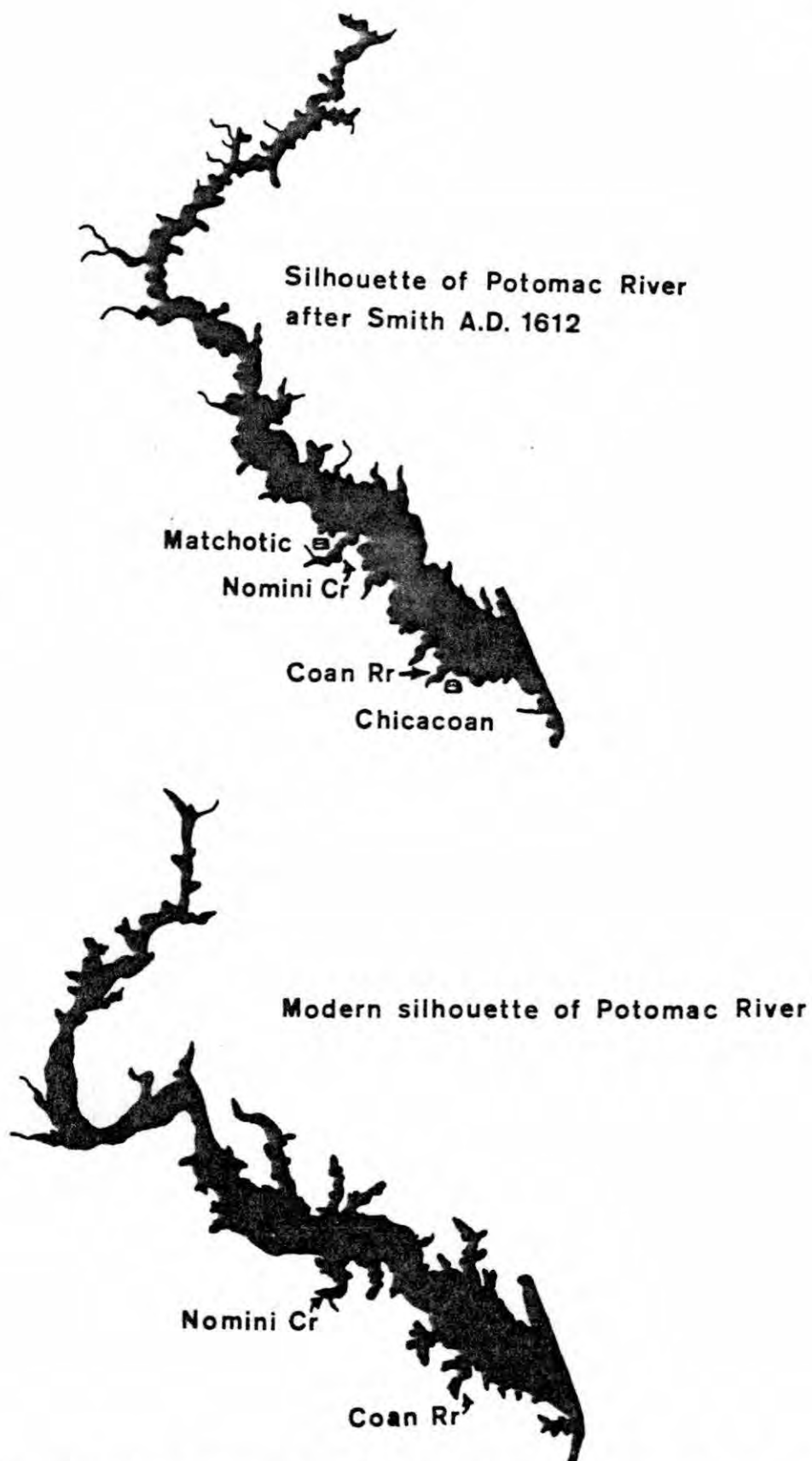


Figure 4. Approximate location of the Chicacoan village based upon a comparison of Smith's Map of Virginia to a modern map.

number of cockarouses cannot be estimated. Of shamans and priests, there were probably at least two or three to act as healers, perform various ceremonies, advise on war, and maintain the mortuary temple. A system of tribute collection supported the werowance, his family, lesser werowances and their families, and the priests. The tribute also provided for communal feasts, religious activities, entertaining visiting personages, and sealing alliances with other groups. Commoners and any war captives, respectively, would have made up the bottom two rungs of the status ladder.

The political relationship of the Chicacoan to the Powhatan chiefdom was probably as a marginal, semiautonomous petty chiefdom. Information on the Chicacoan's political relationships with other Northern Neck chiefdoms is scanty. The Chicacoan apparently dealt with neighboring petty chiefdoms on an individual and independent basis. There is no evidence to indicate that they were involved in interchiefdom hostilities. Political relationships across the Potomac River, with the Yaocomaco of the Conoy group, were probably peaceful. At least historical records for the early A.D. 1650s indicate amicable cultural relationships across the Potomac (Gary W. Stone 1979:personal communication). Indeed, the only group with whom the Chicacoan may have had hostile dealings were the "Massawomecks" (probably the Seneca Iroquois). The "Massawomecks" are known to have raided the Algonquian groups of the Patuxent River, the Conoy, and the Potomac chiefdom. As a Manahoac Indian vividly related to John Smith (1910c:428), "The Massawomeks did dwell upon a great water, and had many boats, and so

many men that they made warre with all the world."

The total number of Chicacoan warriors was put at 30 by both John Smith and William Strachey. This would suggest an overall population of 120 to 130 people. Average household size would have been between eight and 10 individuals, or about 11 to 16 households living in as many longhouses. Add to this the werowance's longhouse, at least one storehouse for the werowance, and the mortuary temple, and there were probably a total of between 15 to 19 longhouse structures. Ancillary storage units, sweathouses, and menstrual huts would also have been part of the village make-up.

Probably not all of the village structures were clustered. Rather, most of the longhouses were dispersed, with maybe a few clustering around the werowance's longhouse and storehouse. Any longhouses clustered near the werowance's house may have represented an overt display of close kinship to the chief along matrilineal lines. Thus, the areal extent of the village was large because the village population was dispersed. Occasional raids by the "Massawomecks," for example, probably would not have caused a major alteration in this type of village settlement pattern. If, however, occasional raids were a concern (as opposed to organized or conquest warfare) then a palisade may have been constructed around the werowance's longhouse, storehouse, a few other structures, and perhaps the mortuary temple. The preponderance of the longhouses would have remained dispersed outside this "fortified core" (Binford 1964:144; cf. Wright 1968:177).

The Chicacoan village was probably located near the Coan River, along its eastern bank. It may have been situated on a rise adjacent to or within the terraced necklands. Fresh water springs or streams would have also been nearby. The village's catchment area would probably have contained some marshlands, as well as significantly high proportions (relative to the subregion as a whole) of Mattapex-Bertie, Matapeake-Mattapex, and/or Woodstown-Dragston soil associations. The village would not have been located along the Potomac River shoreline, due to the extreme exposure to storms and colder winter temperatures.

To support the village population, about 90 to 100 acres (36 to 41 ha) of maize would have to have been under cultivation per year. This would have resulted in 1,800 to 2,000 bushels (63,428 to 70,476 l) of maize per year, or 15 bushels (529 l) per person. This information, plus the historical records on the Virginia Algonquians, indicates that 50% or more of the total subsistence needs of the Chicacoan may have come from maize alone.

Archeologically, the remains of the early seventeenth century Chicacoan will probably be somewhat sparse, since we are dealing with the accumulated debris of a small population probably spread out over a relatively large area. The village should be visible as a horizontally extensive, but vertically shallow, midden. Midden soil discoloration and artifact density will vary considerably within the village site. If a clustered area or a "fortified core" existed, this should appear as an area of dark midden whose outward perimeter should approximate the periphery of the cluster or the palisade line. A high

artifact density might also be expected within the dark midden. Other small midden stains and artifact clusters, representing the dispersion of longhouses outside any possible core area, may lie scattered over an extensive area.

Chicacoan gathering/hunting sites will present a different set of problems in archeological identification. Shell middens will be the most obvious of gathering sites. If an oyster bar was within a convenient day's journey of the village then the main activities conducted at the site were probably extractive. Consequently, one should expect the archeological remains to reflect those activities associated with gathering and consuming molluscs and, perhaps, other aquatic resources, as well as limited hunting and gathering of resources within the immediate site environment. Percy (Quinn 1967:8-9) describes visiting such a site on April 27, 1607. If, on the other hand, people were living on a site, in addition to gathering and consuming molluscs, then archeological evidence of both camping and extractive activities should be present. Sites of this nature would have been created when some of the village population would break up into small kin groups to live off marine resources, as was common in May and June. In consequence, such a shell midden should yield a greater diversity of archeological remains, as opposed to a shell midden that served primarily as an extractive site.

Archeological evidence of late fall and winter hunting base camps will probably be found quite some distance outside the village's catchment area, in the interior uplands. Other limited activity sites

may be recognizable archeologically, depending upon the nature and number of different activities which took place there, and how often the site may have been revisited.

7. SOME HYPOTHESES

The review and analysis of the ethnohistorical data offer the opportunity to discuss and elaborate upon two hypotheses proposed by Turner (1976). One hypothesis concerns ". . . discrepancies between warrior counts or house counts in a settlement to the projected population estimates based on the number of settlements in a district [petty chiefdom]. . . ." (Turner 1976:165-166). In an earlier work, Feest (1973:73) noted that John Smith's population estimate of 130 warriors for the Wicocomoco seemed too high given that only two villages -- a werowance's village and a satellite village -- are shown on Smith's map. Yet, such a warrior count is not too high when compared to later Wicocomoco population estimates (Feest 1973:76). Therefore, Feest (1973:73) reasoned that either the Wicocomoco villages were larger than most other Virginia Algonquian villages, or Smith's map was inaccurate and did not show all of the Wicocomoco's villages.

Turner (1976:166) suggested that such discrepancies existed not only for the Wicocomoco but for the Chicacoan, Matchotic, Kiskiack, Nansemond, Chesapeake, Accomac and Acohanock. All of these petty chiefdoms were located in the coastal areas of the Tidewater. Due to the existence of eight cases illustrating discrepancies between total

population estimates and a comparatively small number of total settlements, the situation was considered to be one actually observed by Captain John Smith, and not the result of inflated warrior counts or inaccurate recording of village locations in the coastal zone. To explain the apparent coastal zone pattern of presumably larger werowances' villages and fewer satellite villages or hamlets, Turner (1976:166-167) posited an ecological explanation. He noted that land fauna are less common along the coast than they are further inland, perhaps offering less of a reason to disperse the populations of a petty chiefdom to exploit these resources. Oyster banks, however, are usually large and densely packed, suggesting fewer and larger settlements would be more adaptive along the coast.

There are some difficulties with Turner's explanation, however. If the populations of the interior Coastal Plain were dispersed into a greater number of smaller villages as a more efficient means of exploiting the more numerous land fauna of the interior, then what was the reason for having hunting base camps in the interior (see this chapter, Section 5b)? And, although the proximity of estuarine resources, such as oysters, probably was a factor in site selection, it need not have been a cause of concentrated populations in the estuarine Coastal Plain. The ethnohistorical accounts specifically mention that the village populations dispersed into small groups in order to subsist upon molluscs and other estuarine resources (see this chapter, Section 5b).

I would suggest, therefore, that topography, and the intensity

and frequency of shifting sociopolitical boundaries were at least two of the factors which influenced settlement patterns in the estuarine Coastal Plain. As one nears the coastal areas of Chesapeake Bay, the lower terraces along the rivers become much wider. The shorelines also become more broken with small estuaries, coves and embayments. The broad and expansive necklands adjacent to such areas would be conducive to the dispersion of longhouses over a large area and, yet, still give the inhabitants a sense (one suspects) of belonging to a discrete settlement.

As has already been mentioned, the expansion of the Powhatan chiefdom seems to have been from the fall line of the James River and the head of the York River eastward to the coast. One ethnohistorical case and five archeological examples of palisaded villages were documented. All such structures occurred along the boundary between the Algonquian and Siouan speakers, or along known political subdivisions within the Algonquian groups, themselves. Therefore, the intensity and frequency of raids or warfare appear to have been greatest near the falls of the four major Tidewater rivers or along the expanding sociopolitical bounds of the Powhatan chiefdom. In the southern coastal area of Tidewater Virginia raiding and warfare do not appear to have been as frequent, nor as intense, until shortly before, or at the time, Jamestown was settled. The coastal areas of the Northern Neck and the southern Eastern Shore appear to have been subject to a relatively low incidence of raids or warfare. Consequently, there would have been little reason to have nucleated

settlement in these areas.

I further hypothesize that the areal extent of the protohistoric and contact period werowances' villages of the coastal areas of the Virginia Tidewater was large because the village populations were internally dispersed. These villages are posited to have been located on the broad necklands of the first and second terraces along water-courses near optimum areas for exploiting aquatic resources and where significantly high percentages (relative to the subregion as a whole) of silt loam and sandy loam soils conducive to slash-and-burn subsistence cultivation were concentrated. Further, it is proposed that locally arable soils and wood supplies for fuel and building would have been depleted more slowly if the individual longhouses of a village were dispersed than if the village was nucleated. Also, if grass and weed infestation of the agricultural plots is considered a constant, then dispersed villages would have shifted to new locations less frequently than nucleated villages.

If this hypothesis is correct, then it should follow that the coastal settlement pattern of fewer and larger settlements would hold for the Moratico and Cuttatawomen I, since their territory was in the estuarine zone of the Coastal Plain, along the north bank of the lower Rappahannock River. Yet, the settlement patterns for these two petty chiefdoms, as shown on Smith's map of Virginia (Figure 1), are quite different from the settlement pattern hypothesized for coastal chiefdoms.

This is clearly illustrated when the Moratico and Cuttatawomen I

settlement patterns are compared to other Northern Neck chiefdoms whose territory was in the coastal area. The Moratico and Cuttatawomen I each had a werowance's village and four or five satellite villages. The Moratico had an estimated population of 340 people and the Cuttatawomen I 210. In comparison, the Chicacoan had a single village of 130 people. The Wicocomoco and Matchotic each had a werowance's village and one nearby satellite village, with estimated populations of 550 and 425, respectively. In sum, the Moratico and Cuttatawomen I each had from three to five more villages than the Chicacoan, Wicocomoco or Matchotic. And, yet, the Moratico and Cuttatawomen I had smaller total populations than the Wicocomoco and Matchotic.

A possible explanation for this difference lies in an elaboration of another hypothesis proposed by Turner (1976:85-86). Data on the differential distribution and frequency of various resources, particularly anadromous fish, wild flora, and Class I soils, were used to hypothesize that the highest population densities in Tidewater Virginia would first occur in the transition zone, in the vicinity of the Pamunkey and Mattaponi Rivers. By the Protohistoric Period "Rapid population growth would be expected in the Lower [sic] Northern Neck with densities here perhaps surpassing other areas of the chiefdom, coastal and inland. . . ." (Turner 1976:162). His primary reason for this was the large amounts of Class I soils found in the Northern Neck.

Turner's (1976:161) test of this hypothesis has already been discussed in the section on settlement patterns. To recapitulate, Turner expanded upon Speck's (1925:36) proposition that the large

number of settlements along the north bank of the Rappahannock River was the result of some of the Rappahannock River groups moving from the Middle Peninsula across to the Northern Neck. Ostensibly, this was done so that the river would lie between these groups and the expanding Powhatan chiefdom. Using population densities based upon ethnohistorical estimates, Turner (1976:160-162) found that the lower Middle Peninsula had the lowest population density (26 people per 100 km²) of any subregion in Tidewater Virginia. Conversely, the lower Northern Neck had the highest population density (124 people per 100 km²). It would seem, therefore, that the rapid expansion of the Powhatan chiefdom resulted in an increase in the population and village density along the Rappahannock River's north bank, in the Northern Neck.

Why, then, do the settlement patterns of the Moratico and Cuttatawomen I differ from the patterns observed for the Wicocomoco and Matchotic, when they are all located in the coastal area? If, as Turner's analysis suggests, there was population movement from the south bank of the Rappahannock River to the north, during protohistoric times, I hypothesize that the resulting increase in population density stimulated the dispersal of the chiefdoms' populations into satellite villages and outlying hamlets as a means of asserting their respective controls over the narrow bands of prime agricultural lands along the north bank of the Rappahannock River, regardless of whether or not a chiefdom was located in the estuarine or interior Coastal Plain. Prior to the increase in population density along the north shore of

the Rappahannock River, the Moratico and Cuttatawomen I are postulated to have had a settlement pattern similar to the Wicocomoco, Matchotic, or Chicacoan.

CHAPTER III
THE ARCHEOLOGICAL BACKGROUND AND SURVEY

INTRODUCTION

The study area, referred to as the Chicacoan locality, is defined by the Potomac River on the north and a ridge in the interior uplands which marks the head of the Coan, Presley, and Hull drainages, on the south. This ridge corresponds approximately to Virginia State Highway Route 360. The neck of land along the east (right) bank of Hull Creek marks the eastern boundary and the western boundary is the neck of land adjacent to the west (left) bank of the Coan River (Figure 5). This locality encompasses an area of approximately 65 km².

My systematic archeological investigations in the Chicacoan locality began in the spring of 1976 with a three-day reconnaissance and low-altitude aerial flights. During the summer of the same year, nine weeks of archeological survey and test excavations were conducted. In 1978, brief on-the-ground surveys were done periodically throughout the year, along with low-altitude aerial survey. From May 17 to August 16, 1978, excavations took place at three sites: Blue Fish Beach (44NB147), Boathouse Pond (44NB111), and Plum Nelly (44NB128). The next year, a low-altitude aerial survey, with limited on-the-ground confirmation, was done in the spring.

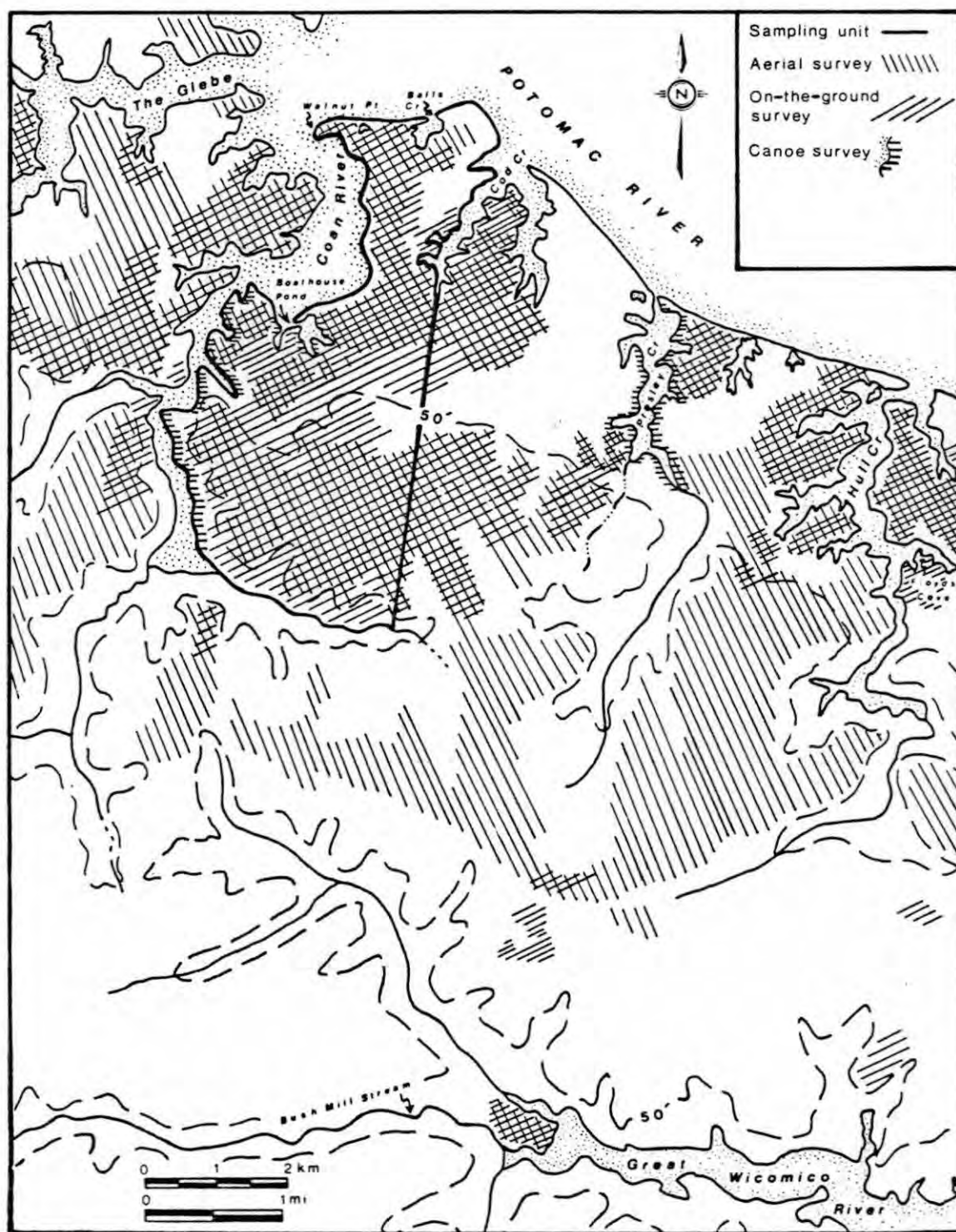


Figure 5. Map of the Chicacoan locality showing sampling unit, areas surveyed, and method used.

In addition to the archeological research within the Chicacoan locality, on-the-ground survey was done at selected spots along the Yeocomico River, the Glebe, and the Little and Great Wicomico Rivers in Northumberland County, Farnham Creek in Richmond County, and the Corrotoman River in Lancaster County (see Figure 2). Low-altitude aerial surveys and photography were done throughout the four counties of Westmoreland, Northumberland, Richmond and Lancaster. Flight coverage was most intense over the area from the Yeocomico River to the Chesapeake Bay and from the Potomac River south to the interior uplands around the headwaters of the Great Wicomico River. A flight was also made along the north bank of the Rappahannock River, starting around Little Carter Creek and thence eastward to the east (left) bank of the Corrotoman River.

A total of 181 archeological sites were recorded during the course of the archeological investigations. These sites are the result of human occupation from as early as 8,000 B.C., during the Dalton Subphase of the Paleo-Indian Period, up to the middle of the nineteenth century A.D. However, because the purpose of the present research is to examine locational changes in Indian occupations during the time A.D. 200 through the seventeenth century, only those archeological sites containing evidence of such occupations will be analyzed. Thus, a total of 56 archeological sites are included in this study.

Many of the archeological sites are multicomponent. Archeological remains from these sites which predate A.D. 200, or belong to historic

Euro- or Afro-American components, will not be described in detail, unless they were recovered during archeological excavation. Such components will be mentioned in the individual site descriptions, but only in brief. Otherwise, detailed descriptions and analyses are provided for those archeological remains associated with Indian occupations from A.D. 200 through the seventeenth century.

General surface collections from predominantly shallow, multi-component sites cannot be assumed to represent contemporaneous artifact assemblages. Such sites are usually a series of contiguous middens blurred into one seemingly homogeneous site due to the overlapping of prehistoric occupations through time and space, and/or the effects of modern agricultural practices. In most instances, only temporally sensitive artifacts, such as points and ceramics, can be determined from surface assemblages to be contemporaneous artifact classes (Steponaitis 1980:9). Consequently, with the exception of the excavated material and some of the controlled surface collections, detailed qualitative and quantitative data on non-diagnostic artifact classes (such as flakes, cores, hammerstones, etc.) will not be presented. Although biased, the data are amenable to the problem of examining site distributions through time.

The first section of this chapter outlines the history of archeology in the Northern Neck, with occasional digressions on the nature, assumptions, and limitations of the various archeological projects. This is followed by a discussion of the survey methodology and techniques. In Section 3, the artifact types used in defining the

temporal occupations of the archeological sites are discussed, along with a descriptive classification for the lithic artifacts. Section 4 deals with the system of site designation and classification used in this study. The final three sections of the chapter present the site and assemblage descriptions from the surface survey.

1. HISTORY OF ARCHEOLOGY IN THE NORTHERN NECK

The earliest recorded archeological exploration in the Northern Neck dates to A.D. 1869. In that year, a party of amateur archeologists from the Shenandoah Valley excavated a multiple burial on Potomac Neck, Stafford County, Virginia (Reynolds 1881:92-94; Stewart 1958). At least 12 skeletons were interred. Unfortunately, it is unknown if the multiple burial was an ossuary. The associated artifacts included five shell maskettes with stylized human faces in bas-relief, rectangular and circular copper plates, tubular copper beads, two copper hawk bells, shell beads, stone pipes, a pottery vessel, and a "cross of white metal of rude construction" (Reynolds 1881:93). Stewart (n.d.:30) places the location of this burial site at the confluence of Accakeek Creek (not to be confused with Accokeek Creek, Maryland) and Potomac Creek, an area known as Indian Point (see Figure 2). This is probably the location of the last phase of occupancy of Potomac Neck by the historic Potomac chiefdom.

Subsequent to the discovery of the multiple burial site and before July of 1891, a single burial was found on the left bank of Accakeek Creek, above Indian Point, on a jut of land called Doug Point

(Holmes et al. 1891). Edward Ruggles of Passapatanzy, Virginia, apparently discovered the small pit which contained a flexed burial. A copper gorget, tubular copper beads, and "numerous needles four or five inches" long were among the artifacts interred with the burial (Holmes et al. 1891). The proximity of this burial to the multiple burial site at Indian Point further strengthens the proposition that Protohistoric and Historic occupations of the Potomac chiefdom were heavily concentrated along this portion of Potomac Neck.

In 1891 and 1892, William Dinwiddie and occasionally W. H. Holmes and Gerard Fowke surveyed sections of the Northern Neck, principally along the shorelines of the lower Potomac River, Chesapeake Bay and the Rappahannock River, from its mouth up to Moratico Creek (Holmes et al. 1891). Their intent was to record the locations of American Indian archeological sites and to collect representative samples of artifacts from the region. Site locations were plotted on maps, but no system of site designation was used. Therefore, in only some cases can the artifact collections be correlated with specific archeological sites. Most commonly, artifact collections were provenienced by stream or creek drainages.

Several points need to be made concerning this survey. First, Holmes and his assistants were very familiar with the accounts of the historic Algonquians contained in Bozman's 1837 History of Maryland and Arber's 1884 edited volume of Captain John Smith, Works, 1608-1631. Second, although Holmes believed some of the oyster shell middens of the south Atlantic coast were of "considerable age," indicating the

"lapse of many centuries," he thought the shell middens along the middle and northern Atlantic were "so nearly homogeneous throughout their mass as to be regarded as representing a rather limited and not seriously interrupted period of occupancy" (Holmes 1907:114). Thus, all of the oyster shell middens discovered during Holmes and Dinwiddie's survey of the Northern Neck were thought to have resulted from occupations by the historic Virginia Algonquians or their immediate ancestors. It is now known that some of the shell middens found throughout the lower Potomac River Valley accumulated as a result of intermittent native occupations from at least the Late Archaic Period to the Historic Period; a time range of about 5,000 years. Consequently, it cannot be assumed, as Dinwiddie did, that the sites located by him were contemporaneous (Holmes et al. 1891).

Dinwiddie jotted down some of his ideas on archeological site locations, and a few of these deserve to be mentioned. For Dinwiddie, the main determinants of "good aboriginal town sites" were: (1) spring water; (2) ease of access to lodges; (3) shallow oyster bars; and (4) quiet navigable water for small boats. He found that all of these factors prevailed in the small creeks, where most of the archeological sites were located. Few of these conditions were present along the shoreline of the Potomac River proper, and Dinwiddie did not find many sites there (Holmes et al. 1891). Unfortunately, he failed to consider the dynamic nature of the Potomac River shoreline over time, and the loss of archeological sites to shoreline erosion.

Even more interesting is Dinwiddie's explanation for the small number of archeological sites found by him along the creeks and rivers that empty into the Chesapeake Bay, between the Potomac and Rappahannock Rivers. With the exception of the length of the Great Wicomico River, Dinwiddie noted that all of the creeks were quite short and emptied into the wide and turbulent Chesapeake, and there were few oyster bars with only very light production (in 1891). Although the Great Wicomico River was much longer, "The depth of water in the Wicomico itself was too great to have admitted of aboriginal oystering, even if bars had existed, but the oyster seems to have found only a limited natural footing here, and the more extensive bars are mostly of artificial propagation [sic]" (Holmes et al. 1891). According to Dinwiddie, such conditions would probably have made these creeks unfavorable sites for aboriginal villages (Holmes et al. 1891).

In the fall of 1935, attention was again drawn to the archeology of Potomac Neck, in Stafford County, Virginia. A young amateur named Carl Manson told Judge William Graham of his discovery of Indian burials near Potomac Creek. For the next two years, Graham and his associates excavated several ossuaries and portions of a Late Woodland-Protohistoric village at this location, later named the Potomac Creek Site (see Figure 2). In 1938, Dr. T. Dale Stewart, a physical anthropologist with the Smithsonian Institution, began more systematic excavations. Digs were conducted over three field seasons by Stewart at the Potomac Creek Site, the last ending in 1940 (Stewart n.d.:5-6). Originally thought to be the historic Algonquian village

of Patawomeck, or Patawomeke (Schmitt 1965; Stewart 1939), it seems likely that the Potomac Creek Site represents a village occupied shortly before contact with the English. The historic village of Patawomeck is probably represented by the once-extensive archeological site on Indian Point, mentioned earlier (Steward n.d.:32-33).

Also during the 1930s, David I. Bushnell (1937) surveyed portions of the lower Rappahannock River between Leedstown and 1.6 km above Lambs Creek (see Figure 2). Bushnell attempted to correlate the archeological sites he found with the villages shown on Captain John Smith's map of Virginia. On this basis, he felt he might have found the archeological remains of the following Historic Period Algonquian villages: Pissaseck, Nandtanghtacund (Nansantico), Kerahocack, Checopissowo, Cuttatawomen II, and Sockobeck. Problems similar to those in Holmes and Dinwiddie's survey pertain to this survey, as well. Although Bushnell was aware of the discovery of the Folsom complex and its relative antiquity (Bushnell 1937:64-65), without excavating, he had no means of determining what artifacts came from periods earlier than the historic chiefdoms.

Since 1950, several members of the Archeological Society of Virginia have published reports on the excavation of sites in the Northern Neck. Salvage excavations of three possible ossuaries occurred on the Mount Airy estate, near the north bank of the Rappahannock River in Richmond County (McCary 1950:12-16). Remains of material culture associated with the 30-odd burials included three clay smoking pipes, 20,000 shell beads of several types, nine copper

rings, several iron and copper bracelets, a round metal case containing two mirrors, over 15,400 glass beads of various types, about 30 copper hawk bells, and approximately 12 brass or copper buttons. The site apparently dates to the first half of the seventeenth century A.D., and most probably represents burials of the Rappahannock chiefdom. Other excavations were conducted at the De Shazo Site, in King George County (MacCord 1965). This site was first reported by Bushnell (1937:60-62), and tentatively identified as the site of the historic Indian village of Cuttatawomen II, located at the junction of Lamb Creek and the Rappahannock River. The excavations reported by MacCord (1965:98-104) confirmed that a Protohistoric and Historic Period village had once occupied the site.

Additional, limited excavations were done at the Presnall Site (MacCord 1972a), McCrea Site (Dalton 1971), Mothershead Cache (MacCord 1972b) and Mount Airy shellfield (Buchanan 1976b). These sites are located in Westmoreland County. They range in occupation from Middle Archaic times to the late Middle Woodland Period, with the Mount Airy shellfield containing evidence of a limited Late Woodland occupation. Another excavation, this one in Northumberland County, took place in 1972 on the site of what had once been a "simple structure" (Dalton 1974:167). Most of the artifacts were sherds of Colono-Indian pottery, with lesser amounts of European sherds, cutlery, and pipe fragments. No bricks were found. The artifacts recovered suggest a period of occupation within the range of A.D. 1675 to 1750. Originally, the Owing Site was hypothesized as being occupied by slaves, or a slave

with an Indian spouse (Dalton 1974:168). However, it is equally probable that the site was occupied by an acculturated Indian family of Wicocomoco descent, who lived there sometime between 1675 and 1730 (Potter 1977:172).

As part of his doctoral dissertation fieldwork, E. Fandolph Turner did a site survey of five Virginia Coastal Plain counties during the summer and fall of 1974 (Turner 1976:206). One of these counties was Richmond, located in the lower Northern Neck bordering the Rappahannock River. Sixteen prehistoric sites were surveyed in Richmond County, of which 14 contained aboriginal sherds (Turner 1976:208, 237). At least one site, located near the mouth of Little Carter Creek, is apparently historic Indian.

This survey was designed to supplement published archeological data and to "partially overcome problems in determining temporal and spatial changes in population distribution" (Turner 1976:207). Turner's central hypothesis was "that the evolution of the Powhatan chiefdom was principally the result of increasing competition for land subsistence resources over time caused by population pressure which in turn was initiated when the human carrying capacity, given specified subsistence patterns, [sic] of the region, was neared" (Turner 1976:11). This hypothesis was tested against available ethnohistorical and archeological information, as well as Turner's survey data. A model for the development of the Powhatan chiefdom was constructed.

While a detailed critique of Turner's central hypothesis is not germane to the present study, it should be mentioned that population

pressure models have come under attack from several quarters. Brumfiel (1976:248), for example, has shown that population pressure can be brought about by changes in the sociopolitical subsystem. Rather than causing centralization, in some cases population pressure may be an effect. Thus, the stress on subsistence resources noted by Turner may have resulted, in some instances, from the increased demand of tribute collection placed upon various petty chiefdoms controlled by a paramount chief.

Unfortunately, due to limitations in time and funding, Turner was unable to conduct excavations during his archeological fieldwork. This, coupled with the lack of reliable, published excavation data and a confusing ceramic sequence, made Turner (1976:215) cautious in his ceramic analysis. As a result, he did not recognize any temporal differences in the use of certain ceramic types (Turner 1976:225). This approach necessitated that he treat the Early, Middle, and Late Woodland Periods as one monolithic block of time, during which the complete array of coastal ceramic types were made. Therefore, his study provides no data on the settlement and subsistence patterns of the Late Woodland Period -- the very time when changes leading to the formation of the Powhatan chiefdom are hypothesized to have occurred -- because Turner did not isolate any chronological differences in the Woodland ceramic assemblages.

Surprising as it may seem, after 110 years of archeological activity in the Northern Neck, there is still no published information on aboriginal zonal or areal settlement patterns. Due to the lack of

excavation data, the belief in a short chronological sequence and unsystematic survey techniques, Holmes' 1891-92 survey of the lower Potomac River and vicinity is not adequate, by itself, for the definition of areal settlement patterns. It is invaluable, however, as a source of information on the locations of archeological sites that have been partially or totally destroyed by natural or cultural means. It also provides significant insights into the late nineteenth century condition of extant archeological sites, which Holmes and/or Dinwiddie visited, as well as information on the local topography, oyster beds, and cultivation regime of the 1890s. While Bushnell was aware of evidence for Man's antiquity in the New World (1937:64-65), he, too, had no chronological controls. He was also limited in the amount of time he could devote to his survey and he had no financial support. Thus, Bushnell was not able to survey the shores of the Rappahannock River in a systematic fashion. The purpose of Turner's five county survey was to gather data to document broad temporal and spatial differences in population size and distribution, and not to systematically survey particular transects or localities. Therefore, in 1976, the situation in the Northern Neck was much the same as in all of Tidewater Virginia when Turner (1976:207) stated that "no systematic surveys of prehistoric settlement patterns in the region have been published."

2. SURVEY STRATEGY AND TECHNIQUES

The main objective of my survey was to identify and isolate

prehistoric and historic Indian occupations dating from A.D. 200 through the seventeenth century. There were three corollary objectives: (1) to use the direct historical approach to identify the Protohistoric and Historic Period archeological components; (2) to locate sites with buried archeological deposits in order to increase the chance of recovering environmental data and to provide data on the local sequence of archeological cultures; and (3) to test William Dinwiddie's hypothesis on the location of the early seventeenth century Chicacoan village. For the purpose of this study, an archeological site is defined as the locus of any past human activity which leaves empirically observable evidence that is preserved.

Most of the survey was done during nine weeks in the summer of 1976, by a field crew of two people. Total on-the-ground coverage of the 65 km² of the study area was not feasible given the limited time and resources. While random selection of sampling units within the Chicacoan locality would have provided an accurate basis for estimating the number and diversity of archeological sites by environmental variables (Flannery 1976:159-160), it would not have increased the probability of discovering protohistoric or historic Chicacoan occupations, nor would it have been particularly feasible in an area broken up into hundreds of privately owned parcels of land (Wilke and Thompson 1977:62). A survey strategy was needed which would increase the probability of discovering protohistoric and historic Chicacoan occupations, cross-cut the lesser physiographic zones of uplands, slopes and necklands, and provide a basis for an accurate estimate of the location

of various settlement types during the 1,450 years under study.

Prior analysis of the historical sources (Chapter II, Section 6) indicated that the Chicacoan were most likely living along the east (right) bank of the Coan River in the early seventeenth century. It seemed reasonable to assume that there would be a higher probability of discovering protohistoric and historic Chicacoan occupations here than elsewhere in the study area. Therefore, the land adjacent to the east bank of the Coan River was purposely selected for 100% coverage as a survey unit within the Chicacoan locality.

The survey unit was defined as the land along the east bank of the Coan River drained by streams flowing into the Coan River or Cod Creek. The physiographic bounds were the Potomac River, Cod Creek, the interior uplands drained by the easternmost heads of streams flowing into the Coan River, and the eastern bank of the Coan (Figure 5). The survey unit was roughly 16.3 km^2 , or about 25% of the total study area. The sampling unit had the following characteristics: (1) it incorporated the area considered to have been occupied by an early seventeenth century Chicacoan village; (2) it was defined according to physiographic boundaries; (3) it included a complete physiographic cross-section of uplands, slopes and necklands, with 45% of the unit being uplands (the land above the 50-foot contour interval); (4) there was a high percentage of large land tracts with single owners, making it easier to gain permission to trespass; and (5) 100% coverage would provide an accurate basis for estimating the diversity of settlement types within the study area.

Although 100% coverage of the survey unit was planned, only an 85% on-the-ground sample was obtained (Figure 5). The remaining 15% consisted of properties where permission to trespass was not obtained. Fortunately, of the 85% of the survey unit sampled, the proportion of upland to neckland was the same as the proportion for the entire unit. Thus, given the present state of land ownership, the survey unit was sampled as completely as possible.

Along the west (left) bank of the Coan River, 65% of the necklands were walked. The remainder could not be surveyed due to crop cover, such as wheat, or owner refusal to allow trespass. Other widely dispersed land tracts in the uplands of the west bank and head of the Coan River were selected for survey as a basis for hypothesis formulation or testing. Additional land tracts further in the interior uplands of the Chicacoan locality were surveyed with the same purpose in mind.

Approximately one-third of the west bank of Presley Creek could not be surveyed, because of a cottage and recreational community. The remainder of the creek's shoreline was completely surveyed by foot and canoe, in addition to on-the-ground coverage of two large tracts of land adjacent to the creek. One tract was selected near the western head of Presley Creek, which transected the uplands, slopes, and necklands. The second tract was selected near the eastern side and mouth of the creek, to sample this area as well as the Potomac River shorefront. The two tracts were of equivalent size.

The lower half of the east bank of Hull Creek was surveyed in

order to test a hypothesis proposed by William Dinwiddie. In 1891, Dinwiddie had observed that:

It is more than probable that the large and extensive sites found here are the ancient remains of the village or "King's Howse" known to John Smith as Cekakawon. . .

The largest settlement was apparently in the right a little more than a mile above the mouth, on a farm now owned by Mr. T. R. Cole, and originally in Colonial times formed a portion of the Cralle estate (Holmes et al. 1891).

Since Dinwiddie's hypothesis on the location of the A.D. 1608 Chicacoan village was at variance with the generally accepted historical location, it was decided that the area mentioned by Dinwiddie, as well as the opposing west bank of Hull Creek, should be re-examined by a thorough walk-over.

There were three means of surveying: by foot, canoe and air (see Figure 5 for areas surveyed and method used). In cultivated fields, the on-the-ground survey consisted of team members walking approximately 9.5 m apart. Each person looked for artifacts, faunal remains (mollusc shells or animal bones), surface indications of features, or soil textural or color differences. Soil probes were used to determine the nature of the soil profile and to detect subsurface features or midden deposits. In wooded areas, random shovel tests and soil probes were heavily relied upon, as well as the examination of eroded areas, tree falls, and banks.

The canoe was used to gain access to heavily wooded shoreline properties or to examine the shoreline for archeological sites. The latter procedure required the team to paddle close to the shoreline, looking for artifacts, faunal remains (especially mollusc shell),

features, or soil discolorations. The canoe proved most useful in surveying shorelines along shallow waters.

Aerial survey was done using several different light aircraft, mainly Cessnas. Flights were made at low altitudes, usually between 152 and 305 m. Experimentation at various seasons, during a three-year period, proved that the optimum seasons for spotting archeological sites from the air were late winter and early spring. If a small-grained, winter cover-crop, such as wheat, was growing over an archeological midden, the wheat would be more dense, greener and thicker than in surrounding areas. This was most prevalent when the soils began to warm up in late winter. In plowed fields, on the other hand, the damp soil marks of archeological middens showed up most clearly about two days after disc-harrowing for spring planting. During times of severe drought, such as the summer of 1976, crop marks were sometimes visible in small-grained crops like wheat or rye.

The best photographic results were attained at oblique angles to the archeological site, between 152 and 213 m altitude. The plane usually made one complete circle around the archeological site before any photographs were taken. This was done to determine the best photographic angle, taking into consideration the height and angle of the plane, the angle of the sun, the direction of cultivation, and the size and nature of the archeological site. Both color and black-and-white shots were taken, using a hand-held, 135 mm camera.

The results of the aerial survey were very encouraging. There was a 95% success rate in identifying historic, Euro-American sites

from the air. Large prehistoric or historic Indian sites greater than 1 ha and with dark earth or dense shell midden, were detected with a 90% chance of success. Intermediate prehistoric or historic Indian sites between 1,000 m² and 1 ha, with dark earth midden or dense shell midden, were spotted with about a 60% probability of being correct. Prehistoric sites lacking a dark earth midden or dense shell midden, or smaller than 1,000 m², could not accurately be discriminated from the air.

A dozen flights were made over the Chicacoan locality during a three-year period. At least once during these flights all cultivated fields in the study area were observed under damp soil conditions shortly after spring cultivation. No large or intermediate prehistoric or historic Indian sites with dark earth midden, or dense shell midden, were observed in the interior uplands, above the 50-foot contour interval.

Once a site was located and the limits ascertained, one of three procedures was used to make the surface collection: (1) the entire site was completely walked, using cultivation rows or survey flags as markers, and all visible archeological material was collected; (2) the investigators spaced themselves about 4 m apart, and collected all cultural debris in their path; and (3) a controlled surface collection was made of the entire site using grid units 20-meters square, with everything of archeological significance picked up.

Procedure 1 was used on small sites and intermediate sites with concentrations of cultural debris. Procedure 2 was used on

intermediate sites with diffuse scatters of artifacts, and some large sites. When this procedure was applied to a large site, the site would be divided into collection units based on observable physiographic features, such as knolls, slopes, or swales. Procedure 3 was utilized on one large and one intermediate, multicomponent sites. Procedures 1 and 2 were employed in the summer of 1976, when the survey team consisted of two members. Procedure 3 was applied in the summer of 1978, when survey crews of four or more people were available.

This section will end with a brief mention of the effects of artifact collectors on archeological sites within the study area. With the exception of occasional artifacts picked up by local farmers or land owners, there were only three major artifact collectors in the Coan River-Hull Creek area. None of these individuals dug for artifacts; all of their finds were made by surface collecting. Only one of these collectors, Mrs. Geraldine Clark, cataloged her artifacts according to provenience. Consequently, it was possible to incorporate some data from her collections into this study.

3. ARTIFACT TYPOLOGY, CHRONOLOGY AND DESCRIPTION

To bring about order in the arrangement of the sites and components in time and space, it is necessary to discuss the artifact types diagnostic of the time from A.D. 200 through the seventeenth century. The discussion will begin with the late Middle Woodland Period and proceed to the aboriginal material culture of the early

Historic Period. Before doing so, it seems appropriate to state the assumptions underlying the concept of type as used in this study.

Types are analytical units created by an archeologist as a means of arranging data to solve a particular research problem. The nature of the problem defines the cluster of attributes used in constructing a type (Griffith 1977:32-35). For present purposes, artifact types are needed as chronological indicators. Hence, I am primarily interested in historical types which are types defined on the basis of temporally sensitive attributes. As more research is done that is explicitly designed for problems of chronology, hopefully, current historical types will be refined.

For the period of time under consideration in this study, pottery vessels are the most sensitive temporal indicators and, therefore, most of the subsequent discussion is concerned with this class of artifacts. Ceramic types dating to approximately the same time and having similar temper or paste are grouped into wares (Griffith and Artusy 1977:11-12).

On the basis of the historical artifact types, four temporal units are defined which will be used to order the sites and components in time. These temporal units are: (1) the late Middle Woodland Period which dates from about A.D. 200 to perhaps as late as A.D. 900; (2) the Late Woodland Period which is subdivided into Late Woodland I, dating from A.D. 900 to approximately 1300; and (3) Late Woodland II which dates from A.D. 1300 to 1500; and (4) the Protohistoric and early Historic Period, dating from A.D. 1500 to about 1650.

a) The Late Middle Woodland: A.D. 200 to 900

The pottery characteristic of the latter half of the Middle Woodland Period, from about A.D. 200 or 300 until approximately A.D. 800 or 900, is a coarse, thick shell-tempered ceramic known as Mockley Ware. This ware was defined by Robert Stephenson et al. (1963:105-109) as consisting of three types: Mockley Cord-Marked, Mockley Net-Imprinted, and Mockley Plain. Earlier, Clifford Evans (1955:46-47) had defined two pottery types--Chickahominy Cord-Marked and Potts Net-Imprinted and Roughened--which were identical to the Mockley cord and net types (see Plate 1 for a comparison of Stephenson's and Evans' types). Chickahominy Cord-Marked and Potts Net-Imprinted and Roughened were part of Evans' Chickahominy Series, which included all shell-tempered pottery found in the Virginia Coastal Plain. Research since Evans' study has demonstrated that the Chickahominy Series represents a shell-tempering tradition of at least 1,500 years. Therefore, Stephenson's isolation of Mockley Cord-Marked and Mockley Net-Imprinted, as types representative of a late Middle Woodland pottery, helped refine our knowledge of the coastal shell-tempering tradition. Radiocarbon dates from southern Delaware to the lower James River, Virginia, confirm the temporal placement of Mockley Ware (Table 4).

Mockley Ware vessels are most often medium to large, coil-constructed jars with direct rims and rounded or semiconical bottoms. Rims are usually straight, although inverted and everted forms occur occasionally (Stephenson et al. 1963:105). Depending upon the clay source used and how well the clay was prepared, varying amounts of

Plate 1. Comparison of type sherds of Evans' Potts Net-Impressed and Roughened (left 2 columns) to Stephenson's Mockley Net-Impressed (right 2 columns).

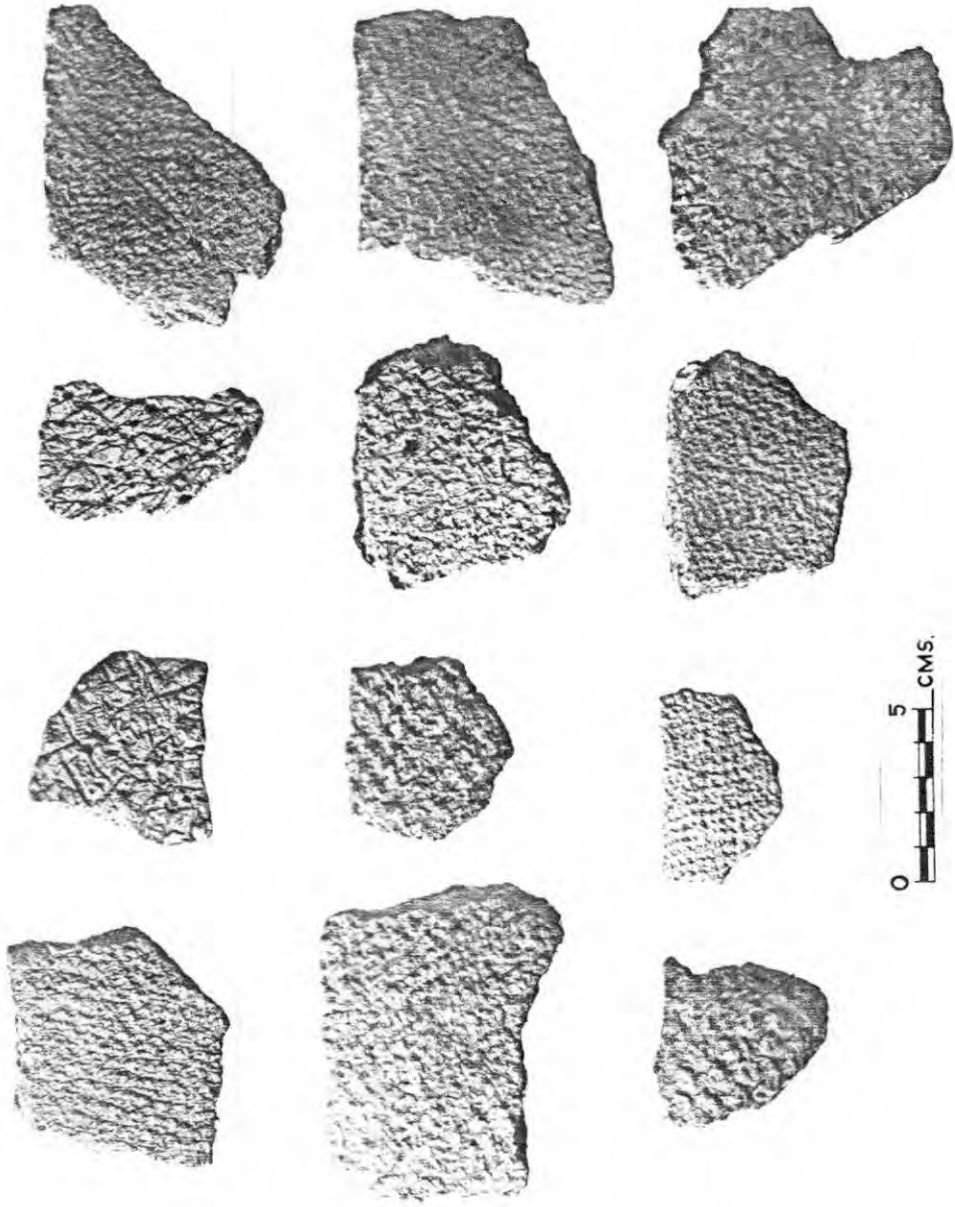


Table 4. Radiocarbon Dates From Sites in the Chesapeake Coastal Plain.

<u>Associated Ceramic Ware</u>	<u>Uncorrected Date</u>	<u>Laboratory No.</u>	<u>State*</u>	<u>Reference**</u>
Mockley	A.D. 200 (1750 + 90)	I-5817	D	1
	A.D. 300 (1650 ± 110)	I-6060	D	1
	A.D. 325 (1625 ± 160)	UGa-1273b	D	1
	A.D. 330 (1620 ± 65)	UGa-1273a	D	1
	A.D. 445 (1505 ± 90)	not given	V	2
	A.D. 580 (1370 ± 120)	M-1608	M	3
	A.D. 815 (1135 ± 95)	I-5246	M	4
	A.D. 860 (1090 ± 60)	D1C-1763	V	5
	A.D. 875 (1075 ± 90)	Gx-2263	V	6
	A.D. 880 (1070 ± 60)	D1C-1769	V	5
Sullivan	A.D. 1040 (910 + 60)	SI-3666	M	7
	A.D. 1385 (565 ± 55)	SI-3665	M	7

Table 4. (Cont.)

<u>Associated Ceramic Ware</u>	<u>Uncorrected Date</u>	<u>Laboratory No.</u>	<u>State*</u>	<u>Reference**</u>
Townsend	A.D. 1005 (945 \pm 70)	SI-4374	V	5
	A.D. 1085 (865 \pm 75)	UGa-923	D	1
	A.D. 1100 (850 \pm 55)	UGa-1440	D	1
	A.D. 1125 (825 \pm 65)	SI-4230	V	8
	A.D. 1225 (725 \pm 75)	SI-4232	V	8
	A.D. 1245 (705 \pm 125)	UGa-1547	V	9
	A.D. 1260 (690 \pm 50)	UGa-1461	V	9
	A.D. 1285 (665 \pm 75)	UGa-925	D	1
	A.D. 1310 (640 \pm 50)	D1C-1764	V	5
	A.D. 1340 (610 \pm 55)	D1C-1768	V	5
	A.D. 1370 (580 \pm 60)	UGa-924	D	1
	A.D. 1460 (490 \pm 45)	D1C-1766	V	5
	A.D. 1590 (360 \pm 120)	SI-137	V	10

Table 4. (Cont.)

<u>Associated Ceramic Ware</u>	<u>Uncorrected Date</u>	<u>Laboratory No.</u>	<u>State*</u>	<u>Reference**</u>
Yeocomico	A.D. 1510 (440 \pm 75)	D1C-1765	V	5
	A.D. 1540 (410 \pm 55)	D1C-1770	V	5
	A.D. 1605 (345 \pm 70)	SI-4231	V	8
	A.D. 1630 (320 \pm 55)	D1C-1767	V	5
	A.D. 1645 (305 \pm 70)	SI-4372	V	8
	A.D. 1690 (260 \pm 55)	D1C-1762	V	5

*State Key: D -- Delaware; M -- Maryland; V -- Virginia

**Sources: 1 -- Artusy 1976:9; 2 -- Oppermann 1980:4; 3 -- Wright 1973:29;
 4 -- Gardner and McNett 1971:43, 45; 5 -- Waselkov in press;
 6 -- Barka and McCary 1977:17; 7 -- Peck 1978:19; 8 -- Potter, this report; 9 -- Outlaw 1977:6; 10 -- MacCord 1965:102.

sand, limonite and organic matter are found in the plastic as natural inclusions. Typically, the paste is clayey and poorly paddled. Approximately 20 to 30% of the paste is composed of coarse, unburned, crushed shell, usually oyster. Vessel walls are thick. The interior of the vessel is usually smoothed, although a minority show signs of having been scraped. As previously mentioned, the exterior surfaces are cord-marked, net-impressed, or, very rarely, plain. Cord-marking is the dominant type at the beginning of the late Middle Woodland Period, but decreases in popularity over time as net-impression increases. A small percentage of Mockley cord and net have been smoothed below the rims' exterior and then decorated with crude, broad-line incised chevrons, diamonds, cross-hatched or parallel lines, some filled with punctations (Opperman 1980:23-25; Stephenson et al. 1963:107-108). The interior of the rim is often marked with finger impressions from pinching. In summary, the diagnostic attributes for Mockley Ware are: (1) thick vessel walls; (2) coarse shell temper; (3) cord-marked or net-impressed surfaces; and (4) simple, conical jar forms with direct rims, wide mouths, and semiconical or rounded bottoms.

A previously unidentified ceramic, which is apparently contemporaneous with the terminal manufacture of Mockley Ware, has been found in situ at the White Oak Point Site (44WM119) in Westmoreland County, Virginia. The pottery, named Nomini Ware, is tempered with medium-size, rounded gravel and the clay is compact and well-kneaded. Exterior surfaces are either cord-marked or impressed

by a spaced weft-twining fabric. Until analysis of the White Oak Point excavations is complete, more detailed information on this ceramic is unavailable (Gregory Waselkov 1981:personal communication).

The points associated with Mockley Ware occupations are varied. The crudely made Selby Bay point is either weakly stemmed or side-notched, with an elongated blade and straight to slightly excurvate edges (Thomas et al. 1974:5-6; Bastian 1974). In the Northern Neck it is common to find the striking platform left on the base. Large, lanceolate blanks from which the stemmed and side-notched points were made are also found (Wright 1973:21). Selby Bay points from the Northern Neck are most frequently made from blue rhyolite, and occasionally siltstone, chert and quartz. Rhyolite is non-local, whereas siltstone, chert and quartz are available locally in cobble form. Further north, Selby Bay points made from a variety of jaspers are somewhat more common (Thomas et al. 1974:7). The lengths of specimens from the Northern Neck range from 30 to 70 mm.

Seven small, shallow side-notched points of variable morphology were found in the Mockley Ware occupations at the White Oak Point Site. Four of the points are made from quartz, two of quartzite, and one from rhyolite. The points range in length from 26 to 43 mm. Bases are straight to slightly concave (2 mm). Side notches are from 1 to 3 mm in depth (Gregory Waselkov 1981:personal communication). The flaking pattern is similar to the Selby Bay points, with a minimum of secondary flaking confined mainly to the lateral edges. In Northumberland County, quartz points of similar manufacture have been found in

surface collections from sites with major Mockley Ware occupations.

Fox Creek points (formerly called Steubenville points) have also been found with Mockley Ware pottery. These points are either broad-stemmed or lanceolate, and proportionately rather wide relative to their length, with excurvate edges and slightly concave bases. The lengths range from 26 to 80 mm. The shoulders of the broad, stemmed forms are so slight in some instances as to be almost nonexistent (Ritchie 1961:50-52; Ritchie and Funk 1973:120; Stephenson et al. 1963:140-141). In the lower Potomac Valley, Fox Creek points are made from rhyolite or sometimes argillite. As a whole, Fox Creek points tend to be better made and exhibit more secondary retouch than Selby Bay points and their variants, which are cruder and show less evidence of retouch, especially around the hafting element.

b) The Late Woodland: A.D. 900 to 1500

The most common pottery of the Late Woodland Period (circa A.D. 900 to 1500) in the Northern Neck is Townsend Ware. In general terms, Townsend ceramics are made from a compact clay, tempered with relatively fine, crushed, unburned shell (usually oyster), comprising 10 to 20% of the paste. In comparison to Mockley Ware, the walls of Townsend Ware vessels are fairly thin. The vessels are wide-mouthed jars, ranging from large to small, which are coil-constructed, with direct rims, conoidal bodies, and rounded or semiconical bases. Decoration, when present, occurs on the vessel exterior, below the lip of the rim. Both incised and cord-impressed techniques are used to create a number of decorative motifs, which are described in detail in

a subsequent paragraph. All Townsend ceramics, no matter whether they are decorated or undecorated, have fabric-impressed exterior surfaces (Blaker 1963:14-16; Stephenson et al. 1963:109-110).

Townsend Ware was first described by Margaret Blaker (1963:14-22), although one of the ware's component types -- Rappahannock Fabric-Imprinted -- was originally described in 1942 by Karl Schmitt (1965:11-12). Blaker's typology was constructed from an analysis of the pottery from the Townsend Site, near Lewes, Delaware. Recently, Daniel Griffith (1977; 1980; 1981) has revised Blaker's typology by analyzing the stylistic, spatial and temporal systematics of Townsend pottery in southern Delaware, in order to identify temporally sensitive modes. Temporal information for the modal analysis was derived from superposition, seriation and radiocarbon dating.

Griffith's (1980:29-30) research resulted in the division of Townsend Ware into four component types, which were further refined by the creation of eleven varieties based upon decorative motif. The four types are: (1) Rappahannock Fabric-Imprinted (RFI) -- no recognized varieties. The vessel has a fabric-impressed body and no decoration; (2) Rappahannock Incised (RI) -- eight varieties based upon the complexity of the decorative motif. The incised technique involved the cutting of lines into the plastic; (3) Townsend Corded (TC) -- three varieties depending upon the cord technique used and the complexity of the motif. The cord technique involved the impression of a twisted cord (direct-cord) or cord-wrapped-stick (pseudo-cord) into the wet clay; and (4) Townsend Herringbone (TH) -- one variety

defined for southern Delaware. The vessel has cord-impressed, horizontal bands in the upper field and an incised, herring-bone motif in the lower field.

A number of conclusions, relative to the problem of chronology, were drawn from Griffith's research (see Table 4 for the Delaware radiocarbon dates). First, the type Rappahannock Fabric-Imprinted occurs throughout the Late Woodland Period. Second, among the eight varieties of the type Rappahannock Incised, temporal differences were noted on the basis of the complexity of the incised motifs. The complex, geometric incised motifs represented by Griffith's varieties RI3-RI8 occurred early in the Late Woodland Period, whereas the simpler, mainly horizontal, incised motifs (Griffith's varieties RI1 and RI2) began about A.D. 1285 and increased in popularity until the end of the period. The trend was toward increasingly simple, incised motifs (Griffith 1980:30-33). Third, the pseudo-cord decorative technique postdates A.D. 1285 in southern Delaware, and may be somewhat earlier in the lower Eastern Shore of Maryland. And fourth, the direct-cord decorative technique dates after A.D. 1370 in southeastern Delaware, although it possibly occurred much earlier along the Western Shore of Maryland (Griffith 1977:146-147).

In applying Griffith's Townsend Ware typology to the Northern Neck, a number of observations need to be made. No Townsend Herringbone type, as defined by Griffith (1980:30), has been reported for the Northern Neck, although it does occur rarely in southern Virginia (Keith Egloff 1981:personal communication). The Townsend

Corded type occurs, but only as an extremely small percentage of Townsend ceramics. The most prevalent Townsend Ware types in the Northern Neck are Rappahannock Fabric-Imprinted (by far the most common) and Rappahannock Incised. These two types are identical to Evans' (1955:44-46) Chickahominy Fabric-Imprinted type and its incised variant. At the time of his study, Evans (1955:124-125) recommended that if future research revealed that there were no major differences between types of the Townsend and Chickahominy Series, then they should be combined. Townsend Ware is, by definition, Late Woodland, whereas Evans' Chickahominy Series consists of seven types representing at least 1,500 years of shell-tempering tradition. Therefore, following Evans' recommendation, the use of the type name Chickahominy Fabric-Imprinted and its incised variant should be discontinued in favor of the Townsend Ware type names Rappahannock Fabric-Imprinted and Rappahannock Incised. Radiocarbon dates on Townsend ceramics from Virginia are given in Table 4.

Detailed studies of Late Woodland historical ceramic types (types defined by clusters of temporally sensitive attributes) are needed for the various subregions of Tidewater Virginia. Until these are done, Griffith's Townsend Ware chronology for southern Delaware provides the only detailed chronological framework available. Its application to Tidewater Virginia, however, must be done with circumspection. Enough preliminary data exist to suggest some modifications in the use of the Townsend chronology in the Virginia Coastal Plain.

A number of complex, geometric motifs of Rappahannock Incised

pottery have been found at the Hand Site, in Southampton County, and the Hatch Site in Prince George County, Virginia (Smith 1971:275-280; Clark 1976:212; Gregory 1980). The main occupations of both sites are Protohistoric (A.D. 1500 to 1607/08) and early Historic, although earlier occupations are also present. It is possible that in southern Tidewater Virginia some of the Rappahannock Incised complex motifs continued from the first half of the Late Woodland until Protohistoric or possibly early Historic times. However, this cannot be substantiated based solely on the extant literature available for the Hand and Hatch Sites.

The Townsend Corded pottery type and Evans' type (1955:48-49, 146, 154) Potts Cord-Wrapped Dowel are found infrequently in the Virginia Coastal Plain, and appear to be Late Woodland-Protohistoric and possibly early Historic (Smith 1971:275-278; Egloff 1981a:11). Another technique for creating the cord-impressed motif has been reported for Townsend Corded, in which a fabric-wrapped paddle edge is used to impress the design (Stephenson et al. 1963:Plate XI). Such specimens have been found in the Northern Neck as well. The type Potts Cord-Wrapped Dowel represents a shell-tempered, plain surface ceramic that is part of Evans' (1955:44-49) Chickahominy Series. Egloff (1981a:11) has noted that "the cord-wrapped dowel impressions . . . were actually made with the edge of a wicker fabric, suggesting a close association with the Townsend Fabric-Impressed Series."

A shell-tempered pottery which is supposed to be similar to Townsend Ware has been identified at a site just up from the confluence

of the Wicomico and Potomac Rivers, in Maryland (McNett 1975; McNett and McDowell 1974:5-6, 11-12). The pottery, termed "Swan Point Ware," is described as having a compact paste mixed with sand and differing amounts of shell. The crushed shell varies in size from extremely fine to large particles. The surface treatment is varied. Vessel exteriors are plain, cord-marked, fabric-impressed and net-impressed, in descending order of their occurrence in the assemblage (McNett and McDowell 1974:5-6, 18-20).

Beyond this juncture, the two descriptions of "Swan Point Ware" which are available, are so dissimilar it is almost like reading the descriptions of two different wares (McNett 1975; McNett and McDowell 1974:5-6). In McNett and McDowell (1974:6), "Swan Point Ware" is said to be more like Mockley Ware, although it is not a close similarity. Further, they state that there was no rim decoration, with the exception of one rimsherd with an appliqué strip. In McNett (1975) it is stated that "the only way to tell this pottery from small Townsend sherds is to note whether it is all fabric-marked. If so, it is Townsend, but if there are a variety of surface finishes, it is Swan Point Ware." In addition, it is mentioned that small rimsherds were found with both incising and cord-wrapped stick decoration. Since McNett performed the ceramic analysis (McNett and McDowell 1974:4) for both works cited above, it is difficult to know which ceramic description to use. It will be assumed, therefore, that the recent work (McNett 1975) is the more accurate.

The site where "Swan Point Ware" was identified is an extensive

(1.13 km), shallow (average depth about 30 cm), shellfield located along Cuckhold Creek, on Swan Point Neck in Charles County, Maryland. A small number of test squares were excavated at five locations on the neck. Only 197 sherds large enough for analysis were recovered (McNett and McDowell 1974:3-5). From this sample, four separate "ware" groups were identified. These "ware" groups indicated that the site had been occupied at various times throughout the entire Woodland sequence (McNett and McDowell 1974:10-12). From an examination of the pottery distribution, it would appear that the various "ware" groups were mixed throughout the deposits (McNett and McDowell 1974:18-20). Due to the large size of the site, the shallowness of the deposit, and the apparent mixing of the occupations, it is extremely doubtful if all of the surface finishes attributed to "Swan Point Ware" were ever made at the same time. It is even more doubtful that the pottery identified as "Swan Point Ware" represents a ware group. Therefore, the term "Swan Point Ware," like the term "Swan Point culture," should be dropped from the literature, since both constructs are built more on suggestion than on reliable data.

Another somewhat enigmatic shell-tempered pottery is the so-called "Sullivan Ware." What Steponaitis (1980:17) has termed "Sullivan Ware" was first identified by Wright (1973:16-17, 22) and later described by Peck (1978:20-22). It is characterized as a thin-walled, lightly shell-tempered pottery with partially smoothed-over, fine cord-marking. Vessels have constricted necks and conoidal bases (Wright 1973:22). In the Severn drainage of Maryland, "Sullivan Ware" is decorated with

cord-impressed bands, and fine-line horizontal and herringbone incisions (Wright 1973:22). The sherds identified as "Sullivan Ware" from Maryland's Patuxent drainage had no decoration (Steponaitis 1980:32). A similar situation occurs in the Chicacoan locality.

Two radiocarbon dates (Table 4) from a pit containing "Sullivan Ware" have been reported for a site on the Severn River, Maryland (Peck 1978:17-23). A charred wood sample dated A.D. 1385 \pm 55, and an oyster shell sample dated A.D. 1040 \pm 60. Peck (1978:19) discounted the latter date "since oyster shell samples tend to date earlier than charred wood samples from the same context." Clearly, if the purpose of describing "Sullivan Ware" is ultimately to define a cluster of temporally sensitive attributes to be used in constructing an historical, Late Woodland pottery type, then additional research needs to be done.

Aside from Townsend Ware, the second major Late Woodland ceramic found in the Northern Neck is Potomac Creek Ware. Sherds of this ware are confined mainly to the upper Northern Neck, in King George and Stafford Counties, Virginia. W. H. Holmes (1903:155-156) was the first person to describe Potomac Creek pottery, which was named after the type site of Potomac Creek, in Stafford County. Later descriptions by Griffin (Manson et al. 1944:406-409), Schmitt (1952:63; 1965:10-11) and Stephenson (et al. 1963:113-120) expanded and refined the type descriptions within the ware group. Potomac Creek Ware consists of vessels made by coiling, with paddle-malleated surfaces. Vessels are small to large, with globular bodies, everted or straight rims (some

with applique strips) and rounded bases. The clay is tempered with 20 to 35% crushed quartz and/or medium sand. The clay is compact and hard, and vessel walls are relatively thin. Two types are recognized: (1) Potomac Creek Cord-Pressed, which may be cord-marked only, or cord-marked with direct-cord, pseudo-cord, or cord-wrapped paddle edge impressions in the rim area; and (2) Potomac Creek Plain, with exterior surfaces either originally smoothed, or cord-marked and then smoothed. Potomac Creek Ware dates from approximately A.D. 1300 through the seventeenth century (Clark 1980:8), although the type Potomac Creek Plain may have originated or, at the least, increased in frequency during the Protohistoric Period.

There are several published statements, needing clarification, which concern the distribution and occurrence of Potomac Creek pottery in the Northern Neck. A popular notion is that at the time of English contact, Potomac Creek pottery was being made by all the native groups in the Potomac Valley, from Washington, D.C. to the mouth of the river (MacCord 1969:18). This is not the case. Archeological sites where Potomac Creek ceramics comprise the majority of Late Woodland-Protohistoric wares do not occur much further downriver, along the southern shore, than in the vicinity of Upper Machodoc Creek in King George County. The majority of the Late Woodland ceramics along the lower 80.5 km of the Potomac River's south shore are Townsend Ware. On the lower Rappahannock River, starting about 16 km below Fredericksburg and continuing to the river's mouth, the major Late Woodland pottery is also Townsend Ware. Furthermore, the occasional

occurrence of Potomac Creek sherds on lower Rappahannock River sites does not justify the inclusion of such sites in the "Potomac Creek Complex," if the complex is meant to denote protohistoric or historic sites of the Piscataway-Conoy chiefdom (Clark 1980:8-9). Such an approach ignores settlement types, subsistence data, ethnohistorical data and other criteria that should contribute equally to any definition of a cultural system. Indeed, the Potomac chiefdom, located in A.D. 1608 primarily along Aquia and Potomac Creeks in Stafford County, and possibly along Upper Machodoc Creek in King George County, is the only contact period group in the Northern Neck which is definitely represented, archeologically, by the Potomac Creek Complex.

Another pottery type with some affinities to the descriptive type Potomac Creek Plain is Moyaone Plain. This type was first described in 1942 by Karl Schmitt (1965:11-12), and was later revised and expanded into a ware group by Stephenson et al. (1963:120-125). Two of Stephenson's three types occur primarily in the upper Northern Neck, albeit in extremely small percentages: Moyaone Plain and Moyaone Cord-Imprinted. Moyaone Ware is coil-constructed with paddle-malleated or smoothed surfaces. The plastic consists of a compact clay with fine-grained micaceous sand that is occasionally mixed with crushed quartz, or coarser sand. It is soft and slightly friable to the touch. Vessel forms are small to medium with globular bodies and rounded bases. The type Moyaone Cord-Imprinted has a cord-marked exterior surface, which may have been partly or completely smoothed over, and cord-imprinted decoration on the exterior rim area

(Stephenson et al. 1963:120-123). Moyaone Plain pottery appears to have been smoothed without prior paddling with a cord-wrapped paddle. There is no decoration. The vessel forms of Moyaone Plain tend more toward simple bowls rather than jars (Stephenson et al. 1963:124-125). Moyaone Ware may date as early as the end of the Late Woodland Period and continue through the Protohistoric and possibly early Historic Period.

Another Late Woodland pottery type, named Currioman Fabric-Imprinted, has been tentatively described by Gregory Waselkov. The pottery is tempered with rounded quartz grains and has fabric-imprinted exterior surfaces. Based upon its stratigraphic position at the White Oak Point Site (44WM119), it has been assigned to the early Late Woodland Period (Gregory Waselkov 1981:personal communication). A formal definition of the pottery type will be available upon completion of Waselkov's research.

From the beginning of the Late Woodland Period until the early Historic Period the diagnostic points are triangular in form. In general, two point types, the Levanna and the Madison, are considered characteristic of late prehistoric times. Levanna points are "generally the largest and most equilateral, and have a concave or straight base" (Ritchie 1969:276). They date from about A.D. 900 to 1300. Over time there is a decrease in the size of the points and a shift to thinner and more isosceles forms which are called Madison points. These points are the dominant type after A.D. 1300 (Snow 1980:315; Ritchie 1969:278).

Unfortunately, except for a difference in size, the other distinguishing attributes noted by Ritchie between Levanna and Madison points are not apparent in the triangular points from the lower Northern Neck. A similar circumstance has been mentioned by Kraft (1975:91-92) for triangular points found in the upper Delaware Valley. In the Northern Neck, the evolution is from larger to generally smaller Levanna points. Large Levanna points are defined as being greater than 32 mm long and 22 mm wide. Small Levanna points are equal to or less than 32 mm in length and 22 mm in width.

In summary, the Late Woodland Period can be subdivided based upon trends in the popularity of certain artifact types. Late Woodland I (circa A.D. 900 to 1300) is characterized by complex geometric motifs on Rappahannock Incised pottery, Currioman Fabric-Imprinted pottery and Levanna Large Triangular points. Late Woodland II (circa A.D. 1300 to 1500) is characterized by mainly simple, horizontal motifs on Rappahannock Incised pottery, Townsend Corded pottery, Sullivan Ware, Potomac Creek Cord-Marked pottery, Moyaone Cord-Imprinted pottery, and Levanna Small Triangular points. Rappahannock Fabric-Imprinted pottery was made throughout the entire Late Woodland Period and into the early Historic Period.

c) The Protohistoric and Early Historic: A.D. 1500 to 1650

The Protohistoric Period represents the "false dawn" of historic contact when Spanish, French and English explorers made brief incursions into the Chesapeake Bay region, circa A.D. 1500 to 1607. Although the protohistoric is not usually distinguished in the

regional chronology, at least one pottery ware has been identified in the lower Northern Neck as being specifically Protohistoric and early Historic. The pottery, named Yeocomico Ware after the river of the same name which separates Northumberland and Westmoreland Counties, is tempered with relatively fine, crushed shell and has a plain exterior surface or, more rarely, a scraped or cord-marked exterior surface (see Appendix 2 for a detailed description). Interior surfaces are sometimes scraped on both plain and exterior scraped vessels. Rims are either straight or excurvate, with lips commonly rounded or tapered. Both direct rims and slightly constricted necks occur. Vessel walls are thin and coil-constructed. Decoration, when present, consists of vertical or slightly oblique lines of punctations, or horizontal cord-impressions just below the exterior lip of the rim. Vessel forms range from a small cup to medium-size bowls to globular jars with rounded bottoms. Six radiocarbon dates place this ware between A.D. 1510 and 1690 (Table 4).

Potomac Creek Plain and Moyaone Plain pottery increase in frequency during this time. Other ceramics which continue from Late Woodland II into the Protohistoric and early Historic include Rappahannock Fabric-Imprinted, at least the simple Rappahannock Incised varieties, Townsend Corded, Potomac Creek Cord-Marked and Moyaone Cord-Imprinted.

Occasionally, hollow reed or cane punctations were used as part of the decorative motif on both the Rappahannock Incised and Townsend Corded types (Winfrey 1967:9; 1969:195; MacCord 1965:101; Smith

1971:276-277). This is considered to be a late decorative attribute in Tidewater Virginia, dating from the Protohistoric and probably early Historic Periods (Keith Egloff 1981:personal communication). Evidence from the De Shazo Site, in King George County, and the Hand Site (mentioned previously) seems to support such an interpretation (MacCord 1965:101-103; Smith 1971:276-277).

The last half of the seventeenth century A.D. into the early eighteenth century in the Northern Neck is marked by various Colono-Indian wares. These ceramics were made by Indians using native techniques, but were stylistically and/or functionally patterned after European designs (Noël Hume 1962:5-6). Colono-Indian pottery can be untempered or tempered with either shell or sand. The plain exterior surface can be unburnished or burnished. Vessel forms consist of flat-bottomed jars with inverted rims, globular jars with constricted necks and everted rims, or shallow bowls with slightly flattened bases and straight rims (Dalton 1974:167; MacCord 1969:10, 12-13, 18; Buchanan 1976a:197). These ceramics developed from the Protohistoric and early Historic shell-tempered plain Yeocomico pottery, and from the quartz and sand-tempered Potomac Creek Plain and Moyaone Plain types.

The triangular point most common during this time is the Levanna Small Triangular point. However, by the end of the early Historic Period points similar to Holland's Type A, small triangular (1955:166), were probably being manufactured.

d) Descriptive Classification for Lithic Artifacts

The description of stone artifacts found during the survey and

excavations is modified from lithic typologies used by Fitzhugh (1972:71-72), Chapman (1977:85-96) and House and Wogaman (1978:58-61). Classes of lithic artifacts not defined below, or classes of non-lithic artifacts not previously discussed, will be described and/or illustrated in the text using generally accepted terms.

Core: Any mass of stone from which one or more flakes have been removed leaving primary flake scars and no evidence of prepared tool edges, or edge damage indicative of use as a tool.

Chunk: An angular piece of lithic debris, shatter, or core fragment considered to be the by-product of lithic reduction in the early stages of stone tool manufacture.

Hammerstone: Usually a fist-size, roughly spherical or oblong cobble, with edge wear indicative of battering. Most specimens in the lower Northern Neck are made from quartzite.

Core hammerstone: A mass of stone originally used as a core and later used as a hammerstone, with evidence of edge battering along the angular platform margins of the core.

Flake: Usually a thin piece of chipped stone debris which, if complete, has an observable striking platform and dorsal and ventral faces. For the purpose of this study, no cortex remains on the flake.

Decortication flake: A thin piece of chipped stone with cortex on the dorsal face.

Utilized flake: A tool made from a flake, exhibiting intentional, secondary flake scars along the flake edge(s). Utilized flakes were made without a standard form of production, the flake itself being a

by-product of other manufacturing processes. Only slightly modified, they were used casually and discarded.

Point: A morphologically defined class of bifacial chipped stone tools generally having basal modification for hafting, usually symmetrical and having relatively sharp tips. The class may include some tools used to tip projectiles, as well as those which were used as knives or for multiple functions. All nondiagnostic fragments are termed point/biface fragments.

Biface: A tool class which includes artifacts with bifacial flaking that cannot be grouped functionally as points or blanks. Artifacts in the biface category may actually have served as projectile points, knives, or blanks, but the attributes of the specimens do not indicate which. All nondiagnostic fragments are termed point/biface fragments.

Blank: A bifacial or unifacial chipped stone artifact in uncompleted form, generally intended for use as either a projectile point or knife. It is recognized by its sinuous edges, lack of retouch, large flake scars and thick body. The artifact outline approximates the length-width ratio of the completed form.

Scraper: A unifacial or bifacial chipped stone artifact with steep working edges, generally greater than 40°. This class consists of formal scraping function artifacts not including casual tools like utilized flakes.

Ground stone axe: A large, thick bifacial tool, shaped by flaking or pecking followed by grinding and, in some instances,

polishing. The tool possesses a single, bifacial, transversely oriented working edge on one end. In outline, the tool can either be trianguloid, or rectanguloid, and without grooves for hafting (celts), or rectanguloid with a complete groove around the tool (full-grooved axe), or a groove three-quarters of the way around the tool (three-quarter-grooved axe).

Atlatl weight: A bifacially worked stone artifact, initially shaped by flaking and/or pecking, and then ground and sometimes polished. A large hole is drilled completely through the artifact. In the lower Northern Neck, examples reported have been of the tubular or winged types. Ostensibly, the artifact was mounted on an atlatl (spear-thrower), as part of the atlatl and dart weapon system.

Fire-cracked rock: Usually fist-size cobbles of sandstone, or occasionally quartzite, which were used in fire hearths, roasting pits, or for pot boiling. Exposure to heat has altered the normal appearance of the cobbles by discoloration, surface crazing, making the structure of the sandstone more friable, or complete fracturing.

4. SITE DESIGNATION AND CLASSIFICATION

The sites reported here have been recorded following the Smithsonian Institution's River Basin Survey system, in use by the Virginia Research Center for Archeology. In addition, certain sites have been assigned descriptive names, by which they were known in the field. Universal Transverse Mercator (UTM) coordinates will not be provided in this report. Detailed information pertaining to site

locations is available on the site survey forms on file with the Virginia Research Center for Archeology.

The method of site classification employed in the descriptions is modified from a classification system devised by John Cottier and Gregory A. Waselkov (Waselkov 1980:137-141). The main feature of the system is that it distinguishes units of observation from units of systemic interpretation (Table 5).

Site size, integrity, and predominant midden composition were chosen as the most significant attributes for site classification. Sites with more than 50% of the midden volume composed of dark earth (the remainder being mollusc shell) are termed "midden" sites. Sites consisting of 50% or more mollusc shell (the remainder being dark earth midden) are termed "shell midden" sites. Those sites lacking dark earth midden and/or shell midden are called "decomposed" (after Waselkov 1980:139). These three varieties are further subdivided into three, arbitrarily chosen, size-grades: (1) Large -- 1 ha or larger; (2) Intermediate -- between 1 ha and 1,000 m²; and (3) Small -- 1,000 m² or less.

This system allows one to classify sites readily based on attributes observable during intensive survey. In the case of shallow, multicomponent sites, "if the limits of different components can be identified by controlled surface collections, then an archeologist can assign each component to a class and need not assume site homogeneity" (Waselkov 1980:139-140).

Finally, the archeological site classification is not to be

Table 5. Archeological Survey Site Classification.

Class	Description	Observable Characteristics
1	Large Midden Site	1 ha or larger with more than 50% of the midden composed of dark earth.
2	Intermediate Midden Site	Between 1 ha and 1,000 m ² in size with more than 50% of the midden composed of dark earth.
3	Small Midden Site	1,000 m ² or less in size with more than 50% of the midden composed of dark earth.
4	Large Shell Midden Site	1 ha or larger with 50% or more of the midden composed of mollusc shell.
5	Intermediate Shell Midden Site	Between 1 ha and 1,000 m ² in size with 50% or more of the midden composed of mollusc shell.
6	Small Shell Midden Site	1,000 m ² or less size with 50% or more of the midden composed of mollusc shell.
7	Large Decomposed Site	1 ha or larger without dark earth midden and/or shell midden.
8	Intermediate Decomposed Site	Between 1 ha and 1,000 m ² in size without dark earth midden and/or shell midden.
9	Small Decomposed Site	1,000 m ² or less in size without dark earth midden and/or shell midden.

confused with a settlement typology. The former is not based on systemic interpretation, while the latter is. For example, it might be very tempting to assume site homogeneity and, thereby, interpret Class 1 sites as villages. Although relationships between site observation and systemic interpretation can be postulated, data in addition to that gathered during intensive survey is necessary to confirm the systemic interpretation.

5. SITES IN THE CHICACOAN LOCALITY

44NB3: Downing Site

This multicomponent site (Figure 6) is located on a broad cultivated neckland between Wrights Cove and Glebe Creek, along the west bank of the Glebe. It is a large, shallow midden site (Class 1) characterized by a light gray soil discoloration and a thin scatter of oyster shell. A small area of darker midden and oyster shell, with a concentration of European, Colono-Indian and Indian artifacts, lies on the northwest periphery of the site. Portions of the site were occupied intermittently from about 8,000 B.C. to the Protohistoric and Historic Periods. The heaviest use of the site occurred between 3,000 and 1,100 B.C., in the Late Archaic Period.

A varied collection has been made from the site. Prehistoric material preceding the late Middle Woodland Period includes: a Palmer point, a winged atlatl weight, a wide range of square-stemmed and contracting-stemmed Late Archaic points, two full-grooved axes, and some Early Woodland and early Middle Woodland short-stemmed quartz

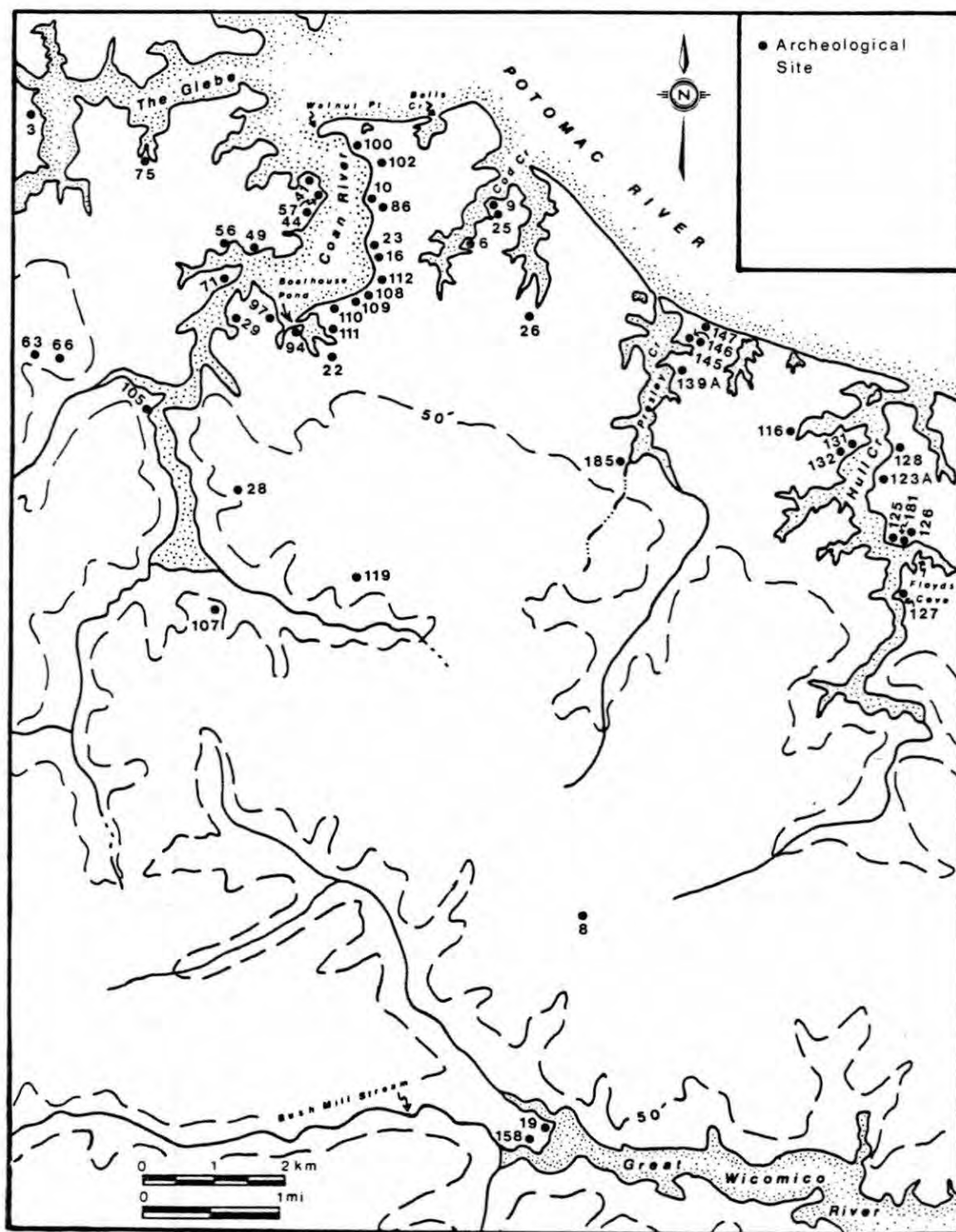


Figure 6. Archeological sites in the Chicacoan locality.

points. Lithic debris is confined to flakes, some decortication flakes, and a few cores and chunks.

A single sherd of Mockley Net-Imprinted pottery is the only diagnostic late Middle Woodland artifact found. There are three Levanna Small Triangular points, two Levanna Large Triangular points, a triangular blade, three triangular blanks, and two Rappahannock Fabric-Imprinted sherds of Late Woodland and/or Protohistoric origin. Protohistoric and Historic aboriginal ceramics include two sherds of Yeocomico Plain pottery, and one pottery handle and three sherds of Colono-Indian ware (similar to specimens found by David Bushnell at Leedstown, Virginia: Smithsonian Institution, Department of Anthropology catalog numbers 392207 and 402919). Aboriginal pipe fragments from this same time consist of the following: four plain, terra-cotta clay tobacco pipe stems, one dentate, diamond design on a terra-cotta pipe stem, and one terra-cotta pipe bowl with double lines of rouletting just below the lip.

The Colono-Indian sherds and terra-cotta tobacco pipe fragments were found in the small area of dark midden and oyster shell, along with 20 sherds of European ceramics, 182 white clay tobacco pipe fragments, and one glass bead. The European ceramics consist of Rhenish blue and gray stoneware, Rhenish brown stoneware, North Devon gravel-tempered earthenware, black glazed "Buckley-like" earthenware, fine-combed Staffordshire slipware, and red-bodied earthenware with brown lead glaze. Two white clay pipe stems bear the name "WILEVANS," which stands for one of two unrelated pipe makers, both with the name

William Evans. These two men worked in Bristol, England, between A.D. 1660 and 1699 (Oswald 1975). A pipe bowl fragment is marked with a circular cartouche with the letters "WE" in the center. Identical stem and bowl fragments bearing the name "WILEVANS" and the "WE" cartouche were found at the Hallowes Site, in nearby Westmoreland County (Buchanan and Heite 1971:44-45). A complete white clay pipe bowl, with 2.5 cm of broken stem, was found. The stem has a bore diameter of $7/64$ of an inch. The letters "RT" are stamped on the bowl, facing the smoker. A single line of rouletting occurs just below the bowl's rim. Pipes with the "RT" mark represent the production of three generations of Robert Tippetts -- father, son and grandson -- working in Bristol, England, from A.D. 1660 to the first quarter of the eighteenth century. The attributes just enumerated indicate that the pipe was probably made in the Tippet shop between A.D. 1675 and 1700 (Henry Miller 1981:personal communication; Noël Hume 1970:303). The single glass bead is a tube bead similar to Kidd and Kidd's (1970) Class II, Type bb10, except that it has swirled inlays of black on red (Plate 2).

The European artifacts suggest an occupation between A.D. 1675 and 1700. However, only excavation of this small area of dark midden and oyster shell will provide the data necessary to correctly attribute an ethnic identity to the inhabitants of this site. Since culture change involves the incorporation of objects into a functioning cultural system, the patterning of the features and artifacts is as important as the origins of the artifacts.

Plate 2. Glass beads and copper ornament: A, blue glass tube bead, Class II, Type a41, site 44NB97; B, glass tube bead with swirled inlays of black on red, Class II, Type bb10, site 44NB3; C, piece of sheet copper cut into triangle, Indian Town Farm Site #1.



C



B



A



44NB6: Harris Site

This is an intermediate shell midden site (Class 5) located on a headland along the east bank of Cod Creek. The site is cultivated, and a thin scatter of oyster shell and artifacts demark the spatial extent of the site. Lithic debris and a number of Late Archaic stemmed points have been found, but no potsherds. A single, yellow jasper Levanna Large Triangular point is the only Late Woodland artifact from the site. The Late Woodland I occupation is classified as a small shell midden (Class 6).

44NB8

This site is located in the interior uplands on the edge of a broad ridge, near Virginia State Highway Route 360. Although a few oyster shells are scattered over the cultivated surface of the site, there is no midden of any kind. The site is classified as a small decomposed site (Class 9), with the oyster shell probably resulting from a single, small feature that has been incorporated into the plowzone.

The small collection from the site is temporally varied, ranging from a Late Archaic point to five white clay pipe stems. A late Middle Woodland Fox Creek Lanceolate point was found. Six body sherds of a thin-walled, finely crushed shell-tempered ceramic were also recovered. The exterior surface of the ware was first treated with a paddle wrapped with fine cord, and then partially smoothed-over. This pottery is probably referable to the "Sullivan Ware" described by Steponaitis (1980:17, 32) for the Patuxent drainage. If so, this

probably represents a Late Woodland II occupation.

44NB9

This site was found after its partial destruction by cottage construction and landscaping. Originally, the site was an intermediate shell midden (Class 5), about 10 to 15 cm deep. The site was located on a headland near the mouth of the eastern bank of Cod Creek.

The collection consists of one quartzite chipped stone axe, with shallow sidenotches, 40 sherds of Mockley Cord-Marked pottery, and smoothed and eroded sherds of what was probably Mockley Ware.

44NB10: Labofish Site

Originally, this site was a large shell midden (Class 4) located on a jut of land along the east bank of the Coan River, near its mouth. The depth of the shell midden on the point appears to have been about 61 cm, but cottage construction has destroyed most of it. The depth of the midden in the broad cultivated field adjacent to the river does not exceed the depth of the plowzone.

Late Archaic contracting-stemmed points and one full-grooved axe were found, along with the following Late Woodland artifacts: a quartz triangular blank, a small, pecked and ground rectanguloid celt of greenstone, and a Sullivan Ware potsherd. This probably represents occupations during the fourteenth through sixteenth centuries A.D. The Late Woodland II occupation is tentatively classified as an intermediate shell midden (Class 5).

44NB16: The Last Resort

This large, multicomponent shell midden site (Class 4) is situated adjacent to the high, east bank of the Coan River, in a cultivated field. The densest concentration of oyster shell is immediately beside the river bank. The shell midden lies entirely within the plowzone, although two subsurface features were discovered during the survey: one in a profile cut along the bank, and the other was located by soil coring near the center of the site, in the vicinity of the bluff.

A general surface collection was made during the survey of 1976, and a controlled surface collection was obtained in 1978, using the mobile baseline technique developed by Wilke and Thompson (1977:15-16). A total of 66 20-meter squares were collected.

The site was used sporadically from as early as 4,500 B.C., during the Middle Archaic Period, until the end of the Late Woodland Period, and perhaps in the Protohistoric and early Historic. Artifacts from the site which predate A.D. 200 include the following: Morrow Mountain I and II points; Savannah River points and Savannah River Contracting-Stemmed variants; Holmes points; a sherd from a soapstone bowl; small stemmed points of quartz, probably dating between 750 B.C. and A.D. 200; and a few sherds of Accokeek Cord-Marked and Popes Creek Net-Impressed pottery.

The artifacts which postdate A.D. 200 will be discussed in two separate groups: those found during general surface collecting, and those from the controlled surface collection. The artifacts from the general surface collection include 11 Mockley Cord-Marked and two

Mockley Net-Impressed sherds. The poll end of a three-quarter-grooved axe, made from greenstone, may be part of the Mockley Ware assemblage. The Late Woodland occupation is represented by three Currioman Fabric-Impressed sherds, 18 Rappahannock Fabric-Impressed sherds, two Rappahannock Incised sherds (one complex and one simple), one sherd of Sullivan Ware, 14 Levanna Large Triangular points, five Levanna Small Triangular points and eight triangular blanks. A possible Proto-historic or early Historic occupation is suggested by two sherds of Yeocomico Plain pottery. There were 33 eroded, shell-tempered sherds which could not be assigned to any particular component.

The controlled surface collection was made in an effort to identify any spatial differences in the occupation of the site over time, especially from the late Middle Woodland through the early Historic. No diagnostic late Middle Woodland artifacts were found during the controlled surface collection. The following diagnostic Late Woodland artifacts were found: 15 Rappahannock Fabric-Impressed sherds, three Sullivan Ware sherds, eight Levanna Large Triangular points, one Levanna Small Triangular point, and seven triangular blanks. A serrated quartz point similar to Holland's Type A, small triangular (1955:166), was also found. It probably dates from the early Historic Period. In addition, 47 eroded, shell-tempered sherds were collected.

An interesting pattern emerges when the distribution of the Levanna points and triangular blanks is compared to the distribution of other diagnostic points and blanks assignable to specific

archeological periods (Figure 7). Only the Late Archaic points and blanks, and the Levanna points and triangular blanks, are concentrated in the densest portion of the shell midden. The distribution of identifiable Late Woodland ceramics is similar to that of the Levanna points and triangular blanks (Figure 7).

A total of 43 Levanna points and triangular blanks are in the general and controlled surface collections (Plate 3). Of this number, 76% are made from quartz, 14% from quartzite, 5% from chert, and 5% from yellow jasper. The high percentage of Levanna points made from quartz is reflected in the distribution of quartz cores and chunks (Figure 7). The greatest density of quartz cores and chunks occurs in the same area as the majority of the Levanna points and triangular blanks, which in turn approximates the spatial extent of the oyster shell concentration. Two smaller concentrations of quartz cores and chunks are also apparent in the northern and northeastern parts of the site. It is here that most of the quartz points dating to the Middle Archaic, Early Woodland, or early Middle Woodland Periods were found (Figure 7).

It is difficult to assess the spatial extent of the Mockley Ware occupation at this site, since no Mockley Ware sherds were found during the controlled surface collection. On the basis of the 11 Mockley Cord-Marked and two Mockley Net-Imprinted potsherds from the general surface collection, it is suggested that the Mockley occupation of the site was relatively light, with only a small area of the shell midden (a Class 6 site) actually resulting from the activities of

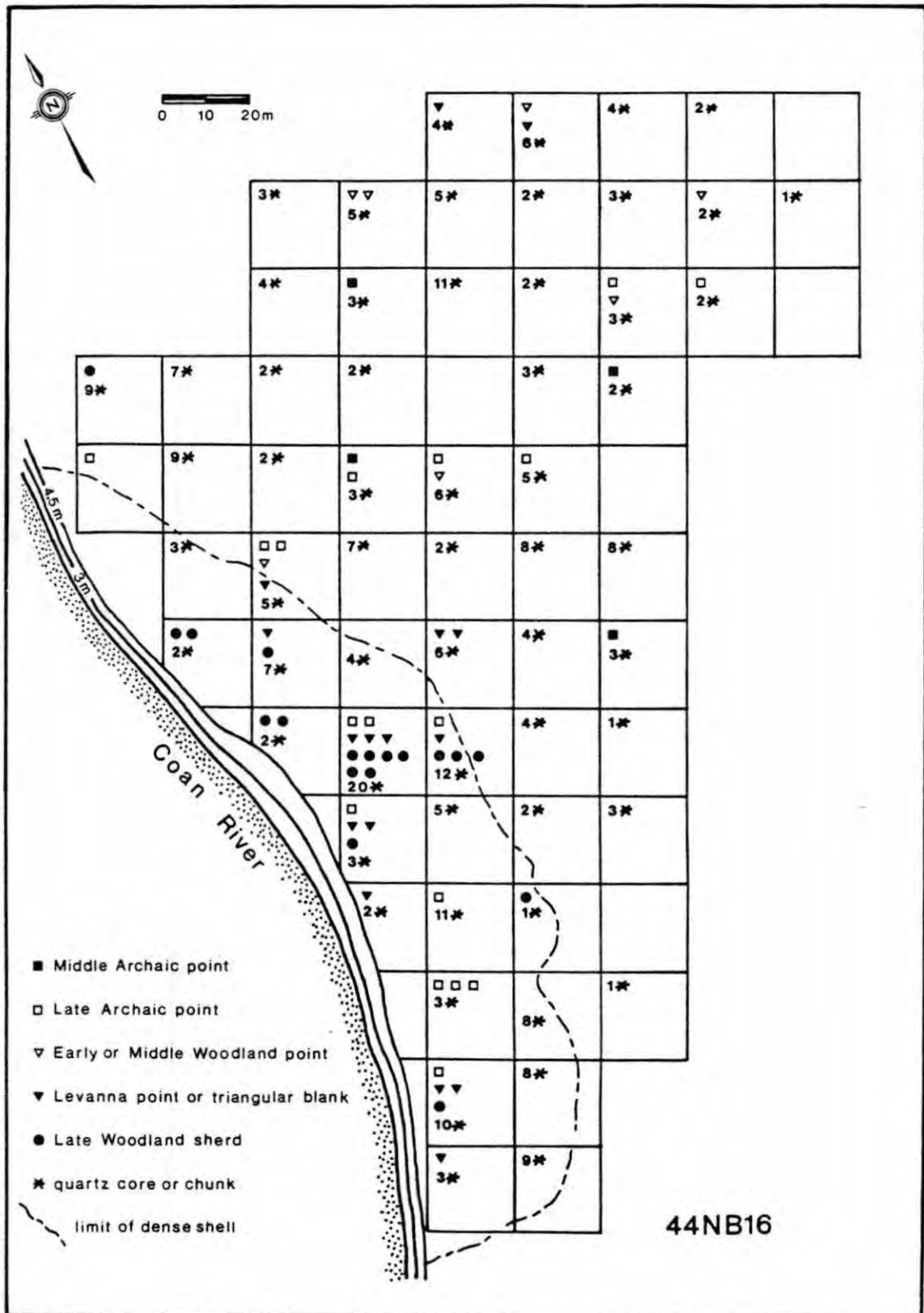


Figure 7. 44NB16 -- distribution by collection units of diagnostic points, Late Woodland ceramics and quartz cores and chunks.

- Plate 3. Lithic artifacts from 44NB16 and 44NB23:
- A, Levanna Small and Large Triangular points from 44NB16;
 - B, Triangular blanks from 44NB16;
 - C, Levanna Small Triangular points from 44NB23;
 - D, Chlorite pipe bowl fragment, 44NB23;
 - E, Triangular blanks (3 left specimens) and reworked triangular points, 44NB23.

43444



A



B



D



C



E



people producing Mockley Ware.

The total number of diagnostic Late Woodland artifacts are 33 Rappahannock Fabric-Imprinted sherds, two Rappahannock Incised sherds (one complex and one simple), four sherds of Sullivan Ware, 22 Levanna Large Triangular points, six Levanna Small Triangular points, and 15 triangular blanks. The spatial distribution of the Late Woodland artifacts, based on the controlled surface collection, coincides with most of the oyster shell concentration. Therefore, the Late Woodland occupations can be classified as an intermediate shell midden (Class 5) dating between A.D. 900 and 1500.

The two sherds of Yeocomico Plain pottery and the small, serrated triangular point probably represent very limited use of the site in the early Historic Period.

44NB19: Betz Landing

This site is located on a neck of land between the Great Wicomico River and Bush Mill Stream, at the headwaters of the Great Wicomico River. It is classified as an intermediate midden site (Class 2) which occupies the top and side of a 6 m rise. At the time of the first visit to the site, a light gray midden discoloration with a thin scatter of oyster shell was visible on top of the cultivated surface. There were also surface indications of at least three aboriginal pits, which had recently been truncated by plowing. Due to severe slope wash, the site has been taken out of cultivation and allowed to return to forest.

Minor components on the site include a Middle Archaic Morrow

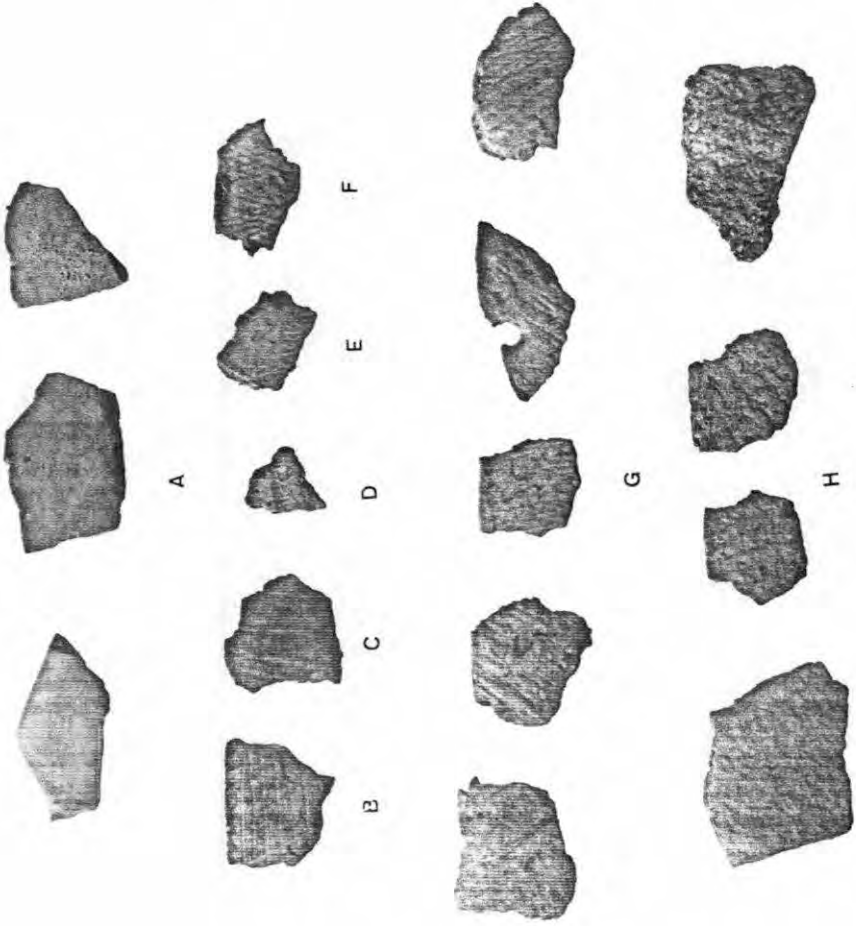
Mountain occupation, a Late Archaic component consisting of some soapstone bowl sherds, and some Early Woodland and early Middle Woodland components represented by Accokeek Cord-Marked and Popes Creek Net-Impressed sherds, and small, stemmed points made of quartz. Nearby is a separate Euro-American occupation dating from the late seventeenth to the mid-eighteenth centuries A.D.

The major occupation of this site occurred during the late Middle Woodland Period. Both Mockley Cord-Marked and Net-Impressed sherds were found (Plate 4). The collection of Mockley Cord-Marked sherds consists of nine rimsherds, 101 body sherds and four lower body sherds. One body sherd has a repair hole drilled from the exterior surface, and four body sherds have interior scraping. All sherds but one exhibit single cord-impressions; the exception is a sherd with multiple, braided cord-impressions. The cord-markings are criss-crossed, overlapping and non-overlapping. Five body sherds have been partially smoothed-over. Four body sherds and two lower body sherds have fine cord-marking, with elements only 1 mm thick.

The collection of Mockley Net-Impressed sherds is composed of 13 rimsherds, 124 body sherds, five lower body sherds, and six basal sherds. Twelve body sherds and one lower body sherd are scraped on the interior surface. Both open-net-impressed surfaces, and net-and-knot roughened surfaces occur. The latter exterior surface treatment resulted from over-paddling. Open-net impressed surfaces are predominant.

Sherds with indeterminate surfaces, or smoothed-over surfaces,

Plate 4. Ceramics from 44NB19:
A, Colono-Indian sherds;
B and C, Rappahannock Incised;
D, Townsend Corded;
E and F, Rappahannock Fabric-Impressed;
G, Mockley Cord-Marked;
H, Mockley Net-Impressed.



probably from vessel portions of Mockley Ware, include four rimsherds, six body sherds and two lower body sherds. A total of 145 eroded, shell-tempered sherds were found.

Chipped stone artifacts associated with the Mockley occupations are varied (Plate 5). One Fox Creek Stemmed point, one parallel-sided point with a straight base, three shallow side-notched points, and one small stemmed point are manufactured from rhyolite. In addition, there are four point/biface fragments of rhyolite. Four small, shallow side-notched points made from quartz were found, which are similar to points found in situ with Mockley Ware at the White Oak Point Site (44WM119). Other lithic artifacts which may be part of the Mockley Ware assemblage include 2 large, shallow side-notched points and one large midsection to a heat-treated, red jasper blade.

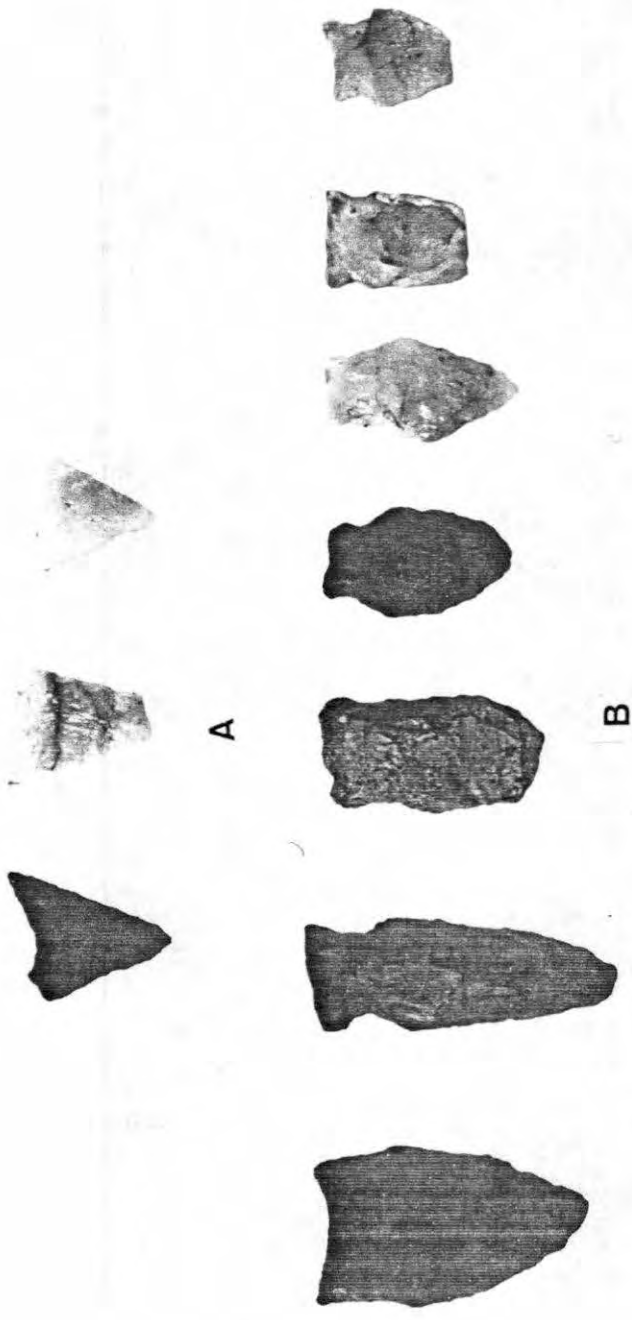
A minor Late Woodland II component (Plates 4 and 5) consists of 15 body sherds and one rimsherd of Rappahannock Fabric-Imprinted pottery, one body sherd and one rimsherd of Rappahannock Incised pottery (probably simple motif), and one body sherd of the Townsend Corded type (the cord technique was applied by the edge of a paddle wrapped in wicker-type fabric). Three Levanna Small Triangular points are also part of this component, which is classified as a small midden site (Class 3).

Four Colono-Indian potsherds and the bit end of a terra-cotta tobacco pipe are probably associated with the nearby late seventeenth and early eighteenth century Euro-American occupation. Two of the Colono-Indian sherds came from the same vessel. One sherd is a

Plate 5. Points from 44NB19:

A, Levanna Small Triangular points;

B, miscellaneous points (1 to r): Fox Creek Stemmed, 2
Selby Bay Side-Notched, 2 small stemmed points, 2
shallow side-notched points.



A

B



porringer handle and the other is a body sherd (Plate 4). Both sherds are lightly burnished and contain no temper. The remaining two Colono-Indian sherds come from different vessels. One is a body sherd with natural inclusions of limonite in the paste and a lightly burnished interior surface. The other is an everted rimsherd with sandy paste and an unburnished, plain exterior surface.

44NB22

This site is a small, thin shell midden (Class 6), located in a cultivated field south of Boathouse Pond, on the east side of the Coan River. It is situated adjacent to the base of the slopes and necklands. The area of artifacts and oyster shell is near an abandoned house of the late nineteenth and early twentieth centuries A.D.

In addition to artifacts attributable to the occupation of the house, some early eighteenth century European sherds, an Early Woodland Period aboriginal sherd, and some flakes were collected. A deeply concave, Levanna Small Triangular point was found which probably dates from A.D. 1300 to the early Historic Period.

44NB23

A ravine separates this site from 44NB16 to the south. The site is an intermediate shell midden (Class 5) that is within the 23 cm plow zone. The main concentration of oyster shell is near the bank of the Coan River, although artifact scatter continues east of the oyster shell, paralleling the ravine.

Like most of the sites in the Chicacoan locality, this one is

multicomponent. A single St. Albans point indicates some use of the site in the Early Archaic Period. A number of Savannah River Contracting-Stemmed variants, Holmes points and a soapstone bowl sherd are representative of occupations during the Late Archaic Period. Several short-stemmed quartz points similar to Stephenson's et al. (1963:143-144) Calvert type, a Potts point, and some eroded sand- and pebble-tempered sherds are the sole remains of Early Woodland and, possibly, early Middle Woodland components. No diagnostic artifacts dating from the late Middle Woodland were found.

Both general and controlled surface collections were made from the site. Therefore, the Late Woodland and Protohistoric artifacts will be discussed according to the manner in which they were collected. The Late Woodland-Protohistoric artifacts (see Plate 3) from the general surface collection include two Levanna Small Triangular points, 1 Levanna Large Triangular point, two triangular blanks, three Rappahannock Fabric-Imprinted sherds, one Sullivan Ware sherd, and two plain shell-tempered sherds. Seventeen eroded, shell-tempered sherds were also found, but cannot be confidently assigned to any particular ceramic ware.

The controlled surface collection resulted in four Levanna Small Triangular points, two Levanna Large Triangular points, three reworked triangular points, four triangular blanks (see Plate 3), 10 Rappahannock Fabric-Imprinted sherds, five Yeocomico Plain sherds, five Sullivan Ware sherds, and one sherd of Yeocomico Scraped. In addition, there were 36 eroded, shell-tempered sherds. An aboriginal

pipe bowl fragment, made of greenish-black chlorite, was recovered. It is polished, and has a protruding lip. Protohistoric and Historic chlorite pipes have been found elsewhere in the lower Northern Neck (Barka 1968:50-51).

Like site 44NB16, the two major components of this site are Late Archaic and Late Woodland to Protohistoric. Unlike site 44NB16, however, there is more of a separation between the concentrations of diagnostic artifacts from the two components. The highest density of Late Archaic points is in the area of the oyster shell concentration. The greatest number of triangular points and blanks overlaps the Archaic distribution along the eastern periphery of the oyster shell midden and extends eastward (Figure 8). The distribution of the identifiable and eroded shell-tempered pottery mirrors the major concentration of Late Woodland-Protohistoric triangular points and blanks (Figure 8). It is most probable that the distribution of these artifacts resulted from occupations between A.D. 1300 and 1607/08.

44NB25: Haynie Site

This site is located near the mouth of Cod Creek, on the east bank of the creek and southeast of site 44NE9. It is classified as an intermediate shell midden (Class 5). When the site was first visited, part of it had been bulldozed in preparation for cottage construction. An undisturbed portion of the bank along Cod Creek was chosen for profiling, in order to determine the depth of the shell midden. At this point, whole oyster shell, charcoal and Mockley Ware potsherds were mixed to a depth of about 25 cm. The cultural deposit

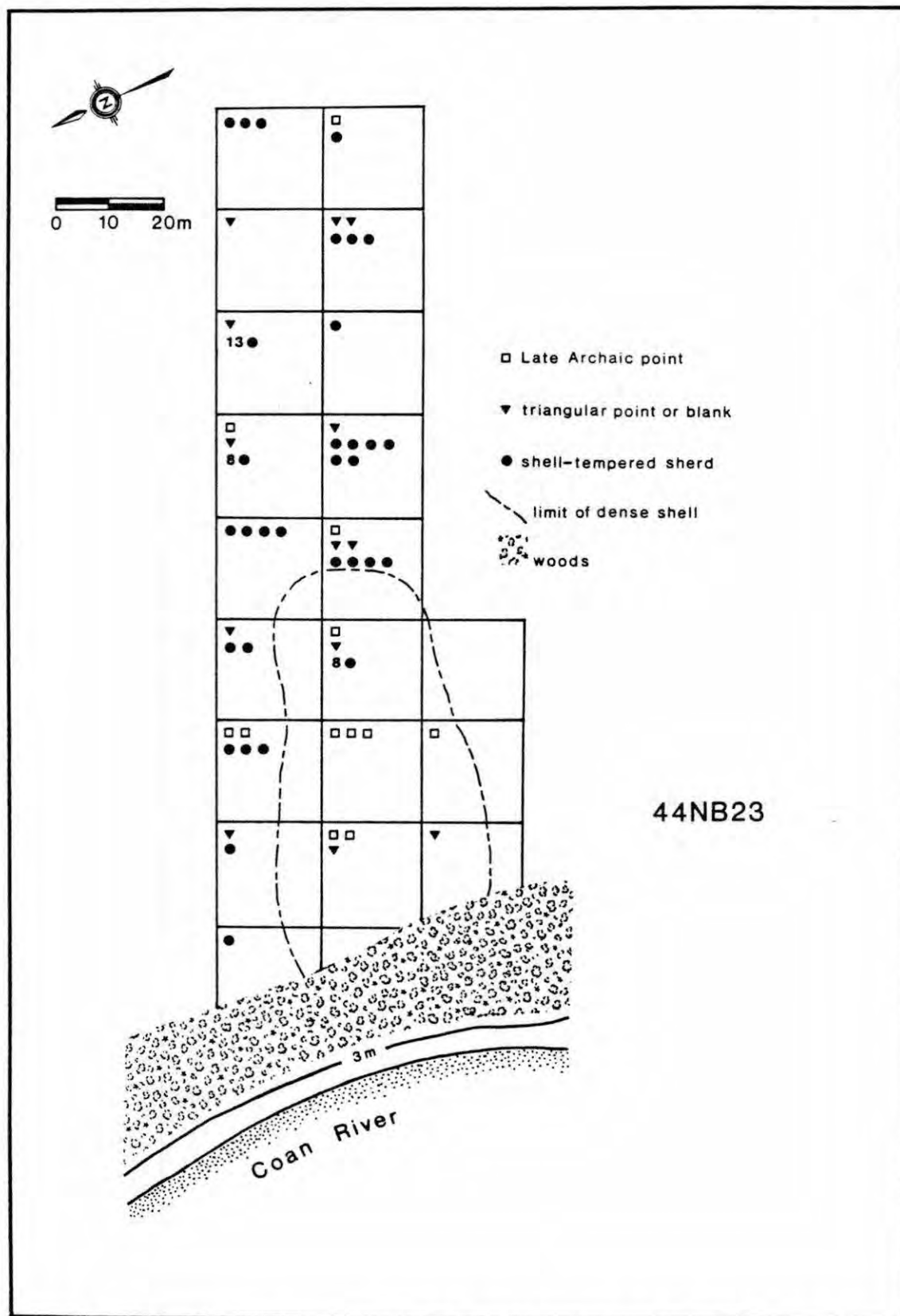


Figure 8. 44NB23 -- distribution by collection units of Late Archaic and Late Woodland-Protohistoric points and shell-tempered pottery.

sat atop a sterile horizon of yellowish sand. Archeological remains of an eighteenth century brick structure were observed in the bank at the northwest corner of the site.

The following artifacts were collected from the bank profile or the surface: two rimsherds of Mockley Cord-Marked; 24 Mockley Cord-Marked body sherds; one lower body sherd of Mockley Cord-Marked; four rimsherds of Mockley Net-Impressed pottery; 26 Mockley Net-Impressed body sherds; two basal sherds of Mockley Net-Impressed pottery; three body sherds of shell-tempered pottery with coarse, overlapping fabric-impressions; one rimsherd, two body sherds, and two lower body sherds of a smoothed or plain shell-tempered pottery; one plain shell-tempered body sherd with finger nail impressions on the exterior surface; and 16 eroded, shell-tempered body sherds.

The ceramic assemblage from this site is not unlike the variation in the surface treatment of Mockley Ware in Zone 2 of the Maycocks Point Site (Opperman 1980:25-27). This zone was dated at A.D. 875 \pm 90. Therefore, the ceramic assemblage from the Haynie Site is interpreted as a single component dating from the last half of the late Middle Woodland Period, probably between A.D. 550 and 900.

44NB26

This is a small decomposed site (Class 9), located near the head of the eastern branch that flows into the mouth of Cod Creek. The site is in a cultivated field. The collection includes some flakes and bifaces of quartz, the quartzite basal fragment of a Middle Archaic Guilford point, a quartzite Late Archaic Savannah River variant point,

and one Levanna Small Triangular point made from quartz.

44NB28

This site is in the interior uplands, on the east side of the Coan River. The main component of the site is Euro-American, dating from A.D. 1750 to 1820. A concentration of European artifacts, oyster shells, and light gray soil discoloration mark the former house site. Off to one side of this, a few quartzite, quartz and rhyolite flakes, a biface, and a Selby Bay Side-Notched point were found. This prehistoric component is interpreted as a small decomposed site (Class 9) dating to the late Middle Woodland Period. The site is in an agricultural field.

44NB29

This site is situated near an unnamed cove, due north of Headly Cove, along the east side of the Coan River. The dark soil discoloration and oyster shell scatter is clearly visible on the surface of the cultivated field.

There are three components. An historic, Euro-American dwelling site, dating from the early eighteenth century A.D., is located on top of a Late Woodland I occupation and a late Middle Woodland occupation. Artifacts from the Late Woodland I component include one Levanna Large Triangular point, one small, pecked and ground trianguloid celt of greenstone, and five Rappahannock Fabric-Imprinted sherds. The late Middle Woodland component is represented by two Mockley Net-Imprinted sherds. Four plain, shell-tempered sherds were also found which could

belong to either prehistoric component. The prehistoric occupations are interpreted as small shell midden sites (Class 6) dating from the late Middle Woodland Period to the Late Woodland I.

44NB41

A sparse scatter of oyster shells demarks this intermediate shell midden site (Class 5). It is located on the west bank of the Coan River, below Stevens Point. Tests with a soil corer indicated that all of the midden is within the plowzone.

The collection from the site consists of four Rappahannock Fabric-Imprinted sherds, one plain, shell-tempered sherd, 4 eroded, shell-tempered sherds, and one quartz Levanna Large Triangular point.

44NB44: Forest Kitchen Site

This intermediate shell midden site (Class 5) is located on the west bank of the Coan River, about 0.5 km south of site 44NB41. A profile cut along the edge of the bluff exposed a midden of whole oyster shells about 23 cm deep. Unfortunately, very little of the midden remains intact; most of it has been disturbed by cultivation.

Apparently, the site is multicomponent. A few artifacts could be classified as Late Archaic. Most of the diagnostic material, however, is from Late Woodland I occupation. The lithic artifacts include one Levanna Large Triangular point, two triangular blanks, and one trianguloid, ground stone celt of greenstone. The ceramic artifacts consist of Rappahannock Fabric-Imprinted sherds, one Rappahannock Incised sherd (simple motif), and five eroded, shell-tempered sherds.

Two Currioman Fabric-Impressed sherds were also collected.

44NB49: Cowart Site

This is a thin, intermediate shell midden (Class 5), located on the west bank of the Coan River, near Lake, Virginia. Most of the site is covered by grass, although a portion of the site is in a plowed garden.

The collection consists of a quartz Levanna Large Triangular point and one Rappahannock Fabric-Impressed sherd.

44NB56: Long Point Site

The information on this site is presented in Chapter IV.

44NB57

This site is located on the shoreline of the west bank of the Coan River, about half-way between sites 44NB41 and 44NB44. It is classified as an intermediate shell midden (Class 5), although most of the site is covered by a lawn. Complete oyster shells were visible in a few bare patches in the lawn. Because of the ground cover, the site size is approximate. One Rappahannock Fabric-Impressed sherd was found.

44NB63

This is an intermediate decomposed site (Class 8) located in the uplands, north of a feeder creek flowing into Mill Creek. There is no midden discoloration, oyster shell, or any indication of subsurface features. The entire site appears to be within the 23 cm plow zone.

The collection consists mainly of non-diagnostic lithic materials made from quartz. A few cores, flakes, several bifaces, and point/biface fragments were found. A non-diagnostic quartz corner-notched point and a Yeocomico Plain potsherd were also recovered.

On the basis of so few diagnostic artifacts, it is difficult to estimate what the nature and extent of the Protohistoric or early Historic occupation may have been. Perhaps some of the quartz bifaces and debitage were associated with the Yeocomico Plain potsherd. Even so, the Protohistoric or early Historic component should probably be classified as a small decomposed site (Class 9).

44NB66

This site is east of the previous site (44NB63), in the uplands north of Mill Creek. The major component of the site consists of brick rubble, oyster shell, and historic Euro-American artifacts. This represents the archeological remains of a mid-nineteenth century house site, clearly visible as a midden stain and artifact cluster in the cultivated field.

A minor aboriginal component includes a small, serrated triangular point similar to Holland's Type A, a quartzite side scraper, and a few quartz and quartzite flakes. This site is located further from an estuary than any of the shell middens containing evidence indicative of aboriginal occupation, only. Therefore, the aboriginal component is classified as a small decomposed site (Class 9) of the early Historic Period.

44NB71

This intermediate decomposed site (Class 8) is located in a cultivated field, along a high bluff on the west side of the Coan River. The site is demarked by a scatter of lithic debris and artifacts. One small feature, with some oyster shell in it, had recently been disturbed by the plow. This was the only oyster shell visible on the entire site.

The collection from the site consists of a majority of quartz cores, chunks and flakes. A limited Late Archaic component is present. The tip of a rhyolite point/biface, a rhyolite point/biface fragment, and a rhyolite flake may be indicative of a small, late Middle Woodland occupation (Class 9). Otherwise, a quartz Levanna Large Triangular point and a chert triangular blank indicate limited use of the site during the time from A.D. 900 to 1300. The Late Woodland I occupation is also classified as a small decomposed site (Class 9).

44NB75

This is a small, thin shell midden (Class 6) located on the south bank of The Glebe. The shell midden has been completely disturbed by plowing.

The collection includes chunks, flakes, a cord-marked, shell-tempered sherd (probably Sullivan Ware), and the base of a quartz Levanna Large Triangular point.

44NB86

This is an intermediate shell midden site (Class 5) located on

the east bank of the Coan River. The thin oyster midden has been destroyed by plowing, and is now within the 20 cm plow zone.

Non-diagnostic artifacts in the collection include utilized flakes, bifaces, flakes, chunks, and cores. The few diagnostic artifacts indicate limited occupations during the Late Archaic, Early Woodland, and Protohistoric-Historic Periods. The single Protohistoric-Historic artifact is a sherd of Yeocomico Plain pottery. Four eroded, shell-tempered sherds were also found.

44NB94

This is a small shell midden (Class 6) situated on a bluff on the west side of Boathouse Pond. The site is in mixed hardwoods and pines, and is being severely eroded. The oyster midden is only about 8 cm thick. A single body sherd of Mockley Net-Imprinted pottery was found eroding out of the bluff.

44NB97

Like most of the extensive, shallow, multicomponent sites in the necklands along the Coan River, this large shell midden (Class 4) covers an entire headland. The site is on the east side of the river, adjacent to the mouth of Boathouse Pond. Soil coring located at least one subsurface feature filled with oyster shell and charcoal. However, most of the shell midden is within the plow zone.

There was apparently limited use of the site during the Early Archaic and Late Archaic Periods. The collection of late Middle Woodland artifacts consists of two Mockley Cord-Marked sherds and one

rhyolite Selby Bay Side-Notched point. A pecked and ground, rectanguloid, greenstone celt is referable to either the Mockley occupation or, perhaps, to the Protohistoric-Historic occupation. The collection of Protohistoric and early Historic material includes: two triangular blanks; five sherds of Rappahannock Fabric-Imprinted pottery; one Rappahannock Incised sherd (simple motif); four plain, shell-tempered sherds; one Levanna Small Triangular point; one small triangular point similar to Holland's Type A; one Potomac Creek-like, smoothed, cord-marked sherd; and one blue glass tube bead. According to Kidd and Kidd (1970), the bead is classified as Class II, Type a41 (see Plate 2). Also found were 26 eroded, shell-tempered sherds.

Most of the total number of diagnostic artifacts date to the Protohistoric or early Historic Periods. On the other hand, the late Middle Woodland material is quite limited. It is suggested, therefore, that the Mockley occupation was probably restricted to a small shell midden (Class 6). The Protohistoric and early Historic material was scattered over the southeastern 0.81 ha of the site. It is classified as an intermediate shell midden (Class 5) dating between A.D. 1500 and 1650.

44NB100

This small shell midden (Class 6) is on the east bank of the Coan River, near Walnut Point. The margins of the site have been disturbed by landfill operations and cottage construction. The depth of the shell midden is not more than 15 cm.

Artifacts collected from the site include flakes, chunks, one plain, shell-tempered sherd, and one eroded shell-tempered sherd.

44NB102

This very thin, intermediate shell midden (Class 5) is in a broad, cultivated field adjacent to the east bank of the Coan River. Plowing has destroyed the shell midden. The collection consists of one quartz flake, one quartzite core and one Rappahannock Fabric-Imprinted sherd.

44NB105

This small, sparse shell midden (Class 6) is on a rise along the west bank of the Coan River, opposite Hawk Nest Point. The site is at the base of the uplands, and is extremely eroded. A rimsherd from a small, Yeocomico Plain vessel and one eroded, shell-tempered sherd were collected. The site is probably Protohistoric or early Historic.

44NB107

The main occupation of this site occurred between A.D. 1730 and 1840. It is the site of an historic structure, visible on the surface of the cultivated field as a cluster of brick fragments, oyster shell, and Euro-American artifacts. The site is in the interior uplands, above the head of the Coan River.

A single sherd of Mockley Cord-Marked pottery was found outside the main historic cluster.

A few historic artifacts dating to the occupation of the house site were also in the vicinity of the aboriginal sherd. All of the

eighteenth and early nineteenth century house sites discovered in the Chicacoan locality have been characterized by clusters of oyster shell and brick rubble. Like site 44NB66, this site is too far from an estuary for any of the oyster shell to be associated with the aboriginal occupation (compare these two sites to 44NB63, which has no Euro-American component). Therefore, the Mockley component of this site is classified as a small decomposed site (Class 9).

44NB108

This intermediate shell midden (Class 5) sits atop the high neckland adjacent to the east bank of the Coan River, near the "L" shaped bend in the river. The artifact scatter is thin, as is the distribution of the oyster shell. The site has been completely disturbed by plowing.

The greatest use of the site, based on the number of diagnostic artifacts found, was during the Late Archaic Period. There were also limited Middle Archaic and Early Woodland occupations. The collection of late Middle Woodland artifacts includes one Fox Creek Lanceolate point, one trianguloid rhyolite blank, one Selby Bay Side-Notched point, and four Mockley Net-Imprinted sherds. Two Rappahannock Fabric-Imprinted sherds and three triangular blanks were found which could date from the Late Woodland to the early Historic Periods. The Protohistoric and early Historic artifacts include one Levanna Small Triangular point with fine serrations (matches a specimen from 44NB111, Area D), three terra-cotta clay pipe stems, and three sherds of Yeocomico Plain pottery. Three sand-tempered Colono-Indian sherds

(all from the same vessel) were also found. A few eighteenth and nineteenth century sherds and glass bottle fragments were found along the eastern fringes of the site.

44NB109

This is a small shell midden (Class 6) located west of 44NB108, on the high neckland adjacent to the east bank of the Coan River. The oyster shell scatter is slight and confined entirely to the plow zone.

A single Savannah River variant point is the only diagnostic artifact found which predates A.D. 200. Most of the artifacts are either late Middle Woodland or Late Woodland I. The collection includes one Selby Bay Side-Notched point, one Selby Bay rhyolite blank, and one Mockley Cord-Marked sherd. The Late Woodland I artifacts consist of one Levanna Large Triangular point and one large triangular blank. A pecked, ground and polished celt made from greenstone was recovered. It is trianguloid in shape and probably dates to the Late Woodland Period. One eroded, shell-tempered sherd was also found.

44NB110

This is an intermediate shell midden (Class 5) located west of site 44NB109, on the high neckland beside the east bank of the Coan River. The oyster shell is scattered lightly over the site and does not extend below the base of the plow zone.

None of the occupations of this site appear to have been very extensive. Evidence of occupations prior to A.D. 200 include

diagnostic artifacts of the Middle Archaic, Late Archaic, and Early Woodland Periods. The collection of late Middle Woodland artifacts includes one Selby Bay Side-Notched point and three sherds of Mockley Net-Impressed pottery. Late Woodland I artifacts include one reworked Levanna Large Triangular point, one chert triangular blank and, perhaps, three sherds of plain, shell-tempered pottery. One eroded, shell-tempered sherd was also found.

44NB111: Boathouse Pond

The data pertaining to this site are presented in Chapter IV.

44NB112

This site is located along the east bank of the Coan River, northeast of site 44NB108. It is a small, thin shell midden (Class 6). Soil coring indicates that the shell midden does not extend below the base of the 23 cm plow zone.

At least four components are present on the site: Late Archaic, Early Woodland, Late Woodland and a seventeenth through nineteenth century Euro-American component. The collection of Late Woodland II artifacts includes 2 Levanna Small Triangular points; one straight base, isosceles triangular point; two triangular blanks; two sherds of Rappahannock Fabric-Impressed pottery; and one sherd of Sullivan Ware.

44NB116

This is the site of an historic structure, with much oyster shell and brick rubble lying on top of the cultivated field. The Euro-American artifacts date the occupation of the site between A.D. 1790

and 1840. The site is near the head of Bridgeman Creek, on Neuman Neck.

A minor Middle Archaic component is present. A red jasper Levanna Large Triangular point is the sole Late Woodland I artifact.

44NB119

This site is located in the interior uplands, east of the Coan River, and north of the Clark Millpond. The main component of the site is a small area of oyster shell, brick rubble and Euro-American artifacts. This historic occupation occurred between A.D. 1730 and 1800.

Aboriginal artifacts collected from the vicinity of the historic site include one Protohistoric or early Historic quartz triangular point (similar to a specimen from 44NB111-D), one elongated biface of rhyolite and one quartzite flake. The aboriginal occupation is interpreted as a small, decomposed site (Class 9).

44NB123-A

This is a small shell midden (Class 6) located on the east bank of Hull Creek. Part of the shell midden is cultivated, and part is in mixed hardwoods. In the latter portion of the site, the intact shell midden is 8 cm thick.

The site has at least four components: Late Archaic, Early Woodland, late Middle Woodland, possibly Late Woodland I, and historic Euro-American. The late Middle Woodland artifacts include one Mockley Net-Imprinted sherd, and two thick, eroded, shell-tempered sherds.

One crude, yellow jasper triangular blank (similar to specimens from nearby site 44NB128) was found which may date to Late Woodland I times.

44NB125

This is a small shell midden (Class 6) located on the north bank of Floyds Cove, along the east side of Hull Creek. Coring showed the shell midden to be 15 cm deep.

A trianguloid, pecked and ground greenstone celt was collected from the site. No other artifacts, of any class or type, were observed.

44NB126

This is a small, dense shell midden (Class 6) located east of 44NB125, on the north bank of Floyds Cove. Most of the shell midden is in a cultivated field, although a narrow strip about 30 cm thick lies along the bank, which is not plowed.

The collection includes the bit end of a ground, greenstone celt, eight Rappahannock Fabric-Imprinted sherds, five Currioman Fabric-Imprinted sherds, one Rappahannock Incised sherd (probably from a simple motif), two plain, shell-tempered sherds, and one Mockley Cord-Marked sherd. A total of 19 eroded, shell-tempered sherds were also found. On the basis of this assemblage, the main occupation of the site probably occurred during Late Woodland I, circa A.D. 900 to 1300.

44NB127: Watersmeet

This site is located on a prominent headland, along the middle of Hull Creek's eastern shore. When the site was discovered, most of it

had already been destroyed by bulldozing, preparatory to cottage construction. Undisturbed midden remained along the northern edge of the site. There, the shell midden was 10 cm thick. It is estimated that the site was originally a small shell midden (Class 6).

At least two components were present: an Early Woodland and a Late Woodland I. The artifacts that are Late Woodland I include one Levanna Large Triangular point, one straight base triangular point with excurvate edges, one Rappahannock Fabric-Impressed sherd, and one sherd of Currioman Fabric-Impressed pottery.

44NB128: Plum Nelly

The information pertaining to this site is in Chapter IV.

44NB131

This intermediate shell midden (Class 5) is located along the west bank of Hull Creek, on Fountain Neck. The 20 cm plow zone has destroyed the midden.

Diagnostic artifacts include two sherds of Mockley Cord-Marked pottery and three sherds of Rappahannock Fabric-Impressed pottery. In addition to a late Middle Woodland component and a Late Woodland component, a few Euro-American artifacts dating from the early eighteenth century A.D. were found.

44NB132

This site is a small shell midden (Class 6) located west of 44NB131, on Fountain Neck. The shell midden has been destroyed by plowing.

The collection includes flakes, chunks, one sherd of Rappahannock Fabric-Imprinted pottery, and two eroded, shell-tempered sherds. A Late Woodland occupation of the site is suggested.

44NB139-A

This is an intermediate shell midden (Class 5) located on the east bank of Presley Creek. Plowing has destroyed most of the site.

One quartz triangular blank and one Rappahannock Fabric-Imprinted sherd were collected, indicating use of the site at least during the Late Woodland Period.

44NB145

This is an intermediate shell midden (Class 5) situated near the head of a cove along the east side of Presley Creek. Soil coring indicated that no midden remained below the base of the plow zone.

At least two aboriginal components are present on the site. One is a Late Archaic occupation. The other is a late Middle Woodland occupation, which was apparently much lighter. Diagnostic late Middle Woodland artifacts included one Selby Bay Side-Notched point, one sherd of Mockley Net-Imprinted pottery, and two Mockley Cord-Marked sherds. In addition, three eroded, shell-tempered sherds were collected. The Mockley occupation was restricted to a small portion of the total "site." Therefore, it is classified as a small shell midden (Class 6).

44NB147: Blue Fish Beach

The data on this site are presented in Chapter IV.

44NB158

This is a small decomposed site (Class 9), with an occasional oyster shell visible on the top of the cultivated surface. These stray oyster shells probably come from a few small, discrete features that have been destroyed by plowing. There is no evidence of shell midden, nor is there any soil discoloration. The site sits atop a rise, along the north side of Bush Mill Stream. It is south of site 44NB19, in the interior uplands at the headwaters of the Great Wicomico River.

The major components of the site are Early Woodland and early Middle Woodland. A late Middle Woodland component is represented by seven Mockley Net-Imprinted sherds and six Mockley Cord-Marked sherds. In addition, two plain sherds of fine, compact clay (non-tempered) and nine eroded, shell-tempered sherds were found.

44NB181

This small, thin shell midden (Class 6) is situated between sites 44NB126 and 44NB125. It is located on the north bank of Floyds Cove, on the east side of Hull Creek. The oyster shell midden has been destroyed by plowing.

A Rappahannock Fabric-Imprinted sherd is the only diagnostic artifact found. On this basis, the site was occupied at least during the Late Woodland Period.

44NB185

Of all the sites discovered during the survey, this is one of the

most interesting. The "site" is located on a small headland (less than 0.20 ha) along the west side of Presley Creek. It is situated at the juncture of the necklands and uplands. The trees and brush had recently been cleared from the headland, as the first step in putting the land in cultivation. Thus, the clearing had proceeded with a minimum of soil removal, since the farmer wanted as much of the topsoil to remain as possible. After this, the land was plowed, apparently for the first time. This resulted in the exposure of six discrete features (Figure 9).

Area A is an oval cluster of oyster shell, 2 m north-south, by 8 m east-west. Artifacts found include one quartz decortication flake and one lower body sherd of Mockley Net-Impressed pottery.

Area B is a roughly elongated, oval cluster of oyster shell, 3 m north-south, by 17 m east-west. The collection consists of seven body sherds from the same Rappahannock Fabric-Impressed vessel, one body sherd of Yeocomico Plain pottery, six eroded shell-tempered sherds, one quartz chunk, two quartzite flakes, and one quartzite point/biface fragment.

Area C is a half-moon shaped cluster of densely packed oyster shell, 2 m north-south, by 3 m east-west. Artifacts from the feature include one chert side-notched point, one quartz chunk, one quartz decortication flake, and one body sherd and one basal sherd from a Mockley Cord-Marked vessel. The chert side-notched point is quite similar to other chert points found at Area B of site 44NB111 and Woodbury Farm #1. Both of these sites have major Mockley occupations.

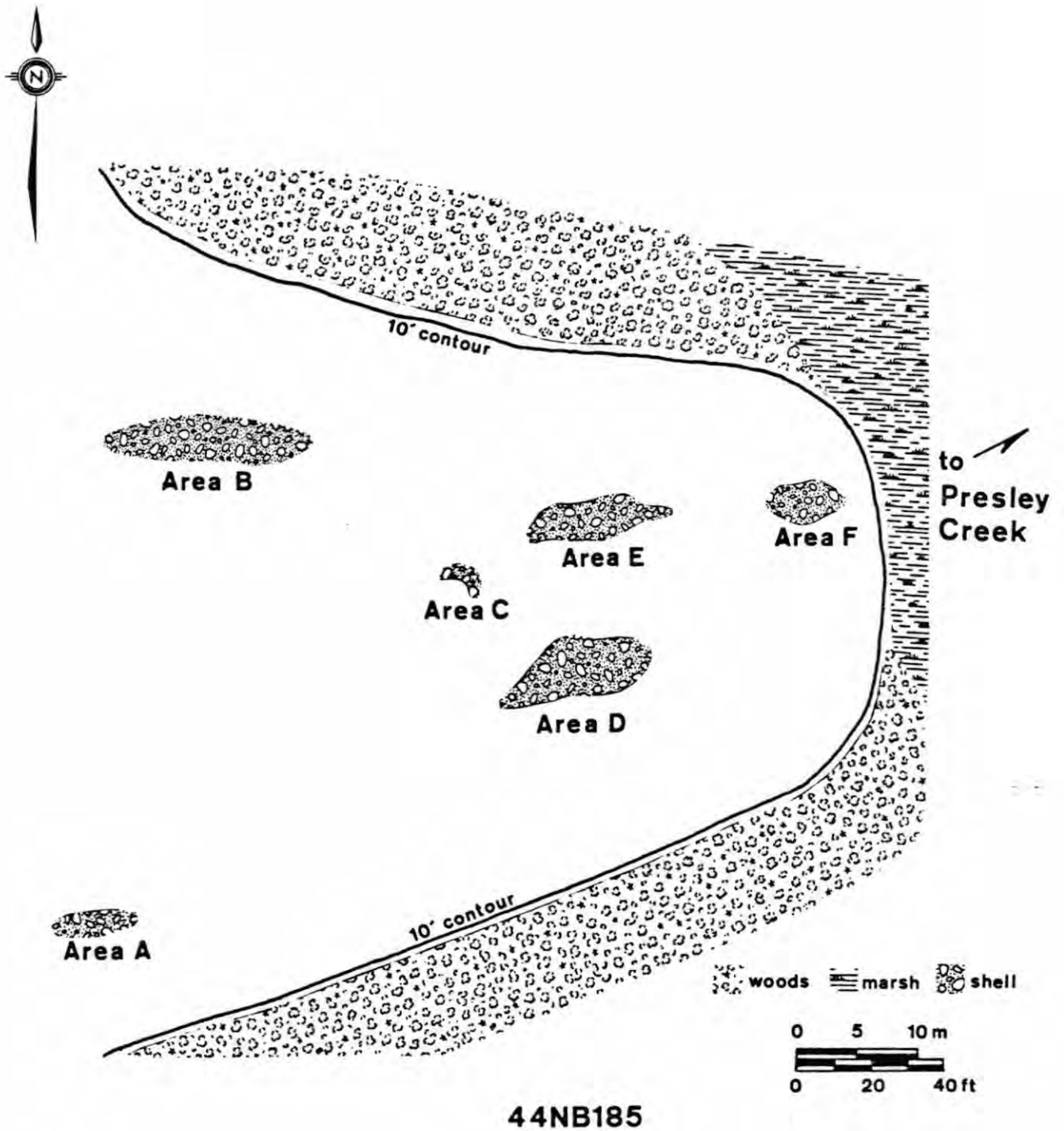


Figure 9. Map of 44NB185 showing discrete features visible on surface.

Area D is an elongated feature of dense oyster shell, 6 m north-south, by 13 m east-west. The lithics collected from the feature consist of one red jasper core, one quartzite chunk, one quartzite decortication flake, one quartzite flake, two quartz decortication flakes, and one quartz flake. The ceramics found include one body sherd and one basal sherd to a Mockley Net-Imprinted vessel, three body sherds and one rimsherd to a Mockley Cord-Marked vessel, two smoothed, shell-tempered body sherds, and two eroded, shell-tempered body sherds.

Area E is an elongated, thin cluster of oyster shell, 3 m north-south, by 12 m east-west. Lithic artifacts found include three quartz chunks, one quartz decortication flake, one quartzite flake, one yellow jasper core, and one quartzite biface. The pottery collected from the feature consists of eight Mockley Cord-Marked body sherds, one smoothed, shell-tempered sherd, and one smoothed sherd made of a fine past with stray, quartz grain inclusions.

Area F is an oval-shaped cluster of thin oyster shell, 2.5 m north-south, by 7 m east-west. The collection includes one quartz flake, one quartz core, three quartzite cores, and one body sherd of Yeocomico Scraped pottery.

Areas A, C, D and E are Mockley features dating from the late Middle Woodland Period. Areas B and F are features which probably date from the Protohistoric or early Historic Periods.

This site is quite informative, in that it provides spatial data on a series of discrete features, each of which represents a brief

interval of time; perhaps no more than a week. It also gives archeologists an insight into one means by which shell middens are formed. As discovered, the "site" is actually six separate features, created at various intervals over a total span of perhaps 1,200 years. If this headland had been used more frequently during this time, the discreteness of the features would have begun to blur, as each group of oyster harvesters used a different spot on the headland. The end result would have been a seemingly continuous sheet of oyster shell midden across the headland.

6. SITES ON THE CORROTOMAN RIVER

Indian Town Farm #1

William Dinwiddie discovered this site during his survey of 1891. It is classified as a large shell midden site (Class 4), located in Lancaster County, on the east side of the Corrotoman River, along an unnamed cove (See Figure 2). Some of Dinwiddie's observations pertaining to this site are worth quoting.

This shell field is the largest, except one discovered on the Rappahannock river, and has an area of fully 60 acres. While this shell field is fairly homogenous, on its inner margins may be seen the circles representing lodge sites, which were not buried under the heavier debris of shell found toward the center and creek bank. It has an extreme depth of about 4 feet (Holmes et al. 1891).

There can be no doubt that the site visited by the survey team in 1978 and the site discovered by Dinwiddie are one and the same. Two maps, one drawn by Dinwiddie and the other annotated by him, make it possible to correlate the location of his site with current

topographic maps.

However, the present extent and depth of the site is not as great as originally estimated by Dinwiddie. The spatial extent of the oyster shell and dark earth midden is approximately 9.3 to 10.13 ha (23 to 25 acres). Two-thirds of the site's shoreline was walked, and no thick deposits of oyster shell were observed. In several places, however, the bank had slumped, presenting the illusion of a thick oyster shell midden. It is possible that either the deep oyster shell midden mentioned by Dinwiddie was further down the shoreline than we walked, or that he mistook shoreline slump as a thick shell midden. We questioned the landowner about the possibility of the shell having been quarried from the site, for burning in a lime kiln. The man has lived on this property all of his life, and he had no recollection of such an event. Nor did the man's father, who owned the property before him, ever tell his son about quarrying shell on their farm. Nonetheless, there is the possibility that some shell quarrying occurred, though it seems rather remote.

Two cultivated portions of the site were collected from; and a large, wooded portion was surveyed by soil coring, digging exploratory pits, and examining the bank along the shoreline. In the surveyed wooded area, the site has a uniform midden depth of 10 to 15 cm. The midden is composed of whole oyster shells and extremely dark soil.

The two cultivated tracts collected from were designated areas A and B. The following material was found in Area A: one Levanna Large Triangular point; one Levanna Small Triangular point; one piece of

sheet copper cut into a roughly triangular form (see Plate 2); four Rappahannock Fabric-Imprinted sherds; two plain, shell-tempered sherds; four eroded, shell-tempered sherds; and two sherds of very fine paste, non-tempered plain pottery. Also found were flakes of yellow jasper, chert, and quartz.

The collection from Area B consists of the following artifacts: one triangular biface; four Levanna Small Triangular points; two triangular blanks; nine Rappahannock Fabric-Imprinted sherds; seven plain, shell-tempered sherds; three Mockley Cord-Marked sherds; three Currioman Fabric-Imprinted sherds; and 18 eroded, shell-tempered sherds. A high percentage of yellow jasper, red jasper, chert, and Harpers Ferry quartzite flakes were found, as well as flakes of quartz and, to a lesser extent, quartzite. A few Late Archaic and Early Woodland artifacts were also collected.

It is interesting to note that in a court transaction concerning the division of the Corrotoman Estate, a map, surveyed December 31, 1817, shows the unnamed cove on which the archeological site is located as "Indian Town Creek." The land to the south of this cove is referred to as "Indian Town Quarter." John Smith's map of Virginia shows five villages of the Cuttatawomen I in the vicinity of the Corrotoman River (see Figure 1). It is possible, therefore, that the early nineteenth century place names mentioned above are references to the existence of a seventeenth century Indian settlement along the cove.

On the basis of the archeological survey, the main component of

this site dates no earlier than the Late Woodland Period. The cut piece of sheet copper and the early nineteenth century place names of "Indian Town Creek" and "Indian Town Quarter" are strongly suggestive of protohistoric and historic Indian occupations, probably by the Cuttatawomen I chiefdom.

Indian Town Farm #2

This small decomposed site (Class 9) is located southwest of Indian Town Farm #1, on the east side of the Corrotoman River. The site is in a cultivated field. The collection consists of six Mockley Cord-Marked sherds and two plain, shell-tempered sherds. The component is late Middle Woodland.

Indian Town Farm #3

This is a small shell midden (Class 6) situated along the east side of the Corrotoman River, in the same broad, cultivated field as Indian Town Farm #2. It has been completely destroyed by plowing.

The collection includes the following ceramics: four Mockley Cord-Marked sherds; 10 sherds of a smoothed-over, cord-marked, shell-tempered pottery; eight plain, shell-tempered sherds; one plain, shell-tempered rimsherd with a folded rim; one Rappahannock Incised sherd (complex motif); and 29 eroded, shell-tempered sherds. The collection may represent two components, one being late Middle Woodland and the other Late Woodland I.

Indian Town Farm #4

Like the two previous sites, this one is located in the same

broad, cultivated field along the east bank of the Corrotoman River. It is classified as a small shell midden (Class 6). Plowing has destroyed the site.

The collection consists of four Rappahannock Fabric-Imprinted sherds, one Mockley Cord-Marked sherd, and five eroded, shell-tempered sherds. The site was apparently used during the late Middle Woodland and Late Woodland Periods.

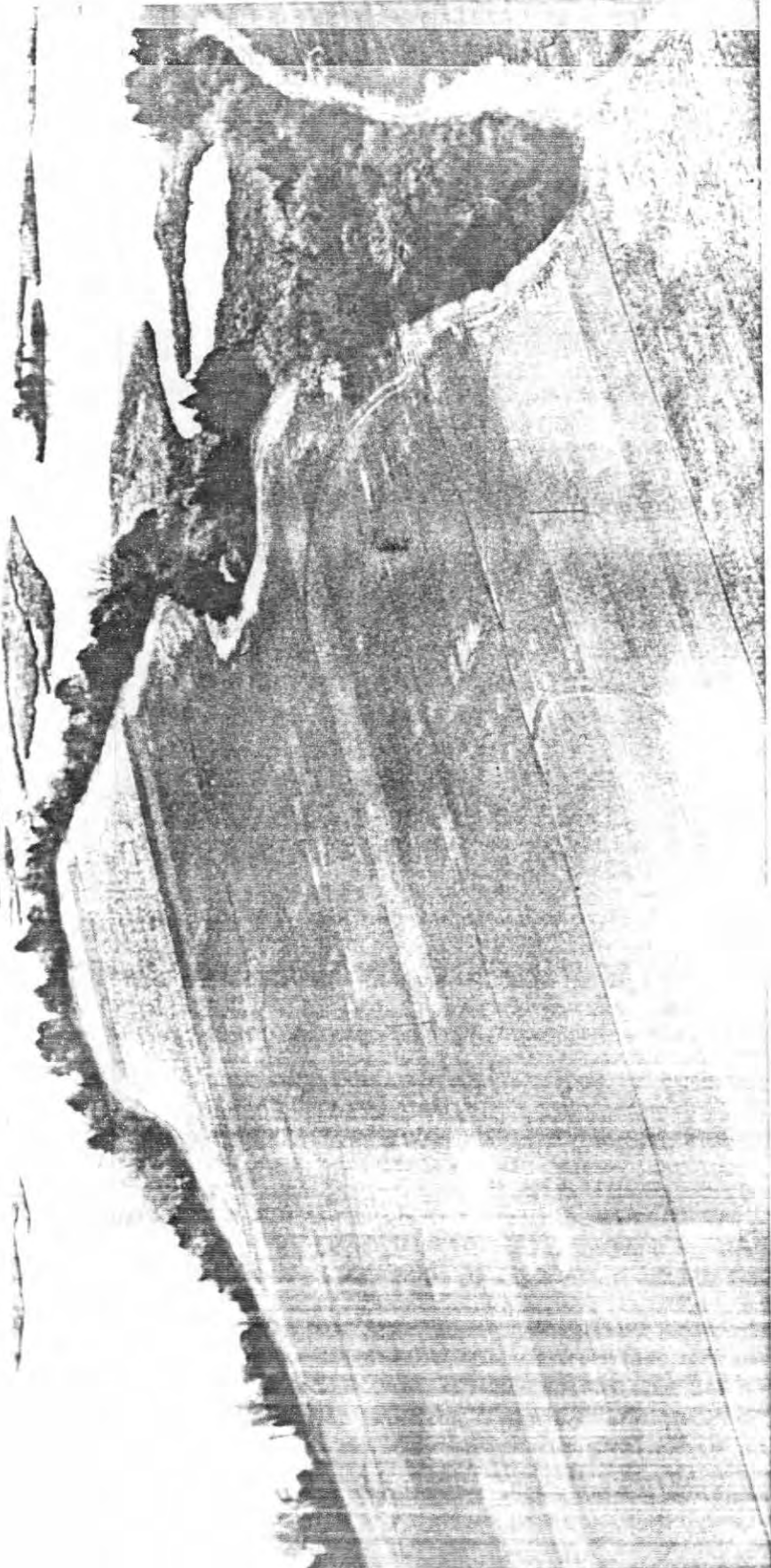
SITES ON THE LOWER RAPPAHANNOCK RIVER

Woodbury Farm #1

The site was discovered during aerial survey in April of 1979. This and the succeeding Woodbury Farm #2 were both visible as dark, gray-black midden stains against the lighter, sandy loam soils (Plate 6). The dark earth midden and oyster shell covered approximately 3.34 ha of a cultivated headland on the west side of Farnham Creek, in Richmond County (see Figure 2). The site is classified as a large midden (Class 1). Numerous features were discernible on top of the cultivated surface, as oval or roughly circular clusters of fire-cracked rock, charcoal, animal bone (mainly deer), and artifacts.

A few Late Archaic and some Early Woodland artifacts were found, but the vast majority of the surface collection is late Middle Woodland (Plates 7 and 8). The ceramics include 463 Mockley Net-Imprinted sherds (51 with interior scraping) and 77 Mockley Cord-Marked sherds (16 with interior scraping). Diagnostic lithics include two Selby Bay blanks. There are 43 shell-tempered sherds with smoothed exterior

Plate 6. Aerial photograph of Woodbury Farm Site #1. Midden deposits visible as dark soil marks.



surfaces. These sherds could have come from Mockley net or cord vessels, Rappahannock Fabric-Imprinted vessels, or plain vessels; it is not possible to determine which type. In addition, 259 unidentifiable, eroded, shell-tempered sherds were found.

The Late Woodland collection (Plates 7 and 8) is the next largest after the material from the Mockley occupations. The diagnostic Late Woodland ceramics include 59 Rappahannock Fabric-Imprinted sherds, one sherd of the type Townsend Corded, and 13 Currioman Fabric-Imprinted sherds. One terra-cotta pipe stem with a square cross-section was found. The lithic artifacts consist of three Levanna Small Triangular points, two Levanna Large Triangular points, one reworked triangular point, four triangular blanks, and the bit end of a small, pecked and ground greenstone celt.

The greatest use of this site probably occurred between A.D. 550 and 1,100. The Townsend Corded sherd, pipe stem and Levanna Small triangular points probably indicate a more limited occupation of the site after A.D. 1300.

Woodbury Farm #2

This site is located on the next adjacent headland south of Woodbury Farm #1. Dark earth midden and oyster shell covered about 1.22 ha. Soil coring indicated that most of the midden has been destroyed by plowing. The site is classified as a large midden (Class 1).

Only two diagnostic artifacts were found which predate A.D. 200. Otherwise, the remainder of the collection is late Middle Woodland,

Plate 7. Ceramics from Woodbury Farm #1 and #2:

- A, miscellaneous ceramics (l to r): Townsend Corded w/vertical paddle edge cord-impressions, Rappahannock Incised, Townsend Corded, Rappahannock Fabric-Impressed;
- B, terra-cotta pipe stem w/square cross-section;
- C, Currioman Fabric-Impressed;
- D, Mockley Net-Impressed;
- E, Mockley Cord-Marked.



Plate 8. Points from Woodbury Farm #1:

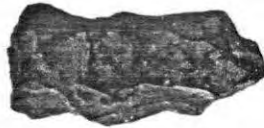
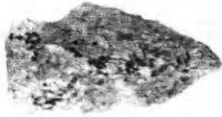
- A, Levanna Small and Large Triangular points and yellow jasper triangular blank (far right);
- B, Selby Bay Side-Notched (3 left specimens), chert side-notched, quartz side-notched;
- C, bit end of greenstone celt.



A



C



B



Late Woodland, and possibly Protohistoric-Historic. The late Middle Woodland artifacts consist of 27 Mockley Net-Impressed sherds and four Mockley Cord-Marked sherds. Other pottery, which may be either late Middle Woodland or Late Woodland includes six plain, shell-tempered sherds. A total of 38 eroded, shell-tempered sherds were also found.

The collection of Late Woodland, and possibly Protohistoric or early Historic artifacts includes 20 Rappahannock Fabric-Impressed sherds, one shell-tempered fabric-impressed sherd with vertical cord impressions made by the paddle edge, four Rappahannock Incised sherds (from the sherd size it is not possible to discriminate the complexity of the motif), one Potomac Creek Cord-Impressed sherd, and four Currioman Fabric-Impressed sherds. Also found were one triangular biface and one triangular blank.

From the high percentage of Mockley Net-Impressed sherds, the Mockley occupation probably occurred late, perhaps between A.D. 550 and 900. The shell-tempered, fabric-impressed sherd with the vertical cord designs and the Potomac Creek sherd date part of the Late Woodland component to after A.D. 1300, and, perhaps, to the Protohistoric or early Historic Period.

CHAPTER IV
THE ARCHEOLOGICAL EXCAVATIONS

INTRODUCTION

In the summer of 1976, test units were excavated at two sites, Long Point (44NB56) and Plum Nelly (44NB128). A third site, called Blue Fish Beach (44NB147), had been exposed by shoreline erosion. The exposed portion of the site was completely troweled, drawn and photographed.

The information obtained from the 1976 test excavations and survey was used to select three sites for excavation or testing during the 1978 field season. Blue Fish Beach was chosen for complete excavation because it apparently represented the sealed remains of a small, Late Woodland shell midden overlying an earlier, late Middle Woodland midden. The Boathouse Pond Site (44NB111) was selected for testing because it was the largest midden site found along the Coan River, with late Middle Woodland, Late Woodland, and possibly proto-historic and historic components. Finally, additional excavations were planned for the stratified site of Plum Nelly, in order to obtain the time depth necessary to help refine the local cultural sequence and to gather subsistence data. The deposits tested in 1976 contained materials from a sequence of occupations dating at least as early as

the Late Archaic Period to the Protohistoric-Historic Period, as well as numerous features with excellent faunal and paleobotanical preservation.

The chapter is divided into four sections, each pertaining to the excavation or testing of one of the four archeological sites mentioned above. A summary is provided at the end of each section, rather than providing a general summary of all four sites at the end of the chapter. The excavation data from the late Middle Woodland through Historic Period components will be integrated with the survey data in the first section of the final chapter.

1. BLUE FISH BEACH (44NB147)

a) Location and Setting

The site occupies a small, shallow depression along the edge of a cultivated field adjacent to the Potomac River shoreline (Figure 10). The soil type in the immediate vicinity of the site is Matapeake silt loam, while the broad neckland on which the site is situated is part of the Mattapex-Bertie association (Elder et al. 1963). West of the site is Presley Creek, now fringed along its banks with mixed woodlands of oak and pine. Just east of the site are two north-south ravines, which become partially inundated at high tide. East of these ravines are Corbin Pond and a similar, unnamed body of water. These two so-called "ponds" represent coves that have been closed by stable sand spits. Were it not for dredging, Presley Creek would be similarly affected.

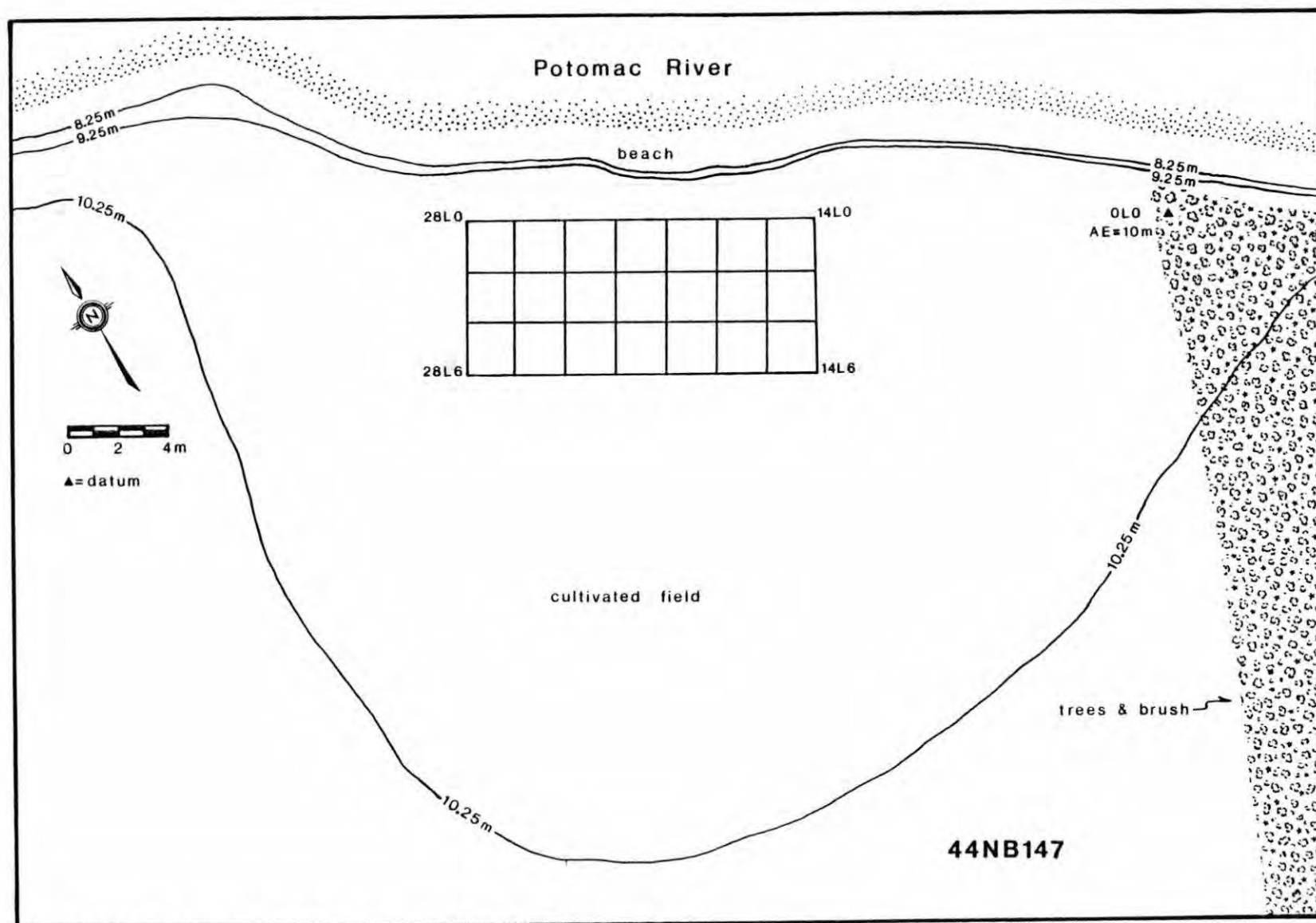


Figure 10. Map of Blue Fish Beach Site (44NB147).

The site was discovered during the summer of 1976, while surveying the banks along the Potomac River, east of Presley Creek. Shoreline erosion had exposed an east-west profile of an old gully or ravine, which had been filled in by a shell midden and dark earth midden, and later sheet wash, alluvial, and aeolian deposits. These more recent deposits were of sufficient depth to prevent destruction of the aboriginal midden by plowing.

The site's present shoreline location belies its environmental setting of four centuries ago. The references to nearby ravines and sealed coves, and to the spit forming in the mouth of Presley Creek, are graphic illustrations of the ongoing process of shoreline evolution in the lower Potomac, which has been archeologically documented elsewhere in Chesapeake Bay (Wilke and Thompson 1977:23-26). Indeed, during the 74 years between 1868 and 1942, the average yearly rate of shoreline erosion within the site's locale was 1.16 m (Byrne and Anderson n.d.:46, 72). Analysis of the shellfish remains from the site (to be discussed later) also provides clues to the site's environmental setting of circa A.D. 1600. All of this information indicates that the shallow depression in which the site is situated apparently is a remnant of an old ravine located at the head of a small embayed tidal marsh, which emptied into the Potomac River. Subsequent to the last use of the site by the Indians, shoreline erosion has obliterated most evidence of the intertidal marsh.

b) The Excavations

On May 17, 1978, work began by laying out a grid system of

2-meter squares. A baseline was established adjacent and parallel to the shoreline, which ran roughly northwest to southeast. A second line was placed east of the site at a right angle to the baseline. The intersection of these two lines was designated reference point #1 and point OLO on the site grid, with an assumed elevation of 10 m. A total of 21 2-meter squares were laid out. Squares were designated by reference to the southeast corner.

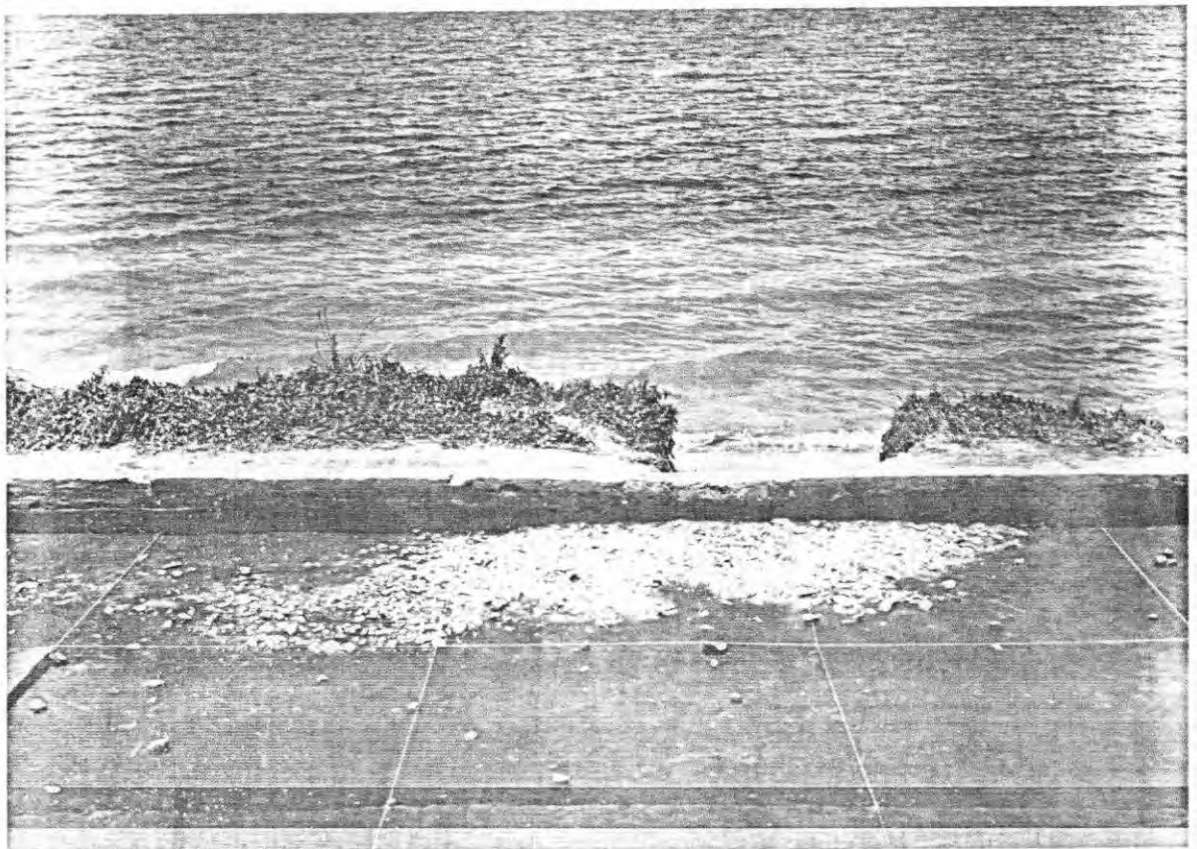
In 1976, when the site was found, the exposed deposits along the river bank were troweled, drawn and photographed. Because the midden lay in a filled gully, with its sides sloping up to the east, south and west, excavation by arbitrary levels was deemed inappropriate. With the data from the 1976 cross-sectional drawings, and the east-west site profile available for immediate inspection in the eroded bank face, the decision was made to excavate the site by the natural and cultural zones of deposition.

Standard excavation techniques were used (Plate 9). Each unit was excavated by zones, and all soil and oyster shell midden was screened through 1/4-inch wire mesh. Material from each zone was bagged and recorded separately by zone and unit. Artifacts recovered in situ were plotted by assumed elevation and horizontal grid coordinates, and bagged separately from the general finds recorded by zone and unit. Horizontal plans were drawn and photographed for each cultural zone within each unit, and the profiles of the units were drawn and photographed (black and white and color slides).

Similarly, all features were mapped and photographed before and

Plate 9. Excavations at Blue Fish Beach (44NB147).

Plate 10. The shell midden, Zone III B, at Blue Fish Beach
(44NB147).



after excavation. Cross-sections of the features were done when appropriate. In most instances, two samples of fill were taken from the features, one for flotation and the other for soil analysis. If a feature contained mollusc shell, a sample of shell was also taken.

c) The Stratigraphy

In late spring of 1978, high storm tides on the Potomac River crested over the bank and into the slight depression along the shoreline. When the storm waters retreated, a layer of sand (Zone I) was deposited along the southern edge of the site, while the area of the site beside the shore was scoured out, removing some of the uppermost plow zone (Zone IIA). Along a portion of the eastern edge of the site, this zone was completely eroded away (Figure 11).

Below the upper zone of plowed soil was an earlier plow zone (Ap2 soil horizon) and an underlying All soil horizon (see Appendix 3 for a complete soil profile description). Originally, the Ap2 soil horizon and the All soil horizon seem to have been the same, until the upper part was plowed. Plowing oxidized some of the organic matter in the dark brown silt loam, giving it a lighter color. Aeolian sands were also incorporated into the plowed soil of the Ap2 horizon, increasing the sand content slightly over the All soil horizon. Further, the All horizon had been partially disturbed by agricultural equipment. Scars left by the tip of a single shank subsoiler were found spaced approximately 1.82 m apart, at the base of the All horizon. Nor was it always possible, during excavation, to discriminate the Ap2 horizon from the All soil horizon accurately. Since both had originally been

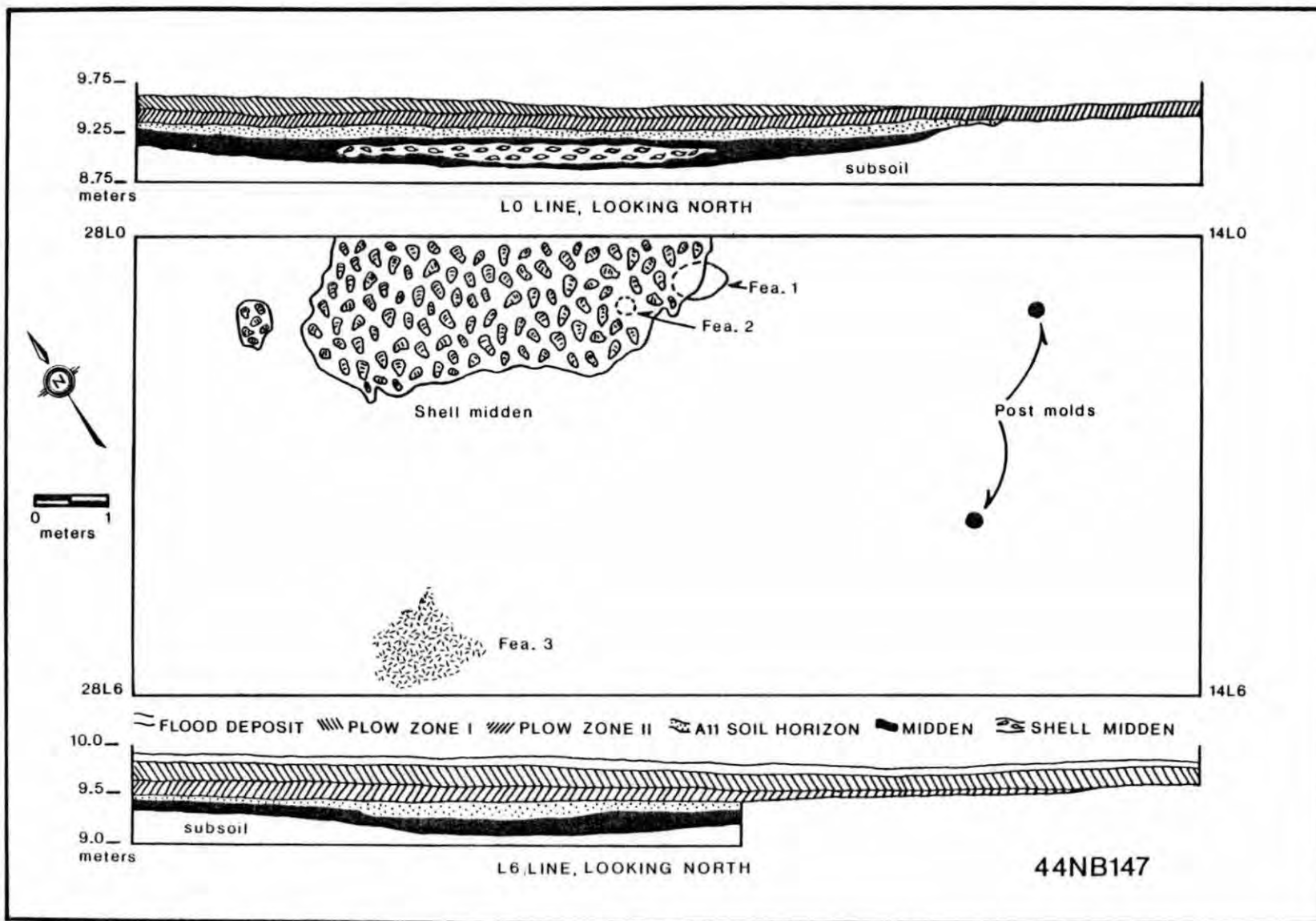


Figure 11. Plan view of excavations at Blue Fish Beach (44NB147).

part of the same horizon and subsequently each had undergone total or partial disturbance by agricultural equipment, it was decided to combine the Ap2 and All horizons into a single zone -- Zone IIB.

Underlying Zone IIB was a very dark, grayish-brown silt loam, designated Zone III. This zone represents the accumulation of midden from aboriginal use of the site. Zone III covered the entire remnant of the filled gully or ravine. In units 20L2, 22L2, 24L2, and to a lesser extent 26L2, a lens of mollusc shell was sandwiched in the middle of the silt loam midden (Plate 10). In those portions of the excavation units where the shell midden was present, the stratigraphy was designated in the following manner: Zone IIIA was the silt loam midden above the shell; Zone IIIB was the remnant of the shell midden; and Zone IIIC was the silt loam midden beneath the shell (Figure 11). Below Zone III were several B horizons comprising the subsoil, Zone IV.

d) The Artifacts

i) The ceramics. The largest class of artifacts found at Blue Fish Beach was pottery. A total of 362 aboriginal sherds were found in the excavations. Of this number, only 302 sherds were used in the final analysis, the remainder being unidentifiable. The sherds were divided into four groups: (1) Mockley Ware -- 58 sherds; (2) Townsend Ware -- 12 sherds; (3) Yeocomico Ware -- 219 sherds; and (4) miscellaneous aboriginal ceramics -- 14 sherds.

The Mockley Ware sherds represent at least six different vessels (see Table 6, vessels 11-16). Five of the six vessels were impressed with nets on the exterior surface, and the sixth vessel was impressed

Table 6. Analysis of Pottery Vessels from Blue Fish Beach (44NBI47).

Vessel number	Temper	Max. particle size (mm)	Body thickness (mm)	Vessel portion*	Coil width (mm)	Rim orientation	Moh's hardness	Exterior surface treatment	Interior surface treatment	Additional comments	Number of sherds
1	shell	5	6	B,R	11	vertical	2.5	scraped	plain	flat rim.	3
2	shell/sand	6	6	B	9	-	2.5-3.0	plain	plain	-	2
3	shell	9	7-10	B,LB	7	-	2.0-2.5	smoothed -over fabric	plain	-	10
4	shell	8	6-8	BS,B	10	-	2.5	scraped	scraped	-	3
5	sand/shell	6	7	R,B	9	inverted	3.0-3.5	net	scraped	transverse paddle edge marks across rim.	10
6	shell	10	8	B	10	-	3.0-3.5	smoothed -over cord	scraped	-	4
7	shell	9	6-7	R,B,LB	10	everted	2.0-2.5	plain	scraped	-	67
8	shell	5	6-8	B,LB	11	-	2.5	plain	scraped	-	15
9	shell	5	6	B,LB	11	-	2.5-3.0	plain	plain	a small cup	6

Table 6 (cont.)

Vessel number	Temper	Max. particle size (mm)	Body thickness (mm)	Vessel portion*	Coil width (mm)	Rim orientation	Moh's hardness	Exterior surface treatment	Interior surface treatment	Additional comments	Number of sherds
10	non-tempered	-	5	R,B,LB	10	inverted	2.0	plain	plain	1 line of punctations below pinched rim.	7
11	shell	9	9	R,B,LB	11	vertical	2.5	net	plain	pinched rim.	7
12	shell	5	11	R,B	15	vertical	2.5	net	plain	paddle edge marks across rim.	24
13	shell	10	13	B	15	-	2.0-2.5	net	plain	-	4*
14	shell/sand	10	13	R,B	16	vertical	2.5	net	plain	transverse paddle edge marks across rim.	4
15	shell/sand	8	12	B,LB	15	-	2.5	net	plain	-	16
16	shell	7	10	R,B	14	inverted	2.5	smoothed-over cord	plain	Finger nail marks across rim.	3
17	shell	4	8	B	10	-	2.5	smoothed-over fabric	plain	3 nested, incised triangles.	1

*Key to vessel portion: R = rim; B = body; LB = lower body; BS = basal.

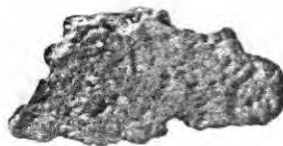
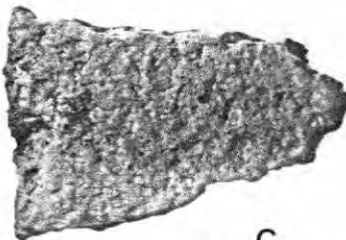
Plate 11. Mockley Ware from Blue Fish Beach (44NB147):
A, vessel 12, net-impressed;
B, vessel 16, smoothed-over and cord-marked;
C, vessel 15, net-impressed.



A



B



C



with a cord-wrapped paddle and then partially smoothed (Plate 11B). At least four of the five nets were of the looped variety.

For the most part, the clay used in constructing the Mockley Ware vessels had not been cleaned very well. Many natural inclusions such as limonite, organic matter, and stray pebbles were left in the clay. Two of the vessels had very sandy paste. Indeed, sherds from one of the vessels were so sandy they might have been typed Popes Creek Net-Imprinted were it not for the shell temper and notched rim (Plate 12B).

Rims belonging to four of the Mockley Ware vessels were found, and all were decorated simply. One had a pinched rim, done by slightly squeezing the lip of the rim between the thumb and forefinger (Plate 12A). Another had a rim notched by indenting the lip with the end of the forefinger, leaving fingernail marks in the deepest parts of the indentations (Plate 11B). The remaining two vessels had notched rims created by impressing the paddle edge across the lip (Plates 11A and 12B).

The variation among the six Mockley Ware vessels was great. Net-impressions were made by open, looped nets of coarse elements to tightly looped nets of fine elements. The paste ranged from compact and silty to sandy and friable. Among the six vessels, maximum particle size of the shell temper was from 5 to 10 mm.

All of the Mockley Ware sherds but five were found in the bottom part of Zone III, or Zone IIIC. The data on the horizontal and vertical distribution of the Mockley Ware sherds are presented in Table 7.

Plate 12. Mockley Ware from Blue Fish Beach (44NB147):
A, vessel 11, net-impressed;
B, vessel 14, net-impressed.



A



B



Table 7. Horizontal and Vertical Distribution of Mockley and Yeocomico Sherds at Blue Fish Beach (44NB147).

Ware	Specimen(s)	Unit	Assumed elevation and/or zone
Mockley	23 sherds	20L2, Fea. 1	A.E.=9.02m, ZIIIC
Mockley	o	20L2	A.E.=9.04m, bottom ZIII
Mockley	p	20L2	A.E.=9.01m, ZIIIC
Mockley	1 sherd	20L2	bottom ZIII
Mockley	4 sherds	22L2	ZIIIC
Mockley	1 sherd	22L2	ZIIIB, shell lens
Mockley	u	22L2	A.E.=9.02m, ZIIIC
Mockley	2 sherds	24L2	ZIIIC
Mockley	bb	24L2	A.E.=9.03m, bottom ZIII
Mockley	ff	24L2	A.E.=9.07m, bottom ZIII
Mockley	2 sherds	26L2	bottom ZIII
Mockley	m	26L2	A.E.=9.17m, bottom ZIII
Mockley	n	26L2	A.E.=9.22m, top ZIII
Mockley	1 sherd	18L4	ZIIB
Mockley	o	22L4	A.E.=9.05m, bottom ZIII
Mockley	q	22L4	A.E.=9.06m, bottom ZIII
Mockley	r	22L4	A.E.=9.04m, bottom ZIII
Mockley	2 sherds	24L4	bottom ZIII
Mockley	k	24L4	A.E.=9.10m, bottom ZIII
Mockley	n (2 sherds)	24L4	A.E.=9.03m, bottom ZIII
Mockley	p	24L4	A.E.=9.03m, bottom ZIII
Mockley	d	26L4	A.E.=9.25m, top ZIII
Mockley	i	26L4	A.E.=9.10m, bottom ZIII
Mockley	h	20L6	A.E.=9.11m, bottom ZIII
Mockley	d	24L6	A.E.=9.11m, bottom ZIII
Mockley	e	24L6	A.E.=9.21m, top ZIII
Mockley	f	24L6	A.E.=9.11m, bottom ZIII
Mockley	i	24L6	A.E.=9.17m, bottom ZIII
Mockley	f	26L6	A.E.=9.26m, very bottom of ZIII and top of ZIV

Table 7. (cont.)

Ware	Specimen(s)	Unit	Assumed elevation and/or zone
Yeocomico	11 sherds	20L2	ZIIIB, shell lens
Yeocomico	g	20L2	A.E.=9.15m, top ZIII
Yeocomico	cc	20L2	A.E.=9.18m, top ZIII
Yeocomico	2 sherds	22L2	top ZIII
Yeocomico	5 sherds	22L2	ZIIIA
Yeocomico	a	22L2	A.E.=9.18m, ZIIIA
Yeocomico	b	22L2	A.E.=9.19m, ZIIIA
Yeocomico	c	22L2	A.E.=9.20m, ZIIIA
Yeocomico	d	22L2	A.E.=9.20m, ZIIIA
Yeocomico	h	22L2	A.E.=9.20m, ZIIIA
Yeocomico	i	22L2	A.E.=9.23m, ZIIIA
Yeocomico	l	22L2	A.E.=9.21m, ZIIIA
Yeocomico	q	22L2	A.E.=9.19m, ZIIIA
Yeocomico	100 sherds	22L2	ZIIIB, shell lens
Yeocomico	2 sherds	24L2	top ZIII
Yeocomico	6 sherds	24L2	ZIIIA
Yeocomico	f	24L2	A.E.=9.21m, top ZIII
Yeocomico	i	24L2	A.E.=9.19m, top ZIII
Yeocomico	m	24L2	A.E.=9.21m, ZIIIA
Yeocomico	n	24L2	A.E.=9.20m, ZIIIA
Yeocomico	q	24L2	A.E.=9.17m, top ZIII
Yeocomico	46 sherds	24L2	ZIIIB, shell lens
Yeocomico	1 sherd	24L2	ZIIIC
Yeocomico	3 sherds	24L2	ZIV
Yeocomico	2 sherds	26L2	ZIIB
Yeocomico	11 sherds	26L2	top ZIII
Yeocomico	j	26L2	A.E.=9.19m, top ZIII
Yeocomico	q	26L2	A.E.=9.17m, bottom ZIII
Yeocomico	2 sherds	22L4	top ZIII
Yeocomico	g	22L4	A.E.=9.22m, top ZIII
Yeocomico	j	22L4	A.E.=9.14m, top ZIII
Yeocomico	1 sherd	24L4	ZIIA or ZIIB
Yeocomico	b	24L4	A.E.=9.33m, top ZIII
Yeocomico	3 sherds	16L6	ZIIA
Yeocomico	a	18L6	A.E.=9.38m, top ZIII
Yeocomico	b	20L6	A.E.=9.30m, top ZIII
Yeocomico	g	20L6	A.E.=9.26m, top ZIII
Yeocomico	1 sherd	22L6	top ZIII

The degree of slope of the old gully or ravine is shown by the difference in assumed elevation of Mockley sherds found on top of the subsoil in units 20L2 and 26L6. There is a 25 cm difference in the elevations of specimen "p" in unit 20L2 and specimen "f" in unit 26L6. It is obvious from this example that across-the-site comparison of artifact elevations cannot be made without considering the slope of the deposits.

Only 12 sherds of Townsend Ware were found. Ten of the sherds belong to a single, Rappahannock Fabric-Imprinted vessel (Table 6, vessel 3; Plate 13E). Two of these were found in the shell lens, Zone IIIB, and the remaining eight sherds were found in the upper part of Zone III, in units mainly around the periphery of the shell midden. Vessel 17 is represented by a single sherd of Rappahannock Incised, bearing a motif of three nested triangles (Plate 13D). This sherd came from Zone IIB, near the area of the greatest concentration of sherds from vessel 3. Another Rappahannock Fabric-Imprinted sherd was found in a post mold in unit 16L2. It is not possible to determine whether this sherd was part of vessel 3, vessel 17, or neither one.

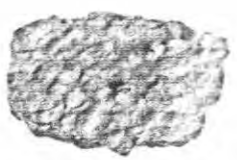
Of the 219 sherds classified as Yeocomico Ware, 103 can confidently be assigned to one of seven different vessels (Table 6, vessels 1, 2, 4, 7, 8, 9, and 10). The remaining 116 sherds could not be assigned with certainty to any of the vessels. Thus, seven should be considered the minimum number of vessels represented by the 219 sherds of Yeocomico Ware.

The Yeocomico vessels were small to medium-size bowls or, in one case, a small cup (Plate 14G and H). The walls were thin, the clay

- Plate 13. Miscellaneous ceramics from Blue Fish Beach (44NB147):
- A, vessel 5, sand-and-shell-tempered, net-impressed;
 - B, vessel 6, crushed scallop shell temper, smoothed-over cord-marked;
 - C, vessel 4, Yeocomico Scraped;
 - D, vessel 17, Rappahannock Incised w/complex motif;
 - E, vessel 3, Rappahannock Fabric-Imprinted.



A



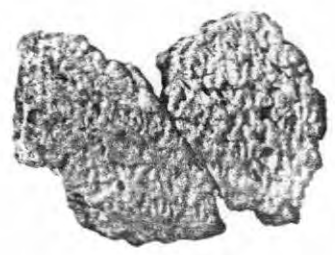
B



C



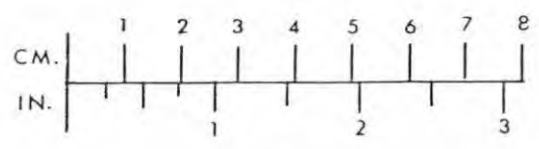
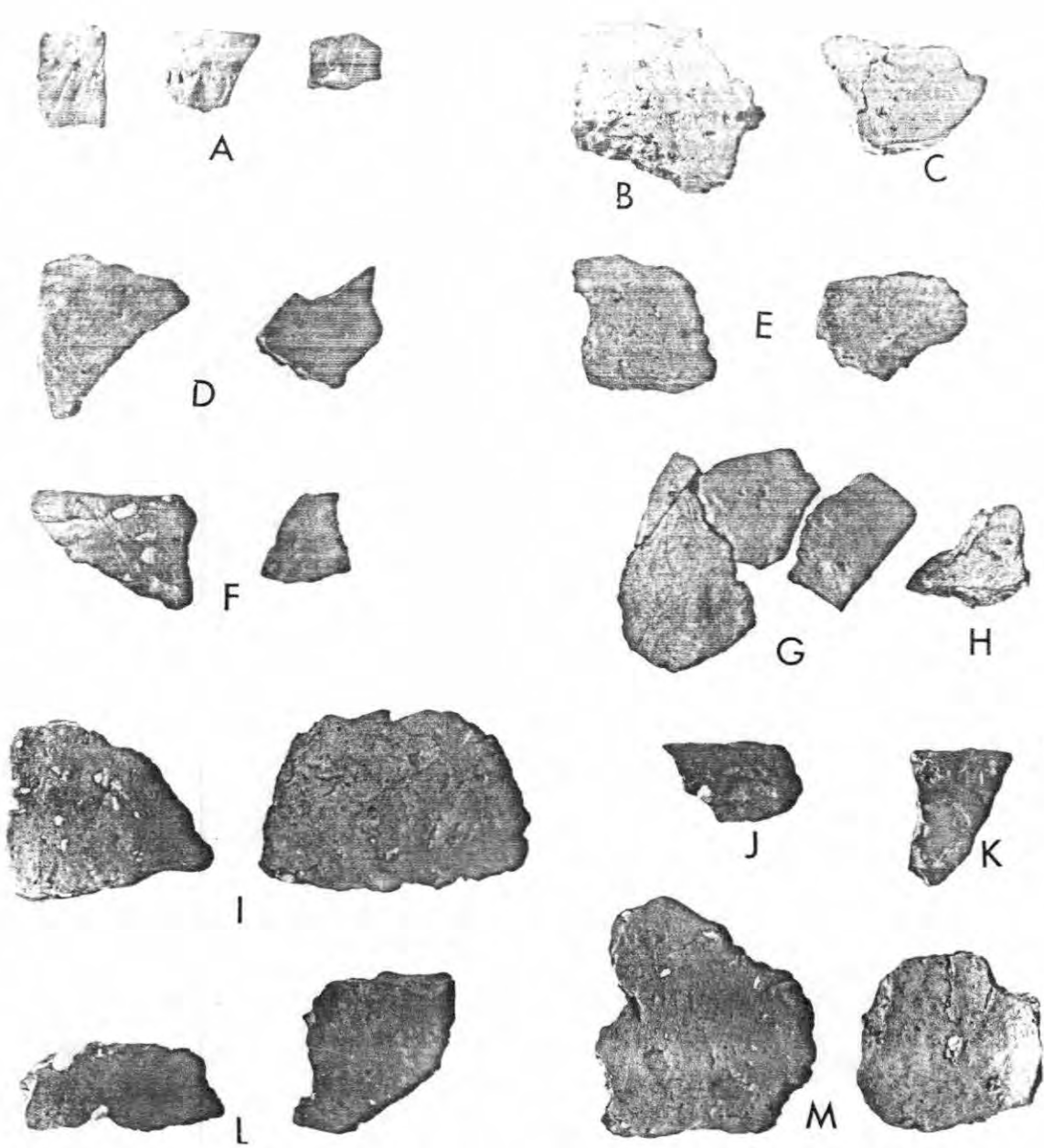
D



E



- Plate 14. Yeocomico Ware from Blue Fish Beach (44NB147):
A and D, vessel 10, plain;
B and C, vessel 1, scraped exterior;
E, vessel 2, plain;
F, I, and L, vessel 7, plain exterior and scraped
interior;
G and H, vessel 9, plain, note slight foot ring on G;
J, K, and M, plain rim and body sherds from Zone III B.



compact, and the shell temper very finely crushed. Six of the vessels had exterior surfaces that had been smoothed plain (Plate 14). The seventh vessel had scraped exterior and interior surfaces (Plate 13C). The interiors of two of the smoothed exterior vessels were also scraped.

Sherds from two of the Yeocomico vessels were decorated. Vessel 10 had a single line of fine punctations paralleling the rim, about 1 cm below the exterior lip (Plate 14A). One small rimsherd from vessel 8 had four direct horizontal cord-impressions.

The vertical distribution of Yeocomico Ware was confined almost entirely to the upper part of Zone III (Table 7). In excavation units 20L2, 22L2, and 24L2, sherds of Yeocomico Ware were found in either the shell midden, Zone IIIB, or immediately atop the shell midden in Zone IIIA. The vast majority of the sherds came from Zone IIIB, the shell midden.

The horizontal distribution of Yeocomico sherds was restricted primarily to excavation units 20L2, 22L2, 24L2, and 26L2. A total of 206 sherds of Yeocomico Ware were found in these four units. The remaining 13 Yeocomico sherds came from units directly inland from the shell midden and along the south-central and southeastern part of the site (Table 7).

A total of 14 sherds from two miscellaneous pottery vessels were recovered (Table 6, vessels 5 and 6). Vessel 5 was a sand- and shell-tempered jar, impressed on the exterior with a stretched, looped net made of coarse elements. It had a direct, slightly inverted rim with a flat lip, marked transversely by the edge of a paddle (Plate 13A).

Vessel 6 was a jar made from a compact paste mixed with crushed scallop shell. The exterior has been cord-marked using coarse elements, and then partially smoothed-over (Plate 13B). The sherds from these two vessels were found mainly in the upper portion of Zone III or Zone IIB.

ii) The lithics. Diagnostic lithic artifacts were scarce at Blue Fish Beach. A quartz, Levanna Large Triangular point was found on the beach face adjacent to the site (Plate 15C). In the plowed soil of Zones IIA and IIB, two Savannah River Contracting-Stemmed points were found, along with the base of a quartzite square-stemmed point and a hammerstone of sandstone.

In Zone IIIA, one quartzite and two quartz biface fragments were found (Plate 15E). A complete elongated, quartzite biface was also recovered (Plate 15F). From the shell midden, Zone IIIB, came one quartzite hammerstone and two quartzite point/biface fragments.

The most surprising lithic artifact from Zone IIIB was a complete Perkiomen Broad point made from slate (Plate 15D). This point was found within the compact shell midden, near its base, in unit 20L2. The Perkiomen Broad point has been dated to the eighteenth and seventeenth centuries B.C., in northwestern New Jersey (Kraft 1970:62). Obviously, this point is intrusive into the shell midden, which dates to the Protohistoric or early Historic Period. This is the only Perkiomen Broad point the author has seen from the lower Northern Neck.

A lower body sherd from a steatite bowl was found at the base of Zone III, atop the subsoil, in unit 24L6 (Plate 15B). Flat-bottomed

Plate 15. Lithic artifacts from Blue Fish Beach:

- A, core of English flint, Zone III A;
- B, soapstone bowl sherd, bottom Zone III;
- C, Levanna Large Triangular point, beach;
- D, Perkiomen Broad point, bottom Zone III B;
- E, quartzite biface, Zone III A;
- F, quartzite biface, Zone III A.



A



B

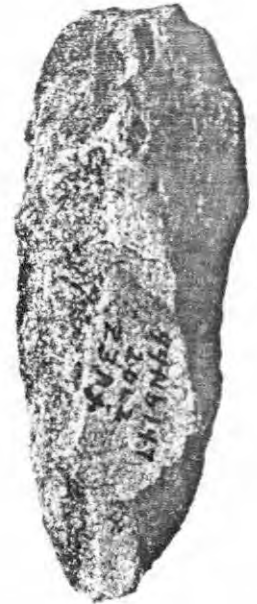
C



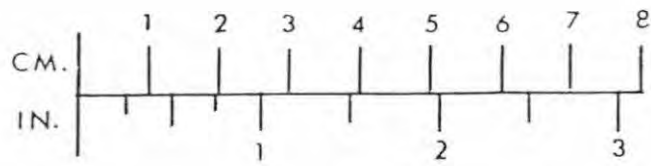
D



E



F



steatite bowls are part of the assemblage containing Perkiomen Broad points found on sites in northwestern New Jersey, eastern Pennsylvania and New York State (Ritchie 1969:153-154; Kraft 1970:62, 73).

Therefore, the steatite sherd and Perkiomen Broad point found at Blue Fish Beach are probably associated.

Relatively speaking, there was a small amount of lithic debris from the site, with only one clear association with a particular cultural deposit. Reference to Table 8 will show that almost half of the cores and chunks were found in the shell midden, Zone IIIB. Nine of the cores and chunks from Zone IIIB were quartz, which represents 64% of the total number of quartz cores and chunks found at the site. The remaining seven cores and chunks from Zone IIIB were quartzite.

iii) The Euro-American artifacts. Items of Euro-American manufacture will be divided into two groups, based upon their vertical distribution. The first group is comprised of those artifacts found in the disturbed zones, IIA and IIB. The second group consists of those objects found near the top of the dark earth midden, Zones III or IIIA.

The following Euro-American objects were found in Zones IIA and IIB: one iron nail fragment, one North Devon gravel-tempered sherd, one white salt-glazed stoneware sherd, one blue shell-edged pearlware sherd, and 12 small brick fragments. North Devon gravel-tempered wares commonly date from A.D. 1675 to 1750 (Henry Miller 1979:personal communication). The sherd of white salt-glazed stoneware is from a plate and can be dated between A.D. 1740 and 1775, while blue

Table 8. Distribution of Lithic Debris by Zones at Blue Fish Beach (44NB147).*

Zone	Quartz			Quartzite			Chert			Jasper			Basalt	Slate	Total
	f	df	c/c	f	df	c/c	f	df	c/c	f	df	c/c	f	f	
IIA		2	2	1	4	3	1		2		1	1		1	18
IIB	2	3		5	1	4				2		1			18
III	4	5	1	7	4	2	1	2	1	2	1		1		31
IIIA				1		1	1				1				4
IIIB	1	1	9	3		7		1							22
IIIC			2	1	1	1					1				6
IV				1											1
Total	7	11	14	19	10	18	3	3	3	4	4	2	1	1	100

*Key to lithic debris: f - flake; df = decortication flake; c/c = cores and chunks.

shell-edged pearlware was common during the period A.D. 1780 to 1830 (South 1977:211-212). Excluding the North Devon earthenware sherd and one brick fragment, the remainder of the previously mentioned artifacts were found along the western edge of the site, primarily in unit 26L6.

Five Euro-American artifacts were found near the top of the dark earth midden, Zone III or IIIA. These items include two white clay pipe stems, one iron knife blade fragment, one wasted core of English flint (Plate 15A), and a flake of English flint. The bore diameters of the pipe stems are $7/64$ of an inch. Pipes with bores of this diameter were made between A.D. 1620 and 1710, with the greatest probability of their being manufactured between A.D. 1650 and 1680 (Nöel Hume 1970:298). The flake of English flint is from a source other than the core of English flint found nearby.

The data on the horizontal and vertical distribution of the Euro-American artifacts are presented in Table 9. Based upon this information, it would seem that the iron knife blade fragment, the pipe stems, and the core and flake of English flint might be associated with the Yeocomico Ware occupation. The iron knife blade fragment was found at the top of Zone III. The pipe stems and core of English flint were found within the upper 5 cm of Zone III. The flake of English flint was found on the top of the shell midden, at the bottom of Zone IIIA. While the softness of the sandy loam soil makes it possible that later activities could have mingled these artifacts into the top of Zones III and IIIA, I do not believe this to have been the case for the following reasons: (1) with the exception of the North

Table 9. Horizontal and Vertical Distribution of Euro-American Artifacts at Blue Fish Beach (44NB147).

Specimen(s)	Unit	Assumed elevation and/or zone
3 brick fragments	24L2	ZIIA
1 sherd North Devon gravel-tempered ware	18L4	ZIIB
1 brick fragment	14L6	ZIIA
1 brick fragment	24L6	ZIIB
1 white salt-glazed stoneware sherd	26L6	ZIIA
1 blue shell-edged pearlware sherd	26L6	ZIIA
1 brick fragment	26L6	ZIIA
1 iron nail fragment	26L6	ZIIB
6 brick fragments	26L6	ZIIB
1 wasted core of English flint	18L2	A.E.=9.20m, ZIIIA
1 flake of English flint	20L2	A.E.=9.19m, ZIIIA
1 iron knife blade fragment	18L6	A.E.=9.36m, top ZIII
2 white clay pipe stem fragments	20L6	A.E.=9.27m, top ZIII

Devon gravel-tempered sherd, all of the diagnostic Euro-American artifacts found in the disturbed Zones IIA and IIB date much later than the two pipe stems found in Zone III; (2) the five items of Euro-American origin found in Zones III and IIIA are consistent with similar classes of European artifacts found at the historic Algonquian De Shazo Site in the upper Northern Neck (MacCord 1965:98-104); and (3) the five Euro-American artifacts fit comfortably with the radiocarbon dates for the Yeocomico Ware occupation of A.D. 1605 \pm 70 and A.D. 1645 \pm 70.

e) The Features

The most prominent feature at the site was the remnant of the shell midden, Zone IIIB (see Plate 10). This shell refuse was deposited by people using Yeocomico Ware. The maximum dimensions of the excavated portion of the shell midden were approximately 5.0 m east-west, by 2.0 m north-south, by 23 cm thick. An additional 1.5 m of shell midden remained unexcavated immediately adjacent to the Potomac River bank. Thus, the total north-south distance was 3.5 m.

To approximate the original extent of the shell midden, Blue Fish Beach was compared to two nearby sites, 44NB172 and 44NB174. Both sites are located about 300 m south-southwest of Blue Fish Beach, near the head of an unnamed cove along the east bank of Presley Creek. In each case, the site consists of a buried, intact shell midden located in a shallow depression. Site 44NB172 has maximum areal dimensions of 5.49 m by 3.65m; site 44NB174 has maximum dimensions of 6.10 m by 9.75 m. Shoreline erosion has had relatively little effect on the two sites.

If the maximum remaining area of the Blue Fish Beach shell midden is compared to the maximum area of each of the above sites, then between 12% and 70% of the shell midden at Blue Fish Beach has eroded away. If the maximum areas of 44NB172 and 44NB174 are averaged, and Blue Fish Beach is compared to this figure, then approximately 56% of the shell midden has been lost to shoreline erosion. Given the configuration of the Blue Fish Beach shell midden at the time of excavation and the small area of artifact scatter peripheral to the shell midden, the latter figure is probably the most reasonable estimate.

Two features were found which were associated with the Mockley Ware occupation. Feature 1 was located in unit 20L2 at an assumed elevation of 9.02 m. It consisted of an oval area of orange-colored, fired clay about 6 cm thick, 60 cm east-west, and 40 cm north-south (Figure 11). The western half of the feature lay beneath Zone IIIB, the shell midden. Found within Feature 1 were 23 sherds of Mockley Net-Impressed pottery belonging to vessel 12.

Feature 2 was situated about 40 cm west-southwest of Feature 1, also in unit 20L2 (Figure 11). It is a smaller area of orange-colored, fired clay, approximately 22 cm in diameter and 4 cm thick. This feature was completely underneath Zone IIIB, the shell midden. Its point of origin was an assumed elevation of 8.95 m, within Zone IIIC. No artifacts were found in direct association. However, two Mockley Ware sherds were found about 40 cm south of the feature at elevations of 9.01 and 9.04 m.

Feature 3 was located in units 22L6 and 24L6. It was an amorphous area of red-brown soil and charcoal flecks, with an inner soil discoloration of mottled yellow (Figure 11). The feature had been disturbed by a rodent burrow. The soil discolorations which characterized the feature were only a few centimeters thick, with the whole feature lying on top of the subsoil, Zone IV. No artifacts were found in direct association with the feature.

Two post molds, one in unit 16L2 and another in unit 16L4, were excavated. Both post molds were 20 cm in diameter, and they were spaced 3.0 m apart. One had a slightly convex bottom, while the other, in unit 16L2, had an irregular bottom which was deeper on one side. A Rappahannock Fabric-Impressed sherd was found in the latter post mold. No other artifacts were found in the fill from the post molds.

A third post mold, also 20 cm across, was observed in the face of the eroded bank when the site was profiled in 1976. This post mold had a slightly convex bottom. Although the post mold had been eroded away when the 1978 excavations began, the profile drawings done in 1976 indicate it was aligned with the two post molds found in 1978. It is most likely that these post molds represent the remains of a historic fenceline.

f) The Faunal and Carbonized Plant Remains

The analysis of the shellfish and animal bone from Blue Fish Beach was performed by Gregory A. Waselkov. The results of his analysis are in Appendix 4. Therefore, only a brief summary of his findings will be presented here.

All of the shell midden in units 20L2 and 22L2 was screened through 1/4-inch mesh. The intact shell and shell fragments greater than 1/4-inch were bagged and carefully packed in boxes. The material 1/4-inch or smaller was collected and processed in a simple bucket flotation apparatus. This resulted in a sample containing all faunal remains greater than 1.2 mm in size.

Oyster, soft-shell clam, Gulf periwinkle, stout tagellus, ribbed mussel, angel wing, and quahog were identified in the samples from the shell midden. The major invertebrate food source was oyster, followed by soft-shell clams. If the sample from the two excavation units represents approximately 1/5 of the original midden, then there were about 250,000 gm of useable meat extracted from perhaps 50,000 shellfish.

The seven different species of shellfish found at the site are indicative of three estuarine sedimentary substrates. Gulf periwinkle and ribbed mussel are characteristic of intertidal marshes, of the type postulated to have existed just north of Blue Fish Beach. Stout tagellus, soft-shell clam, and quahog are most common in shallow, sandy nearshore environments which occur immediately offshore from the present-day site. Finally, the third substrate consists of oyster beds found in shallow water with sandy bottoms.

Although only eight calcined bone fragments were found in the shell midden, it cannot be assumed that they are an accurate reflection of the part hunting played in the sum total of activities carried out at this site. Nonetheless, the complete absence of projectile

points/knives diagnostic of the Protohistoric and Historic Periods tends to strengthen the proposition that little hunting was practiced during the occupation of the site by people using Yeocomico Ware.

The analysis of the plant food remains is not complete. Thus far, Dr. Gary Crawford has identified all of the carbonized seeds, and this information is presented in Table 10. A total of 25 carbonized seeds were found in the flotation samples taken from the shell midden, Zone IIIB, or the midden, Zones III and IIIA. The seeds are from blackberry, holly, aralia, cleavers, bearsfoot, nightshade and pokeweed. In addition, hickory nutshell and wood charcoal were also found, but the samples have not been quantified. All of the plant food remains are associated with the Yeocomico Ware occupation.

Based upon these data, the Protohistoric or early Historic occupation of Blue Fish Beach occurred at least in the fall. Nothing in the sample is representative of spring.

g) Radiocarbon Dates

Eight radiocarbon samples were submitted for dating, and seven dates were received (Table 11). The eighth sample was, unfortunately, too small for dating.

Five of the seven dated samples were obtained from Zone IIIB, the shell midden. The two dates derived from oyster shell samples are considered to be too early, based upon the association of the Yeocomico Ware with the shell midden. The one charcoal sample that was determined to be modern was almost too small to date and may have been affected by pretreatment procedures. The remaining two charcoal

Table 10. Blue Fish Beach (44NB147) Flotation Samples: Types of Carbonized Seeds (presented as number of seeds per type).

Zone and unit	Total number	aralia	bears-foot	black-berry	cleavers	holly	night-shade	poke-weed
<u>Top Zone III</u>								
18L2	3	-	1	1	-	-	1	-
20L2	1	-	1	-	-	-	-	-
24L2	3	1	-	-	2	-	-	-
26L2	1	-	-	-	-	-	-	1
20L4	2	-	1	-	-	1	-	-
22L4	2	-	2	-	-	-	-	-
24L4	1	-	1	-	-	-	-	-
<u>Zone IIIB shell lens</u>								
24L2	12	3	2	3	4	-	-	-
Total	25	4	8	4	6	1	1	1

Table 11. Radiocarbon Dates from Blue Fish Beach (44NB147).

<u>Uncorrected date</u>	<u>Laboratory Number</u>	<u>Sample Material</u>	<u>Provenience</u>
A.D. 1125 (825 \pm 65)	SI-4230	9.0gm wood charcoal	Unit 20L2 A.E.=9.12m
A.D. 1605 (345 \pm 70)	SI-4231	6.1gm wood charcoal	Unit 22L2 Zone IIIB
A.D. 1225 (725 \pm 75)	SI-4232	5.0gm wood charcoal	Unit 24L4 A.E.=9.05m
A.D. 1255 (695 \pm 60)	SI-4369	oyster shell	Unit 22L2 Zone IIIB
A.D. 1445 (505 \pm 60)	SI-4370	oyster shell	Unit 22L2 Zone IIIB
130.2% modern (nitration pretreatment; small sample; diluted).	SI-4371	10.9gm wood charcoal submitted. Sample too small after cleaning.	Unit 22L2 Zone IIIB
A.D. 1645 (305 \pm 70)	SI-4372	10.1gm wood charcoal	Unit 24L2 Zone IIIB
No date received	SI-4373	5.5gm wood charcoal submitted. Sample too small after cleaning.	Unit 20L2 Zone IIIC

samples were dated to A.D. 1605 \pm 70 and A.D. 1645 \pm 70. These are the correct dates for the Yeocomico Ware occupation and the formation of the excavated portion of the shell midden. This interpretation is supported by four radiocarbon dates derived from charcoal samples associated with Yeocomico Ware found at White Oak Point (44WM119). The uncorrected dates for these samples range from A.D. 1510 \pm 75 to 1690 \pm 55 (Waselkov in press).

The two remaining dates come from charcoal samples found in Zone III, the dark earth midden. These uncorrected dates are A.D. 1125 \pm 65 and A.D. 1225 \pm 75. Although the latter date comes from a charcoal sample found in the midden at an assumed elevation of 9.05 m, in unit 24L4, it obviously does not date the Mockley Net-Imprinted sherds found at similar elevations in the same unit. Rather, it represents the intrusion of charcoal from a later occupation into the soft, sandy matrix of the Mockley Ware midden. The earlier date of A.D. 1125 \pm 65 came from a charcoal sample found in the northwest corner of unit 20L2 at an assumed elevation of 9.12 m. It is in this area of the site that the sherd from a complex-motif Rappahannock Incised vessel was found, along with other Rappahannock Fabric-Imprinted sherds. Therefore, it is most likely that these two radiocarbon dates are associated with a limited occupation of the site during Late Woodland I by people using Townsend Ware vessels incised with complex geometric motifs. Such an interpretation fits Griffith's (1980:33) temporal placement of complex motifs of Rappahannock Incised pottery found in southern Delaware.

h) Summary

The earliest occupation of Blue Fish Beach occurred during the latter part of the Late Archaic Period, probably between 2,000 and 1,500 B.C. The environmental setting was quite different, and the shoreline of the ancestral Potomac River was some distance from the site. The two Savannah River Contracting-Stemmed points and the Perkiomen Broad point and steatite bowl sherd indicate at least two different Late Archaic components. Neither occupation resulted in much midden refuse.

When the site was reoccupied sometime between A.D. 200 and 900, the people were using medium-to-large, wide-mouthed pottery jars tempered with crushed oyster shell and impressed on the exterior surface with nets or cords (Mockley Ware). Only a limited amount of stoneworking was done, primarily in quartz and quartzite. At least two fired-clay hearths are attributable to this occupation. Although a shallow layer of dark earth midden accumulated over the site, no evidence of food refuse was found.

The site was briefly used again, sometime around A.D. 1100 or 1200. The ceramic artifacts from this occupation include Rappahannock Fabric-Imprinted potsherds and a sherd from a complex motif Rappahannock Incised vessel. The Levanna Large Triangular point found on the beach face adjacent to the site is probably associated with this component. Occupational refuse was very shallow.

The final aboriginal use of Blue Fish Beach probably occurred in the mid-seventeenth century A.D. Based upon an analysis of the charred

seeds, the site was occupied at least in the fall. The primary activity appears to have been the gathering and eating of oysters, soft-shell clams, and other shellfish. The discarded shell accumulated in a shallow depression near an intertidal marsh. The original shell midden probably contained the remains of some 50,000 shellfish, yielding about 250,000 grams of useable meat.

The pottery associated with this occupation has been named Yeocomico Ware. This ware consists of vessels with plain or scraped exterior surfaces, finely crushed shell temper, and, if decorated, horizontal cord-impressions or punctations below the rim, or vertical lines of punctations on the body. Vessel forms range from small cups and medium-size bowls to globular jars with rounded bottoms.

One complete quartzite biface and several quartz and quartzite point/biface fragments were found, but no small triangular points diagnostic of the Protohistoric and early Historic Periods. The absence of points and the recovery of only eight calcined bone fragments is, perhaps, indicative of the limited importance of hunting at this site, during the Yeocomico occupation.

It was estimated that approximately 56% of the site has eroded away. Based upon excavation of the portion that was left, the Yeocomico component is interpreted as the remains of a small, shellfish gathering site (Class 6) occupied during the fall. The uniformity and thinness of the shell deposit coupled with the relatively small amount of cultural material is suggestive of a single occupancy of somewhat short duration.

2. BOATHOUSE POND (44NE111)

a) Location and Setting

During aerial survey in the spring of 1976, a large midden site (Class 1) was found in the neckland along the east bank of the Coan River (Figure 12). Named Boathouse Pond, the site covers an area of approximately 7.29 ha and is clearly visible as a gray-black midden stain against the lighter, natural-colored soils (Plate 16). The site includes three headlands which point west toward Boathouse Pond, as well as an extensive area of flat neckland to the east of the headlands. Of all the sites discovered in the Chicacoan locality, this one has the greatest spatial extent. However, most of the dark earth and oyster shell midden is thin, mixed within the 20 cm deep plow zone.

The soil type of the northern part of the site is Matapeake silt loam, while the remainder of the site is Mattapex silt loam. The Matapeake and Mattapex soils may be cropped intensively, and are particularly favorable for corn because of their capacity to supply the moisture corn needs during the growing season (Elder et al. 1963:24-25). Both of these soil types are part of the Mattapex-Bertie association which blankets the necklands from the east bank of the Coan River to the west bank of Hull Creek, at its mouth.

If the ethnographic evidence presented by Chisolm (1968:131) is correct and the maximum distance most agriculturalists are willing to walk to their fields is 2 km, then 51% of the land within a 2-km catchment area of the Boathouse Pond Site is soil of the Mattapex-Bertie

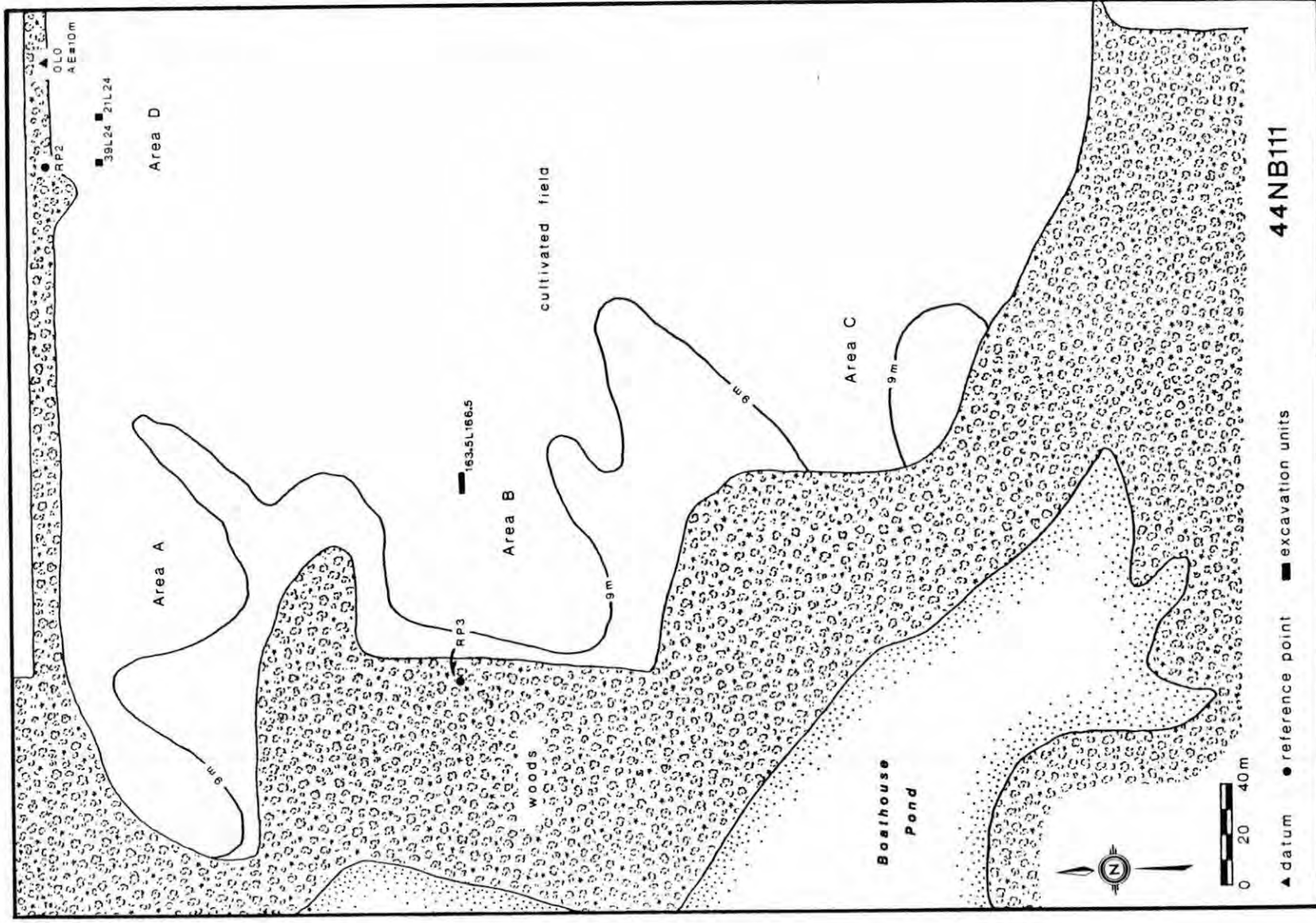


Figure 12. Map of Boathouse Pond Site (44NB111).

Plate 16. Aerial photograph of Boathouse Pond Site (44NB111).
Area of archeological midden visible as dark plant and
soil marks.



association. The remainder of the land within a 2-km radius of the site is 6% Woodstown-Dragston association and 42% Sassafras-Sandy land association. About one-third of the Sassafras-Sandy land association is not fit for tilling because it is too steep. Altogether, there are approximately 456 ha (1125 acres) of arable land within a 2-km catchment radius.

In terms of its general setting, the Boathouse Pond Site is due south of the east bank of the Coan River by somewhat over 200 m. It is southeast of the prominent L-shaped bend in the river by little more than 400 m. The distance from the site to the base of the interior uplands is approximately 600 m, due south. Overall, the site is in an advantageous position, being situated on a broad, shallow cove off from the main channel of the Coan River, about one-third the length of the river from its mouth.

At this juncture, it might prove instructive to compare the setting of the Boathouse Pond Site with some of the criteria apparently used by the historic Virginia Algonquians in selecting a village site (see Chapter II, Section 4b). These criteria were: (1) proximity to rivers or streams; (2) location upon the rise of a hill or ridge; (3) nearness to freshwater springs or streams; (4) nearness to marshlands; and (5) proximity to land suitable for slash-and-burn cultivation.

The Boathouse Pond Site meets all of these criteria, with the exception of number 2. The site is beside Boathouse Pond, along the east bank of the Coan River, a tributary of the Potomac. There are several freshwater springs nearby at the juncture of the necklands and

uplands, as well as freshwater streams in the easily accessible interior uplands. The Coan River system has the greatest number of hectares of marshland of any section of Northumberland County, and three of the largest marshes are within 4 km of the Boathouse Pond Site (see Chapter 1, Section 4b). It must be kept in mind, however, that these data pertain to the present location and extent of the marshlands and not to their nature and extent of 400 or 500 years ago. The proximity of the site to arable land has already been demonstrated. Thus, the area around Boathouse Pond would appear to have been a choice location for a village site.

b) Surface Collection and Test Excavations

Due to the large size of the site, it was divided into four areas based upon the topography (Figure 12). Area A includes the north-central and northwestern portions of the site that lie along and near a tongue of land east of Boathouse Pond. Area B is the largest, encompassing the center of the site which starts in the broad neckland and extends onto a wide headland. Area C is the southern end of the site, which includes a narrow tongue of land. Finally, Area D is the northeastern part of the site located in the interior of the neckland. Oyster shell is scattered over all of the site, with its greatest concentration in Area B. However, dark earth midden comprises the largest percentage of the midden refuse.

Two surface collections were made from each area, once with a cultivated surface but no crop cover and again with a cultivated surface and row crops of 15-cm-high soybeans. Members of the survey team were

spaced approximately 4 m apart, and all visible archeological material in their paths was collected. The surface collections from each of the areas within the site were labeled accordingly and kept separate.

From an analysis of the surface collections, it appeared Areas B and D had the greatest concentrations of late Middle Woodland through Protohistoric and, possibly, early Historic artifacts. Therefore, these two areas of the site were selected for test excavations in the hope of finding subsurface features at the base of the plow zone.

An east-west baseline was established which closely paralleled the fence at the north end of the site. A second line perpendicular to the baseline was placed along the eastern edge of the site and the intersection of these two lines was designated Reference Point 1 and OLO on the site grid, with an assumed elevation of 10 m. A second reference point was placed on the baseline 42 m west of point OLO. Two 3-meter squares were laid out in Area D: units 21L24 and 39L24 (24 m left of the 39-m point on the baseline). An east-west trench consisting of five 1.5-meter squares was laid out in Area B. The units were designated 163.5L166.5 to 169.5L166.5.

The plow zone was removed with cut-face shovels and all soil was screened through 1/4-inch wire mesh. When the subsoil was reached, the floor was troweled and the plow scars removed as separate disturbances. The depth of the plowed soil was quite uniform, varying only slightly between 20 and 23 cm. With the exception of two features in Area D and five post molds found in the trench in Area B, all archeological remains were confined to the plow zone.

c) The Artifacts

i) The ceramics. A total of 599 sherds were found during the surface collecting and excavations (Table 12). Fifty-seven per cent, or 345 sherds, were too small or too eroded to be identified. This is to be expected given that this land has been under Euro-American cultivation for at least 330 years. The remaining 254 sherds could be assigned to a historical ceramic type. Of this number, all but three sherds date from the late Middle Woodland Period to early Historic times. Two Early Woodland Period Accokeek Cord-Marked sherds and one Pottery Hill Net-and-Knot-Roughened sherd from the early Middle Woodland Period are the only identifiable ceramics which predate A.D. 200.

The two largest groups of pottery from the site are those that date between A.D. 200 and 900, and those that postdate circa A.D. 1300 to the end of the early Historic Period. Comprising the former group are the pottery types Nomini Cord-Marked, Mockley Net-Imprinted, and Mockley Cord-Marked (Plate 17E). A total of 89 sherds attributable to these three ceramic types were found, with the bulk coming from Area B. The percentage of Mockley and Nomini wares relative to the total number of sherds from Areas A and C was also high, although the raw counts were small in comparison to the number from Area B.

There is a conspicuously small number of sherds which can confidently be assigned to the intervening period of A.D. 900 to 1300. Four Currioman Fabric-Imprinted sherds were found. This type has been assigned to the early Late Woodland Period based upon its

Table 12. Ceramic Artifacts from Boathouse Pond (44NB111).

Pottery and pipe types	Area A		Area B					Area C		Area D		Total
	surface	surface	unit 163.5	unit 165	unit 166.5	unit 168	unit 169.5	surface	surface	unit 21L24	unit 39L24	
Terra cotta pipe fragments	-	2	-	-	-	-	-	1	2	1	-	6
Accokeek Cord-Marked	2	-	-	-	-	-	-	-	-	-	-	2
Pottery Hill Net-and-Knot- Roughened	-	1	-	-	-	-	-	-	-	-	-	1
Nomini Cord- Marked	-	5	-	-	-	-	-	3	3	-	-	11
Mockley Net- Impressed	7	7	-	22	12	1	1	-	-	-	-	50
Mockley Cord- Marked	1	6	-	2	7	2	5	5	-	-	-	28
Currioman Fabric-Impressed	-	-	-	-	1	-	-	-	2	-	1	4
Sullivan Cord- Marked	-	-	2	-	-	1	-	-	13	3	4	23
Rappahannock Fabric-Impressed	2	8	1	-	-	-	-	2	6	3	1	23
Rappahannock Incised (simple)	-	-	1	-	-	1	-	1	1	-	-	4

Table 12. (cont.)

Pottery and pipe types	Area A		unit 163.5	Area B				Area C		Area D		Total
	surface	surface		unit 165	unit 166.5	unit 168	unit 169.5	surface	surface	unit 21L24	unit 39L24	
Yeocomico Ware	4	19	-	2	6	-	1	4	5	8	8	57
Shell-tempered plain	-	-	2	3	1	3	-	4	8	-	5	26
Potomac Creek- like Cord-Marked	-	1	1	1	1	1	-	-	-	3	5	13
Potomac Creek- like Plain	2	-	-	-	-	-	1	-	-	1	-	4
Medium Sand- Tempered Brushed	-	-	-	-	-	-	-	-	6	-	-	6
Non-tempered Colono-Indian- like	-	2	-	-	-	-	-	-	-	-	-	2
Eroded shell- tempered sherds	10	78	24	15	15	12	8	16	28	28	73	307
Eroded sand- and pebble- tempered sherds	-	13	1	-	1	-	-	4	7	5	7	38
Total	28	142	32	45	44	21	16	40	81	52	104	605 in- cludes pipes

- Plate 17. Ceramic artifacts from Boathouse Pond (44NB111):
- A, sherds from Area D (1 to r), Yeocomico Scraped (5 specimens), Potomac Creek Cord-Marked (3 specimens), Rappahannock Fabric-Imprinted (1 specimen);
 - B, aboriginal pipe stems from Area D;
 - C, sherds from Area B (1 to r), non-tempered plain (1 specimen), Yeocomico Plain (2 specimens), Potomac Creek-like (1 specimen), shell-tempered plain (1 specimen), Potomac Creek Cord-Marked (2 specimens);
 - D, aboriginal pipe stems from Area B;
 - E, Mockley Ware from Area B.



A



B



C



D



E



5 CM.

2 IN.

stratigraphic context at the White Oak Point Site (Gregory Waselkov 1981: personal communication). Rappahannock Fabric-Impressed pottery was made throughout the Late Woodland Period and into early Historic times, so it is possible that some of the 23 sherds of this type found at the site date from the early Late Woodland, as well.

The second largest group of ceramics postdates A.D. 1300 and includes the types Sullivan Cord-Marked, Rappahannock Incised (simple and reed punctate motifs), a plain non-tempered ceramic, plain and exterior-scraped Yeocomico Ware, Potomac Creek-like Cord-Marked and Potomac Creek-like Plain (Plate 17A and C). The qualifier attached to the Potomac Creek pottery types requires further explanation. The sherds from Boathouse Pond attributed to Potomac Creek Ware are near the limits of the range of variation for the ware, as described by Stephenson et al. (1963:113-120). The examples from the site are tempered with medium sand grains of about 1 to 2 mm and have gray to reddish brown, and occasionally dark brown, exterior surface colors. Vessel walls are thin and hard. Only body sherds of the cord-marked type have been found and these are impressed with fine elements 1.0 to 1.5 mm thick.

None of the sherds of Sullivan Cord-Marked are decorated. One sherd of Rappahannock Incised is also decorated with reed punctations, which places it in a Protohistoric and early Historic time frame. The remainder of the incised sherds have horizontal incisions only. One of the two sherds of the plain, non-tempered pottery is a rimsherd with a rounded lip and incurvate rim. These two sherds belong to a

shallow bowl. The Yeocomico Ware from the Boathouse Pond Site has both plain and scraped exterior surfaces, fine shell temper, and thin walls. The sherds with exterior-scraped surfaces are also scraped on the interior. Some of the sherds with plain exterior surfaces are scraped on the interior too. The sherds categorized under the descriptive type "shell-tempered plain" could have belonged to the unpaddled portions of Mockley or Townsend Ware vessels or, perhaps, to the lower bodies or basal portions of Yeocomico Ware vessels.

A final comment is in order concerning the descriptive pottery type "medium sand-tempered, brushed." The six sherds of this type are apparently from the same vessel. The paste and temper are identical to those described for medium sand-tempered Potomac Creek Ware. The interior and exterior surface color is black, and the sherds are thin and hard. Clay impressions taken from the exterior surface of the sherds clearly show that the vessel was brushed with a bunch of stiff fibers (Plate 17A).

Besides pottery, six terra cotta pipe specimens were found (Table 12; Plate 17B and D). One fragment from a thimble-size bowl was decorated with incised lines encircling the exterior surface. Two of the pipe stems have rounded cross-sections and one is squared. All three of the pipe stem fragments have dentate punctations around the stem. The two additional specimens are rounded stem bits, one with part of a dentate pattern on the side of the stem.

ii) The lithics. A total of 37 identifiable points were found in the surface collections and excavations (Table 13). Eight of the points

Table 13. Lithic Artifacts from Boathouse Pond (44NB111).

Lithic artifact type	Area A		Area B					Area C		Area D		Total
	surface	surface	unit 163.5	unit 165	unit 166.5	unit 168	unit 169.5	surface	surface	unit 21L24	unit 39L24	
Kirk Stemmed	-	-	-	1	-	-	-	-	-	-	-	1
Small variant Savannah River Stemmed	-	-	-	-	-	-	-	1	-	-	-	1
Savannah River Contracting- Stemmed	1	-	-	-	-	1	-	-	2	-	-	4
Fox Creek Lanceolate	1	-	-	-	-	-	-	1	-	-	-	2
Fox Creek Stemmed	-	-	-	-	-	-	-	1	-	-	-	1
Selby Bay Side-Notched	2	3	-	-	1	-	-	3	-	-	-	9
Selby Bay Stemmed	2	-	-	-	-	-	-	1	-	-	-	3
Selby Bay Blank	1	-	-	-	-	-	-	1	-	-	-	2
Levanna Large Triangular	-	1	-	-	-	-	-	-	-	-	-	1
Large triangular blank	-	1	-	-	-	-	-	-	-	-	-	1

Table 13. (cont.)

Lithic artifact type	Area A		Area B					Area C		Area D		Total
	surface	surface	unit 163.5	unit 165	unit 166.5	unit 168	unit 169.5	surface	surface	unit 21L24	unit 39L24	
Levanna Small Triangular	-	1	-	-	-	-	-	1	4	2	1	9
Long, narrow, serrated trian- gular	-	1	-	-	-	-	-	-	-	-	-	1
Small, stemmed point	1	-	-	-	-	-	-	-	-	-	1	2
Biface	2	3	-	-	-	-	-	-	-	-	-	5
Point/biface fragment	7	8	1	1	1	1	-	4	1	-	-	24
Hammerstone	-	-	-	-	-	-	-	1	-	-	-	1
Anvil/hammer- stone	-	1	-	-	-	-	-	-	-	-	-	1
Celt or celt fragment	1	2	-	-	-	-	-	-	-	-	-	3
Total	18	21	1	2	2	2	0	14	7	2	2	71

date before A.D. 200. Among these are an Early Archaic Kirk Stemmed point made from argillite, 4 quartzite and one quartz Late Archaic Savannah River points, and 2 small stemmed points made from quartz. The latter are probably associated with the Early Woodland Accokeek Cord-Marked pottery.

The remaining 29 points postdate A.D. 200. Seventeen points are of the Fox Creek-Selby Bay types (Table 13; Plate 18C), which are part of the same technological subsystem as the Mockley and Nomini Ware ceramics. All of these points but one are manufactured from rhyolite and some are made from old bifaces and flakes of rhyolite. The exception is a side-notched point of chert (Plate 18D), which is morphologically and technologically similar to the chert side-notched point found in the Mockley feature at site 44NB185-C. Another chert point, similar in all respects to the latter two specimens, was found in the surface collections from Woodbury Farm #1 (see Plate 8B). The major component at this site derives from Mockley Ware occupations.

One quartz Levanna Large Triangular point and one quartz triangular blank were found; and these probably date to the early Late Woodland Period, along with Currioman Fabric-Imprinted and some of the Rappahannock Fabric-Imprinted pottery. The nine Levanna Small Triangular points and the long, narrow, serrated triangular point fall after A.D. 1300 (Plate 18A and B) and are contemporaneous with the late prehistoric, Protohistoric, and early Historic ceramics from the site. The elongated, serrated triangular point is made from an old rhyolite flake, while the nine Levanna Small Triangular points are

- Plate 18. Lithic artifacts from Boathouse Pond (44NB111):
- A, Levanna Small Triangular points and yellow jasper cobble core from Area D;
 - B, triangular points and a blank from Area B;
 - C, rhyolite Fox Creek Lanceolate, Fox Creek Stemmed, and Selby Bay Stemmed and Side-Notched points from Areas A, B and C;
 - D, chert side-notched point from Area B;
 - E, spall of English flint from Area B;
 - F, poll of greenstone celt from Area B;
 - G, reworked greenstone celt from Area A.



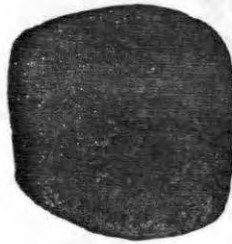
A



B



C



G



F



E



D



made from quartz (4), quartzite (2), and yellow jasper (3). The yellow jasper points were made from small cobbles that can be found in local gravel deposits (Plate 18A).

One complete celt and the poll ends from two celts were recovered during the surface collections (Table 13; Plate 18F and G). All specimens have been pecked and ground and were made from greenstone. The complete celt has a reworked poll.

Flakes, decortication flakes, and cores and chunks are enumerated according to site area and raw material in Table 14. It is an interesting observation that no decortication flakes or cores and chunks of rhyolite were found -- only rhyolite flakes. This is made even more intriguing by the fact that 43% of the total number of points and blanks found at Boathouse Pond were made from rhyolite. Similar circumstances have been observed at the sites of Betz Landing (44NB19) and Woodbury Farm #1, both with heavy Mockley Ware occupations. It is suggested that during the late Middle Woodland Period rhyolite, which is a non-local stone, was being brought into the lower Northern Neck as blanks or preforms.

It is also interesting to note that the greatest occurrence of quartz, yellow jasper, red jasper, and chert debitage is in Areas B and D. The distribution of late prehistoric through early Historic Period points and ceramics is also greatest in these two areas of the site.

iii) Euro-American artifacts. Five items of Euro-American origin were found in the surface collections from Area B. Two white clay pipe stems with bore diameters of 7/64 of an inch were recovered. Pipes with

Table 14. Debitage from Boathouse Pond (44NB111) by Raw Material, Area, and Type.

Site area and type of debitage	Quartz	Quartzite	Jasper	Rhyolite	Greenstone	Chert	Other (basalt or slate)	Total
<u>Area A</u>								
Flakes	4	6	1	-	-	-	-	11
Decortication flakes	4	3	-	-	-	-	-	7
Cores & chunks	10	13	-	-	-	2	-	25
<u>Area B</u>								
Flakes	14	14	4	4	2	1	-	39
Decortication flakes	20	12	3	-	-	-	-	35
Cores & chunks	58	39	1	-	1	6	1	106
<u>Area C</u>								
Flakes	2	6	1	21	-	4	1	35
Decortication flakes	9	9	1	-	-	1	-	20
Cores & chunks	28	32	1	-	-	5	-	66
<u>Area D</u>								
Flakes	44	9	22	1	-	4	6	86
Decortication flakes	34	7	25	-	-	5	-	71
Cores & chunks	23	9	8	-	-	7	-	47
Total	250	159	67	26	3	35	8	548

bores of this diameter could have been made anytime between A.D. 1620 and 1710, although their greatest occurrence was between A.D. 1650 and 1680. A rimsherd to a Rhenish brown stoneware jug is of a type common to the period A.D. 1630 to 1675. The handle to a brown-glazed earthenware vessel is similar to utility wares of the early to mid-seventeenth century. Finally, a spall of English flint was found, with some cortex remaining (Plate 18E).

Although these artifacts were found on the surface of the plow zone, it is suggested that they might have been used during the historic aboriginal occupancy of the site. The two pipe stems and English flint mirror the same classes of European artifacts associated with the Yeocomico Ware occupation of Blue Fish Beach (44NB147). The two sherds of European ceramics are from wares common to the second and third quarters of the seventeenth century which have been found in historic aboriginal contexts (MacCord 1969:20-21).

d) The Features

Two features were found in the southeast corner of unit 39L24, in Area D (Figure 13). Feature 1 was originally a small aboriginal pit, about 45 cm in diameter, that was subsequently disturbed by a tree stump and rodent runs. These later disturbances distorted most of the pit profile. Cultural material found in the feature included: one sherd of Currioman Fabric-Imprinted pottery; one sherd of Rappahannock Fabric-Imprinted pottery; two sherds of Yeocomico Ware; one quartz flake; one chert decortication flake; three fragments of unidentifiable mammal bone; and 4.53 kg of fire-cracked rock. Wood charcoal and

burned clay lumps were mixed in the feature fill. Feature 2 lacked artifacts, but had an irregular profile and contained large lumps of burned earth. Most likely, it represents a small, burned tree stump.

Five post molds were found at the base of the plow zone, in the trench excavated in Area B (Figure 13). Three post molds were found in unit 165L166.5, one in unit 166.5L166.5, and one in unit 168L166.5. Two of the post molds contained cultural material. The following items were found in post mold 2: seven sherds of Mockley Net-Imprinted pottery belonging to the same vessel; two Mockley Net-Imprinted sherds belonging to a different vessel; one fragment of unidentifiable mammal bone; and six oyster shells. Cultural material found in post mold 3 included: 10 Mockley Net-Imprinted sherds to the same vessel; one sherd of plain, shell-tempered pottery; and one quartz flake. Due to the small size of the surface area exposed, little more can be said except that some type of pole-supported structure was erected in this area, probably during the Mockley occupation.

e) Summary

Prior to A.D. 200, there had been limited occupation of the Boathouse Pond Site during the Early Archaic, Late Archaic, and Early Woodland Periods. The five Savannah River points and the amount of quartzite debitage found indicate that most of this earlier activity took place in the Late Archaic Period. Based upon a comparison to the Late Archaic features at Plum Nelly (44NB128), some of the oyster shell mixed within the dark earth midden of the Boathouse Pond Site was undoubtedly deposited by the Late Archaic occupants.

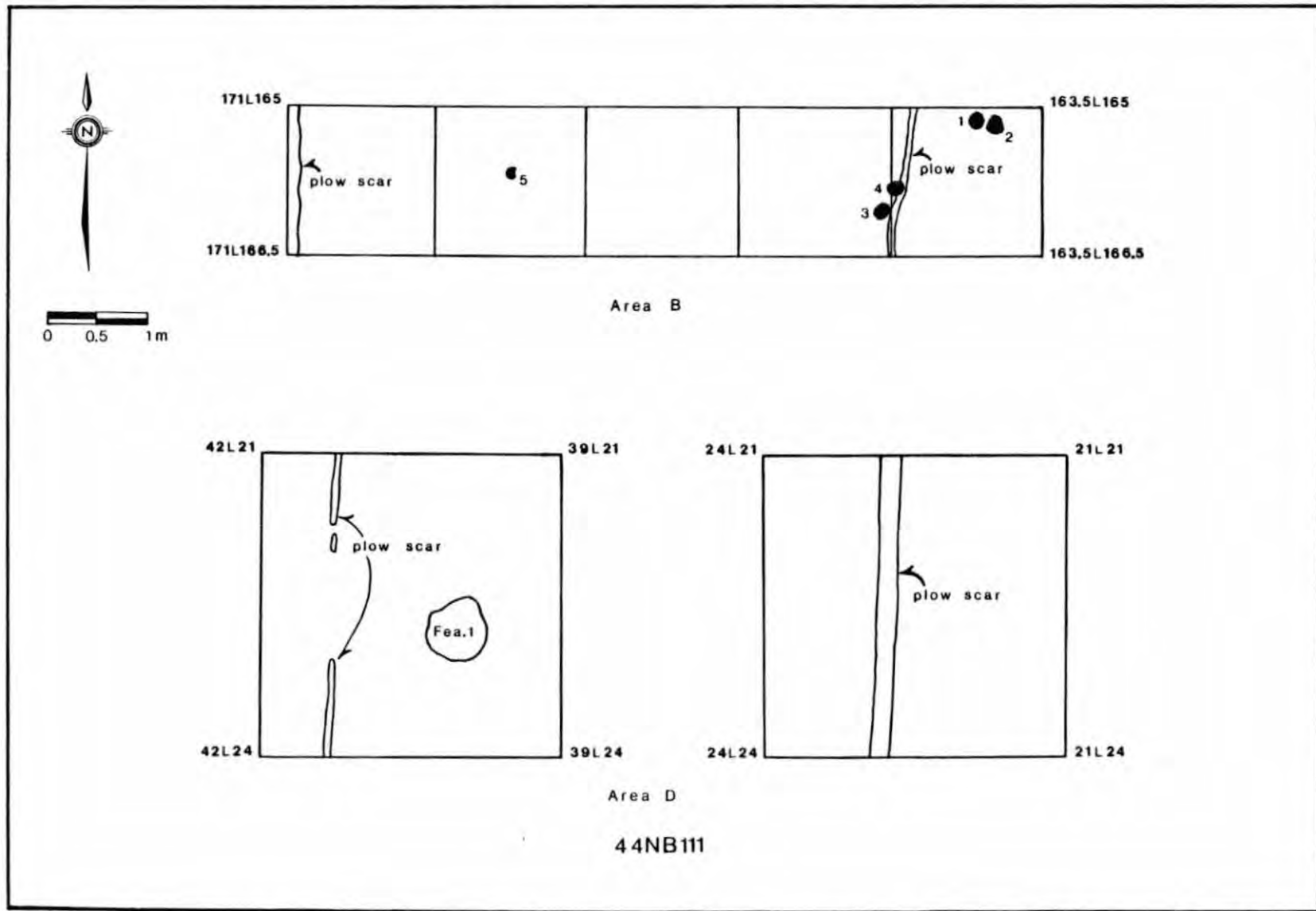


Figure 13. Plan view of excavations at Boathouse Pond (44NB111).

Use of the site increased dramatically between A.D. 200 and 900. Artifacts from the late Middle Woodland Period were scattered over approximately 5.26 ha. Areas A, B, and C were occupied by a cultural group whose technological subsystem included Mockley and Nomini Ware ceramics and a variety of Fox Creek and Selby Bay points made almost exclusively from rhyolite. An examination of the rhyolite points, blanks, and lithic debris supports the proposition that most of the rhyolite was being brought into the lower Northern Neck as blanks or preforms, probably from sources in western Maryland. Some of the points were apparently made from old bifaces and flakes. From the spread of oyster shells over the site and by comparison to the Mockley components at sites 44NB25 and 44NB128, it is probable that oysters were part of the subsistence base of the late Middle Woodland occupants of Boathouse Pond. Post molds from the Mockley component were found in Area E, but additional excavation is required before any possible post mold patterns can be delineated.

Occupation of the site during the intervening years between A.D. 900 and approximately A.D. 1300 was sporadic. Limited use was made of only 0.81 ha of Areas B and D.

Sometime after A.D. 1300, most of the site was reoccupied. Artifacts which postdate A.D. 1300 have been found in all four areas of the site, covering approximately 4.45 ha. However, most of them have come from Areas B and D. Items of material culture include pecked and ground celts, Levanna Small Triangular points, horizontally incised Rappahannock Fabric-Imprinted pottery, Sullivan Cord-Marked

pottery, and Potomac Creek-like Cord-Marked pottery. Artifacts which can be attributed specifically to the Protohistoric and early Historic Periods include Rappahannock Incised pottery with reed punctations, Potomac Creek Plain pottery, Yeocomico Ware, and terra cotta smoking pipes with dentate designs. On the basis of the location of the site, its proximity to certain resources, its large spatial extent, the presence of a thin, gray-black midden soil, and the nature of the artifacts found, it is postulated that Boathouse Pond was the site of a Protohistoric and early Historic village.

3. LONG POINT (44NB56)

a) Location and Setting

The Long Point Site is located on the first unnamed inlet north of Mill Creek, along the west bank of the Coan River (Figure 14). The site is about 600 m from the Coan, on the north bank of the inlet. It is situated on a broad tableland of Sassafras fine sandy loam soil next to banks that are 6 m high. The soil types within the vicinity of the site make up a Woodstown-Dragston association. Although most of the intermediate shell midden (Class 5) has been destroyed by plowing, a narrow wooded strip along the bluff contains undisturbed shell midden.

b) Surface Collections, Test Excavations, and Stratigraphy

The entire cultivated surface of the site was walked, and all visible archeological material was collected. The diagnostic lithic artifacts found were limited to one quartz Savannah River Stemmed

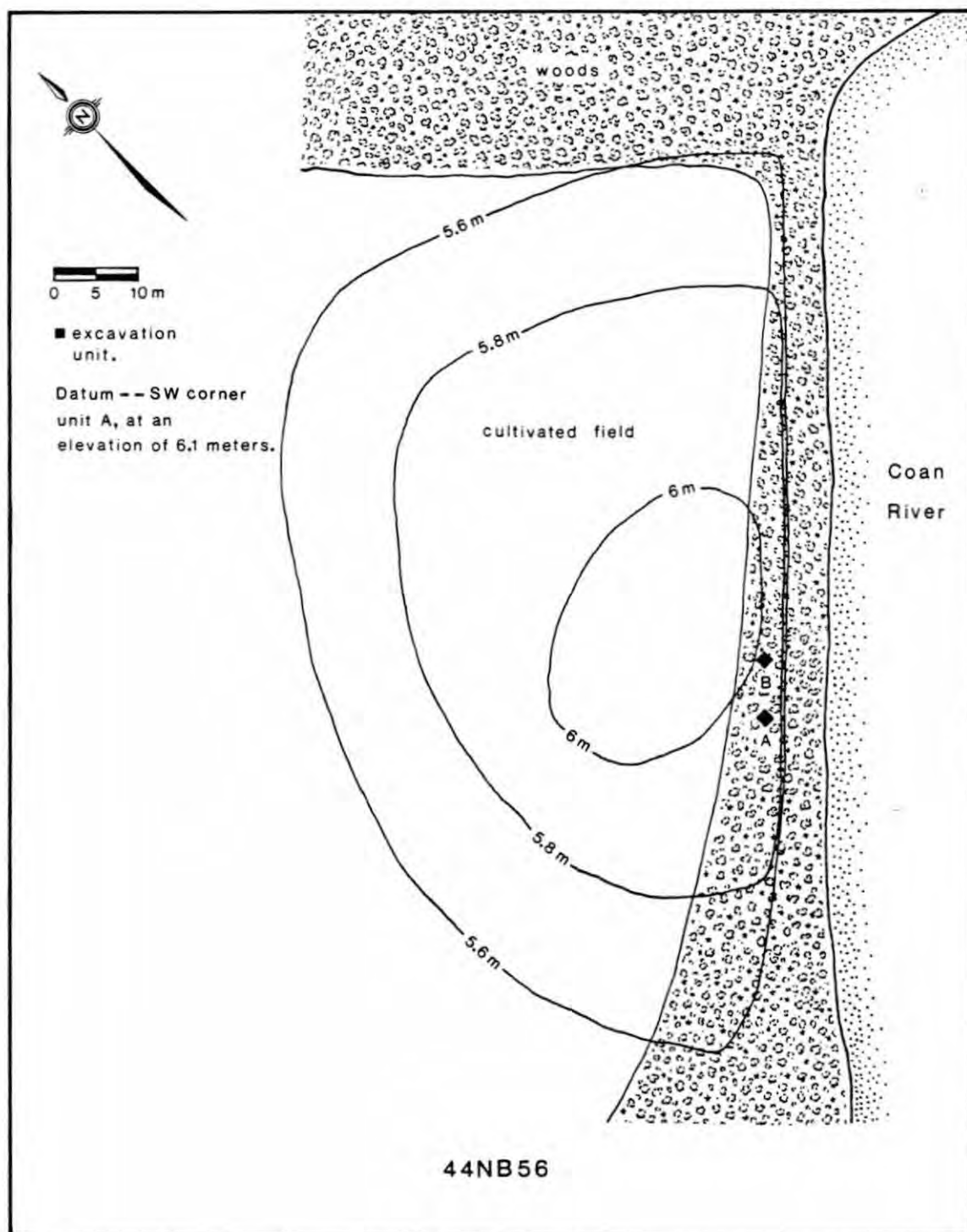


Figure 14. Map of Long Point Site (44NB56).

point, a quartz triangular blank, and two quartz Levanna Small Triangular points. Other lithic artifacts included: one quartzite cobble hammerstone, two rhyolite point/biface tips, one quartz blank, one quartzite biface fragment, 50 cores and chunks, and 85 flakes. Three sherds of Rappahannock Fabric-Imprinted pottery were found. Artifacts in the collection of Mr. C. W. Claughton, the property owner, included one three-quarter-grooved axe of greenstone; one three-quarter-grooved axe of hematite; one quartz Rossville-like point; and two Savannah River Contracting-Stemmed points, one quartz and one quartzite.

When the site was discovered by the survey team, a deposit of compact oyster shell, 15 to 20 cm in depth, was observed below an 8-cm layer of leaf mold and humus, exposed in the eroded bank along the southern edge of the site. On the basis of the Late Woodland artifacts found during surface collection and the discovery of undisturbed shell midden, test excavations seemed advisable.

Two 1.5-meter test squares (designated A and B) were excavated in the undisturbed portion of the site bordering the north bluff of the inlet. The test units were laid out on a north-south axis 4.5 m apart (Figure 14). All soil and shell from the excavations was screened through 1/4-inch mesh.

The stratigraphy consisted of an O horizon of leaf mold and humus 5 to 8 cm deep, labelled Zone I. Below was Zone II, a shell midden varying between 20 and 23 cm in thickness. The shell occurring at the top of the midden was broken and mixed with brown earth, while whole oyster shells made up the bottom half of the midden. In test square

B, Zone III was a sterile yellow sand underlying the shell midden. However, in test square A, a post mold stain was found in the northwest corner of the north wall. The post mold originated below the shell midden and bottomed out 25 cm below the shell or 58 cm below the present ground surface. The western third of Zone III, in which the post mold occurred, was a white sand, while the eastern two-thirds of Zone III was the sterile, yellow sand found in test square B.

c) The Excavated Archeological Material

Artifacts and faunal remains recovered during the excavations are presented in Table 15. In Zone I, Rappahannock Fabric-Imprinted, Rappahannock Incised (simple motif), and Moyaone-like Plain pottery were found along with the basal portion of a thin, chert triangular point. The sherds identified as shell-tempered plain could easily belong to the unpaddled portion of an otherwise paddled vessel. They are not sherds of Yeocomico Ware. One unidentifiable mammal bone was found in Zone I.

All of the potsherds from Zone II, the shell midden, were shell-tempered. Those sherds (88%) that were not badly eroded were Rappahannock Fabric-Imprinted. Of the 39 flakes found in Zone II, 69% were quartz, 13% were chert, 10% were quartzite, and 8% were rhyolite or slate. Although 14 mammal bones were recovered from this zone, none of them were identifiable.

The point of origin of the post mold was the top of Zone III. Adjacent to the top of the post mold were three quartz flakes and two eroded pebble- and sand-tempered sherds of the Prince George Series

Table 15. Artifacts and Faunal Remains from Test Excavations at Long Point (44NB56).

	Pottery types		*df=decorrtication flake										Lithics		Miscellaneous								
Test Square A	Zone I	1	-	1	2	8	-	-	-	1	1	1	2	-	-	-	1	85 gm	2	-	-		
	Zone II	-	-	-	-	-	-	2	-	-	-	2	-	-	1	-	-	98 gm	3	-	2		
	Zone III	-	-	-	-	-	2	-	-	-	-	2	1	-	-	-	-	-	-	-	-	-	
	Test Square B																						
	Zone I	-	1	-	-	8	-	-	-	-	1	-	1	-	1	-	-	-	84 gm	-	1	1	
	Zone II	-	-	16	2	62	-	3	2	2	1	3	11	16	5	-	2	1	593 gm	16	-	12	

(Evans 1955:60-62). Although the exterior surfaces were eroded, impressions taken with plasticine indicate that the sherds were probably of the type Pottery Hill Net-and-Knot-Roughened. These artifacts and the post mold were found in the area of white sand occupying the western third of test square A.

d) Summary

The earliest evidence for use of Long Point is indicated by several Late Archaic Period Savannah River points. This occupation probably dates to around 2,000 B.C.

The next use of the site is indicated by the Pottery Hill Net-and-Knot-Roughened sherds and the Rossville point. Ceramics of the type Pottery Hill Net-and-Knot-Roughened are found mainly in the interior Coastal Plain of Virginia, and are probably contemporaneous with the Popes Creek Net-Imprinted pottery of the Potomac Valley. Stephenson et al. (1963:184) first suggested that the thick, lozenge-shaped Rossville point was part of the Popes Creek assemblage. Due to the unscientific manner in which Alice Ferguson's excavations of the Accokeek Creek Site were conducted, this association could not be proven. However, a series of radiocarbon dates from sites on Martha's Vineyard, Massachusetts, confirm the placement of Rossville points within the temporal range assigned to Popes Creek pottery (Ritchie 1969:231). Therefore, the Pottery Hill Net-and-Knot-Roughened sherds and the Rossville point were probably deposited during an occupation of the site sometime between 400 B.C. and A.D. 200, in the early Middle Woodland Period.

On the basis of the present evidence, the main occupation of the site occurred in the latter part of the Late Woodland Period or during the Protohistoric, probably between A.D. 1300 and 1607/08. Artifacts which made up part of the technological subsystem included Townsend and Moyaone-like ceramics and Levanna Small Triangular points. It is most likely that the major portion of the shell midden was formed during this time. In addition to the harvesting and consumption of oysters, hunting also took place. Unfortunately, the small number and condition of the mammal bones limits any further statements pertaining to the hunting activities conducted from this site.

4. PLUM NELLY (44NB128)

a) Location and Setting

Plum Nelly is about 14.5 km west of the confluence of the Potomac River and Chesapeake Bay, situated in the broad necklands along the east bank of Hull Creek (Figure 15). The soil within a 2-km catchment radius of the site is about 56% Matapeake-Mattapex association and 44% Mattapex-Bertie association. The site is an intermediate shell midden (Class 5) with maximum dimensions of 188 m north-south by 61 m east-west, although the total area is slightly under 1 ha. Nonetheless, it is the largest site discovered during the survey of the Hull Creek drainage system.

The site was divided into three areas based upon the topography. The northern part of the site is along the edge of a broad neckland of Sassafras fine sandy loam soil. Oyster shell is more prevalent in

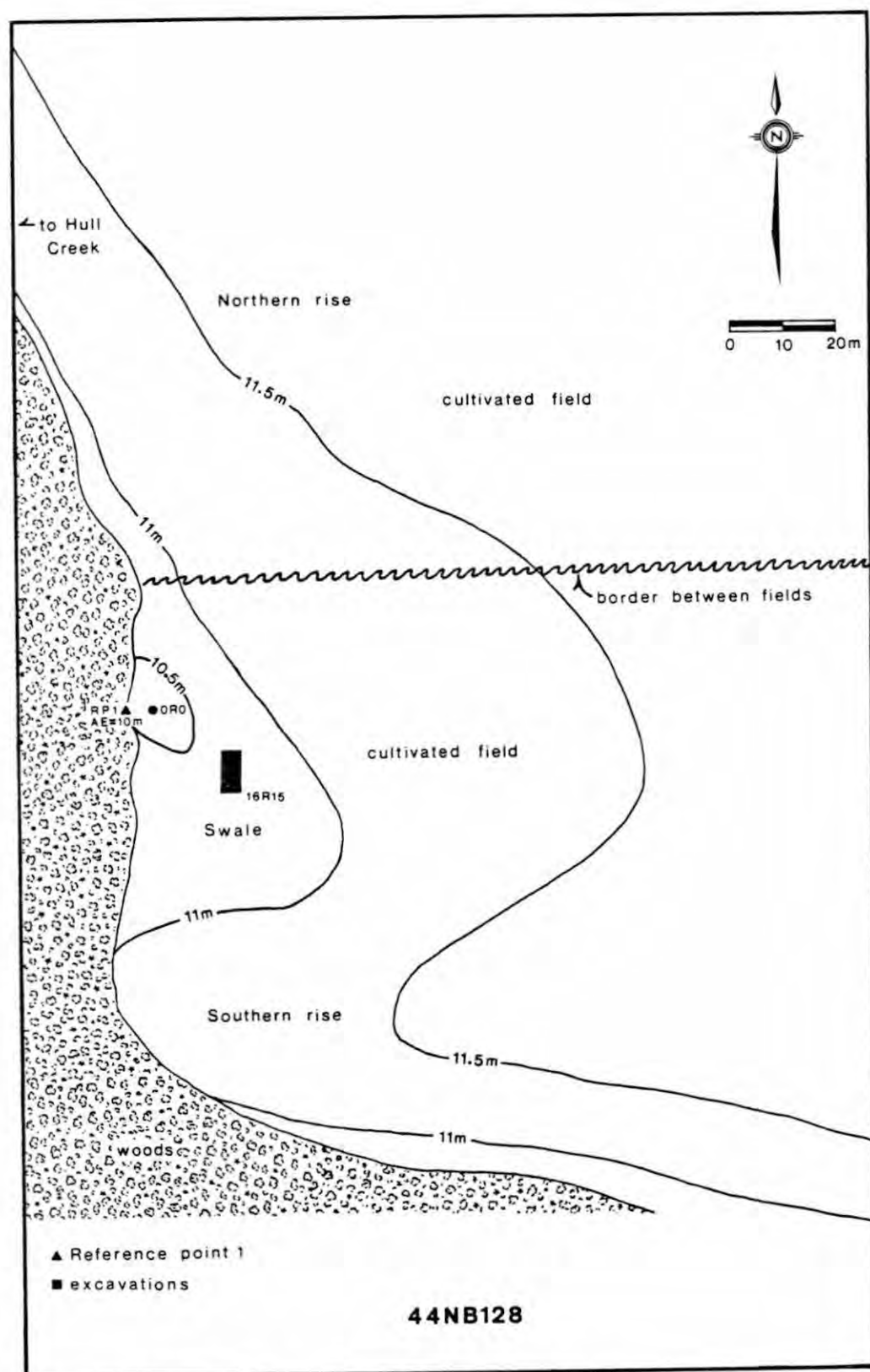


Figure 15. Map of Plum Nelly Site (44NB128).

this area than dark earth midden. At the extreme northern end of the site the shell midden is confined to the plow zone, while as much as 20 cm of shell midden lies below the plow zone of the remainder of the northern area. The center portion of Plum Nelly is a shallow depression or swale, lying between the northern area and a slight rise to the south. In the swale the deposits of shell and dark earth midden attain a maximum depth of 84 cm, or 59 cm of midden below the base of the plow zone. Here the midden is composed of as much dark earth as shell. The southern end of the site sits atop a slight rise. Shell is more prevalent than dark earth midden and no midden deposits were detected below the plow zone. The soil of the central and southern areas is Matapeake silt loam.

b) Surface Collections and Excavation Procedures

Plum Nelly was discovered by the two-member survey team in early June of 1976. The southern and central portions of the site were planted in corn and the northern area was in wheat. Fortunately for us, the corn was only 30 cm tall. A general surface collection was made, therefore, of the entire southern and central areas, using the corn rows as markers.

A brief, general surface collection of the northern area was made by the author prior to spring planting in 1979. The author walked east-west paths across the site, spaced 4 m apart, using survey flags as markers. All visible archeological material was collected. In early spring of the same year, a two-member survey team made another general surface collection from the entire southern area. The rows of

15-cm-high soybeans were used as markers.

Archeological sites with high artifact densities are rarely discovered in the lower Northern Neck, yet Plum Nelly proved to be such a rarity. During the three surface surveys over portions of the site, 2,978 artifacts were collected. The following is a numerical division of the collection by general artifact class: 157 points and blanks; 58 bifaces; 125 point/biface fragments; 1,788 flakes, decortication flakes, and utilized flakes; 738 cores and chunks; one three-quarter-grooved axe; two celts; two celt fragments; one tubular atlatl weight fragment; one winged atlatl weight fragment; one core hammerstone; 12 hammerstones; five lumps of hematite; and 87 potsherds. The majority of the artifacts were probably deposited during Late Archaic occupations. Of the 157 points and blanks, at least 58% were diagnostic of the Late Archaic Period. As a whole, the diagnostic artifacts from the surface collection indicate that Plum Nelly was used intermittently from as early as 6,800 B.C. to as late as the sixteenth century A.D.

Immediately following the surface collection and corings in early June of 1976, it was decided to excavate two contiguous five-foot squares in the swale, near the approximate center of the site. A walnut tree along the western edge of the site was chosen as a temporary datum and units designated 75S50E and 80S50E were laid out and excavated to the top of the culturally sterile B horizon.

The results of the test excavation were encouraging. The deposits of mollusc shell and dark earth midden were a complex series

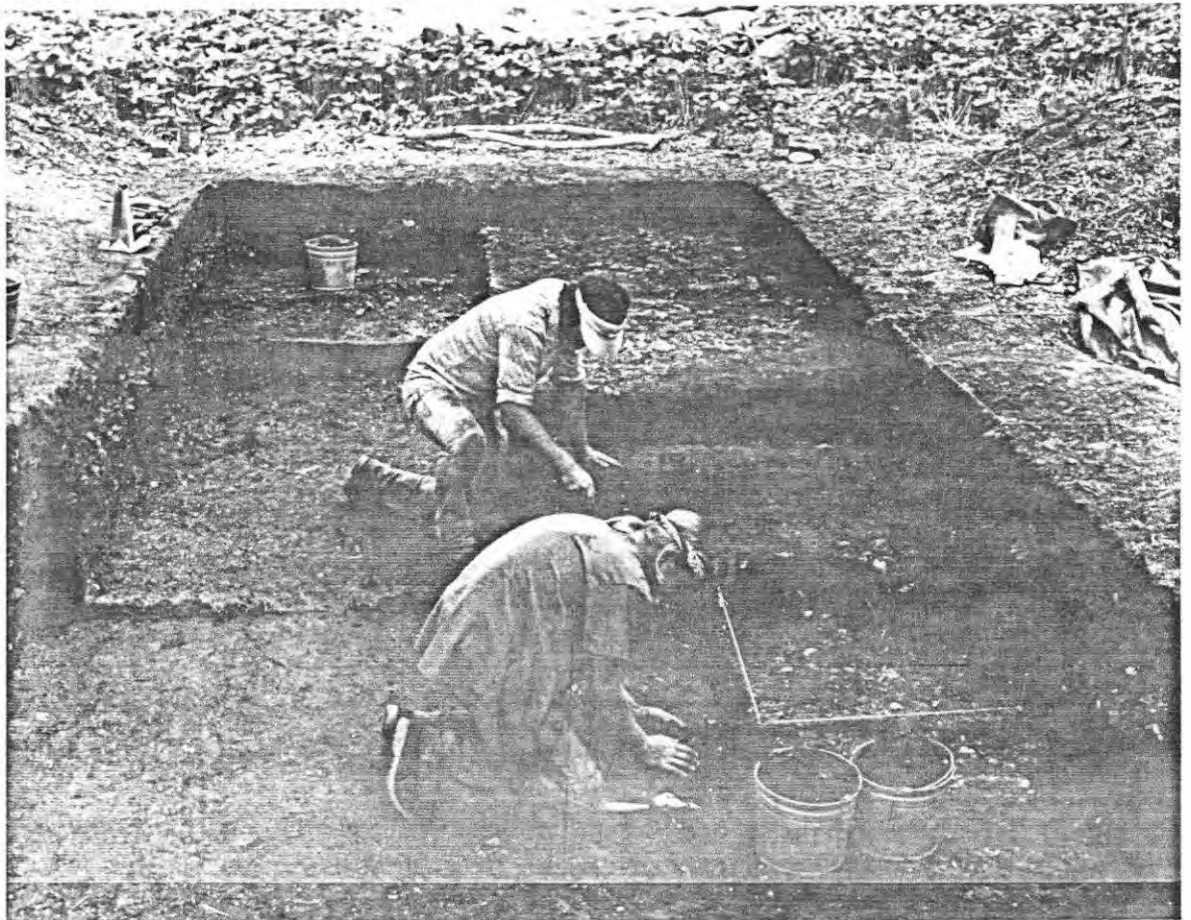
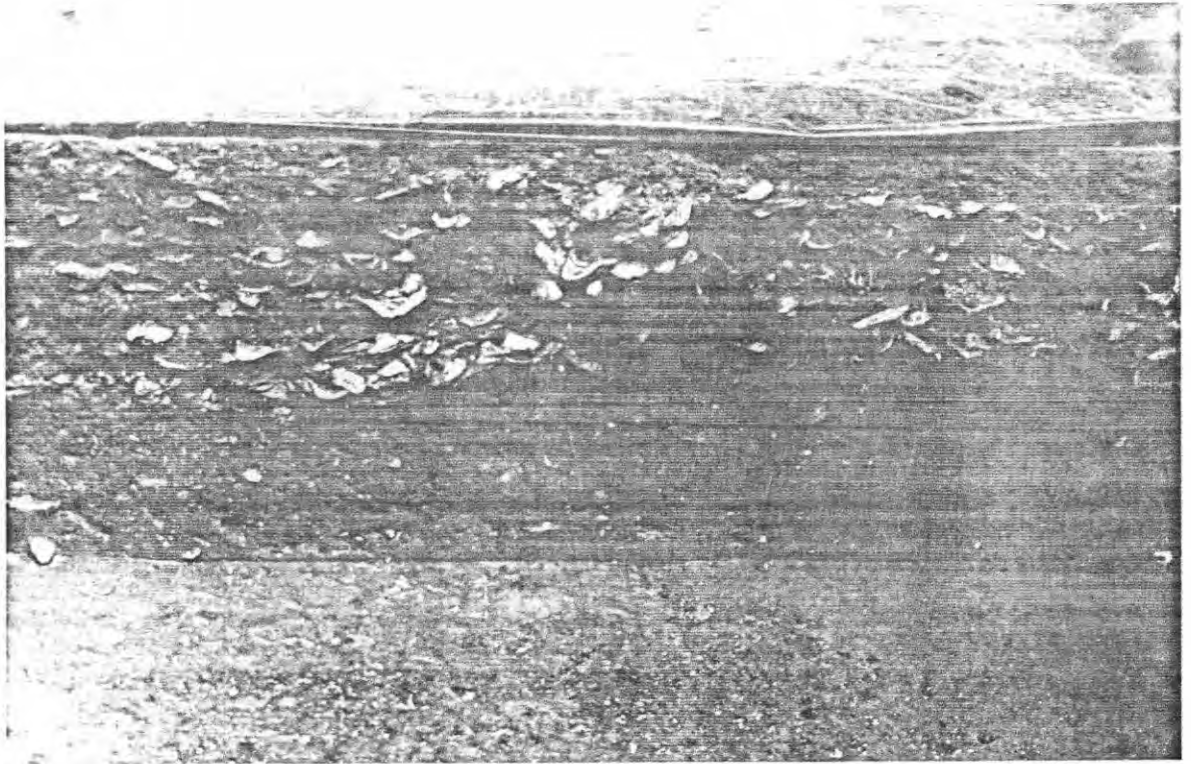
of individual features intruding into other features, some containing shell and some without (Plate 19). Bone preservation was excellent and carbonized wood charcoal and plant food remains were abundant. Unfortunately, few diagnostic artifacts were found in the midden deposits below the plow zone, so only a vague age of the deposits could be ascertained. Some of the deposits and features were late Middle Woodland and at least some of the lower deposits were probably Late Archaic. Beyond this, everything was conjecture.

Therefore, due to the presence of late Middle Woodland features, the amount and preservation of faunal and paleobotanical remains, and the potential for unravelling some of the local culture-historical sequence, the author decided to open up a larger area around the original test units. In mid-July of 1978, excavations were begun, once again at Plum Nelly. A permanent reference point was established at the base of the walnut tree. A large piece of angle iron driven into the ground serves as Reference Point 1 with an assumed elevation of 10 m. A magnetic east-west baseline was laid out with Reference Point 1 as its origin. A magnetic north-south line was placed along the edge of the cultivated field, east of Reference Point 1. The intersection of these two lines was designated as point ORO on the site grid. The grid system consisted of 10 1.5-meter units, laid out in two adjacent rows of five units each. The test units excavated in 1976 were incorporated into the 1978 excavations as units 16R9 and 16R10.5 (Figure 16).

Excavation began by removing the fill from the 1976 test units

Plate 19. North wall of unit 16R10.5 during 1976 test excavations at Plum Nelly (44NB128).

Plate 20. 1978 excavations at Plum Nelly (44NB128).



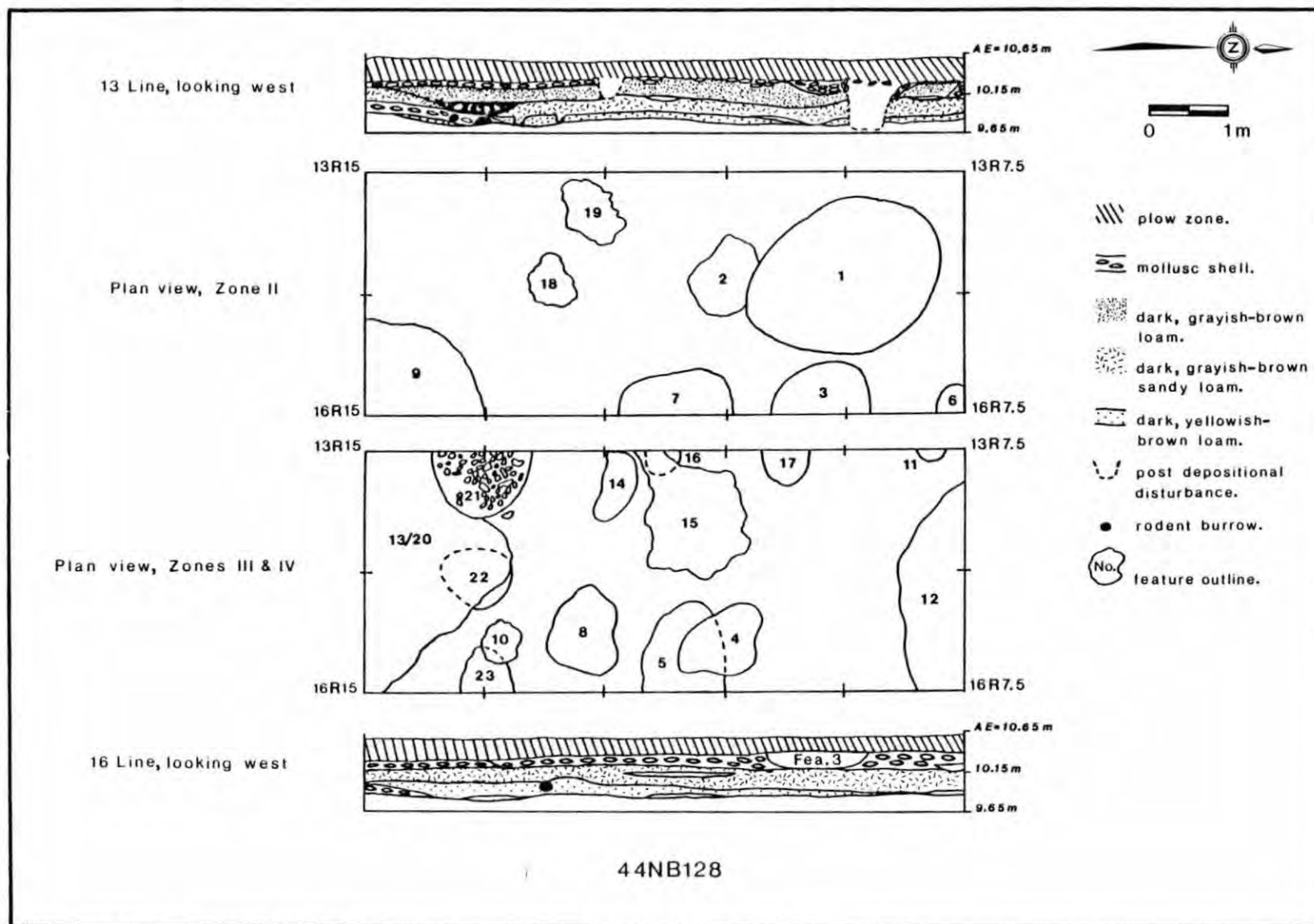


Figure 16. Plan view of excavations at Plum Nelly (44NB128).

and troweling the walls. Concurrent with this, the plow zone was shovelled off the eight new units, followed by the removal of the plow scars and plow ridges. The plow scars and plow ridges were very shallow (less than 3.0 cm) and few artifacts were found in them. Therefore, all artifacts from the plow scars and plow ridges were placed with the material from the plow zone, Level 1.

Below the base of the plow zone, all excavation was done with trowels and three-tine hand forks, used to lift up the shell to avoid breaking any faunal remains or delicate artifacts (Plate 20). The emphasis during excavation was on the identification of individual features from the mass of dark earth midden and mollusc shell. Excavation proceeded by the removal of features or 5-cm levels. All features and artifacts found in situ were plotted by horizontal and vertical coordinates. Thus, it was possible to correlate the artifacts, features, and arbitrary 5-cm levels with one of three zones of deposition.

Feature fill was floated using rectangular, stainless steel frame baskets lined with 1-mm wire mesh. The fill was placed in the baskets, which were partially immersed in the shallow waters along the shore of Hull Creek. With gentle agitation, the soil particles were suspended in the water, the heavy fraction of non-charred material stayed in the bottom of the basket, and the light fraction of carbonized plant remains floated to the surface where they were gathered using a strainer of 1-mm wire mesh (Plate 21). The light fraction was air dried and then placed in plastic bags labelled with the appropriate

Plate 21. Floating feature fill in Hull Creek.

Plate 22. Soil scientists taking soil core at Plum Nelly
(44NB128).



provenience information. This form of the immersion technique was first used at Plum Nelly in 1976, and was continued during the 1978 excavations here and at Blue Fish Beach.

c) Stratigraphy and Radiocarbon Dates

A description of the soil profile along the east wall of unit 16R9 is provided in Appendix 5 (Plate 22). Basically, the stratigraphy of Plum Nelly consists of four zones. Zone I is the plowed soil, which varies between 23 and 25 cm in depth. Zone II represents the accumulation of midden refuse during the late Middle Woodland Period. It is a stratum of very dark, grayish-brown loam and mollusc shell, which is predominantly oyster. The zone can be equated with Levels 2 through the top half of Level 5. Zone III is composed of very dark, grayish-brown, sandy loam and crushed shell. The mollusc shell consists of soft-clam and some oyster. This zone represents a combination of midden and sheet wash, which accounts for its somewhat higher sand content than Zone II. It is estimated that Zone III dates to the terminal occupations of the Late Archaic Period. It equates roughly with the bottom half of Level 5 through Level 7. Zone IV is the bottom-most stratum containing artifactual material. It is composed of dark, yellowish-brown loam intermixed with mollusc shell of soft-shell clam, oyster, stout tagellus, and ribbed mussel. Level 9 within this zone has been dated to 4105 ± 85 radiocarbon years (2155 B.C.; Lab #SI-4228) and 3905 ± 95 radiocarbon years (1955 B.C.; Lab #SI-4229). The dates were derived from samples of wood charcoal found in units 14.5R9 and 16R12, respectively. Zone IV begins at

approximately the top of Level 8 and goes to the top of the culturally sterile B horizon.

d) The Artifacts

Although the emphasis of the present report is on archeological manifestations dating from A.D. 200 to 1650, material from the excavations which predates A.D. 200 will be described. The descriptions are not detailed, nor are all artifact classes described or quantified (e.g., fire-cracked rock and fired clay). Detailed analyses of the earlier occupations of Plum Nelly, especially the Late Archaic, will be presented elsewhere.

i) The ceramics. Sherds found during the surface collections are listed in Table 16. No ceramics were found during the brief surface survey of the northern area of Plum Nelly, which is why this area is omitted from the table. The majority of the sherds found on the surface of the cultivated field are small, eroded, and unidentifiable beyond the recognition of the temper. Of those sherds that could be assigned to a historical ceramic type, 55% are from late Middle Woodland vessels.

Most of the excavated ceramics came from the plow zone, Level 1 (Table 17). With the exception of two Early Woodland sherds (Accokeek Cord-Marked, Plate 23I and J) the remainder of the identifiable sherds from Level 1 postdate A.D. 200 (Plate 23A-H). Fifty-eight per cent of these sherds date to the late Middle Woodland Period.

A total of 41 ceramics were found in contexts below Level 1. The two sherds and the pottery coil found in Levels 5 and 6 came from

Table 16. Sherds Recovered during Surface Collecting at Plum Nelly (44NB128).

Pottery type	Southern rise	Swale	General surface finds	Total
Nomini Cord-Marked	1	-	-	1
Nomini Fabric-Impressed	-	-	1	1
Mockley Cord-Marked	-	3	4	7
Mockley Net-Impressed	2	2	2	6
Sullivan Cord-Marked	2	-	-	2
Rappahannock Fabric-Impressed	2	3	4	9
Shell-tempered Plain	-	2	3	5
Potomac Creek-like Plain	1	-	-	1
Eroded shell-tempered sherds	7	13	29	49
Eroded sand/quartz-tempered sherds	-	2	4	6
Total	15	26	46	87

Table 17. Sherds Recovered during Excavations at Plum Nelly (44NB128).

Pottery types	Features			Levels						Total
	Fea.1	Fea. 9	Fea. 19	1	2	3	4	5	6	
Accokeek Cord-Marked	-	-	-	2	-	-	-	-	-	2
Nomini Cord-Marked	-	-	-	1	-	1	-	-	-	2
Mockley Net-Impressed	1	10	-	6	4	1	-	-	-	22
Mockley Cord-Marked	5	6	1	8	2	1	-	-	1	24
Currioman Fabric-Impressed	-	-	-	1	-	-	-	-	-	1
Rappahannock Fabric-Impressed	-	-	-	5	-	-	-	-	-	5
Townsend Corded	-	-	-	1	-	-	-	-	-	1
Yeocomico Ware	-	-	-	2	-	-	-	-	-	2
Shell-tempered Plain	-	-	-	8	-	-	-	-	1	9
Eroded shell- tempered sherds	2	3	-	27	-	1	-	-	-	33
pottery coil	-	-	-	-	-	-	-	1	-	1
Total	8	19	1	61	6	4	0	1	2	102

Plate 23. Sherds recovered from the plow zone at Plum Nelly
(44NB128):

- A, Yeocomico Plain;
- B and C, Rappahannock Fabric-Imprinted;
- D, Townsend Corded;
- E, Currioman Fabric-Imprinted;
- F, Shell-tempered plain;
- G, Mockley Net-Imprinted;
- H, Mockley Cord-Marked;
- I, Nomini Cord-Marked;
- J, Accokeek Cord-Marked.



A



B



C



D



E



F



G



H



I



J



rodent burrows and are, therefore, intrusive into the lower levels. This leaves a total of 35 identifiable sherds from Levels 2 and 3, and Features 1, 9, and 19 (Table 17). The minimum number of vessels represented by this sample is 14. Ten of the vessels were Mockley Cord-Marked, two were Mockley Net-Imprinted, one was possibly a vessel of Mockley Plain, and the last vessel was of the type Nomini Fabric-Imprinted (Plate 24).

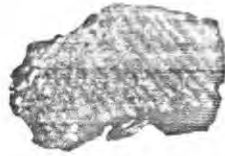
ii) The lithics. Debitage from the 1978 excavations is enumerated by form, raw material, and excavation level in Table 18. This tabulation does not include debitage from the features or the 1976 excavations. The favored material in the two zones of Late Archaic occupation (the bottom half of Level 5 through Level 11) was quartzite (71%), followed by quartz (27%), chert (1%), and jasper (1%). In the Mockley occupation zone (Levels 2 through the top half of Level 5) the percentage breakdown of the raw material is almost identical to that of the Late Archaic zones: quartzite 71%; quartz 25%; chert 2%; greenstone 2%; jasper 1%; and rhyolite 1%. Only in the disturbed plow zone, with mixed debris from Late Archaic, late Middle Woodland, and Late Woodland through Protohistoric occupations, is a significant difference seen in the percentages of raw material: quartz (50%) has the greatest occurrence, followed by quartzite (39%), jasper (7%), chert (3%), and rhyolite (1%).

A total of 16 points and two blanks were found during the excavations (Table 19; Plates 25 and 26). Twelve of the points and one blank can be assigned to the Late Archaic occupations. Because a

Plate 24. Mockley Ware from the excavations at Plum Nelly
(44NB128): A-I, Mockley Cord-Marked; J-N, Mockley
Net-Impressed.



A



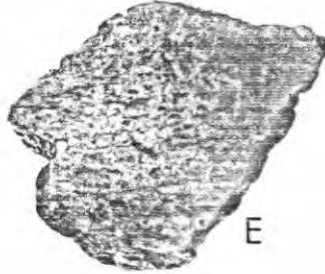
B



C



D



E



F



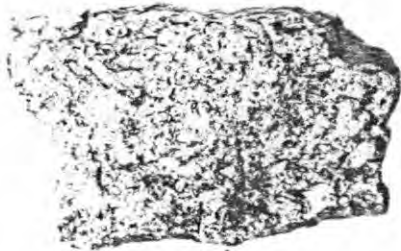
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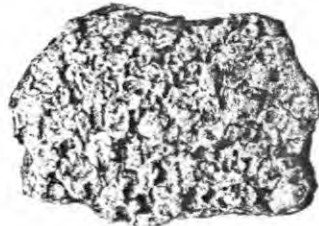
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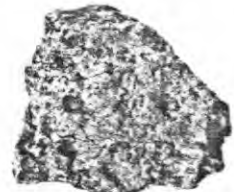
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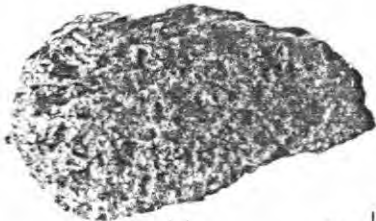
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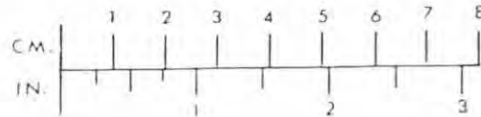


Table 18. Distribution of Debitage by Levels from 1978 Excavations at Plum Nelly (44NB128).

Levels	Flakes					Decortication flakes					Cores & chunks					Total
	*Q	QZ	J	C	O	Q	QZ	J	C	O	Q	QZ	J	C	O	
1	21	28	1	2	1	18	11	7	1	-	30	16	2	1	-	139
2	3	12	-	-	-	2	5	-	1	-	5	14	-	1	-	43
3	-	9	-	-	1	3	10	-	-	-	9	13	-	-	-	45
4	-	7	-	-	-	2	4	1	-	-	4	4	-	-	-	22
5	3	3	-	-	1	2	2	-	-	-	-	13	-	-	1	25
6	2	5	-	-	-	1	6	-	-	-	2	7	-	-	-	23
7	1	3	-	-	-	-	5	-	-	-	-	6	-	-	-	15
8	4	6	-	-	-	-	1	-	-	-	5	4	-	-	-	20
9	3	3	-	-	-	-	6	-	-	-	3	2	-	-	-	17
10	-	1	-	-	-	1	2	-	-	-	2	3	-	1	-	10
11	-	1	-	-	-	-	2	1	-	-	1	3	-	-	-	8
Total	37	78	1	2	4	28	54	9	2	0	61	85	2	3	1	367

*Key to raw material: Q = quartz; QZ = quartzite; J = jasper; C = chert; O = other.

Table 19. Distribution of Lithic Artifacts by Levels and Features at Plum Nelly (44NB128).

Lithic artifact type	Features			Levels											Total
	Fea.1	Fea. 9	Fea. 11	1	2	3	4	5	6	7	8	9	10	11	
Holland's Type A Small Triangular	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
Levanna Small Triangular	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2
Selby Bay Side-Notched	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Small, stemmed, quartz blank	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
Savannah River Stemmed	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
Small variant Savannah River	-	-	1	1	-	-	-	-	-	-	1	1	-	1	5
Small variant Savannah River blank	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
Savannah River Contracting-Stemmed	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2
Holmes point	-	1	-	1	-	-	-	-	-	-	1	1	-	-	4
Drill	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1

Table 19. (cont.)

Lithic artifact type	Features			Levels											Total
	Fea.1	Fea. 9	Fea. 11	1	2	3	4	5	6	7	8	9	10	11	
Biface	2	-	-	-	-	-	-	1	-	-	2	-	-	-	5
Point/Biface fragment	-	-	-	3	-	-	-	-	-	1	-	-	-	-	4
Hammerstone fragment	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Ground celt fragment	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
Grooved axe fragment	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
Total	2	1	1	14	1	0	0	2	0	1	4	2	0	3	31

- Plate 25. Lithic artifacts recovered from the plow zone at Plum Nelly (44NB128):
- A, Holland's Type A Small Triangular;
 - B and C, Levanna Triangular points;
 - D, small stemmed point;
 - E and H, Savannah River Contracting-Stemmed;
 - F, reworked Holmes point;
 - G, small variant, Savannah River blank;
 - I, Savannah River Stemmed.

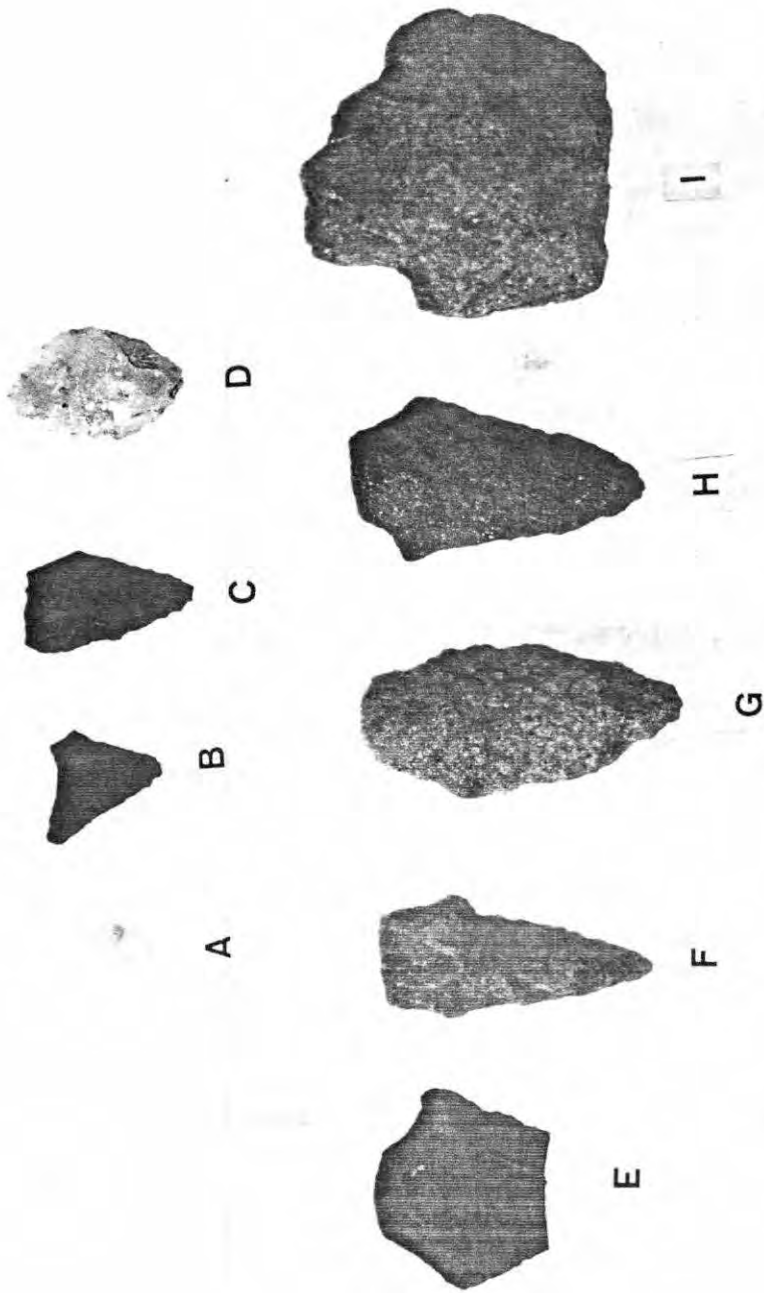


Plate 26. Lithic artifacts from the excavations at Plum Nelly
(44NB128):
A, rhyolite Selby Bay Side-Notched;
B, D, H, and I, small variant Savannah River Stemmed;
C, point/biface fragment;
E, F, and G, Holmes points;
J, drill point;
K, L, M, and N, bifaces



A



B



C



D



E



F



G



H



I



J



K



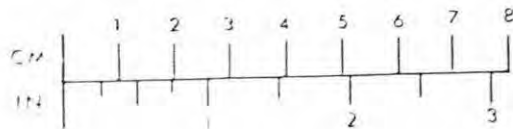
L



M



N



detailed analysis of the Late Archaic artifacts is not germane to this study, the Late Archaic points will be described within existing typologies.

Most of the Late Archaic points found in the excavations at Plum Nelly are similar to the small and large variants of the Savannah River Stemmed points found at the Gaston Site, North Carolina (Coe 1964: Figure 106). However, the basal portion of a large, Savannah River Stemmed point made from quartzite was found in the plow zone (Plate 25I). This specimen is more like the large Savannah River forms illustrated from the Doerschuk Site, North Carolina (Coe 1964:Figure 37.E). In addition, one quartzite and one rhyolite point which were found in the plow zone are similar to the Savannah River Contracting-Stemmed variants described by Claflin (1931:33-39).

The nine remaining points and one blank can be divided into two groups: Holmes points, and small variants of the Savannah River Stemmed point (Plate 25F and G; Plate 26B and D-I). The Holmes type is most similar to the slender, large variants of the Savannah River Stemmed point (McNett 1975; Handsman and McNett 1974:6; Coe 1964: Figure 106.E). Small variants of the Savannah River Stemmed point and Holmes points were found in situ together at Plum Nelly, where they were radiocarbon dated to 2155 B.C. \pm 85 and 1955 B.C. \pm 95 (Plate 26G and I; Plate 31; Table 19). Lest the reader be confused, the Holmes point listed under Feature 9 in Table 19 was intrusive.

The small, stemmed quartz blank listed in Table 19 is probably referable to an Early Woodland time frame. Most likely it was

associated with the same technological subsystem that included Accokeek Cord-Marked vessels, two sherds of which were also found in the plow zone.

A Selby Bay Side-Notched point was found in situ in Level 2, along with sherds of Mockley Ware. The point was manufactured from rhyolite and has been basally thinned, which removed the striking platform (Plate 26A). Four other Selby Bay Side-Notched points and two Selby Bay Stemmed points were recovered in the surface collections from the southern area of the site. All are made from rhyolite and, with the exception of one of the side-notched points, all retain their striking platforms (Plate 27C).

Two Levanna Small Triangular points and one triangular point similar to Holland's type A were found during the removal of the plow zone (Plate 25A-C). In addition, four Levanna Large Triangular points, five Levanna Small Triangular points and five triangular blanks were found in the surface collections of the central and southern areas (Plate 27A and B). Of the total number of 17 triangular points and blanks, 53% were made from quartz, 23% from chert, 12% from jasper, and 12% from quartzite.

The drill point found in Level 11 is partially ground and made from slate (Plate 26J; Table 19). Examination of the bit end, with a hand lens of 20X magnification, revealed striations across both faces and along the lateral edges. Longitudinal striations from the grinding of the slate are also apparent on both faces near the proximal end of the specimen.

Plate 27. Lithic artifacts from the surface of Plum Nelly
(44NB128):
A, Levanna Triangular points;
B, triangular blanks;
C, rhyolite Selby Bay Side-Notched and Stemmed points.



A



B



C



Five bifaces were found in situ (Table 19). All are roughly oval in shape. Three are associated with the Mockley Ware occupations and two were found in a level of Late Archaic occupation. One biface is made from quartz and the remainder are made from quartzite (Plate 26K-N). The mid-section to a large quartzite blade, similar in technique and size to the blades of the large Savannah River Stemmed points, was found in Level 7 (Table 19).

A fragment of a quartzite hammerstone was found in Level 11 and the mid-section of a ground celt was found in the upper part of Level 5 (Table 19). The celt fragment was associated with a thick deposit of oyster shell that was part of the midden refuse left by the Mockley Ware occupations. A pecked and ground grooved axe fragment was found during excavation of the plow zone (Table 19). It is most likely Late Archaic in origin.

iii) Bone and antler artifacts. A total of 55 bone and antler artifacts and artifact fragments were recovered, and these are enumerated according to material, artifact class, and excavation level in Table 20. Bone and antler artifacts found in features are also listed by excavation level, based upon the level of origin for a given feature.

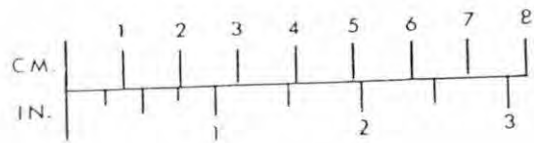
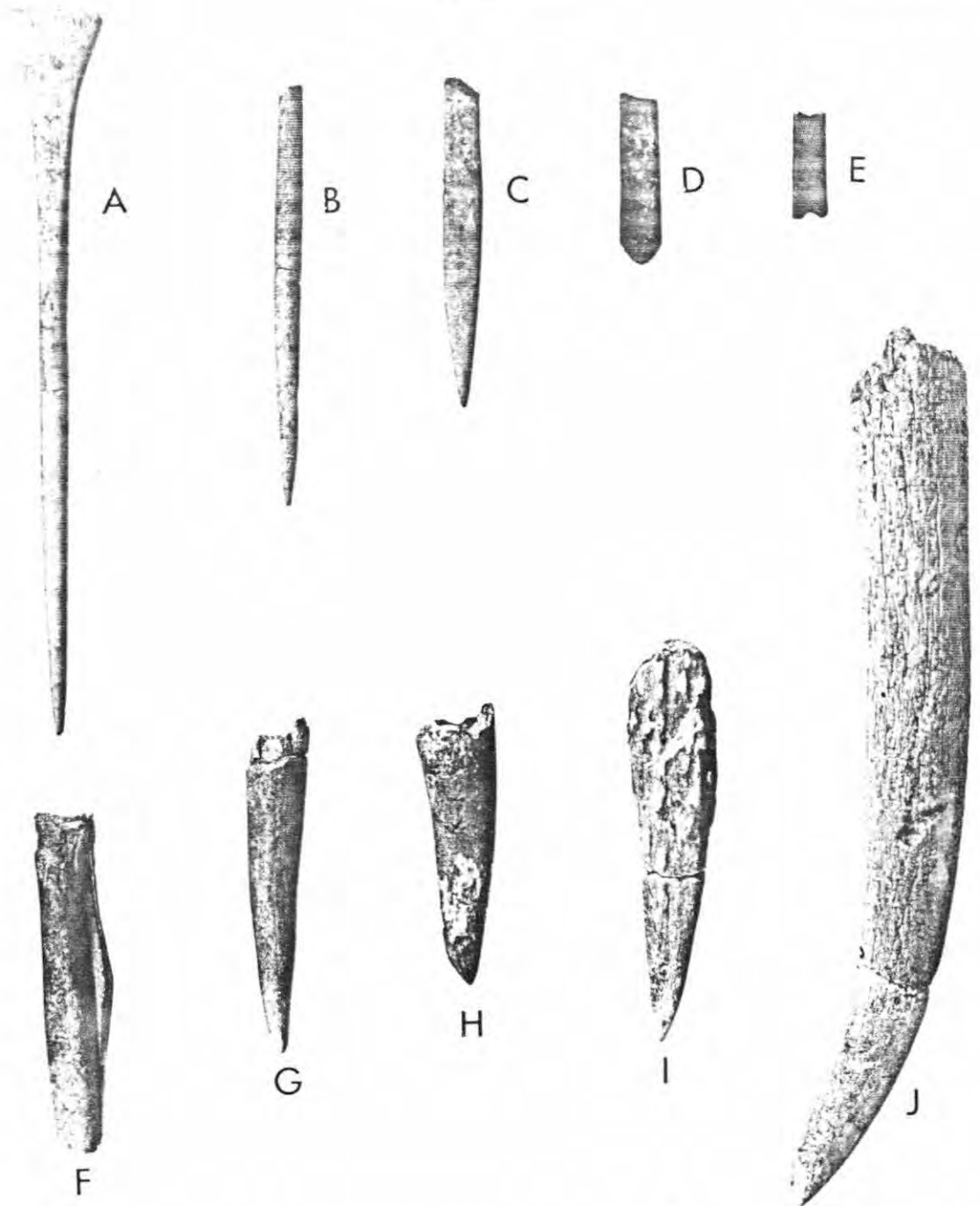
Bone and antler artifacts from Late Archaic features or excavation levels include bone pins, a tubular bone bead fragment, bone awls, an antler tine flaker, and miscellaneous fragments of worked bone and antler (Plate 28A, B and J). The complete bone pin illustrated in Plate 28A has a cylindrical shaft and a flat, expanded, "fishtail"

Table 20. Distribution of Bone and Antler Artifacts by Levels at Plum Nelly (44NB128).

Bone and antler artifact types	Levels											Total
	1	2	3	4	5	6	7	8	9	10	11	
Bone pins & fragments	-	-	-	-	-	-	1	-	1	1	-	3
Bone awls & fragments	-	1	2	2	2	-	1	-	1	-	-	9
Bone needle	-	-	-	-	1	-	-	-	-	-	-	1
Bone shuttle	-	1	-	-	-	-	-	-	-	-	-	1
Bone tubular bead fragment	-	-	-	-	-	-	-	-	-	1	-	1
Antler point	-	1	-	-	-	-	-	-	-	-	-	1
Antler flaker	-	-	-	-	-	-	-	-	1	-	-	1
Antler awl	-	-	-	-	1	-	-	-	-	-	-	1
Cut antler tine	-	1	2	1	-	1	1	-	-	-	-	6
Worked antler	-	-	1	1	-	-	-	-	2	-	2	6
Worked bone	-	5	-	1	1	3	1	-	6	4	4	25
Total	0	9	5	5	5	4	4	0	11	6	6	55

Plate 28. Bone and antler artifacts from the excavations at Plum Nelly (44NB128):

- A, polished bone pin;
- B, shaft and tip of bone pin;
- C, polished bone awl;
- D, bone shuttle fragment;
- E, bone needle fragment;
- F, bone awl fragment;
- G, cut antler tine;
- H, socketed antler point;
- I, antler awl;
- J, antler flaker.



head. The specimen has been abraded and polished, and is 143 mm in length. Similar specimens were found by Webb at the Late Archaic site of Indian Knoll, Kentucky (1974:291-292; Figure 51A). The antler tine flaker has had the tip removed and the end beveled. Examination with a hand lens of 20X magnification revealed deep striations around the end of the tool and on the face of the bevel.

The late Middle Woodland bone and antler artifacts include bone awls, an antler awl, an antler projectile point, a fragment of a bone needle, the fragment of a bone shuttle, and miscellaneous worked bone and antler (Plate 28C-I). The fragment of the bone needle has two eyes, apparently the result of the needle breaking at the first eye and a second one being made (Plate 28E). The bone shuttle fragment is very thin and highly polished, with a tapered end, which is indicative, perhaps, of its use as a shuttle in weaving basketry (Plate 28D).

e) The Features

A total of 22 features were recorded during the 1976 and 1978 excavations at Plum Nelly. Five feature categories were identified: rock hearth clusters, surface concentrations of mollusc shell, small globular pits, pits, and amorphous areas of dark, loose midden. Table 21 provides a tabulation of the features by category and zone of origin. If the top of a feature has been truncated by the plow zone, it is listed as such. The description of the features is divided into four parts, based on their zone of origin.

i) Features truncated by the plow zone. Feature 1 -- a large elliptical pit 2.38 m X 2.0 m X 0.33 m, with a saucer-shaped

head. The specimen has been abraded and polished, and is 143 mm in length. Similar specimens were found by Webb at the Late Archaic site of Indian Knoll, Kentucky (1974:291-292; Figure 51A). The antler tine flaker has had the tip removed and the end beveled. Examination with a hand lens of 20X magnification revealed deep striations around the end of the tool and on the face of the bevel.

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Table 21. Distribution of Features by Zones at Plum Nelly (44NB128).

Feature Type	Features truncated by plow zone	Features in Zone II	Features in Zone III	Features in Zone IV	Total
Rock hearth cluster				Fea. 21	1
Small globular pit		Fea. 6	Fea. 10	Fea. 8	3
Amorphous area of dark, loose soil		Fea. 19	Fea. 14, Fea. 15		3
Pit	Fea. 1, Fea. 3	Fea. 2, Fea. 18	Fea. 11		5
Surface concentration of mollusc shell		Fea. 7, Fea. 9	Fea. 4	Features 5, 12, 13/20, 16, 17, 22 and 23	10
Total	2	6	5	9	22

cross-section. The fill consisted of dark earth, wood charcoal, fire-cracked rock, fired clay lumps, mollusc shell, animal bone, antler, carbonized plant food remains, and artifacts. Mollusc shell from oyster, periwinkle, ribbed mussel, and one quahog clam was found. Animal remains included elements from unidentified bird, painted turtle, eastern box turtle, northern copperhead, gray squirrel, eastern fox squirrel, raccoon, muskrat, and white-tailed deer. Carbonized plant food remains of hickory nutshell, acorn shell, two seeds of pokeweed and one holly seed were found.

The artifacts from Feature 1 included the following items: two quartzite bifaces; 35 quartzite cores and chunks; 14 quartz cores and chunks; 11 quartzite flakes; nine quartzite decortication flakes; two quartz flakes; two basalt flakes; two red jasper decortication flakes; five Mockley Cord-Marked sherds; one Mockley Net-Imprinted sherd; two eroded sherds of shell-tempered pottery; one antler projectile point; one cut antler tine; two bone awl fragments; and one fragment of worked bone. Part of the distal end of a Late Archaic bone pin was found in the pit fill. A matching fragment of the pin was found in situ in Level 7. The pit dates from the late Middle Woodland Period.

Feature 3 -- part of a large, oval pit approximately 1.22 m long, with a rounded bottom and a maximum depth of 25 cm. The pit fill was about 70% oyster shell by volume. The remainder of the pit fill was composed of dark earth, fire-cracked rock, fired clay lumps, a carapace fragment from an eastern box turtle, hickory nutshell, and a quartzite biface fragment. Due to the truncation of the pit by the plow zone

and the absence of diagnostic artifacts, the pit could date from the late Middle Woodland through the Protohistoric Periods.

ii) Features in Zone II. Feature 2 -- an oval pit, partially truncated by Feature 1. Maximum dimensions of the remains of the pit were 1.0 m X 1.0 m X 0.23 m. The pit fill consisted of loose, dark soil mixed with oyster shell, fire-cracked rock, fired clay, animal bone, paleobotanical remains, and some artifacts. Elements from unidentified bird, eastern box turtle, gray fox, and white-tailed deer were found. Paleobotanical remains included wood charcoal, hickory nutshell, acorn shell, one hackberry seed and one pokeweed seed. The artifacts from the pit included one bone awl, one quartzite chunk, three quartzite decortication flakes, and three quartzite flakes. Based upon the feature's point of origin in Level 3, it probably dates from the late Middle Woodland Period.

Feature 6 -- a small, globular pit with a radius of 27 cm and a depth of 10 cm. Approximately 75% of the pit's volume was composed of broken shells of soft-shell clam. The remainder of the pit fill was an orange-colored, fire-burned soil. About one-third of the pit was excavated. The point of origin was in Level 3, which means the pit is probably late Middle Woodland.

Feature 7 -- part of a surface concentration of mollusc shell with dimensions of 0.88 m X 0.65 m X 0.13 m. Besides a high density of oyster shell, the following items were found in the feature: fire-cracked rock; fired clay lumps; fragments of eastern box turtle carapace; unidentified mammal bones; one quartzite core fragment; and

one quartzite flake. This thin heap of oyster shell sat atop an old living surface in the top half of Level 5. Feature 9 is a similar manifestation at exactly the same elevation, and it dates to the late Middle Woodland Period. Therefore, Feature 7 is probably of the same approximate age.

Feature 9 -- part of a large, surface concentration of mollusc shell, about 1.2 m X 1.5 m X 0.18 m. The feature was a dense concentration of oyster shells, fire-cracked rock, and fired clay lumps. Bones of unidentifiable mammal, eastern box turtle, raccoon, bobcat, and white-tailed deer were found. Items of material culture included the following: 12 quartzite cores and chunks; two quartz cores and chunks; four quartzite decortication flakes; four quartzite flakes; 10 Mockley Net-Impressed sherds; six Mockley Cord-Marked sherds; three eroded shell-tempered sherds; and one Holmes point. The Holmes point is of Late Archaic origin and was intrusive. The feature dates to the late Middle Woodland Period.

Feature 18 -- an irregular-shaped pit containing about 60% oyster shell by volume. The dimensions of the pit were 0.61 m X 0.47 m X 0.20 m. Other pit fill included fire-cracked rock, fired clay lumps, fragments of eastern box turtle carapace, and bones of unidentified mammal. The point of origin is Level 3, making the pit a late Middle Woodland feature.

Feature 19 -- an amorphous area of dark, loose soil occurring in Level 3. Archeological remains within the feature included: fire-cracked rock; four quartzite cores and chunks; one quartzite flake;

one Mockley Cord-Marked sherd; one cut antler tip; bones of white-tailed deer and unidentified mammal; and one seed of the genus Prunus (which includes cherry, plum and peach). The feature dates to the late Middle Woodland Period.

iii) Features in Zone III. Feature 4 -- a surface concentration of mollusc shell. The feature was a hard compact layer, about 8 cm thick, composed of soil and crushed soft-shell clam. Fire-cracked rock, fired clay lumps, a quartzite core, and one quartz chunk were found. Paleobotanical specimens from the feature included wood charcoal, hickory nutshell, and one seed each of grape and bearsfoot. The animal remains mixed in the feature fill were those of unidentified bird, eastern box turtle, and white-tailed deer. Due to the point of origin in Level 7, the feature probably dates to the Late Archaic Period.

Feature 10 -- a small, globular pit approximately 0.55 m X 0.46 m X 0.20 m. Soft-shell clam comprised about 55% of the total pit volume. Other archeological material included: fire-cracked rock; fired clay lumps; two quartzite chunks; a quartzite flake; a quartz decortication flake; 100 oyster shells; and bone of raccoon, gray squirrel, and white-tailed deer. The pit originated in Level 6 and is, therefore, probably assignable to the terminal occupations of the Late Archaic Period.

Feature 11 -- the edge of a pit of undetermined size. Only one corner of the pit, 30 cm long and 5 cm deep, was excavated. The feature consisted of dark, loose soil with some oyster shell, fired

clay lumps, mammal bone, hickory nutshell, and artifacts mixed in the fill. The animal remains were those of gray squirrel and white-tailed deer. Two artifacts were found: a quartzite core fragment and a small variant of the Savannah River Stemmed point, made from quartz (Plate 26B). Due to the pit's origin in Level 6, it is probably a feature dating to the end of the Late Archaic Period.

Feature 14 -- a roughly oblong area of dark, loose soil. Maximum dimensions of the feature were approximately 0.90 m X 0.34 m X 0.14 m. Material within the feature included fire-cracked rock, fired clay, hickory nutshell, animal bone, and some artifacts. The animal bone consisted of remains from eastern box turtle and white-tailed deer. Three quartzite decortication flakes, one quartz flake, and one quartz chunk comprised the total number of artifacts. The feature's point of origin was within Level 6. It probably dates to the terminal occupations of the Late Archaic Period.

Feature 15 -- another amorphous area of dark, loose soil approximately 1.50 m X 1.13 m X 0.07 m. Hickory nutshell and wood charcoal were found in the feature, along with the remains of eastern box turtle, gray squirrel, and white-tailed deer. Fire-cracked rock, four quartzite flakes, four quartzite decortication flakes, two quartzite cores and two quartz cores were also recovered. The point of origin is Level 6, which probably dates this feature near the end of the Late Archaic Period.

iv) Features in Zone IV. Feature 5 -- a surface concentration of mollusc shell located atop an old land surface in Level 11. The

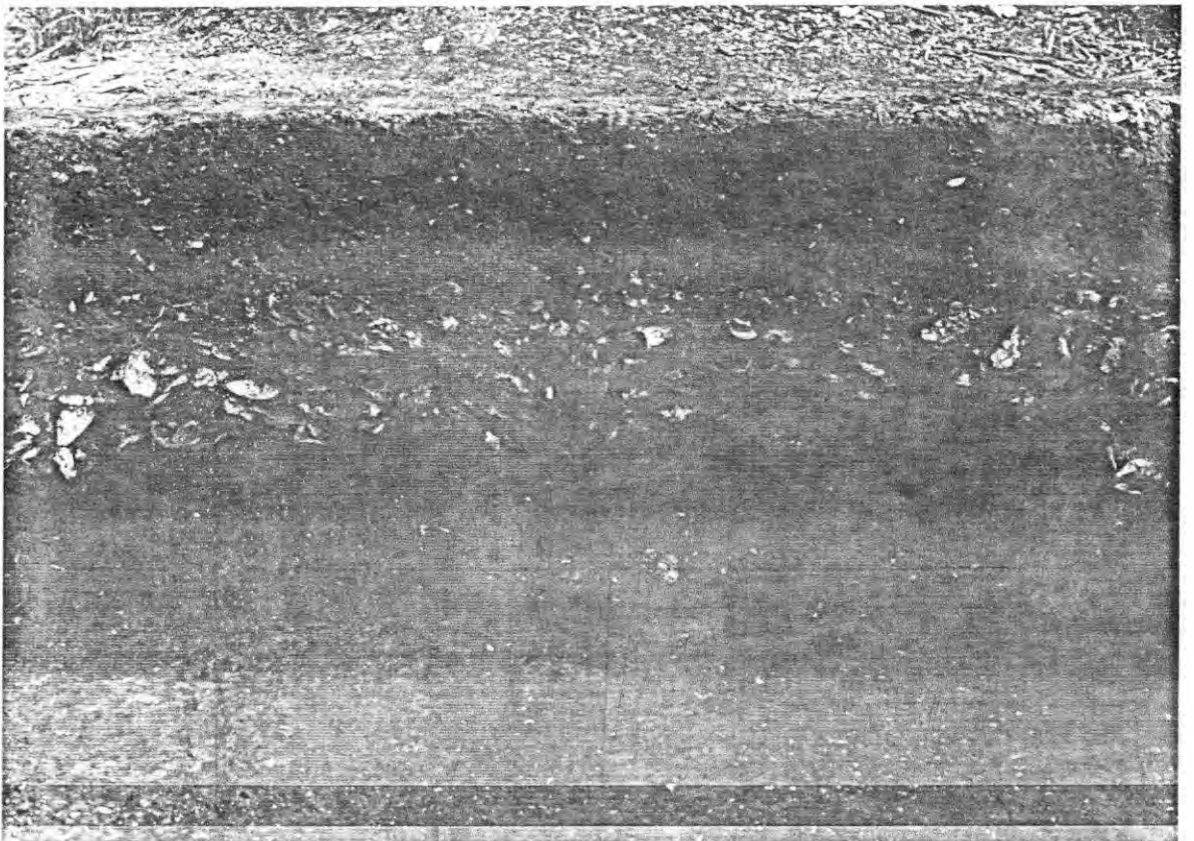
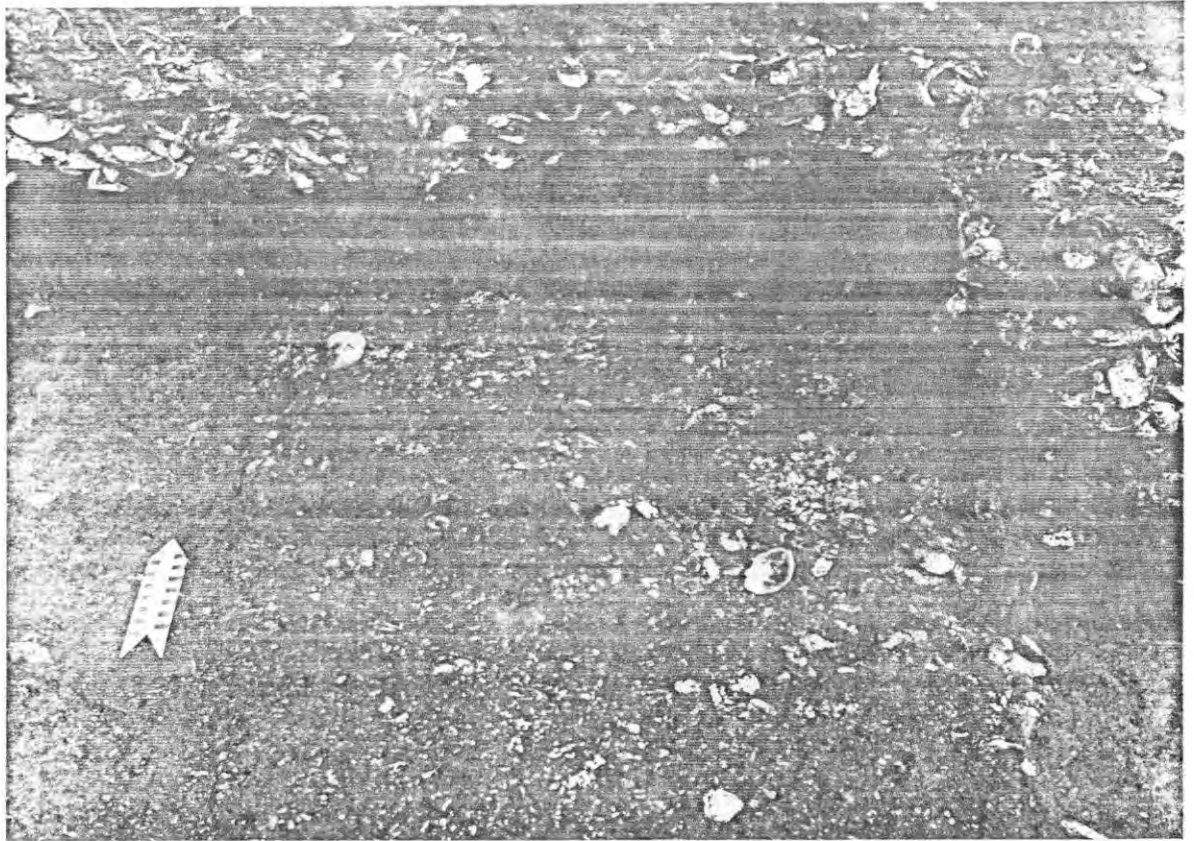
feature was composed primarily of yellow-brown clay loam and crushed soft-shell clam. Fragments of eastern box turtle carapace, bones of unidentified mammal and hickory nutshell were mixed within the feature. Artifacts recovered from the feature included a quartzite decortication flake, three fragments of worked bone, and the distal end of a Late Archaic bone pin. The proximal end of this specimen was found in an adjacent excavation unit in Level 10 (Plate 28A). This feature dates from the Late Archaic period, probably between 2240 and 1860 B.C., based upon two radiocarbon determinations on charred wood samples from Level 9, units 14.5R9 and 16R12 (see Section 4c, this chapter).

Feature 8 -- a small globular pit, approximately 1.13 m X 0.90 m X 0.17 m. Feature fill consisted of about 70% soft-shell clam fragments, 59 oyster shells, one shell of ribbed mussel, fired clay lumps, and fire-cracked rock. Paleobotanical specimens consisted of wood charcoal and hickory nutshell. Fragments of eastern box turtle carapace and bones of unidentified mammal and white-tailed deer constituted the animal remains from the feature. The artifacts found were two quartzite flakes, two quartzite decortication flakes, and one bone awl fragment.

Feature 12 (Plates 29 and 30) -- a surface concentration of mollusc shell originating at the bottom of Level 9 and the top of Level 10. The feature was a thin, discrete heap of shell atop an old land surface. Approximately one-fourth of the feature was excavated and all of the shell saved. The shell consisted of the following: soft-shell clam, 69 broken fragments, 28 left valves and 29 right

Plate 29. Feature 12 at Plum Nelly (44NB128).

Plate 30. North wall of unit 14.5R9 showing profile of feature 12 after removal (44NB128).



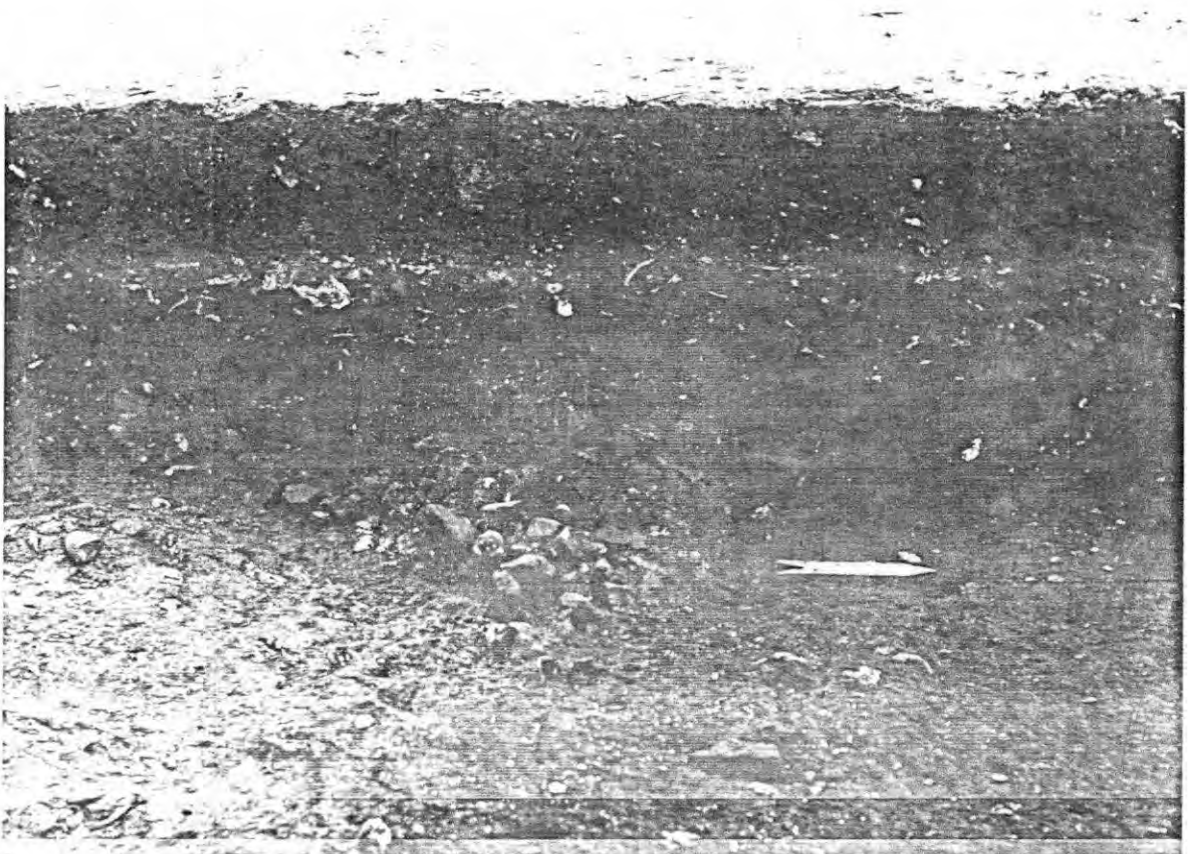
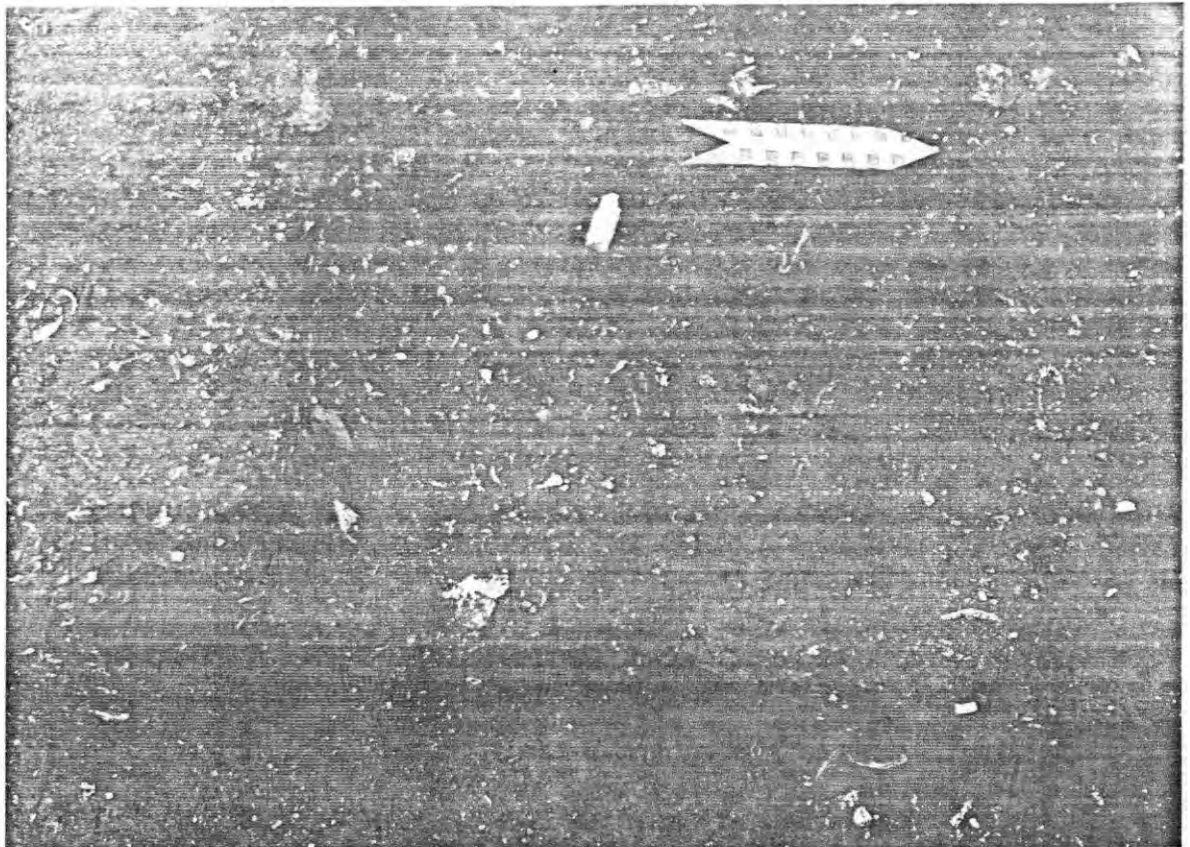
valves; oysters, 39 left valves and 38 right valves; ribbed mussel, two right valves and two left valves; and stout tagellus, one right valve and one left valve. Other material in the feature included: 226.5 gm of fire-cracked rock, one clay lump, wood charcoal, and the remains of unidentified bird, eastern box turtle, and white-tailed deer. Adjacent to this feature, in the same level and unit, were found one small variant of the Savannah River Stemmed point and one Holmes point (Plate 26G and Plate 31). A sample of wood charcoal, also from the same level and unit (14.5R9), assayed at 2155 B.C. \pm 85.

Feature 13/20 -- a surface concentration of mollusc shell lying atop an old land surface. Approximately half of the feature was excavated. The dimensions of the excavated portion were 3.0 m X 1.85 m X 0.13 m. The feature consisted primarily of oyster shell, with fire-cracked rock, animal bone, antler, and artifacts mixed in. The animal remains included eastern box turtle, unidentified bird, shed deer antler, and domestic dog. The artifacts found were: 1 lump of ferruginous sandstone; 1 quartzite flake; 2 quartzite decortication flakes; and 2 pieces of modified antler. Near the periphery of the feature, a small, stemmed quartz point was found in Level 8 (Plate 26D). Due to the point of origin atop an old land surface in Levels 9 and 10 and the association of a Late Archaic stemmed point, the feature probably dates between 2240 and 1860 B.C.

Feature 16 -- a small surface concentration of mollusc shell, the main part of which extends into an unexcavated portion of the site. The mollusc shell consisted of soft-shell clam, located in Level 8.

Plate 31. Small variant Savannah River Stemmed and Holmes point
in situ, unit 14.5R9, at Plum Nelly (44NB128).

Plate 32. Late Archaic rock hearth cluster (Feature 21) at Plum
Nelly (44NB128).



In addition to the shell, hickory nutshell, eastern box turtle, and unidentified mammal remains were found. The feature dates to the Late Archaic Period.

Feature 17 -- a small surface concentration of mollusc shell, consisting of a 5-centimeter layer of burned oyster shells. The only other archeological remains found were bones of unidentified mammal. The feature originated in the bottom of Level 10. It dates to the Late Archaic Period, probably between 2240 and 1860 B.C.

Feature 21 (Plate 32) -- a Late Archaic rock hearth cluster originating in Level 8. The feature was composed of a concentration of fire-cracked rock, fired clay lumps, and fire-blackened earth. A total of 70 fire-cracked rocks (6002.25 gm) and 20 lumps of fired clay (857.46 gm) were recovered. The dimensions of the feature were 1.47 m X 0.88 m X 0.12 m. A small portion of the feature extended into the wall of the excavation unit, and was not removed.

Feature 22 -- a surface concentration of mollusc shell, about 85 cm in diameter and 14 cm in depth. The feature consisted of crushed soft-shell clam, brown midden, and fire-cracked rock. The bottom of the feature was in Level 12, which dates it to the Late Archaic Period.

Feature 23 -- a surface concentration of mollusc shell, composed of broken soft-shell clam lying atop an old land surface in Level 9. Part of the feature extended into the wall of the excavation unit and was not excavated. Fire-cracked rocks were the only other items found in the feature. Due to its point of origin, the heap of soft-shell clams was deposited probably between 2240 and 1860 B.C.

f) The Faunal and Carbonized Plant Remains

A detailed analysis of the vertebrate remains from Plum Nelly was performed by Gregory A. Waselkov and is presented in Appendix 4. Therefore, only a brief summation follows.

A little more than 3,000 animal bones were found during the excavations, with about one-third coming from the Late Archaic occupations. The remainder of the sample was found in late Middle Woodland contexts associated with Mockley Ware pottery and Selby Bay points. There are no marked differences between the two samples in either species availability or exploitative preference.

There are a few dissimilarities, however. Remains of southern flying squirrel were found only in Late Archaic contexts and may be indicative of a more heavily forested local environment than existed later during the late Middle Woodland Period. The Late Archaic occupants of the site seem to have depended upon opossum, domestic dog, beaver and deer as meat sources. On the other hand, the late Middle Woodland occupants apparently relied mainly upon wild turkey and white-tailed deer for their meat.

A minimum of nine deer are represented by the late Middle Woodland sample (see Appendix 4). The estimated ages of the nine deer indicate that most of the individuals were the more vulnerable very young and older deer. These data reflect, perhaps, that during the late Middle Woodland occupation hunters relied upon a stalking technique, rather than some mass capture method.

The presence of migrating passenger pigeon and the ages of the

immature deer and gray fox indicate that both the Late Archaic and late Middle Woodland occupations of Plum Nelly occurred in the winter and spring.

Detailed analyses have not been performed on the invertebrate data from Plum Nelly. Features containing shells were sampled but only in a few cases were all the observed shells and shell fragments collected. In general, a greater percentage of soft-shell clams were found in the Late Archaic features than in those of the late Middle Woodland Period. Conversely, there was a greater percentage of oyster in the late Middle Woodland features than in the Late Archaic ones. *Stout tagellus* was found only in the Late Archaic zones.

The samples of carbonized plant remains which have been analyzed, thus far, are shown in Table 22. The analysis was conducted by Dr. Gary Crawford. Only two seeds were identified from the Late Archaic features: grape and bearsfoot. The only other plant food from the Late Archaic features was hickory nut. However, remains from both hickory nut and acorn were found in late Middle Woodland features, along with seeds from hackberry, pokeweed, holly, and the genus Prunus (which includes cherry, plum and peach). As regards evidence of seasonality, nothing in the samples from either the Late Archaic or late Middle Woodland components is representative of spring or early summer. Both components indicate at least fall occupations.

g) Summary

The site of Plum Nelly was used periodically over a span of 8,500 years, beginning as early as 6800 B.C. The greatest use occurred

Table 22. Plum Nelly (44NB128) Flotation Sample Contents.

	Sample Weight (gm) (excluding fine debris)	Sample Components (%)					Total Plant Food Wt. (gm)	Plant Food (%)		
		Shell	Bone	Wood Charcoal	Unidentifiable Plant Remains	Plant Food		Hickory Nutshell	Acorn Shell	Seeds
Fea. 1	288.08	73.8	4.8	6.9	1.3	13.3	38.38	84.6	15.4	a
Fea. 2 (level 3)	30.41	63.0	2.1	8.2	1.2	25.5	7.75	93.4	6.6	a
Fea. 4 (level 4)	43.29	59.8	12.6	0.5	a	26.8	11.62	100.0	-	a
Fea. 2 (west half)	4.73	-	9.1	46.5	1.3	43.1	2.04	100.0	-	-
Fea. 8	16.20	5.4	-	82.7	-	12.0	1.94	100.0	-	-
Fea. 11 (level 6)	0.19	-	-	-	-	100.0	0.19	100.0	-	-
Fea. 12	2.34	*	-	100.0	-	-	-	-	-	-
Fea. 14 (level 6)	2.19	-	13.7	a	a	86.3	1.89	100.0	-	-
Fea. 15 (level 6)	2.11	-	-	23.7	5.2	71.1	1.50	100.0	-	-
Fea. 15 (level 7)	1.71	-	-	25.7	-	74.3	1.27	100.0	-	-
Fea. 14 (level 7)	0.16	-	-	-	-	100.0	0.16	100.0	-	-
Fea. 16	0.24	-	-	-	-	100.0	0.24	100.0	-	-
Fea. 19	*	-	-	-	-	100.0	*	-	-	100.0
Total	391.65	66.0	5.3	10.6	1.1	15.5	66.98	90.4	9.6	*

a: less than 1%; see individual feature description for seed identification and number of seeds.

*: less than 0.10 gm.

during the Late Archaic Period, probably around 2000 B.C. During this time, the local environment may have been more heavily forested than subsequently.

A variety of animals were consumed by the Late Archaic occupants, including eastern box turtle, passenger pigeon, opossum, gray fox, raccoon, dog, gray and fox squirrels, cottontail, beaver, and white-tailed deer. The deer, beaver, raccoon, and opossum contributed the greatest percentage of meat to the diet. Soft-shell clam, oyster, ribbed mussel, and stout tagellus also supplemented the diet, with soft-shell clam being gathered in greater quantities than during the late Middle Woodland occupation. Plant food consisted mainly of hickory nuts.

Several varieties of features were found in the Late Archaic midden. Small globular pits were dug for steaming molluscs. The empty mollusc shells were either returned to the pits or tossed into small heaps, creating a second type of feature. Another variety of feature is represented by fire hearths built on top of the land surface and lined with rocks.

The technological subsystem of the Late Archaic occupants included grooved stone axes, stemmed points of the Holmes and Savannah River variant types, partially ground slate drill points, oval bifaces, and hammerstones. Tools of bone and antler consisted of awls and antler tine flakers. Items of personal adornment made from bone were tubular beads and pins. Webb (1974:215) has presented evidence which indicates that polished bone pins such as the "fishtail" specimen from Plum Nelly

may have served as hair pins.

From the quantity and nature of the lithic debris found on the surface of the site, as well as from the excavations, flint knapping was a major activity. The complete manufacturing sequence of Late Archaic stemmed points was found, from core modification through bifacial reduction to blanks and completed tool forms.

Zones III and IV at Plum Nelly represent the best preserved Late Archaic Period midden in the Coastal Plain of the Potomac River. From the variety, quantity, and nature of the archeological remains, it is postulated that this site served as a fall-winter base camp, probably sometime between 2240 and 1860 B.C.

Based upon evidence from the excavations, the next major use of the site occurred between A.D. 200 and 900, in the late Middle Woodland Period. The local environment was probably not as heavily forested as it was during the Late Archaic Period.

The animals gathered or hunted during the late Middle Woodland Period were similar to those of the Late Archaic, with the exception that wild turkey apparently contributed a more significant amount of meat to the diet, in addition to the ubiquitous deer. The white-tailed deer may have been hunted by stalking, rather than by drive or surround techniques. Oyster, soft-shell clam, ribbed mussel, and periwinkle were also part of the subsistence economy, with oyster being the most heavily gathered mollusc. Hickory nut and acorn were the major plant foods.

The oysters and other molluscs were steamed in large, oval-shaped

pits. As in the Late Archaic, the empty shells were tossed into the steaming pits or into heaps adjacent to the pits.

The technological subsystem of the late Middle Woodland occupations included (but was not limited to) Mockley and Nomini ware pottery, Selby Bay Side-Notched and Stemmed points made from rhyolite, bifaces made from local stones, and celts of greenstone. Bone and antler awls, bone needles, bone shuttles, and antler projectile points were also used.

Diagnostic late Middle Woodland artifacts were found only in the central and southern areas of Plum Nelly. The Mockley occupation is, therefore, classified as an intermediate shell midden (Class 5), which probably resulted from use of the site during the fall and winter. A more detailed discussion of the site's role in the late Middle Woodland settlement system is presented in Chapter V.

The Late Woodland I occupations apparently occurred in the center of the site, while the Late Woodland II occupations from A.D. 1300 to 1500 occurred in both the central and southern areas of the site. Levanna Large Triangular points and Currioman Fabric-Imprinted pottery are indicators of limited occupation during Late Woodland I, while Sullivan Cord-Marked, Townsend Corded and Levanna Small Triangular points indicate use of the site from Late Woodland II through Proto-historic times. Although no definite Late Woodland features were found in the area excavated, it is inferred from the surface density of mollusc shell in the central and southern areas of the site that the gathering of oysters was an important activity during these

occupations, as well. Consequently, the Late Woodland I occupation is classified as a small shell midden (Class 6) and the Late Woodland II occupation is classified as an intermediate shell midden (Class 5).

Firm evidence for Protohistoric or early Historic use of Plum Nelly is confined to one small quartz triangular point similar to Holland's Type A (1955:166), one Potomac Creek Plain sherd and two sherds of Yeocomico Plain pottery. This component is classified as a small shell midden (Class 6).

CHAPTER V

CHICACOAN SETTLEMENT PATTERNS: ANALYSIS AND CONCLUSIONS

INTRODUCTION

It is the purpose of this chapter to integrate the data from the preceding chapters and to describe the settlement patterns revealed by an analysis of these data. The Chicacoan settlement patterns are then compared to settlement pattern data, models or hypotheses pertaining to other localities in the region. Hypotheses presented earlier in this study are tested against the Chicacoan data, insofar as this is possible given some of the data limitations, and additional hypotheses are postulated. The chapter ends with a brief concluding section.

1. SETTLEMENT PATTERN ANALYSIS

Settlement patterns will be described based upon the trends and variations in archeological site location, size, integrity and predominant midden composition for each occupational period. This method of analysis is not without several weaknesses. First, the longer the duration of an archeological time period, the less likely it is that the distribution of archeological components of that particular time period reflects a contemporaneous pattern. This is particularly true for the late Middle Woodland and Late Woodland I Periods. Second, because most of the artifact collections came from the surface of

shallow, multicomponent sites, it was not possible to correlate accurately the non-diagnostic artifact classes, such as utilized flakes, bifaces or hammerstones, with temporally diagnostic artifacts such as points and ceramics. Only surface collections from a few single-component sites and the total excavation of Blue Fish Beach (44NB147), the partial excavation of Plum Nelly (44NB128) and the test excavations at Long Point (44NB56) and Boathouse Pond (44NB111) provided some functional and/or environmental information. Therefore, in most cases, it was not possible to determine site functions in any detail. Nonetheless, settlement types are postulated, but additional excavation is required to demonstrate these interpretations sufficiently. Third, some shell midden sites could not be assigned to a particular period of occupation because no diagnostic artifacts were recovered. And fourth, natural and human forces (e.g., shoreline erosion, plowing, waterfront development) have altered the archeological settlement pattern to an unknown degree.

For the purpose of the settlement pattern analysis, the sampling unit described in Chapter III, Section 2, has been enlarged to include two adjacent tracts, one in the neckland between the branches of Cod Creek and the other along the left (west) bank of the Coan River. Both tracts were completely surveyed. They were included within the original sampling unit in order to increase the sample size of archeological components. The heavy solid line on the maps showing the distribution of archeological components by occupational periods demarks the boundary of the enlarged sampling unit. It encompasses

approximately 22.3 km².

a) The Late Middle Woodland Occupations: A.D. 200 to 900

The distribution of archeological components dating to this occupational period is shown on Figure 17. The breakdown of components by site class and size for the entire Chicacoan locality is shown in Table 23. Similar data are presented in Table 24 for those components in the sampling unit.

Considering only those components within the sampling unit, it will be observed that most of them are located along the east bank of the Coan River within the vicinity of Boathouse Pond. Indeed, the late Middle Woodland components have the smallest average nearest neighbor distance ($r_o = 12.5$) observed for any of the periods studied. It must be kept in mind, however, that the 12 components within the sampling unit represent a ratio of slightly less than one site per 50-year interval of the total 700-year span of late Middle Woodland occupations.

The pattern in the Chicacoan locality is dominated by the Boathouse Pond component, which covers about 5.26 ha. The Woodbury Farm Site #1, located near the north bank of the Rappahannock River, comes closest in having such an extensive (3.34 ha) Mockley component. Both sites share a number of additional characteristics. Each one is horizontally extensive but vertically very shallow, with most of the midden confined to the plowzone. The middens of the two sites are composed mainly of gray-black soil. Oyster shell is scattered over both sites, but it is not the major constituent of the



Figure 17. Distribution of late Middle Woodland occupations.

Table 23. Components in the Chicacoan Locality by Site Class and Size.*

Archeological time period	Midden			Shell midden			Decomposed			Total number of components per time period
	L	I	S	L	I	S	L	I	S	
Protohistoric - Historic A.D. 1500 to 1650	1	-	-	-	4	7	-	-	4	16
Late Woodland II A.D. 1300 to 1500	1	-	1	-	5	4	-	-	2	13
Late Woodland I A.D. 900 to 1300	-	1	1	-	5	8	-	-	1	16
late Middle Woodland A.D. 200 to 900	1	1	1	-	6	8	-	-	5	22

*Key to symbols of site size: L = Large; I = Intermediate; S = Small. See Table 4 for archeological survey site classification.

Table 24. Components in the Sampling Unit by Site Class and Size.*

Archeological time period	Midden			Shell midden			Decomposed			Total number of components per time period
	L	I	S	L	I	S	L	I	S	
Protohistoric - Historic A.D. 1500 to 1650	1	-	-	-	4	3	-	-	2	10
Late Woodland II A.D. 1300 to 1500	1	-	-	-	4	2	-	-	1	8
Late Woodland I A.D. 900 to 1300	-	1	-	-	5	3	-	-	1	10
late Middle Woodland A.D. 200 to 900	1	-	-	-	4	5	-	-	2	12

*Key to symbols of site size: L = Large; I = Intermediate; S = Small. See Table 4 for archeological survey site classification.

midden refuse. The two sites are situated on necklands adjacent to coves, off of tributaries. Finally, both sites yielded a significantly higher percentage of Mockley Net-Impressed sherds than Mockley Cord-Marked sherds. This means that both components probably date near the end of the late Middle Woodland Period, since Oppermann's study (1980:26, 29-30) showed that Mockley Ware was dominated at an early date by the cord-marked type, which declined in popularity as the net-impressed type increased. Based on these data, it is postulated that the Woodbury Farm #1 and Boathouse Pond components represent village sites where a local or regional band gathered as a complete unit for several months during a particular season(s), with part of the group, perhaps, resident during most of the year. The occupations probably date between A.D. 550 and 900, and may even tend to date closer to A.D. 900.

Seven intermediate sites were investigated; and all but one are littoral, shell middens. The exception is Betz Landing (44NB19), a midden site located at the head of the Great Wicomico River in the interior uplands. Two of the shell middens, 44NB9 and 44NB25, appear to have been single-component sites. The shell on these sites was dense, but the deposits were shallow. Following Oppermann's (1980:26, 29-30) observation on the temporal change in the popularity of cord-marked versus net-impressed Mockley Ware, it is suggested that site 44NB9 dates between A.D. 200 and 550, and site 44NB25 dates between A.D. 550 and 900. On the whole, the intermediate sites are interpreted as either sites repeatedly visited by small kin groups or base camps

used by bands.

Plum Nelly (44NB128) is the only intermediate site where a variety of subsistence and functional data were recovered. The faunal and paleobotanical remains indicate fall-winter occupations, with most of the diet composed of white-tailed deer, oyster, wild turkey, hickory nut, and acorn. The artifacts represent tools that functioned in a variety of activities including hunting, generalized cutting, perforating, woodworking, boneworking, short-term containment for cooking and storage, and stone heating for steaming molluscs and perhaps, pot boiling. Ten of the minimum number of vessels represented by the excavated sherds were Mockley Cord-Marked and two were Mockley Net-Imprinted, which is, perhaps, indicative of site occupations between A.D. 200 and 550. Based on the foregoing information, it is posited that Plum Nelly served as a fall-winter base camp.

For an intermediate site, Betz Landing (44NB19) is unique because it is located in the interior uplands at the headwaters of the Great Wicomico River. A light-gray soil discoloration demarks the site, which occupies a 6-m rise along the water. Three features were observed on top of the freshly cultivated surface, along with scattered oyster shell. The majority of Mockley Ware sherds are net-imprinted, which probably means the site was occupied between A.D. 550 and 900.

The location of the site relative to extant soils and marshlands is interesting. The soil within a 2-km catchment radius of the site is 60% Sassafras-Sandy land association and 40% Sandy land-Sassafras-Mixed alluvial land association. Of the former, only about 19% is

available for tilth, with the remainder being excessively drained soils or soils on moderately steep to steep slopes. The latter soil association consists of excessively drained soils on steep side slopes, well-drained soils on narrow ridgetops, and poorly drained alluvial deposits along streams. This soil association is best suited for forest (Elder et al. 1963:18-19). Of all the intermediate sites dating to the late Middle Woodland, Betz Landing's catchment area has the lowest percentage of soils most favorable for plant husbandry.

On the other hand, within a 2-km catchment radius of Betz Landing are 34.6 ha of marshland. Indeed, the largest marshes of the Great Wicomico River system are located within this catchment area. Two of the four marshes are pocket marshes, one is a fringing marsh and one a creek marsh. These marshes are made up of three plant communities: saltmarsh cordgrass, big cordgrass, and cattail. Such marsh plant communities serve as habitats for muskrats and various nesting birds, provide food for waterfowl, and are associated with fish spawning and nursery areas (Silberhorn 1975:4-7, 35, 41-44). If the most extensive marshlands of the Great Wicomico were found here during late Middle Woodland times, as well, then it is suggested that the Betz Landing Site was occupied in order to exploit the resources of the nearby marshlands and possibly other resources of the interior uplands.

Fourteen small sites are attributed to late Middle Woodland occupations, of which eight are shell middens, five are decomposed sites, and one is a midden site. The shell middens probably represent sites occupied by small groups, perhaps family-size units, for

relatively brief periods. Sites like 44NB185, areas A, C, D and E, are probably the product of individual visits by such small groups for the express purpose of gathering and consuming molluscs. Although no mollusc remains were found associated with the Mockley Ware midden at Blue Fish Beach (44NB147), it is probable that such remains existed just north of the present site. The five, small, decomposed sites are all found in the interior uplands, with the exception of 44NB71. It is proposed that these are specialized procurement sites or temporary camps designed primarily to exploit the resources of the interior uplands.

Comparative data on subsistence activities for Mockley occupations elsewhere in the Potomac Valley are scanty. McNett (1975) states that the oysters from the Mockley Ware component of the Loyola Retreat Site, Maryland, are smaller and there are proportionately fewer of them than in the preceding Popes Creek occupations of the site. Also, there is a higher dark, organic loam content in the Mockley level. Unfortunately, there is no published information on other faunal material from this site. Subsistence data from other Potomac Valley sites, such as Accokeek Creek and Farmington Landing, Maryland, are highly equivocal (Handsman and McNett 1974:22). Poor excavation techniques, inadequate documentation, or mixed contexts limit the usefulness of the faunal and paleobotanical remains from these sites.

Recently, the faunal remains from several Mockley occupational strata at the Maycocks Point Site (44PG40) were analyzed (Barber 1981).

This site is located beside the south bank of the James River, in the interior Coastal Plain. Apparently, the same pattern of faunal utilization existed from about A.D. 200 or 300 until the ninth century A.D. The subsistence economy focused on freshwater mussels, white-tailed deer, turkey, turtles, sturgeon and gar. There is some evidence to suggest that the site was inhabited on a year-round basis (Barber 1981:1, 19-21).

More subsistence data are available for the Mockley components of the Selby Bay Phase along the Severn and upper Patuxent Rivers, Maryland. Excavation of a large pit at the Dorr Site, overlooking the Patuxent, produced 44 sherds of Mockley Net-Impressed pottery, bases of several side-notched, rhyolite points, and various bone artifacts in association with remains of deer, beaver, tortoise, turtle, sturgeon, turkey, and possibly garfish. Shellfish remains from the pit included oyster, stout razor clam, and fresh water clam (Woodward 1969:6-7). No detailed faunal analysis was published. From four excavated Mockley components along the Severn and Patuxent Rivers, Wright (1973:11-16, 36) identified the remains of deer, raccoon, box turtle, skunk, snake, drumfish, blue crab, and possibly turkey. At the Ruf Site, located on the upper Patuxent, a minimum number of four deer were represented in the remains excavated, with two of the deer being immature (Wright 1973:16).

Handsman and McNett (1974:24), and Wright (1973:21-22), interpret the subsistence and settlement data for the Mockley components as indicative of an adaptation to Chesapeake Bay and the estuarine

portions of the rivers. For the western shore of the middle Chesapeake region, "The settlement pattern is one of smaller shell heaps and middens . . . and larger shell heaps and middens . . . The large-small dichotomy is interpreted as reflecting the periodic assembling of small groups into several large groups" (Wright 1973:21-22). Handsman and McNett (1974:26, 31) go further and suggest that the large-small site dichotomy might reflect increasing population size and plant husbandry, necessitating more semipermanent villages. However, no evidence of plant tending or plant domesticates has been found. While maize, introduced from the Piedmont, may have been added to the subsistence base as early as A.D. 700 (Ford 1974:400), there are no convincingly early dates for any plant domesticate east of the Appalachian Mountains prior to the Late Woodland Period (circa A.D. 900). Plant domesticates may have been tended in the lower Potomac Valley prior to A.D. 700, but they were probably not a significant part of the total subsistence base.

An alternative explanation of the distribution of Mockley components along Maryland's western shore has been proposed by Steponaitis (1980:31). She suggests that the estuarine zones of the streams and rivers were occupied by small groups of people who revisited more favorable locations. Large sites might then indicate repeated occupations rather than larger group size. In the spring, these small groups coalesced at sites adjacent to the riverine zones of the drainage systems to catch anadromous fish.

Gilsen is also a proponent of the view that late Middle Woodland

settlement-subsistence systems were based upon a dual adaptation which emphasized "shellfish as the primary resource, with the fish run as the secondary determinant of the settlement patterns" (Gilsen 1979:23). According to Gilsen (1979:21), shellfish are a low-risk high return resource because they are relatively abundant, sessile, and, therefore, predictable. In terms of exploitation, shellfish are harvested more like plants than animals. Although anadromous fish are highly mobile, the annual fish runs are predictable and abundant. They occur in the riverine portions of the drainage systems where various techniques of mass capture, such as the impounding wier, could be used.

Gilsen's model of settlement and subsistence strategy predicts that the main seasonal villages or base camps would be located on or near major ecotones in the estuarine portions of the rivers during late summer, fall, and early winter. The emphasis would be upon shellfish collecting supplemented by plants, waterfowl, turtles, fish, and deer. During late winter, spring, and early summer, secondary villages or base camps would be established in the riverine portions of the drainage systems near spawning areas or fish concentrations. The emphasis would be on catching anadromous fish, supplemented by plants, waterfowl, turtles, small mammals, and deer (Gilsen 1979:23-26). It is proposed that the Mockley components of Maryland's Selby Bay Phase are the archeological manifestations of the terminal intensive gathering-hunting subsistence economy (Gilsen 1978:15).

This model is founded upon Gilsen's idea (1978:11) of "estuarine efficiency." It is his position that the relatively high, natural

productivity of the Chesapeake Bay estuarine system could support greater population densities at a gathering-hunting level of subsistence. Thus, intensified plant husbandry in the estuarine coastal plain would be a relatively late phenomenon in such a system (Gilsen 1978:11-16).

Based upon a comparison of the Chicacoan data to the previously discussed data, models and hypotheses, a slightly different settlement model is proposed for the Chicacoan locality. The early part of the late Middle Woodland (circa A.D. 200 to 550) is characterized by small and intermediate littoral shell middens and small interior sites. Sites like 44NB185 probably resulted from very brief use on a few occasions by very small groups. The gathering and consuming of shellfish by family-size groups or a local band is probably responsible for creation of the small shell middens found in the locality. Periodic assembly of larger, band-size groups is suggested by intermediate sites like 44NB9 and Plum Nelly (44NB128). Subsistence and functional information from Plum Nelly is supportive of Gilsen's idea of fall-winter-early spring base camps located in the estuarine Coastal Plain. However, unlike Gilsen (1979:23), I do not suggest that shellfish were the primary resource. While the emphasis of the estuarine portion of the Mockley settlement system was on the littoral resources, especially molluscs, deer probably provided as much (or more) caloric input to the diet as molluscs. "The notion that molluscan resources have constituted the bulk of any group's subsistence must be rejected, if only because of the Vitamin C and thiaminase and iodine poisoning sure

to result from such a diet" (Waselkov 1978:21).

It is unknown at this time if the cultural groups who used Plum Nelly moved upriver during the spring to catch anadromous fish. Today, the closest spawning and nursery areas for anadromous fish are approximately 80 to 90 km west of Plum Nelly, along the Potomac River, and 50 to 60 km west along the Rappahannock River. If such an adaptive pattern existed, it is suggested that intergroup cooperation would have been necessary in order for cultural groups to have moved from Chesapeake Bay to the vicinity of the fall line.

Sometime after A.D. 550, and most likely between A.D. 700 and 900, very large midden sites appeared, such as Boathouse Pond (44NB111) and Woodbury Farm #1. These very large sites are interpreted as villages where local or regional bands would come together for extended periods during seasonally optimum times of the year, with, perhaps, some members of the group resident throughout most of the year. Probably by A.D. 700, cultigens were beginning to increase in their importance in the settlement and subsistence system. Following Tuck's suggestion (1978:325), it is proposed that sites like Boathouse Pond (44NB111) and Woodbury Farm #1 served as a sort of preadaptation to a more sedentary existence necessary for intensive plant husbandry. This apparent shift in the settlement pattern coincides with the end of a climatic episode of lower temperatures and increased dryness, which characterized the Sub-Atlantic/Scandic transition from approximately A.D. 210 to 645 (Carbone 1978:21). Small and intermediate specialized procurement

sites or temporary extractive camps are found in the interior uplands, while small and intermediate shell middens continue to be found in essentially the same littoral locations as earlier Mockley occupations.

Utilizing distributional data on Mockley and Townsend ceramics in Virginia, Egloff (1981b:19-20) has hypothesized that the piedmont Siouan and coastal Algonquian cultural dichotomy, described by Captain John Smith in A.D. 1607, existed by A.D. 400. Assuming this to have been so, perhaps the mobility and territory of individual cultural groups inhabiting the Northern Neck became somewhat more restricted as the late Middle Woodland Period progressed.

b) Late Woodland I Occupations: A.D. 900 to 1300

The distribution of archeological components dating to this period is shown on Figure 18. A division of these components by class and size, for the Chicacoan locality as a whole, can be found in Table 23. A similar division for components in the sampling unit is shown in Table 24. Sites yielding only Rappahannock Fabric-Imprinted pottery have been omitted from the settlement pattern analysis, since this pottery type was made from A.D. 900 to the early 1600's.

Utilizing only those components from the sampling unit, a number of differences are apparent between the distributions of the late Middle Woodland components and the Late Woodland I components. First, although the actual number of components is less for Late Woodland I, the ratio of components per 50-year time interval has increased from 0.85 sites per 50 years during the late Middle Woodland to 1.25 sites per 50 years during Late Woodland I. This is indicative of a slight

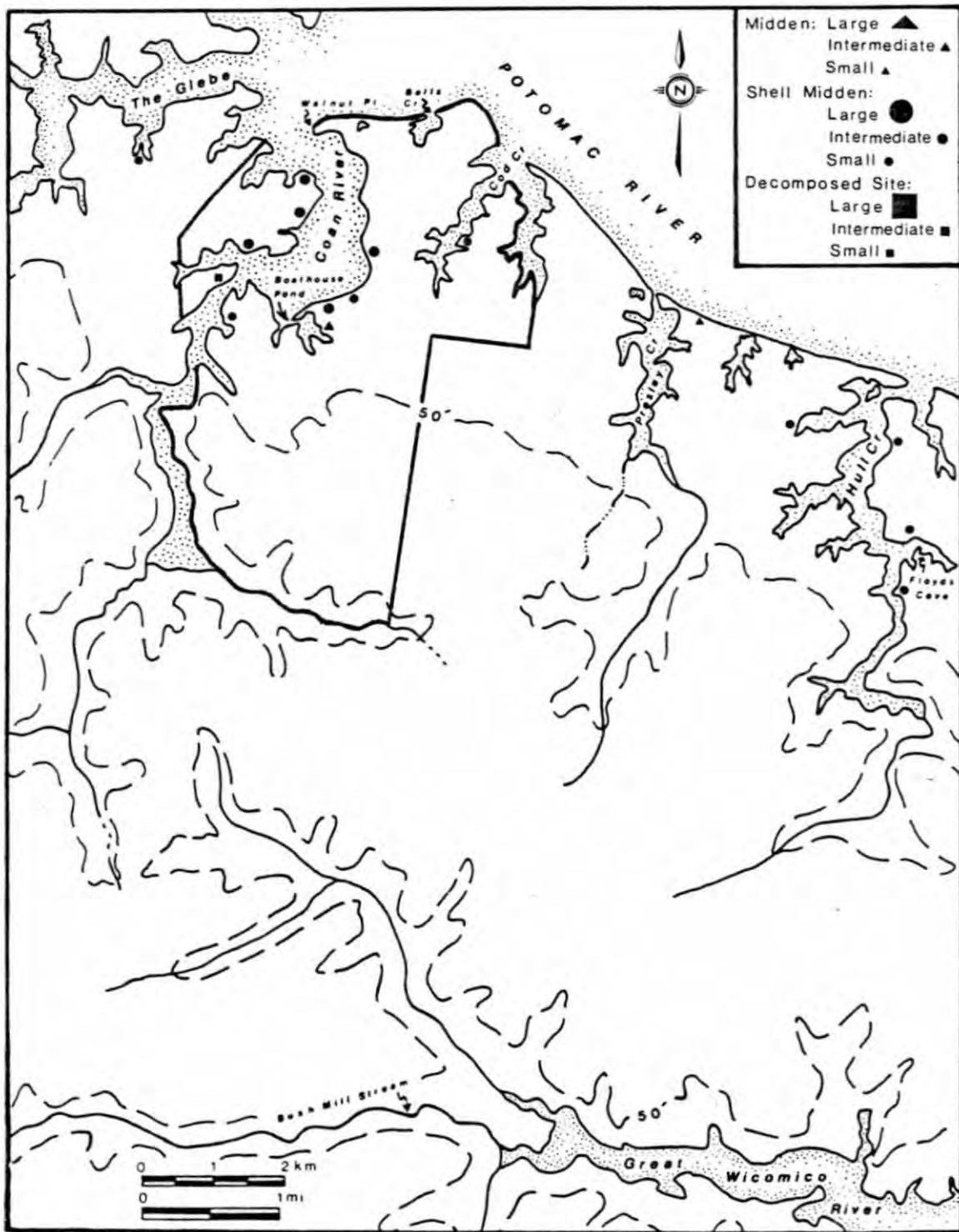


Figure 18. Distribution of Late Woodland I occupations.

rise in the number of sites over time. A second major difference is reflected in Tables 23 and 24. There are no large sites in the sampling unit during Late Woodland I. Also, the number of small sites decreased by 43% and the number of intermediate sites increased by 33%. Finally, during the late Middle Woodland Period the east bank of the Coan River was used almost to the total exclusion of the west bank, whereas both banks of the river were occupied during Late Woodland I. The paucity of sites along the west bank during late Middle Woodland times may be due, in part, to the problems discussed in the chapter introduction.

Comparative settlement and subsistence data from nearby localities is very limited. The so-called Swan Point Culture of the Potomac Valley has already been discussed in Chapter III, Section 3. The data upon which this archeological culture is based are so questionable that any attempt at comparison would be useless. Work since Wright's (1973) research along the Severn River, Maryland, has demonstrated that the sequence of ceramic wares used to define Wright's Sullivan Cove and Little Round Bay phases should be reversed (Griffith 1977:18-19). However, the settlement pattern information associated with the two phases cannot be used for comparative purposes by merely reversing the phases. The collections from the Severn River will have to be reanalyzed before the Late Woodland Period settlement pattern data can be used for comparative purposes. Steponaitis (1980) has recently analyzed artifact collections from the Patuxent River, Maryland, and has provided tentative data on the distribution of

components during various archeological phases. For the period A.D. 800 to 1250, she notes that "the pattern appears to be very similar to the previous phase" (Steponaitis 1980:32). As mentioned earlier, this is not the case for the Chicacoan locality.

It is suggested that the pattern of Late Woodland I components in the Chicacoan locality reflects a dispersal of the population within the necklands along both banks of the Coan River. Intermediate shell middens, such as the Last Resort (44NB16), and the intermediate midden component of Boathouse Pond (44NB111) are interpreted as small, semi-permanent villages. All components found away from the Coan River are small shell middens, with the exception of one small midden. These components are probably the result of the exploitation of estuarine resources by small groups during seasonally "lean" times of the year.

If such a pattern reflects a dispersal of the population in the Chicacoan locality, a number of factors could be involved. Ford (1974:400) has proposed that such a shift in settlement pattern may be indicative of an intensification in plant husbandry. Although no cultigens or storage pits from this time have been excavated in the Potomac drainage, such evidence has been recovered in adjacent regions (Ritchie and Funk 1973:359-362). Another possible factor to consider is a climatic episode of increased dryness during the Neo Atlantic/Pacific transition, which Carbone (1978:20-21) has defined for the Middle Atlantic Region as having occurred about 870 years B.P. (A.D. 1080). Finally, there may have been a shift in the focus of the population from the Coan River to an adjacent estuarine system,

perhaps to the west along the Glebe or South Yeocomico River.

c). Late Woodland II Occupations: A.D. 1300 to 1500

Archeological components for this occupational period are shown on Figure 19. The division of the components by site size and class, for the entire Chicacoan locality and the sampling unit, are shown in Tables 23 and 24. Although there are only 8 components within the sampling unit, the ratio of components to 50-year time intervals has risen to 2 sites per 50 years, indicating that the number of sites continued to increase over time.

Several differences are evident when the distribution of Late Woodland II components within the sampling unit are compared to the distribution of Late Woodland I components. First, there is a large midden component at Boathouse Pond (44NB111) during Late Woodland II. Second, the number of intermediate sites decreased from Late Woodland I to Late Woodland II by 33%. And third, most of the Late Woodland II components are found within a 2 km stretch of necklands along the east bank of the Coan River, whereas the Late Woodland I components were dispersed along the necklands adjacent to both banks of the river.

The area covered by post A.D. 1300 occupations at the Boathouse Pond Site (44NB111) is approximately 4.45 ha. This large midden is interpreted as the remains of a Late Woodland II village. All but one of the intermediate shell middens are located along the Coan River, within 2 km of the Boathouse Pond Site. The intermediate shell middens probably represent small clusters of houses or favored spots near the main village where molluscs were gathered and consumed. The



Figure 19. Distribution of Late Woodland II occupations.

reduction in intermediate components along the Coan River and the appearance of a single, large component is interpreted as the coalescence of most of the resident population into one village, with some of the population perhaps scattered in outlying clusters composed of a few houses. All but one of the components beyond a 2-km radius of Boathouse Pond are small sites classified as decomposed sites, middens, or shell middens. It is postulated that such components represent periodic forays into the interior uplands for gathering and hunting or the fission of part of the population into smaller groups in order to forage for estuarine resources.

Indeed, the observed areal pattern of Late Woodland II components is similar to the seventeenth century ethnohistoric settlement pattern discussed in Chapter II, Sections 4 through 6. This is not unexpected, given the data from adjacent regions which indicate an increased reliance upon plant domesticates (Ritchie and Funk 1973:359-368; Kinsey 1972:388). The similarity of the Late Woodland II settlement patterns and that of the succeeding Protohistoric and early Historic pattern will be demonstrated and elaborated upon in the next section.

d) Protohistoric and Early Historic Occupations: A.D. 1500 to 1650

The distribution of components from this period is shown on Figure 20. The site class and size of the components, for both the Chicacoan locality and the sampling unit, are shown in Tables 23 and 24. If only those components in the sampling unit are taken into consideration, the ratio of components per 50-year time interval has

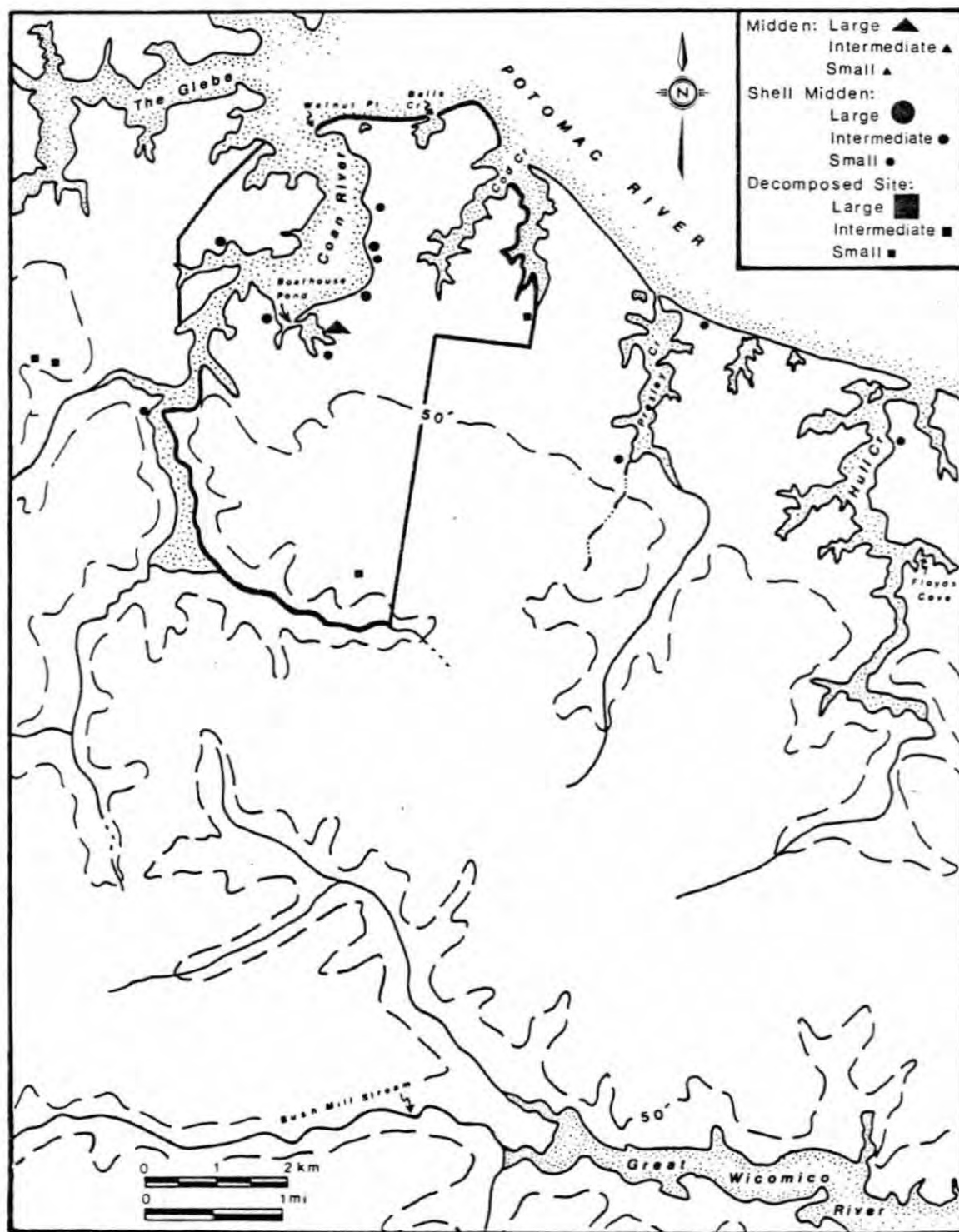


Figure 20. Distribution of Protohistoric-early Historic occupations.

increased to 3.33 components for each 50-year time interval. This is a significant increase in the number of sites over the previous period. It is inferred that this represents an increase in the population of the Coan River area.

In an attempt to assess the level of spatial association between the distribution of Late Woodland II and Protohistoric-Historic components, a coefficient of spatial association (C_s) was calculated (Sorenson 1974:172-176). In order to apply this method for measuring the spatial association between point patterns, it had to be assumed that the components assigned to each period were contemporaneous. For the purpose of this analysis, the durations of the Late Woodland II and Protohistoric-Historic Periods were considered brief enough segments of time that such an assumption could be made. However, coefficients of spatial association were not calculated for any of the earlier periods because they encompassed too much time.

Individual components were weighted in proportionate integer multiples based upon the relative size of the components. Thus, small components were assigned a value of 1, intermediate components were given a value of 2, and large components were assigned a value of 3. The calculated crude C_s value equalled 3.26 and the transformed C_s value equalled 0.53. Referring to Table 25, it will be observed that a transformed value of 0.53 for the coefficient of spatial association indicates a high degree of association between the distribution of Late Woodland II components and the Protohistoric-Historic components.

The large midden component (4.45 ha) of the Boathouse Pond Site

(44NB111), situated beside Boathouse Pond on the east bank of the Coan River, continued to dominate the settlement pattern in the Chicacoan locality. To date, this is the most extensive Protohistoric-Historic component found. The ethnohistorical data, limited though they are, point to the east bank of the Coan River as the location of the historic Chicacoan village (see Chapter II, Section 6).

William Dinwiddie's hypothesis that the early Historic Period Chicacoan village was located along the east bank of Hull Creek was not supported by the survey. Most of the sites found along the east bank of Hull Creek were small shell middens dating from A.D. 900 to 1300. Plum Nelly (44NB128) was the largest site discovered in the Hull Creek drainage, and its primary occupation occurred around 2,000 B.C. Only a small Protohistoric-Historic component was found at Plum Nelly.

Table 25. Analysis of C_s Values.

Crude C_s Value	Transformed C_s Value	Degree of Association/Disassociation
<1/3	<0.5	High Disassociation
1/3 to 2/3	-0.5 to -0.2	Moderate Disassociation
2/3 to 1.5	-0.2 to +0.2	Indeterminate Relationship
1.5 to 3	0.2 to 0.5	Moderate Association
>3	>0.5	High Association

After Sorensen 1974:Table 1.

Earlier (Chapter II, Section 7), it was hypothesized that the areal extent of the Protohistoric-Historic werowances' villages of the estuarine Coastal Plain of Virginia was large because the village populations were internally dispersed. The initial data collected from the Boathouse Pond component supports this proposition. The varying densities and clusters of Protohistoric and early Historic artifacts over the surface of the Boathouse Pond Site are interpreted as resulting from the dispersal of a population within the village area. However, part of the Protohistoric and Historic Chicacoan population may have occupied other spots around Boathouse Pond. During the survey, thin, dark, organic middens with some oyster shell were found on the tops of two wooded tongues of land south of Area C of the Boathouse Pond Site. Unfortunately, no artifacts were found during the brief examination of these two loci. At the entrance to Boathouse Pond, site 44NB97 produced evidence of a Protohistoric-Historic component. It remains to be demonstrated, however, whether or not the Chicacoan Indians occupied 44NB97 and the Boathouse Pond Site simultaneously.

Furthermore, the werowances' villages of the estuarine Coastal Plain of Virginia were hypothesized to have been located on the broad necklands of the first and second terraces, along water courses near optimum areas for exploiting aquatic resources and where significantly high percentages (relative to the subregion as a whole) of silt loam and sandy loam soils conducive to slash-and-burn cultivation were concentrated. The extant data on the location and setting of the Boathouse Pond Site support this proposition, as well.

As mentioned earlier (Chapter IV, Section 2), the Coan River system currently has the greatest number of hectares of marshland anywhere in Northumberland County, with three of the largest marshes within 4 km of the Boathouse Pond Site. As for molluscs, in 1891 Dinwiddie (Holmes et al. 1891) noted that the Coan River had "quite a reputation for fine oyster bars . . . [with] good oyster bars jutting out at every point." However, Dinwiddie dismissed their prehistoric value because at low tide the oyster bars were below 1.5 to 2.4 m of water and, therefore, too deep to be dredged by hand. At the time of his remarks, Dinwiddie was unaware of the consequences of sea level rise on the Chesapeake and its estuaries. However, there are no data available at this time that would allow determination of the accessibility or extent of the Coan River oyster bars during the Protohistoric or early Historic Periods.

It has also been mentioned that there were three soil associations within a 2-km catchment radius of the Boathouse Pond Site: Woodstown-Dragston, Sassafras-Sandy land and Mattapex-Bertie. The latter soil association is one of three that are particularly suitable for slash-and-burn maize cultivation (see Chapter II, Section 5). Given that only 10% of the soils in Northumberland County are of the Mattapex-Bertie association (Elder et al. 1963:20), it is significant that 51% of the soils within a 2-km catchment radius of the Boathouse Pond Site are part of this soil association.

Carneiro (1960:229-234) has devised a formula to calculate the smallest area necessary to permit a village to stay in the same

locale, strictly from the standpoint of arable soil. The formula is:

$$T = \frac{P \times A}{Y} \times (R + Y).$$

The variables are:

P is the population of the community.

A is the area of cultivated land (in acres) required to provide the average individual with the amount of food he ordinarily derives from cultivated plants per year.

Y is the number of years that a plot of land continues to produce before it has to be abandoned.

R is the number of years an abandoned plot must lie fallow before it can be recultivated.

T is the smallest area of cultivable land that will support a village of a given size in the same locale indefinitely.

For the Chicacoan, the following values are assigned to the variables (see Chapter II, Sections 5 and 6, for a detailed discussion of the ethnohistorical subsistence data, from which the values were derived): P = 120 to 130; A = 0.75; Y = 2 to 3; and R = 21 to 42. If we solve for the values at the lowest end of the range, a figure of 1,035 acres (419 ha) is computed. If the highest values are selected, 1,463 acres (593 ha) is derived. Thus, if one considers only soil exhaustion as a factor in village movement, the Chicacoan could have stayed indefinitely in the same locale if 1,035 to 1,463 acres (419 to 593 ha) of arable soil favorable to maize growth were within the village's catchment area.

There are approximately 1,125 acres (456 ha) of arable land

within a 2-km catchment radius of the Boathouse Pond Site. If the Protohistoric-Historic component of this site does, indeed, represent the major locus of Chicacoan occupation, then there was enough arable land within a 2-km catchment radius of the village to support a population of about 125, indefinitely. This may, in part, explain why there is no apparent archeological evidence for the relocation of major village sites in the Chicacoan locality during the Protohistoric and early Historic Periods.

The dispersal of dwellings within the "village area" would also have reduced the need to relocate the village as often. Wood supplies for fuel and building would have been depleted more slowly and pests, such as field mice, would have been less of a problem if the individual longhouses of a village were dispersed, rather than nucleated. By dispersing the houses of a village over a large area, village movement would probably have been a slow, almost imperceptible process, since some factors contributing to the relocation of a house (pests, depleted wood supplies, or grass in the household gardens) would not necessarily have effected the movement of all the houses belonging to a village.

The dispersion of a village's houses also would have resulted in greater areas of disruption to the climax vegetation and increased the amount of edge areas. This, in turn, would have resulted in an increase in transition area wildlife, especially white-tailed deer (Allen 1962:136).

From an examination of the distribution of the Protohistoric-Historic components within the sampling unit, it would appear that most of the occupation occurred in the necklands along the east bank of the Coan River. A similar situation was observed for the preceding Late Woodland II period. Even though these distributional data are somewhat skewed by the factors enumerated in the chapter introduction, the archeological evidence indicates greater use of the east bank of the Coan River after A.D. 1300. All but one of the Protohistoric-Historic intermediate and small components within 2-km of the large Boathouse Pond component are in the neckland along the river's east bank. This is the predicted ethnohistoric pattern, where swidden plots, secondary dwelling areas and favored spots for mollusc gathering were within a convenient day's walk of the main village area.

All of the Protohistoric-Historic components beyond a 2-km catchment radius of the Boathouse Pond Site are either small decomposed sites or small shell middens. Small, decomposed sites, such as 44NB66 and 44NB119, probably represent briefly occupied interior hunting-gathering sites, as evidenced by their assemblages consisting of a triangular point, a scraper or biface, and a few flakes. Small shell middens, like the excavated component at Blue Fish Beach (44NB147), are indicative of estuarine gathering and camping sites used by small groups of people for relatively short durations. Although molluscs, especially oysters, were consumed year-round by the historic Virginia Algonquians, they were relied upon most heavily during late winter and spring, when other resources were

not as abundant or available. The Blue Fish Beach component, however, was apparently occupied in the fall, based upon the existing paleobotanical evidence.

Three estuarine sites located near the north bank of the Rappahannock River provide some comparative data on post A.D. 1300 villages in the lower Northern Neck. The Indian Town Farm Site #1 and the Woodbury Farm Sites #1 and #2 are extensive but shallow midden deposits situated in broad necklands adjacent to coves off of major estuaries. Woodstown-Dragston and Mattapex-Bertie soil associations comprise 86% of the soils found within 2 km of the Indian Town Farm Site #1, and similar soils (State and Tetotum) are found in the immediate vicinity of Woodbury Farm Sites #1 and #2. Although much more research needs to be done at all three sites, the limited surface collection data suggest that the post A.D. 1300 occupations of Indian Town Farm Site #1 and Woodbury Farm Site #1 were not as intensive or extensive as earlier Late Woodland I or late Middle Woodland occupations. The earlier nineteenth century place names of "Indian Town Creek" and "Indian Town Quarter" and the triangular piece of sheet copper found there are indications that some portion of the Indian Town Farm Site #1 may have been used during Protohistoric-early Historic times by a group from the Corrotoman chiefdom. Indeed, it is possible that this site represents the small village of Chesakawon, which Barbour (1971:287) placed in this locale. The Woodbury Farm #1 and #2 sites may also have been occupied during the Protohistoric and early Historic Periods by a group from the Moratico chiefdom. Again,

Barbour (1971:295) proposed that the small village of Oquomock was located in this vicinity. In addition, land patents from A.D. 1660 and 1664 refer to an "Indian field" located along Farnham Creek (Nugent 1934:408, 441).

Earlier discussions of the ethnohistory pointed to an expansion of the Powhatan chiefdom in the Tidewater region south of the Rappahannock River, sometime during the last half of the sixteenth century A.D. Apparently, this occasioned a population movement from the south bank of the Rappahannock River to the north. It was hypothesized that the resulting increase in population density, along the river's north bank, stimulated the dispersal of the chiefdoms' populations into more smaller villages as a means of asserting the individual chiefdoms' control over their respective, narrow bands of prime agricultural land, regardless of whether a chiefdom was located in the estuarine or interior Coastal Plain. As a consequence, there should be archeological evidence for an increase in the number of village outliers, like Chesakawon or Oquomock, during the last half of the sixteenth century A.D. In the previous Late Woodland II period, there should be archeological evidence for the existence of fewer and larger villages, similar to the Boathouse Pond Site (44NB111), in the estuarine territories of the Moratico and Cuttatawomen I.

The discussion of population movement north across the Rappahannock River was tied to a discussion of the settlement pattern observed for Captain John Smith's map of Virginia (see Chapter II, Section 4d). Using Smith's map, archeological data, and information

from McCary (1957), Feest (1978a) and Barbour (1971), the approximate locations of the werowances' villages of the Northern Neck were plotted on a modern map, with a scale of 1:500,000 (See Figure 3). Linear distances were calculated for the werowances' villages with the following results:

Rappahannock River	
Cuttatawomen I to Moratico	24 km
Moratico to Rappahannock	21 km
Rappahannock to Pissasec	27 km
Pissasec to Cuttatawomen II	27 km
Potomac River	
Wicocomoco to Chicacoan	14 km
Chicacoan to Matchotic	29 km
Matchotic to Potomac	55 km

The werowances' villages along the north bank of the Rappahannock River were remarkably uniform in their spacing, with an average distance of 24.75 km between them. It is inferred from this that sociopolitical factors were influencing the approximate distance between the werowances' villages of each petty chiefdom, due in part to the increased competition for preferred resources.

Although the intersite spacing between werowances' villages along the south bank of the Potomac River appears to be somewhat irregular, it is not. In order to understand the spacing of these villages, one must first approximate the extent of each chiefdom's territory or sustaining hinterland. This can be done by constructing Thiessen polygons around each of the werowances' villages (the affects of werowances' villages outside the Northern Neck are not considered, since the Potomac and Rappahannock Rivers apparently served as boundaries between werowances' villages). The polygons are produced

simply by drawing perpendiculars at the mid-points between the werowances' villages (Hodder and Orton 1976:58-60).

From an examination of Figures 1 and 3, several observations are worthy of note. First, the lines of the Thiessen polygons often fall on or near creeks or estuaries. Perhaps this is indicative of certain creeks or estuaries serving as actual boundaries between the territories of the petty chiefdoms. Second, no villages are shown along the south bank of the Rappahannock River, opposite the territory of the Rappahannock chiefdom. It is suggested that this area may have been part of the Rappahannock chiefdom's territory and, possibly, an area previously inhabited by members of the Rappahannock chiefdom. And third, the distance between a given werowance's village and its closest boundary with the territory of an adjacent werowance's village ranges from 11 to 16 km. This correlates nicely with an average distance of 12.375 km for the mid-point between the werowances' villages along the north bank of the Rappahannock River. Thus, it would seem that each werowance's village within the Northern Neck required a minimum of about 11 km distance between the village and the boundary of its territory. This apparently explains why there was no werowance's village on the south shore of the Potomac River, directly across the Northern Neck from the werowance's village of Pissasec, since the distance from Pissasec to the Potomac shore is 12 km, which clearly leaves no hinterland for a separate chiefdom.

There are only two exceptions to the above "rule." The mid-points between the werowances' villages of Cuttatawomen II and

Potomac, and Chicacoan and Wicocomoco are 6 and 7 km, respectively. However, both exceptions can be explained by observing the hinterlands of the Potomac and Wicocomoco chiefdoms. From the distribution of the small, outlying villages of the Potomac chiefdom (see Figure 1), it is apparent that most of the hinterland extended west for a considerable distance along Aquia and Potomac Creeks, thus making up for the close proximity to the Cuttatawomen chiefdom to the south and east. For the Wicocomoco, their hinterland extended further to the south, compensating for the nearness to the Chicacoan chiefdom on the west.

About the year A.D. 1638, an Englishman named John Mottrom established a permanent home along the east bank of the Coan River, on land he bought from Machywap, werowance of the Chicacoan chiefdom. In 1648 Northumberland County was officially formed, and four years later the county commissioners were empowered to handle all affairs consistent with maintaining the peace with the Indians of their county. As a consequence of an act passed by the General Assembly in April, 1652, the Chicacoan and Wicocomoco chiefdoms were combined into a single political group and relocated south of their former territories, near Dividing Creek. This action occurred sometime between A.D. 1652 and 1655 (Potter 1976b:8). A detailed analysis of the effects of John Mottrom's settlement on the Chicacoan settlement pattern or on post A.D. 1652 aboriginal settlement patterns is beyond the scope of this study.

2. CONCLUSIONS

The primary purpose of this study has been to develop a diachronic model of areal settlement patterning for one Tidewater Virginia locality. Emphasis was placed upon archeological manifestations dating from A.D. 200 to 1650 and found in a locale corresponding to the territory of the small Algonquian chiefdom of Chicacoan. Primary and secondary ethnohistorical data were examined, and archeological collections from 56 sites were analyzed and discussed. The model constructed from an analysis of these data is considered preliminary in nature because it will be modified by new theoretical orientations, different research problems, more fieldwork and additional analyses. Regardless of any disagreements others may have with the methods and assumptions used in this research or the general problems besetting settlement pattern studies, it is my hope that this model of Chicacoan settlement patterns will serve as a useful yardstick against which to measure new knowledge.

During the first half of the late Middle Woodland Period (circa A.D. 200 to 550), the settlement pattern in the Chicacoan locality was composed of small and intermediate estuarine shell middens and small interior sites. Family-size groups, perhaps belonging to a local band, were most likely responsible for creation of the small shell middens. The seasonal fusion of these smaller groups into larger, band-size groups resulted in the formation of some of the intermediate shell middens, which probably served as base camps. Evidence from the site of Plum Nelly (44NB128) indicates fall-winter, possibly early spring, occupations.

Sometime after A.D. 550, perhaps between A.D. 700 and 900, very large midden sites were located in the necklands adjacent to coves or embayments of tributaries. Sites of this nature are interpreted as villages where a local or regional band gathered during seasonally optimum times of the year or, perhaps, throughout most of the year. These sites, such as the late Middle Woodland components of the Boathouse Pond Site (44NB111) and Woodbury Farm Site #1, served as a means of preadapting to a more sedentary existence necessary for intensive plant husbandry. This shift in the settlement pattern coincided with the end of the Sub-Atlantic/Scandic transition; a period of possible climatic stress during which temperatures were lower and dryness increased. The pattern of small and intermediate shell middens continued along the estuaries, while small and intermediate extractive camps or specialized procurement sites were found in the interior uplands. It is postulated that by the ninth century A.D. the territories of individual cultural groups in the Northern Neck had begun to decrease in size slowly, in response to a variety of factors, which included the limited but increasing use of cultigens, increasing population density, and the probable establishment of the Algonquian-Siouan cultural boundary along the fall line at the head of the Northern Neck peninsula.

The exchange mechanisms which had been responsible for the movement of rhyolite blanks, from the rhyolite formations of the Harpers Ferry and Catoctin Mountain areas of West Virginia and Maryland (Scott Silsby 1981:personal communication) to the Chicacoan

locality, ceased to function by the ninth century A.D. It is interesting to note that the rhyolite points from the components of the Boathouse Pond Site (44NB111) and Woodbury Farm Site #1 are heavily reworked and many are made from old bifaces and flakes. This probably reflects the breakdown in the supply of rhyolite to the lower Northern Neck by the closing centuries of the late Middle Woodland Period.

The Selby Bay-Mockley cultural systems existed in the Virginia Coastal Plain for approximately 700 years. The apparent cultural stability of the Selby Bay-Mockley people can be explained by their focal adaptation to specific resources and the relatively uniform distribution of these resources. In general, these people had developed a focal adaptation based on the molluscs and fish found in the estuarine and riverine habitats of the Virginia Coastal Plain, coupled with transition area wildlife, such as white-tailed deer, turkey, and box turtle, found along the deciduous forest edge. With the exception of the springtime concentrations of anadromous fish in the riverine habitat, the resources mentioned above were comparatively homogeneous in their distribution within the Coastal Plain, which probably hindered local or subregional specialization.

After A.D. 900, there was an apparent dispersal of the population within the Chicacoan locality. There were no large village sites. Rather, there was an increase in the number of intermediate sites along the necklands of the Coan River and a decrease in the total number of small sites throughout the Chicacoan locality. Such a

pattern is interpreted as a shift away from one large village to several smaller villages, represented by some of the intermediate sites. The small shell middens found further than 2 km from the Coan River were probably the result of the exploitation of molluscs by small groups during "lean" times of the year. The change in the settlement pattern may be indicative of an intensification in plant husbandry, an adjustment to a climatic episode of increased dryness around A.D. 1080, and/or a shift in the focus of the population from the Coan River area.

By the Late Woodland II Period (circa A.D. 1300 to 1500), the areal settlement pattern was similar to the early seventeenth century settlement pattern observed by the English colonists. A single, large, internally dispersed village (the Boathouse Pond Site component) was located in the necklands along the east bank of the Coan River, with outlying intermediate and small shell middens within a 2-km radius of the village. Some of the intermediate shell middens may represent the location of small clusters of houses, while others resulted from repeated visits to temporary collecting sites by people gathering and consuming molluscs. Beyond a 2-km radius of the village were a number of small sites indicative of the exploitation of resources in the interior uplands, as well as the seasonal fission of part of the village population in order to subsist upon molluscs and other estuarine resources.

The main difference between the Late Woodland II Period and the Protohistoric-Historic Period settlement patterns was a significant

increase in the number of Protohistoric-Historic components over the previous period. It is inferred that this represents an increase in the local population. In A.D. 1608, the historic Chicacoan were estimated to have had a total population of between 120 and 130 people. The fifteen to nineteen longhouse structures comprising the werowance's village were dispersed within the village area. Part of this historic occupation is represented by the Protohistoric-Historic component of the Boathouse Pond Site (44NB111) and other sites, such as 44NB97, scattered around the vicinity of Boathouse Pond.

Based upon the ethnohistorical and archeological data, the following factors of site catchment are proposed to have been involved in the selection of a site for a werowance's village of the estuarine Coastal Plain: (1) location on the broad necklands of the first and second terraces; (2) location adjacent to a cove, embayment or the mouth of a tributary of a major estuary; (3) proximity to freshwater springs; (4) location in areas where significantly high percentages (relative to the subregion as a whole) of soil associations were concentrated which contained Matapeake, Mattapex, Woodstown, State, Wickham or Tetotum as the major soil type; and (5) within 4 or 5 km of marshlands.

Within a 2-km catchment radius of the Boathouse Pond Site (44NB111), there was enough good quality, arable land to support a population of about 125 people, indefinitely. This may explain why there was no archeological evidence of any other major village sites in the Chicacoan locality. Also, by dispersing the longhouses of a

village over a large area, village movement would probably have been a slow process, since some of the factors contributing to the relocation of one or several houses (pests, depleted wood supplies, or grass in the garden plots) would not necessarily have caused the movement of other houses in the village.

From an examination of the distribution of the werowances' villages for each petty chiefdom in the Northern Neck, it was suggested that sociopolitical considerations determined the approximate distance between neighboring werowances' villages. Using Thiessen polygons to describe the sociopolitical boundaries surrounding each werowance's village, the following locational "rule" was postulated: within the Northern Neck peninsula, there was an 85% probability that the sociopolitical boundaries of each chiefdom's territory were located at least 11 km from the werowance's village. Furthermore, it is proposed that the territory of individual cultural groups inhabiting the Northern Neck continued to decrease, over time, from about A.D. 800 to the Protohistoric-Historic Period, as the subsistence economy shifted from an adaptation based upon the intensive gathering and hunting of selected resources of the riverine-estuarine-deciduous forest edge habitats to a mixed economy of plant husbandry, gathering and hunting, with at least 50% of the total subsistence base coming from cultigens.

APPENDIX 1: COMMON AND SCIENTIFIC NAMES OF FAUNA AND FLORA

soft-shell clam	<u>Mya arenaria</u>
oyster	<u>Crassostrea virginica</u>
ribbed mussel	<u>Modiolus demissus</u>
stout tagellus	<u>Tagellus pelbeius</u>
angel wing	<u>Cyrtopleura costata</u>
quahog	<u>Mercenaria mercenaria</u>
Gulf periwinkle	<u>Littorina irrorata</u>
blue crab	<u>Callinectes sapidus</u>
sturgeon	<u>Acipenser sturio</u>
gar	<u>Lepisosteus sp.</u>
american shad	<u>Alosa sapidissima</u>
alewife	<u>Alosa pseudoharengus</u>
menhaden	<u>Brevoortia tyrannus</u>
bluefish	<u>Pomatomus saltatrix</u>
rockfish	<u>Morone saxatilis</u>
white perch	<u>Morone americana</u>
spot	<u>Leiostomus xanthurus</u>
croaker	<u>Micropogon undulatus</u>
weakfish	<u>Cynoscion regalis</u>
yellow perch	<u>Perca flavescens</u>
small- and largemouthed bass	<u>Micropterus sp.</u>
catfish	<u>Ictalurus sp.</u>
painted turtle	<u>Chrysemys picta</u>
snapping turtle	<u>Chelydra serpentina</u>
eastern box turtle	<u>Terrapene carolina</u>
mallards	<u>Anas platyrhynchos</u>
black duck	<u>Anas rubripes</u>
canvas back	<u>Aythya valisineria</u>
Canada geese	<u>Branta canadensis</u>
great blue heron	<u>Ardea herodias</u>
whistling swan	<u>Olor columbianus</u>
passenger pigeon	<u>Ectopistes migratorius</u>
wild turkey	<u>Meleagris gallopavo</u>
bobwhite	<u>Colinus virginianus</u>
fox squirrel	<u>Sciurus niger</u>
gray squirrel	<u>Sciurus carolinensis</u>
southern flying squirrel	<u>Glaucomys volans</u>
opossum	<u>Didelphis marsupialis</u>

white-footed mouse
 meadow vole
 eastern cottontail
 striped skunk
 woodchuck
 mink
 muskrat
 river otter
 raccoon
 domestic dog
 gray fox
 red fox
 gray wolf
 beaver
 eastern bobcat
 black bear
 white-tailed deer

white oak
 chestnut oak
 southern red oak
 post oak
 scarlet oak
 black oak
 northern red oak
 hickory
 black walnut
 chestnut
 red maple
 sweetgum
 blackgum
 Virginia pine
 loblolly pine
 shortleaf pine
 mulberry
 huckleberry
 raspberry
 strawberry
 blackberry
 hackberry
 grape
 holly
 cleavers
 aralia
 bearsfoot
 nightshade
 pokeweed
 narrow-leaved cattails
 big cordgrass
 water hemp

Peromyscus sp.
Microtus pennsylvanicus
Sylvilagus floridanus
Mephitis mephitis
Marmota monax
Mustela vison
Ondatra zibethicus
Lutro canadensis
Procyon lotor
Canis familiaris
Urocyon cinereoargenteus
Vulpes fulva
Canis lupus
Castor canadensis
Lynx rufus
Ursus americanus
Odocoileus virginianus

Quercus alba
Quercus prinus
Quercus falcata
Quercus stellata
Quercus coccinea
Quercus velutina
Quercus rubra
Carya sp.
Juglans nigra
Castanea dentata
Acer rubrum
Liquidambar stryaciflua
Nyssa sylvatica
Pinus virginiana
Pinus taeda
Pinus echinata
Morus sp.
Vaccinium sp.
Rubus sp.
Fragaria virginiana
Rubus sp.
Celtis sp.
Vitis sp.
Illex sp.
Galium sp.
Aralia sp.
Polymnia uvedalia
Solanum sp.
Phytolacca americana
Typha angustifolia
Spartina cynosuroides
Amaranthus cannabina

saltmarsh cordgrass
black needlerush
cattail
sunflower
bottle gourd
squash
pumpkin
tobacco
corn

Spartina alterniflora
Juncus roemerianus
Typha latifolia
Helianthus annuus
Lagenaria siceraria
Cucurbita pepo
Cucurbita sp.
Nicotiana rustica
Zea mays

APPENDIX 2: YEOCOMICO WARE TYPE DESCRIPTIONS

This pottery was represented by three types: Yeocomico Plain, Yeocomico Scraped and Yeocomico Cord-Marked. The latter type was found by Gregory A. Waselkov during his investigations at the White Oak Point Site (44WM119) and, therefore, will not be described in this report. The paste of Yeocomico Ware was compact, with a fine texture and tempered with crushed shell, usually oyster. The color tended to be brown, with some areas burned to a light tan or orange. Vessels were small to medium-size bowls, globular jars or, in one instance, a small cup. Rims were either straight or excurvate, with lips commonly rounded or tapered. Both direct rims and slightly constricted necks occurred. Decoration, when present, consisted of horizontal, vertical or slightly oblique lines of punctations, or horizontal cord-impressions just below the exterior lip of the rim.

These types were described on the basis of materials collected from the Chicacoan locality and the White Oak Point Site (44WM119) on Nomini Bay, Westmoreland County, Virginia. Six uncorrected radiocarbon dates from wood charcoal samples found at Blue Fish Beach (44NE147) and White Oak Point (44WM119) place this ware between A.D. 1510 and 1690 (see Table 5). Similar material has been described by Evans (1955: 47-49) as types within the Chickahominy Series: Sussex Plain, Potts Scraped and Potts Cord-Wrapped Dowel. It is currently known that the Chickahominy Series represents at least 1,500 years of shell-tempering

tradition in coastal Virginia. Therefore, with the temporal data now available for the thin, plain and scraped ceramics, it seemed advisable to define a separate Protohistoric-Historic ware by separating the plain and scraped pottery types from the Chickahominy Series.

Yeocomico Plain (see Plate 14):

Method of manufacture: annular segments built upon a starting coil or disc. Paddle-malleated on exterior surfaces. Coil width averaged 10 mm in the specimens from Blue Fish Beach (44NB147).

Paste:

- (1) Temper: crushed shell, usually oyster. The maximum particle size of the shell ranged between 5 to 9 mm. Temper comprises 15 to 20% of the paste.
- (2) Moh's hardness: 2.0 to 2.5.
- (3) Texture: clayey to slightly sandy. Depending upon the clay source used, some vessels were made from clay with little sand content and others with more, giving some sherds a slightly sandy feel. Occasional, stray particles of limonite or quartz grains were also present.
- (4) Color: colors ranged from light tan to orange to brown, with most sherds brown. The vessel interiors tended to be somewhat lighter than the vessel exteriors. Vessels were fired in a reducing atmosphere.

Surface treatment:

- (1) Exterior: the whole exterior surface of the vessel had been smoothed plain.

(2) Interior: the interior surfaces were smooth on the majority of sherds. A small per cent of the specimens had been scraped on the interior, probably with a mollusc shell.

Decoration: decoration, when present, consisted of either horizontal bands of cord-impressions or horizontal, vertical or slightly oblique lines of punctations. The cord impressions were confined to horizontal bands located below the exterior lip of the rim. The punctations were made by a pointed tool, and consisted of single or paired lines of indentations running down the exterior vessel walls, or a single, horizontal line of indentations just below the exterior of the rim.

Form: (1) Lip: usually rounded or tapered. One sherd had a flat lip.

(2) Rim: straight or excurvate. Both direct and slightly constricted necks occurred.

(3) Body: bowls were hemispherical in form. Globular jars had slightly curved sides. Body thickness ranged from 5 to 8 mm.

(4) Base: semi-conical to round.

Vessel size: it is difficult to reconstruct vessel size based upon the sherds from Blue Fish Beach (44NB147). Vessel sections found at White Oak Point (44WM119) indicate most vessels were of medium size, with vessel orifice diameter ranging from 150 mm to 230 mm. Vessel heights were probably similar. The small cup from Blue Fish Beach (44NB147) was about 8 to 10 cm in diameter.

Yeocomico Scraped:

Method of manufacture: same as Yeocomico Plain.

Paste: same as Yeocomico Plain.

Surface treatment:

(1) Exterior: the whole exterior had been scraped, probably with a mollusc shell.

(2) Interior: usually scraped in the same manner as the exterior surface.

Decoration: none.

Form: same as Yeocomico Plain.

Vessel size: same as Yeocomico Plain.

APPENDIX 3: BLUE FISH BEACH (44NB147) SOIL PROFILE DESCRIPTION

Carl E. Robinette and John C. Nicholson
Soil Conservation Service
U. S. Department of Agriculture

Ap1--0 to 23 cm, brown (10YR 5/3) loam (mixed zones of sandy loam, loam, and silt loam): weak, fine granular structure; friable; common fine and very fine roots; many fine, continuous, oblique and common coarse tubular pores; neutral (pH 6.8); abrupt smooth boundary; (deposited predominantly by high storm tides or local sheet erosion and mixed by plowing).

Ap2--23 to 33 cm, brown (10YR 4/3) silt loam (15% clay, 60% silt, 25% sand); weak, fine subangular blocky structure; friable; common fine and very fine roots; common, very fine continuous oblique tubular pores; common, medium vesicular pores between peds; thin, very patchy, dark grayish brown (10YR 4/2) clay films on ped surfaces and thin, continuous in pores and root channels; neutral (pH 7.0); abrupt smooth boundary.

All--33 to 43 cm, dark brown (10YR 3/3) silt loam (15% clay, 65% silt, 20% sand); weak, very fine subangular blocky structure; friable; few very fine roots; common, very fine continuous, oblique, tubular pores and common medium pores between peds; common (5%) fine fragments of charcoal; thin, patchy, dark grayish brown (10YR 4/2) clay films on ped surfaces and thin, continuous in pores and

root channels; few fine, rounded pebbles; neutral (pH 7.0);
abrupt smooth boundary.

A12--43 to 66 cm, very dark grayish brown (10YR 3/2) silt loam (15% clay, 65% silt, 20% sand); (color and texture for fine earth fraction); friable; many fine roots; 90% oyster shells by volume; 10% limonite fragments; few fine pebbles up to 2.54 cm in size in upper 5 cm of horizon; thin, patchy, very dark gray (10YR 3/1) clay films; moderately alkaline (pH 8.0); abrupt smooth boundary.

B21t--66 to 99 cm. dark yellowish brown (10YR 4/4) loam; weak, fine subangular blocky structure; friable; few fine roots; many fine and common medium continuous oblique tubular pores; thin, patchy dark grayish brown (10YR 4/2) clay films on ped surfaces and thin continuous in pores; moderately alkaline (pH 8.0); clear, wavy boundary.

B22t--99 to 125 cm, brown (10YR 5/3) sandy clay loam; common fine, distinct, brownish yellow (10YR 6/6) mottles; weak, very fine, subangular blocky structure; friable; few very fine roots; thin, very patchy dark grayish brown (10YR 4/2) clay films; mildly alkaline (pH 7.5); clear, wavy boundary.

B3--125 to 152 cm, mottled grayish brown (10YR 5/2), brownish yellow (10YR 6/6), and yellowish brown (10YR 5/4) sandy clay loam; weak, very fine subangular blocky structure; friable; common medium FeMn concretions and stains; few very fine roots; mildly alkaline (pH 7.5).

Comments:

- (1) 10 cm storm deposited layer of stratified sand along south wall of L6 line.
- (2) Ap1 is noticeably less dense than other A horizons.
- (3) Entire profile has been deposited in an old gully.
- (4) Ap2 and All seem to have originally been the same horizon until the upper part was plowed. Plowing oxidized some of the organic matter giving it a lighter color and incorporated windblown sands giving it a slightly higher sand content.
- (5) Thin lense of coarse silt and very fine sand at top of Ap2, probably aeolian in nature.

APPENDIX 4: ANALYSIS OF FAUNAL REMAINS

Gregory A. Waselkov
Research Associate
Auburn University

Plum Nelly (44NB128)

Nearly 3,000 bones were recovered from Plum Nelly during excavations and while sifting through 1/4-inch mesh screen (Table 1). Approximately one third of this total is attributable to the Late Archaic occupation of the site, and the remainder derives from the late Middle Woodland Mockley Ware occupation. The two assemblages are very similar in species composition. The presence of southern flying squirrel remains only in Late Archaic context may be indicative of a more heavily forested local environment than was the case during the late Middle Woodland. On the whole, however, the two assemblages show no marked differences in either species available or exploitative preference.

When amounts of useable meat represented by the two assemblages are compared, (Table 2), there are again few significant dissimilarities. Wild turkey, bobcat and white-tailed deer seem to have been more important meat sources during the late Middle Woodland, whereas opossum, domestic dog and beaver rank higher during the Late Archaic. Unfortunately the samples are small (although larger than any previously reported from the region), so these differences may not prove significant.

Table 1. Vertebrate Remains from Plum Nelly, 44NB128

Species	Late Archaic		late Middle Woodland	
	#	MNI	#	MNI
Unidentified Fish	3	-	4	-
Unidentified Amphibian	1	-		
<u>Chrysemys picta</u> , Painted Turtle			6	1
<u>Terrapene carolina</u> , Eastern Box Turtle	173	5	247	10
<u>Lampropeltis</u> sp., Kingsnake/Milk Snake	1	1		
<u>Agkistrodon contortrix</u> , Northern Copperhead			1	1
Unidentified Bird	20	-	15	-
<u>Meleagris gallopavo</u> , Wild Turkey			6	2
<u>Extopistes migratorius</u> Passenger Pigeon	1	1	1	1
Unidentified Mammal	668	-	1,450	-
<u>Didelphis marsupialis</u> , Opossum	1	1		
<u>Procyon lotor</u> , Raccoon	5	2	12	3
<u>Canis familiaris</u> , Dog	2	1		
<u>Urocyon cinereoargenteus</u> , Gray Fox	2	1	5	1
<u>Lynx rufus</u> , Bobcat			2	1
<u>Sciurus carolinensis</u> , Gray Squirrel	12	2	8	1
<u>Sciurus niger</u> , Fox Squirrel	3	1	8	2
<u>Glaucomys volans</u> , Southern Flying Squirrel	1	1		
<u>Castor canadensis</u> , Beaver	1	1		

Table 1 (continued). Vertebrate Remains from Plum Nelly, 44NB128

Species	<u>Late Archaic</u>		<u>late Middle Woodland</u>	
	#	MNI	#	MNI
<u>Ondatra zibethica</u> , Muskrat			1	1
<u>Sylvilagus floridanus</u> , Cottontail	1	1	7	2
<u>Odocoileus virginianus</u> , White-tailed Deer	89	4 (inc. fetus)	229	9
Totals	984	22	2,002	35

Table 2. Amounts and Percentages of Useable Meat from Vertebrate Species at Plum Nelly, 44NB128.

	Useable Meat (kg/Ind)	Late Archaic Total Useable Meat (kg)	%	late Middle Woodland Useable Meat (kg)	Total %
Painted Turtle	0.7			0.7	0.3%
Eastern Box Turtle	0.1	0.7	0.6%	1.4	0.5
Kingsnake/Milk Snake		-			
Northern Copperhead				-	
Wild Turkey	3.8			7.7	2.8
Passenger Pigeon	0.1	0.1	0.1	0.1	-
Opossum	3.8	3.8	3.1		
Raccoon	3.6	7.2	6.0	10.9	4.0
Dog	3.6	3.6	3.0		
Gray Fox	2.3	2.3	1.9	2.3	0.9
Bobcat	6.8			6.8	2.5
Gray Squirrel	0.4	0.9	0.7	0.4	0.1
Fox Squirrel	0.7	0.7	0.6	1.4	0.5
Southern Flying Squirrel		-			
Beaver	9.1	9.1	7.5		
Muskrat	0.9			0.9	0.3
Cottontail	1.1	1.1	0.9	2.3	0.9
White-tailed Deer	19.5-41.0	91.5	75.6	235.6	87.1
Totals		121.0	100.0%	270.5	100.0%

Estimates for amounts of useable meat from white-tailed deer were calculated from regression formulae devised by Thomas Emerson (1978) correlating astragalus length measurements to predicted live weights and edible meat weights (Table 3). Judging from tooth eruption, epiphyseal closure, and tooth wear evidence, the minimum numbers of deer represented in the two components were four from the Late Archaic (two adults, one immature, and one foetus) and nine from the late Middle Woodland (seven adults and two immature) (see Table 4). These data, especially those from the late Middle Woodland components, suggest that deer were hunted primarily by stalking, as opposed to some mass capture method such as a drive or surround, since most of the individuals are the more vulnerable very young and older deer (Waselkov 1978).

The limited seasonality evidence (i.e., the presence of migratory passenger pigeon and ages of immature deer and gray fox) suggests that both components were occupied in winter and spring.

Blue Fish Beach (44NB147)

Aside from a few shells scattered throughout other layers, virtually all faunal remains from this site were found in Zone III B, an early historic aboriginal shell midden. This single lens of shells was sealed by an overburden of soil which accumulated in the natural depression where the site is located. Thus, the shell lens was protected from modern cultivation practices which have disturbed most other small, shallow shell middens. In order to take full advantage of this unusually well preserved shell midden, every effort was made to

Table 3. Amounts of Useable Meat Calculated from White-tailed Deer Astragali, Plum Nelly, 44NB128.

<u>Cultural Period</u>	<u>Astragalus length (mm)</u>	<u>Predicted Live Weight (kg)</u>	<u>Edible Meat (kg)</u>
Late Archaic	43.0	71.9	40.9
late Middle Woodland (Probably left & right of same individual)	35.0	39.0	19.4
	36.0	43.1	22.1
	38.0	51.3	27.4
	38.5	53.4	28.8
	39.0	55.5	30.1
	40.5	61.6	34.1
	41.0	63.6	35.5
	41.5	65.7	37.0

Table 4. Estimated Ages of White-tailed Deer, Plum Nelly, 44NB128.

<u>Late Archaic</u>	<u>late Middle Woodland</u>
1) Foetus	1) 7 months
2) 6 months	2) approx. 15 months
3) 19 months	3) 20-22 months
4) 3 1/2 years	4) 5 1/2 years
	5) 7 1/2 years
	6) 7 1/2 years
	7-9) indeterminate adults

recover all cultural material from two of the three Zone III B excavation units. This sample is approximately 2/5 of the existing shell midden, although shoreline erosion has destroyed some portion of the original site.

The two sample units were excavated and the matrix was screened through 1/4 inch mesh. All intact shells and large shell fragments were carefully packed in boxes. Smaller objects found during screening were separately bagged, as was the material less than 1/4 inch in size. This smallest fraction was processed in a simple bucket flotation apparatus and the heavy fraction (that material greater than 1.2 mm in size which did not float) is included in this analysis. The end result of this procedure is a sample consisting of essentially all faunal remains greater than 1.2 mm in size from the two Zone III B excavation units.

The species identified in the sample are presented in Tables 5 and 6. Complete valves are those specimens which have two measurable dimensions (height and length), even though portions may be missing. Incomplete valves are hinge fragments identifiable as right or left valves. For instance, right oyster valves are typically flat, with umbos which curve right, muscle attachments on the right interior and, most significantly, raised hinges, all of which allow them to be distinguished from left valves with the opposite features. Dead oyster shells (i.e., those shells which did not contain living shellfish when originally collected by the Indians) are included in the fragments category, no matter how complete. These shells can

occasionally be recognized by the eroded appearance of valve interiors or the presence of small holes penetrating shell interiors made by the boring sponge, Clione sulphurea (Nelson 1942:52-53).

Only eight small calcined bone fragments were found in the shell lens, probably due to lack of preservation. Most archaeologists believe that bone preservation at sites on acid soils is enhanced in shell middens, since alkaline shells, in the process of decomposition, will counteract soil acidity and create a neutral or basic micro-environment. In many cases, this scenario is accurate. But in instances of small, briefly occupied shell middens with predominantly intact or nearly complete valves (such as at Blue Fish Beach), the small ratio of shell surface area to shell volume would have meant a slow release of calcium carbonate into the soil. One might hypothesize that, at such sites, non-calcined bone would be dissolved, or at least poorly preserved, because of high soil acidity lasting for several years after the shell middens had been abandoned. Gradually, midden pH would rise to present levels, but much or all bone would have already been eliminated. One test implication of this hypothesis is that the earliest shell deposits at stratified shell middens located on acid soils should contain little or no bone, unless the shell was extremely fragmented during occupation. Bone preservation was excellent in the Late Archaic levels at Plum Nelly, where the shell was finely crushed, while very little bone was recovered from Late Archaic components at the White Oak Point middens, Westmoreland County, Virginia (Waselkov, in preparation). The White Oak Point middens consist mainly of

Table 5. Faunal Remains from Unit 20L2, Blue Fish Beach, 44NB147.

Species		Complete Valves		Incomplete Valves		Fragments
		L	R	L	R	
Ribbed Mussel	No.	-	-	-	-	4
(<u>Modiolus demissus</u>)						
	Wt.(g)	-	-	-	-	0.4
Cyster	No.	2059	1421	297	189	-
(<u>Crassostrea virginica</u>)						
	Wt.(g)	49,050	29,400	6,700	3,700	29,770
Quahog	No.					2
(<u>Mercenaria mercenaria</u>)						
	Wt.(g)	-	-	-	-	2.4
Stout Tagellus	No.	-	-	7	7	-
(<u>Tagellus plebeius</u>)						
	Wt.(g)	-	-	2.6	2.3	-
Soft-shell						
Clam	No.	-	-	26	10	-
(<u>Mya arenaria</u>)						
	Wt.(g)	-	-	18.2	7.9	42.4
Angel Wing	No.	-	-	-	1	-
(<u>Cyrtopleura costata</u>)						
	Wt.(g)	-	-	-	0.8	-
Gulf Periwinkle	No.	-	-		63	84
(<u>Littorina irrorata</u>)						
	Wt. (g)	-	-		28.0	20.5
<hr/>						
Calcined Bone	No.					5
	Wt.(g)					2.8
Artifacts	Wt.(g)					100.0
Charcoal	Wt.(g)					82.5
Soil	Wt.(g)					27,180

Table 6. Faunal Remains from Unit 22L2, Blue Fish Beach, 44NB147.

Species		Complete Valves		Incomplete Valves		Frag-ments
		L	R	L	R	
Ribbed Mussel	No.	-	-	45	50	320
(<u>Modiolus demissus</u>)	Wt.(g)	-	-	78.2	63.5	100.7
Oyster						
(<u>Crassostrea virginica</u>)	No.	6138	4961	698	571	-
	Wt.(g)	97,500	69,500	10,650	9,000	74,010
Stout Tagellus	No.	-	-	80	78	-
(<u>Tagelus plebeius</u>)	Wt.(g)	-	-	39.5	54.3	-
Soft-shell Clam	No.	-	-	309	262	-
(<u>Mya arenaria</u>)	Wt.(g)	-	-	294.3	239.7	1124.4
Angel Wing	No.	-	-	6	7	25
(<u>Cyrtopleura costata</u>)	Wt.(g)	-	-	3.0	2.0	6.9
Gulf Periwinkle	No.	-	-		258	212
(<u>Littorina irrorata</u>)	Wt.(g)	-	-		108.6	44.8
Calcined Bone	No.					3
	Wt.(g)					0.8
Artifacts	Wt.(g)					358
Charcoal	Wt.(g)					352
Soil	Wt.(g)					60,260

large, intact oyster shells. There is no reason to think that the absence of non-calcined bones from Blue Fish Beach or the Late Archaic levels of White Oak Point is an indication that hunting was not practiced. Therefore, although this faunal analysis must necessarily be limited to the invertebrate contribution of the diet, keep in mind the lack of data on vertebrate species which may have been collected and hunted.

The species represented in the shell sample are clues to the local exploited environment, much altered in the last four centuries. The site is being actively eroded by the Potomac River and long-time residents remember trees and structures at least 100 m north of the present shoreline. The shallow depression where the site is situated appears to be the upper remnant of a ravine, such as exists at two locations immediately to the east. These ravines may have originally led into embayed tidal marshes, other examples of which are common along the smaller rivers in the vicinity. Accelerated erosion along the Potomac River in the recent past has apparently erased most traces of many small marshes in the river's lower reaches.

The shell species found at Blue Fish Beach are characteristic of three estuarine sedimentary substrates (Davies 1972:268-269). Ribbed mussel and Gulf periwinkle are most common in intertidal marshes, such as is postulated to have existed immediately north of the site. Quahog, stout tagellus, soft-shell clam and angel wing are characteristic of shallow, sandy nearshore substrates, such as still occur immediately offshore of the present-day site. The third

substrate consists of oyster shell patch reefs, also in shallow water. All three habitats were apparently in close proximity to the site, although the oyster reef was most heavily exploited for shellfish.

Further information concerning the nature of the oyster reef population and its human exploitation can be determined from an in-depth analysis of the oyster shells. A 1/5 sample of complete left valves from unit 22L2 was measured for valve height (i.e., the distance from hinge to opposite margin). Although the size range is quite large (24 to 174 mm), there is a unimodal distribution (mode - 56 mm, mean - 56.9 mm). Since oyster shell growth rate varies tremendously, even in different areas of the same reef, size distribution does not provide a valid basis from which to infer oyster population age structure and annual recruitment rate (Steneck, Lutz, and Cerrato 1978). However, the distribution data will eventually prove useful for comparison with data from nearby contemporaneous and earlier sites in addressing questions of intensity of human exploitation.

A more immediately profitable line of inquiry is to convert shell dimension to estimated meat weight based on observations of modern oyster populations. For this purpose, a sample of 102 oysters were obtained from Pocomoke Sound, in Maryland waters 70 km east of the site, on 13 October, 1977. These modern valves were opened, the drained meat was weighed and right and left valves were measured for height, length, thickness, height/length ratio, and weight. In addition, left valve volume was calculated. Regression equations were calculated for all these measurements and left valve volume and left

valve height were found to be the most accurate predictors of meat weight (correlation coefficients of .69366 and .67477, respectively). From a practical point of view, height is the more useful parameter since less time is required to make each measurement (following Dame 1972:1126; Murawski and Serchuk 1979:40). The left valve height (H, mm) - meat weight (W, g) regression equation is $\log_e W = -6.94 + 2.09 \log_e H$. This equation was used to calculate meat weights for the 1151 measured valves which had an average meat weight of 5.0476 gm. Oyster growth is extremely complex, varying with season, local environmental conditions and region, so this equation should not be applied to far distant oyster populations (Butler 1952). Furthermore, the standard error estimate of .275 should be considered a minimum figure. The total estimated meat yield from shellfish represented in the two sample units, 20L2 and 22L2, is presented in Table 7. Average meat yields for ribbed mussel, quahog, stout tagellus, and Gulf periwinkle are derived from Price et al. (1976:29). The resultant figures indicate that oysters were the major invertebrate food source, with a significant contribution made by soft-shell clams. If we may speculate that this sample is perhaps 1/5 of the original shell midden, then there were approximately 250,000 gm of useable meat (equivalent to 24,500 gm of protein; Galtsoff 1964:381) obtained from perhaps 50,000 shellfish. Further analysis of the shells for information on seasonality should eventually permit a determination of season and length of site occupation.

Table 7. Amounts of Useable Meats from Invertebrate Species from Units 20L2 and 22L2, Blue Fish Beach, 44NB147.

Species	Useable Meat/ Ind. (g)	Minimum Number of Individuals	Total Useable Meat (g)	Total Useable Meat (%)
Ribbed Mussel	7.9	51	403	0.8
Oyster	5.05	9,192	46,397	91.6
Quahog	48.0	1	48	0.1
Stout Tagellus	6.4	87	557	1.0
Soft-shell Clam	7.0	335	2,345	4.6
Angel Wing	15.0	8	120	0.2
Gulf Periwinkle	2.4	321	770	1.5
Total		9,995	50,640	100%

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APPENDIX 5: PLUM NELLY (44NB128) SOIL PROFILE DESCRIPTION

Carl E. Robinette and John C. Nicholson
Soil Conservation Service
U.S. Department of Agriculture

Ap-- 0 to 23 cm, very dark brown (10YR 2/2) loam (15% clay); common shell fragments; many fine roots; strongly alkaline (pH 8.5).

All--23 to 46 cm, very dark grayish brown (10YR 3/2) loam (15% clay); few, fine rounded pebbles; many (approx. 70% by volume) shell and shell fragments; few fragments of limonite; many fine roots; strongly alkaline (pH 8.5).

A12--46 to 69 cm, very dark grayish brown (10YR 3/2) sandy loam (15% clay); few, fine rounded pebbles; many (approx. 20% by volume) soft, fine shell fragments; many fine roots; strongly alkaline (pH 8.5).

A3--69 to 84 cm, dark yellowish brown (10YR 4/4) loam (15% clay); many medium distinct very dark grayish brown (10YR 3/2) mottles; few fine, rounded pebbles; many (approx. 50% by volume) shell and shell fragments; many fine roots; strongly alkaline (pH 8.5).

B21t--84 to 130 cm, dark yellowish brown (10YR 4/4) loam (21% clay); common fine roots; few fine fragments of charcoal; strongly alkaline (pH 8.5).

B22t--130 to 152 cm, dark yellowish brown (10YR 4/6) loam (25% clay); common fine roots; strongly alkaline (pH 8.5).

Comments:

- (1) All clay percentages are field estimates.
- (2) Description to 84 cm made on east wall of excavation unit 16R9; from 84 to 152 cm by bucket auger.
- (3) 0 to 69 cm will qualify as an anthropic epipedon (surface horizon) if P_{25} soluble in citric acid exceeds 250 ppm.

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