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An Archaeological Survey of the Middle Nolichucky River Basin

Calvert W. McIlhany III
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To the Graduate Council:

I am submitting herewith a thesis written by Calvert W. McIlhany III entitled "An Archaeological Survey of the Middle Nolichucky River Basin." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Anthropology.

Charles H. Faulkner, Major Professor

We have read this thesis and recommend its acceptance:

Jeff Chapman, Walter E. Klippel

Accepted for the Council:
Dixie L. Thompson

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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Vice Chancellor
Graduate Studies and Research

AN ARCHAEOLOGICAL SURVEY OF THE MIDDLE NOLICHUCKY RIVER BASIN

A Thesis
Presented for the
Master of Arts
Degree
The University of Tennessee, Knoxville

Calvert W. McIlhany III

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My greatest debt is to my wife, Gail, for typing and editing this manuscript. To Gail and my son, Charlie, I express my deepest appreciation for their patience and understanding.

ABSTRACT

A cultural history of the middle Nolichucky River Basin has been defined based on data obtained during a 1977 survey of 41 prehistoric archaeological sites. The area was sparsely occupied during the Paleo-Indian period, at least 10,000 years ago. More intensive occupations followed during the Early Archaic through Mississippian periods. Representative areas within four generalized biogeographic zones were examined with particular emphasis on locating prehistoric archaeological sites and lithic raw material sources. The small size of the cultural material sample and limited number of sites examined do not provide sufficient data to make specific conclusions about patterns of settlement and subsistence for individual cultural periods. However, patterns of physiographic distribution of sites and changes in preference of lithic materials were evident for each of the broad cultural periods. Distribution of sites within the biogeographic zones reflects the type of subsistence pattern practiced during each cultural period. Local materials were used almost exclusively in the production of lithic implements. Marked changes in lithic preference are directly related to the relative sizes of naturally occurring raw materials and the implements made from them.

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CHAPTER I

INTRODUCTION

In the past, archaeological research in Tennessee has been primarily salvage oriented. Extensive survey and excacation projects have been conducted almost exclusively in conjunction with the system of reservoirs constructed by the Tennessee Valley Authority and the Corps of Engineers. River valleys in which no major reservoirs have been constructed have, for the most part, been virtually ignored as far as their archaeological resources are concerned. The Nolichucky River Basin is one of these areas which has received little archaeological attention in the past.

The Nolichucky is one of several rivers which drain that portion of the Ridge and Valley Physiographic Province located in northeastern Tennessee. Its headwaters are located on the western slope of the Blue Ridge Mountains in North Carolina, and it enters the Ridge and Valley Province near Erwin, Tennessee. From that point, the river flows in a general southwesterly direction to its confluence with the French Broad River near Morristown, Tennessee.

During the period from June 16 to July 20, 1977, a surface survey of portions of the middle Nolichucky River Basin was conducted by the writer while employed as an Archaeological Aide for the Tennessee Department of Conservation, Division of Archaeology. Dr. Lewis W. McIlhany assisted with survey operations. For the purpose of this

survey, the middle portion of the river basin is defined as that portion of the Nolichucky watershed located in Washington County, Tennessee, and the portion in Greene County, Tennessee, between the Washington County line and a north-south line representing 82° 45' West Longitude.

Primary objectives of the survey were to locate and record prehistoric archaeological sites within the various biogeographic zones of the survey area, to obtain a surface sample of cultural material from each site, to identify the prehistoric groups which had inhabited each site, and to gather data on patterns of settlement and subsistence for each of these cultural groups. Realization of these objectives would provide a data base which could serve several archaeological functions. It would (1) allow for establishment of a tentative historical framework of cultural development and change in the middle Nolichucky River Basin, (2) serve as a model for predicting locations of sites inhabited by specific prehistoric cultural groups within the research area, (3) act as a guide for predicting contents of prehistoric sites during future testing and excavation programs, and (4) serve as a model for testing hypotheses about prehistoric culture systems in the area.

The purpose of this thesis is to present a description of the survey area and its environmental resources, a description of survey methods and findings, and conclusions based on data and materials obtained during the survey.

Background

Previous research in the lower and middle portions of the Nolichucky River Basin has been minimal. The earliest documented excavation was conducted in 1871 for the Harvard Peabody Museum at the Lick Creek Site (Wyman 1872:11-22). The Camp Creek site in Greene County was excavated from 1955 to 1957 by members of the Tennessee Archaeological Society under the supervision of The University of Tennessee, Department of Anthropology (Lewis and Kneberg 1957:1-48).

More recently, survey teams from the Research Laboratories of Anthropology of the University of North Carolina have performed cursory explorations of the lower Nolichucky and other river valleys in upper East Tennessee (Dickens 1976:186). An analysis of ceramics from 10 Mississippian sites in the survey area was conducted as a class project by a former undergraduate student in anthropology at The University of Tennessee, Knoxville (Earnest n.d.).

In December 1977, salvage excavations were conducted at site 40WG17 by the United States Forestry Service. This site had been damaged by scouring action during a major flood of the Nolichucky River which had exposed a number of burials and features (Howard Earnest, Jr., personal communication 1977). A report on these excavations has not yet been published.

Prior to this survey, a total of 35 archaeological sites had been recorded in the lower and middle portions of

the Nolichucky River Basin. These sites are located almost exclusively on the alluvial floodplain. Most of these sites were reported by amateur archaeologists, and site survey report forms contain only minimal data.

Survey Methods and Problems

Areas to be surveyed were selected to include a variety of commonly occurring and specialized topographic features. Most of these features can be grouped into four generalized biogeographic zones following the model used in the Normandy Reservoir in Middle Tennessee (Faulkner and McCollough 1973: 4-5). The first of these zones includes the first terraces of the recent alluvial floodplains of the Nolichucky River and its tributaries. The earlier second and third river and stream terraces comprise a second biogeographic zone. Valley slopes and bluff tops form the third zone. The fourth biogeographic zone consists of the gently rolling uplands, ridge summits, and hilltops. Specialized topographic features examined during the survey include cliffs and minor elevations near springs or swampy areas.

Survey activities also included collection of chert samples from bedrock and soils, examination of artifacts in private collections, and gathering data from informants on possible site locations.

It is realized that any non-random sampling technique cannot be expected to provide an unbiased sample of the total material present. One of the objectives of the

survey was to locate as many archaeological sites as possible within each biogeographic zone in a limited amount of time. With these factors in mind, it was decided to choose a sampling strategy which would allow for observation of the greatest possible amount of cultivated land in each zone.

One-half mile wide corridors, which encompassed areas of varying topographic features within the river and tributary stream valleys, were chosen as sampling units to provide a degree of order to the sampling strategy. Within these units, a patterned pedestrian reconnaissance, with surveyors walking parallel about 10 meters apart, was chosen for cultivated areas. Any exposed ground in uncultivated areas would also be examined.

Initial selection of a number of tentative sampling units was made from topographic maps of the survey area. A preliminary drive-through inspection and low altitude flight over the area were then conducted in order to identify those units in which a large percentage of land within each biogeographic zone was under cultivation. It soon became evident that a large portion of the alluvial floodplain was under cultivation. A smaller amount of land on the older terraces, and only isolated portions within the slopes and bluffs and the upland zones were under cultivation. In order to include an adequate sample from each of the biogeographic zones, it was necessary to select isolated fields or areas outside of the selected corridors for examination.

Other problems were encountered which precluded complete coverage within each of the selected corridors. These included difficulty in locating landowners to obtain permission to survey their property and refusal of landowners to allow access to property. Limited visibility due to dense weeds or crops became a major problem toward the end of the survey because of the time of year the survey was conducted.

Nearly half of the farms or individual fields examined during the survey were owned by absentee landowners, or were leased to individuals who did not live in the immediate area. As a result, obtaining permission from the landowner or leasee was a time-consuming affair. In several cases repeated visits or telephone calls were made before the landowner could be contacted.

One proposed survey corridor included a farm of several hundred acres on which two archaeological sites had been previously recorded. Unfortunately, the landowner had experienced repeated instances of crop damage and "potholing" by vandals on one of the sites. As a result, he now refuses to allow any visitors on his property. This was the only case during the survey where access to land was refused. While it is unfortunate that this property could not be included in the survey, the landowner's refusal of access may serve to protect the archaeological sites on his property from further destruction.

At the beginning of the survey, crops and weeds were small enough that they did not significantly hamper survey activities. However, by the first week of July, crops in many fields were high enough to restrict ground visibility and make it difficult to accurately determine the location and limits of cultural materials. In addition to the crops, weeds between the rows precluded examination of the ground in isolated areas.

Weather conditions caused several minor delays during the survey. Local thunderstorms made it necessary to halt survey operations temporarily on four occasions. In a few instances, landowners were reluctant to allow survey operations in fields where the ground was still wet from recent rains. In these cases, it was necessary to return one or two days later after the ground was dry enough to walk on without damaging crops or compacting the soil.

Only one sampling unit was completely surveyed. This corridor extends one-fourth mile on either side of a line extending from a point located at 36° 12' 46" North Latitude, 82° 26' 17" West Longitude to a point located at 36° 12' 07" North Latitude, 82° 27' 46" West Longitude. Highway 81 was used as the southwest boundary for the corridor and a small paved road was used as the northeast boundary. This corridor covers the general area between Keplinger and Dry Creeks on the northeast side of the Nolichucky River and the broad floodplain and terraces on the southwest side of the river.

Two other corridors were partially surveyed. One is located near the mouth of Big Limestone Creek and extends one-fourth mile on either side of a line between points located at 36° 12' 02" North Latitude, 82° 39' 17" West Longitude and 36° 12' 33" North Latitude, 82° 39' 17" West Longitude. The other corridor crosses Little Limestone Creek between points located at 36° 13' 47" North Latitude, 82° 34' 50" West Longitude and 36° 14' 27" North Latitude, 82° 35' 13" West Longitude.

Various locations outside of these corridors were also surveyed. These included cultivated fields within the slopes and bluffs zone and the upland zone, previously recorded sites, and specialized topographic features.

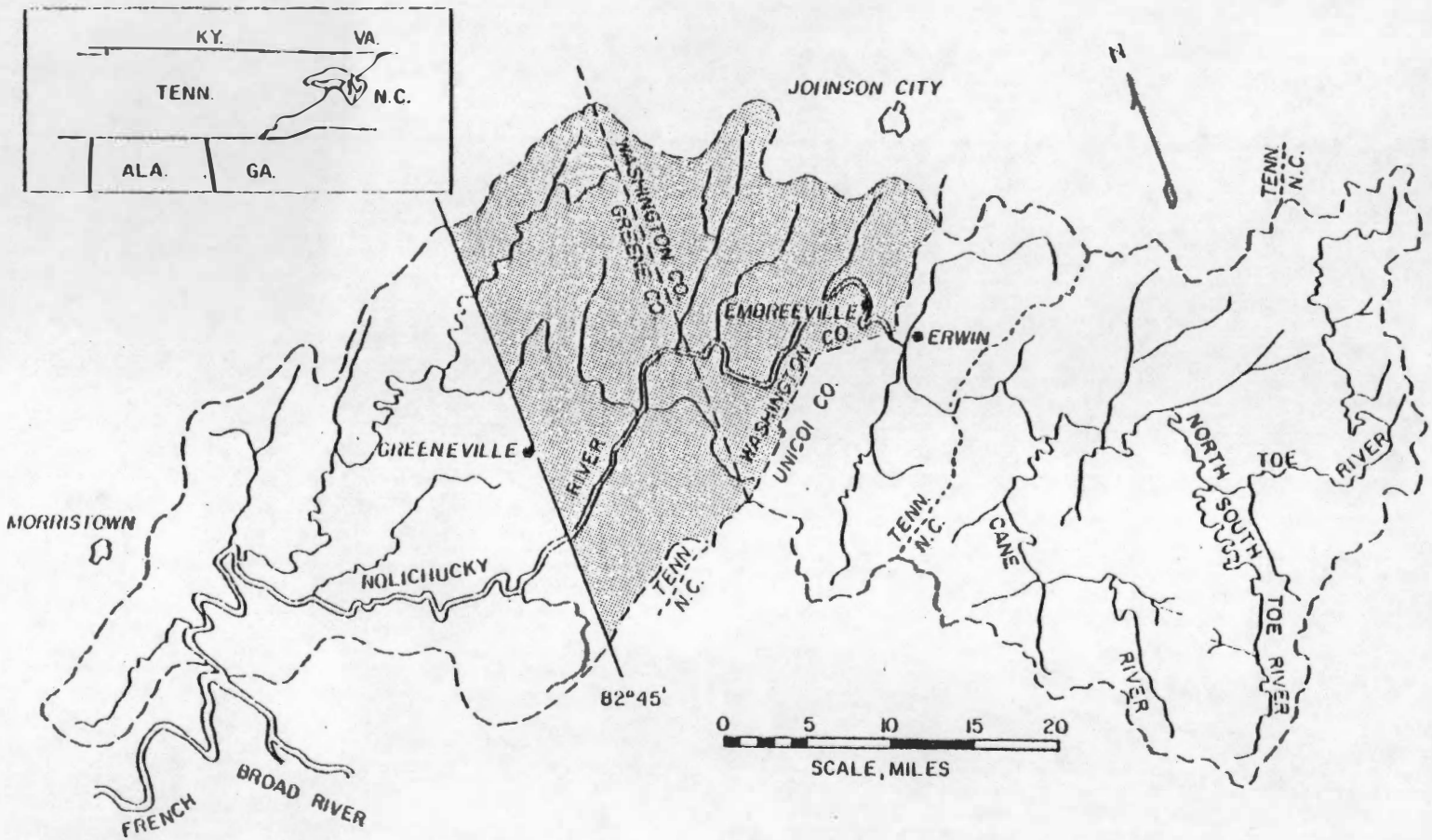
Environmental Setting

The headwaters of the Nolichucky River are located in western North Carolina where the North and South Toe Rivers and the Cane River drain the western slope of the Blue Ridge Mountains. The topography of the upper watershed is mountainous and rugged. Among the peaks in this area is Mount Mitchell, the highest point in the eastern United States at 6,884 feet above sea level (TVA 1940:131). The river passes between the Unaka and Bald Mountains near Erwin, Tennessee, where it enters the Ridge and Valley Physiographic Province (Fenneman 1938:195). Topography in this area is less rugged, stream slopes are less steep, and the broad alluvial bottoms along the river are subject to

overflow (TVA 1940:131). A map of the Nolichucky River Basin is presented in Figure 1.

A combination of mild climate, abundant seasonal rainfall, and a variety of easily exploitable natural resources makes valleys of rivers such as the Nolichucky among the richest and most productive natural environments to be found in the southeastern United States. Lewis and Kneberg (1946: 42-43) described the natural environment of the river valleys of upper East Tennessee as ". . .particularly adapted to aboriginal life in the riches and variety of wild food products, and was capable of supporting rather large populations on this basis alone."

The rocks in the middle Nolichucky River Basin consist of 30,000 to 40,000 feet of folded Paleozoic sediments in the second cycle of erosion. Selective erosion is conspicuous. In the humid climate of the southeastern United States, non-cherty limestones and dolomites are eroded most rapidly and tend to form valley floors. Shales are more resistant, and the highly resistant sandstones and conglomerates cap the ridges. Relief in this area can be characterized as a lowland surmounted by low, narrow, even topped, parallel ridges which run in a northeast to southwest direction (Fenneman 1938:195-196). Maximum elevation of the ridges reaches over 1,900 feet, while the rolling hills covering most of the valley range between 1,400 and 1,500 feet. The difference in elevation between the valley floor and the adjacent ridge crests ranges from 300 to 600 feet.



Shading denotes survey area

Figure 1. Map of Nolichucky River Basin.

The Bald Mountains, which lie less than eight miles from the river and form the southeastern boundary of the middle Nolichucky watershed, rise to a height of over 4,800 feet. These mountains are composed largely of Cambrian quartzites, sandstone, micaceous shale, arkose, graywacke, conglomerate, and greenish basalt flows (Hardeman 1966).

For most of its course in the lower valley, the Nolichucky River lies directly over sparsely cherty dolomites and dark limestones of the Ordovician Knox Group and the Cambrian Honaker Dolomite. These formations contain locally abundant chert nodules (Ibid.). Outcrops of these formations and river gravels derived from them would have provided aboriginal man with an abundant supply of small nodules of dark gray to black "flint" or chert from which tools were fashioned (Kellberg 1963:5).

The Unaka Mountains, at the headwaters of the Nolichucky watershed in North Carolina, are largely composed of slates, quartzites, schists, gneisses, and granites (Hardeman 1966). Stream gravels and alluvial terraces of the Nolichucky River and its tributaries, which originate in the Unaka and Bald Mountains, contain a readily accessible source of cobbles of quartzite, rhyolite, vein quartz, slate, greenstone, and other rocks which could have been used for the production of lithic artifacts.

Mica and soapstone occur in the pegmatite dikes and metamorphic rocks at the headwaters of the Nolichucky River in North Carolina. Aboriginal man could have obtained

these materials for the production of ornaments and vessels either by following the river to its source, or through trade with inhabitants of the Appalachian Summit area.

Soils of the middle Nolichucky River Basin are mainly derived from limestone, dolomite, sandstone, shale, and quartzite parent rocks. Folding and tilting of these rocks has exposed many different formations at the surface. Uneven weathering of relatively thin, steeply tilted layers has resulted in a large number of soils with abrupt changes between them. Still other soil types have been formed by sorting and redeposition of these soils by running water (UTDAE 1945:16).

Soils of the uplands and high terraces have been severely leached. Consequently, they are acid, contain little organic matter, and are low in fertility. Soils of the low terraces and bottom lands are of moderately high fertility and are fairly well supplied with lime and organic matter (USDA Soil Conservation Service 1958a:7). Two upland soil types, the Dunmore and Groseclose series, may have been important sources of chert used for the production of lithic artifacts. Other soils derived from these two series contain redeposited chert in the colluvial slopes and older terraces (Ibid.).

The climate of the middle Nolichucky River Basin is classified as humid mesothermal, and is characterized by a definite seasonal rhythm (Fribourg et al. 1973:5). Prevailing winds are westerly and the rainfall pattern is

marked by a seasonal maximum in late winter or early spring. There is a tendency for a second maximum in middle to late summer, and a well-marked minimum occurs in mid-autumn. The late winter or early spring rains frequently cause floods in this region. Topography is an important factor in causing locally excessive precipitation in the mountains of the Nolichucky headwaters (Ward 1925:190).

Average annual precipitation near the lower end of the middle portion of the Nolichucky Basin is 41.62 inches, based on a 42 year record at Greeneville, Tennessee. Precipitation at the upper end of the middle basin is slightly higher, with a 46.17 inch average based on a 49 year record at Embreeville, Tennessee (USDC 1974:43). The average yearly temperature for the area ranges from 56 to 58 degrees Fahrenheit, and the average frost-free season varies from 170 to 180 days (TVA 1936:Pt 1).

While spring is the season normally associated with flooding, some of the most severe floods in the Nolichucky Basin during this century have occurred in late summer. The greatest flood in recorded history of the area occurred in May of 1901. However, five of the six major floods since that time were in July or August (TVA 1940:140). These summer floods resulted from abnormally high precipitation caused either by tropical storms, which moved inland from the coast, or from abnormal meteorological conditions, which were adversely influenced by mountainous topography near the headwaters of the river (Ibid.:6-10, and 53).

The middle Nolichucky River Basin is characterized by a vegetational community referred to as the Southern Appalachian section of the oak-chestnut forest region (Braun 1950:195). This area has a great diversity of vegetation which varies according to elevation, drainage, exposure, moisture, and soil type. The oak-chestnut forest originally covered most of the mountain slopes and rolling uplands between 1,300 and 4,500 feet of elevation. However, on some of the lower mountain slopes of southern exposure, scattered areas of beech (Fagus grandifolia) and occasional buckeyes (Aesculus octandra) suggest that mixed mesophytic communities existed earlier (Ibid.:197 and 233).

On the valley floors, white oak (Quercus alba) predominates, frequently accompanied by tuliptree (Liriodendron tulipifera), hickory (Carya sp.), red oak (Quercus rubra), and black oak (Quercus velutina). Dogwood (Cornus sp.) and wild cherry (Prunus sp.) are commonly found beneath the canopy (Ibid.:237-238).

Mixed mesophytic forests containing basswood (Tilia heterophylla), sugar maple (Acer saccharinum), tuliptree (Liriodendron tulipifera), and arborvitae (Thuja occidentalis) occur along entrenched tributary streams. Where limestone outcrops occur, red cedar (Juniperus virginiana) is often present (Ibid.:240-241).

The oak-deer-chestnut faciation typical of this area in earlier times has been destroyed as a result of heavy lumbering and the blight which wiped out the American

chestnut (Castanea dentata) in the mid-1930's (Shelford 1963:38-39).

Acorns and chestnuts were probably the most heavily exploited sources of plant food for aboriginal man. However, other nuts, berries, seeds, leaves, flowers, roots, bark, and shoots would have provided a wide variety of food sources from which to choose (Fernald et al. 1958:2).

McCollough and Faulkner (1973:Table 1) listed 61 species of edible plants which might be expected to occur in the vicinity of the Higgs site in Loudon County, Tennessee. This list includes 33 species from the recent alluvial terraces, 30 species on the older terraces, and 24 species in the upland ridges. An additional 19 species of edible plants common to the river valleys of eastern Tennessee were listed by Fernald et al. (1958). Most of these edible plant species were probably available to aboriginal man in the middle Nolichucky River Basin.

Pollen samples collected in the Shenandoah Valley near Staunton, Virginia, suggest that spruce (Picea sp.) and pine (Pinus sp.) predominated in the area prior to 12,720 ± 200 B.P. By 9,520 ± 200 B.P., oak (Quercus sp.) pollen predominated with only a small percentage of conifer pollen. Both oak (Quercus sp.) and pine (Pinus sp.) pollen were abundant by around 5,600 B.P., along with substantial amounts of pollen from other deciduous species (Craig 1969: Figure 40).

Analysis of charcoal samples at the Rose Island site in Monroe County, Tennessee, indicated a predominance of oak (Quercus sp.), with a number of other deciduous trees represented in the Early Archaic deposits. Conspicuously absent was any evidence of coniferous trees. Early Woodland deposits at the same site showed hickory (Carya sp.), oak (Quercus sp.), and pine (Pinus sp.) as the three most frequent types of wood present (Chapman 1975:222-224).

These two samples from locations in the Ridge and Valley Province to the north and south of the Nolichucky River Basin, suggest that a similar progression of forest types may have occurred in upper East Tennessee. An oak maximum as early as 9,500 B.P. may have been followed by increased frequency of coniferous trees by the sixth millennium B.C.

Prior to the arrival of European settlers, the eastern Tennessee Valley supported a rich and varied fauna. Lt. Henry Timberlake traveled throughout the valleys of upper East Tennessee in 1761 and 1762 and was impressed by the incredible numbers and types of wildlife. His memoirs include references to many fish, otters, and beavers in the streams (Williams 1927:69). He also mentioned incredible numbers of buffaloes, bears, deer, panthers, wolves, foxes, raccoons, opossums, and other lesser game animals. Among the wide variety of birds observed, he mentioned turkeys, geese, partridges, pheasants, and several kinds of ducks (Ibid.:27, 47, and 71).

Kellogg (1939) lists 87 species of mammals which have been observed in Tennessee. All but a few of these were probably inhabitants of areas such as the middle Nolichucky River Basin.

At least 250 species or subspecies of birds have been observed in eastern Tennessee. Of these, 65 are listed as permanent residents. The rest are listed as seasonal visitors or migratory transients (Ganier 1933:43).

Kuhne (1939) lists 128 species of fish which are native to the state of Tennessee. The Nolichucky River and its tributaries would have offered a variety of habitats favorable to many of these species prior to the arrival of European settlers.

In a survey of the Great Smokey Mountains National Park, Huheey and Stupka (1967:85-86) recorded 34 species of amphibians and 37 species of reptiles. Most of these were found in the lower elevations and were probably inhabitants of the nearby Nolichucky River Basin. Twenty-five other species were listed which were found within 60 miles of the park boundaries (Ibid.:73-82).

Ortman (1918:618-619) recorded 14 species of fresh water mussels collected from the Nolichucky River one mile above its confluence with the French Broad River. He collected 24 additional species from the French Broad River and its other tributaries. This total of 38 species from the Nolichucky River and nearby waters was collected during single visits to only eight collecting stations.

The riverine environment of the middle Nolichucky River Basin would have provided an exceptionally rich source of faunal species which could have been exploited by aboriginal man. Important mammals restricted to the riverine areas would have included beaver (Castor canadensis), otter (Lutra canadensis), mink (Mustela vison), and muskrat (Ondatra zibethicus) (Kellogg 1939:262-286). Many other mammals including white-tailed deer (Odocoileus virginianus), elk (Cervus canadensis), raccoon (Procyon lotor), opossum (Didelphis marsupialis), eastern fox squirrel (Sciurus niger), and striped skunk (Mephitis mephitis) inhabited the floodplain forests.

Several species of raptorial birds were commonly found in the floodplain forests. A number of aquatic species would have been found along the river and streams, especially in the spring and fall. Some of the more common transient waterfowl in the area would have included the Canada goose (Branta canadensis), mallard (Anas platyrhynchos), green-winged teal (Nettion carolinense), ring-necked duck (Nyroca collaris), and lesser scaup duck (Nyroca affinis) (Ganier 1933).

The larger species of fish, mollusks, salamanders, frogs, turtles, lizards, and snakes would have been readily available food sources during the warmer months from late spring to early autumn.

In the open forests of the uplands and ridges, a number of larger mammalian species were probably significant food

sources. These included the black bear (Ursus americanus), mountain lion (Felis concolor), bobcat (Lynx rufus), red fox (Vulpes fulva), gray fox (Urocyon cinereoargenteus), gray wolf (Canis lupus), and woodchuck (Marmota monax) (Kellogg 1939). Many of the species listed for the riverine areas were probably common in the upland forests as well.

The most important game animal for aboriginal man was probably the white-tailed deer (Odocoileus virginianus). These animals are browsers and were probably common to both the riverine and upland environments during most of the year. However, their heavy use of acorns and chestnuts may have led them to concentrate in the upland forests during the late summer and autumn (Madson 1961:43-44).

Of the large indigenous birds, the wild turkey (Meleagris gallopavo) was probably the most important game species. These birds preferred the open hardwood forests having mast-bearing trees. They tended to avoid areas of dense undergrowth which would reduce their field of vision and speed of escape (Schorger 1966:222).

In summary, the middle basin of the Nolichucky River offered a natural environment particularly suited for aboriginal life. The mild climate, with moderate rainfall throughout the year, favored many types of plants utilized by man as well as by game animals. These factors, along with the rich soils of the alluvial bottomlands, would also have provided a productive environment for aboriginal horticulture.

Ample supplies of raw materials for tools and ornaments were available either within the valley or in the adjacent mountains of the Blue Ridge Physiographic Province.

Predominant forest types have probably changed significantly during the past 12,000 years. However, the variety of edible plants available to aboriginal man would have been adequate to provide a rich and abundant source of food. Faunal species also appear to have been varied and abundant. They would have provided a plentiful supply of meat.

Seasonal variation of the food supply probably led early hunting and gathering groups to shift their habitation sites on a seasonal basis. Resources of the riverine environment would have been most plentiful during late spring and summer. During late summer and autumn, the upland environment would have been most productive. With the addition of cultigens as a new type of food source, more permanent habitation sites on the floodplains became possible.

CHAPTER II

LITHICS

A total of 6072 lithic artifacts were recovered during the 1977 survey of the middle Nolichucky River Basin or observed in private collections from sites visited during the survey. This total included 1338 (22.0%) chipped stone implements, 4709 (77.6%) items classified as chipping debris, and 25 (0.4%) ground and pecked stone artifacts. Distribution of lithic materials for each site is presented in Tables 1 and 2.

Lithic artifacts were placed in descriptive categories based on differences in morphology, style, and technology. Type names used in this analysis are those which have been previously established and are in common usage in the archaeological literature. In many cases, these names reflect the presumed function of a specific tool type.

Chipped Stone Artifacts

This portion of the lithic sample includes those artifacts which were manufactured by percussion or pressure flaking.

Projectile Points/Knives

A total of 261 artifacts classified as projectile points/knives were recovered during the survey. An additional 169 specimens, previously collected by Dr. Lewis W.

TABLE 1. Distribution of Projectile Points/Knives by Site

Site No.	Clovis	Small Fluted	Wheeler	Hardaway-Dalton	Kirk Corner Notched	MacCorkle	St. Albans	LeCroy	Kanawha	Bifurcate Variants	Stanley	Morrow Mountain	Guilford	Cedar Creek	Savannah River	Otarre	Swannanoa	Plott	Ebenezer	Camp Creek	Greenesville	Holichucky	Swan Lake	Jacks Reef C. N.	Jacks Reef Pentagonal	Hamilton	Late Miss. Triangular	Total
40WG3					1								1	2	3	3	1				1							12
40WG4					•					•					•				1	1				•				2
40WG5	2		1												•		•										1	4
40WG6a															•					•	•			1	•	1	•	2
40WG6b							1					2			1							•						4
40WG7																				•	•	•	1			•		1
40WG11					1									1			1									5	3	11
40WG13					•		•				•			•	•				1	•	•	•		•		a		9
40WG24							1					2			1		3	2										9
40WG25					1		1	1			4	1	4		17					9	10		1	1		4		54
40WG26					3	1	1		2			4		5	4		1											21
40WG27					1					3			2		3		1									2		17
40WG28		1			5		1	2	1		1	4			5	2	4	4							1			31
40WG29										1				2	1		2		2			1	2					11
40WG30															1		1					3						5
40WG31																												
40WG32																				1	2	2						5
40WG33																1						3						4
40WG34															1	3	1	1						1				7
40WG35																2			2		1							5
40WG36					1														1							1		3
40WG37																										2	1	3
40WG38																												
40WG39								1				2																3
40WG40	1																											1
40WG41																												
40WG42					1																							1
40WG43														1														1
40WG44																			2									2
40WG45					•					1		1		1			3										1	7
40WG46					1						1																	2
40WG47																												
40WG48																												
40WG49														1														1
40WG50																												
40GN13					5		1		1			2	1	1				2			1	2	1			3		20
40GN14					4							3		1		1								2	2	11		24
40GN15					1							3		1	4	5		1		1				1	3	5		25
40GN16				2	1							1					1											5
40GN17					1																					13		14
40GN18					•					•				•												1		1
Total	3	1	1	2	27	1	6	4	4	5	6	25	8	16	46	17	19	10	9	12	15	11	5	6	6	56	6	327

*Specimens observed in private collections.

TABLE 2. Distribution of Other Lithic Artifacts by Site

Site No.	Bifacial Knife	Flake Knife	End Scraper	Side Scraper	Stemmed Scraper	Chopper	Drill	Graver/Perforator	Spokeshave	Plèçe Esquillée	Preform	Biface	Blade-like Flake	Notched Hoe	Utilized Flake	Chipping Debris	Grooved Ax	Celt	Pitted Cobble	Pestle	Mortar	Discoidal	Gorget	Abrader	Total
40WG3										4		4	1		4	80	1	1							95
40WG4							1				1	5	14		39	134		•		•					194
40WG5					1						1	4	21		20	152		1							179
40WG6a				1				1	2		2	5			50	217					1				300
40WG6b												1			4	44									45
40WG7									1			7			21	125									154
40WG11			1				1			2		4	2		32	216		2				2			262
40WG13			5							3	2	7	2		19	44		•	1			•			83
40WG24		2	2		3					2	5	5			17	239			1						276
40WG25		3	•		•					1	3	42			5	•		1	•						60
40WG26		2	4						1		5	20	3		23	286									344
40WG27	1		2			1						4			7	156									171
40WG28	•	•	•		•		2						•		•	•	1		3					1	7
40WG29			1		2					1		8	1		9	263									285
40WG30						1						8			14	351							1		375
40WG31												2			2	38									42
40WG32										1		1	3	1	6	223									235
40WG33												1			1	32		1		1					36
40WG34												4			8	97									109
40WG35											2	8			17	290							2		319
40WG36															11	54									65
40WG37			1					1			1	9	2		15	151			1						181
40WG38												2			4	20									26
40WG39									2			3			7	128									140
40WG40			2									3	6		11	81									103
40WG41															2	7									9
40WG42			1							1		1			11	87									101
40WG43															1	3									4
40WG44										1		2			5	94		1							103
40WG45		1	2							3		4	3		19	104									136
40WG46										1		1			10	41									53
40WG47					1										9	44									54
40WG48			1												7	27									35
40WG49			1										1		15	138									155
40WG50															1	10									11
40GN13	1		1							1					33	145			1				•		182
40GN14	•						•			•	•	2	2		9	96									109
40GN15			1		•							3			14	74			1						93
40GN16				2								3			31	184									225
40GN17			2							3		5			28	166									204
40GN18										1		1			11	68									81
Total	2	8	27	3	7	2	4	2	6	25	27	194	61	1	552	4709	2	7	8	1	1	2	3	1	5641

*Specimens observed in private collections.

McIlhany, from eight of the sites surveyed are included in the analysis sample. Of the 430 specimens analyzed, 103 are too fragmentary or amorphous to permit classification. The remaining 327 projectile points/knives were identified as belonging to previously established types.

In several cases, artifacts which could be determined with a relatively high degree of certainty as having been found at a specific site, were observed in the possession of landowners or local collectors. The presence of identifiable projectile point/knife types in these collections is indicated in Tables 1 and 2 by an asterisk in the column under the sites from which they were said to have been recovered. Projectile point/knife types observed in the analysis sample are described below.

Clovis (Suhm and Krieger 1954) (Figure 2A)

The basal portion of one specimen recovered during the survey conforms to this type. One complete and one fragmentary specimen were included in the survey sample from a second site. The fragmentary specimen appears to represent the base of an unfinished point which was broken during removal of the first flute. This type is referable to the Paleo-Indian period and probably dates in excess of 10,000 years in the middle Nolichucky River Basin.

Small Fluted (Gardner 1974:15) (Figure 2B)

One basal fragment of this type was included in the survey sample. This type was found stratigraphically

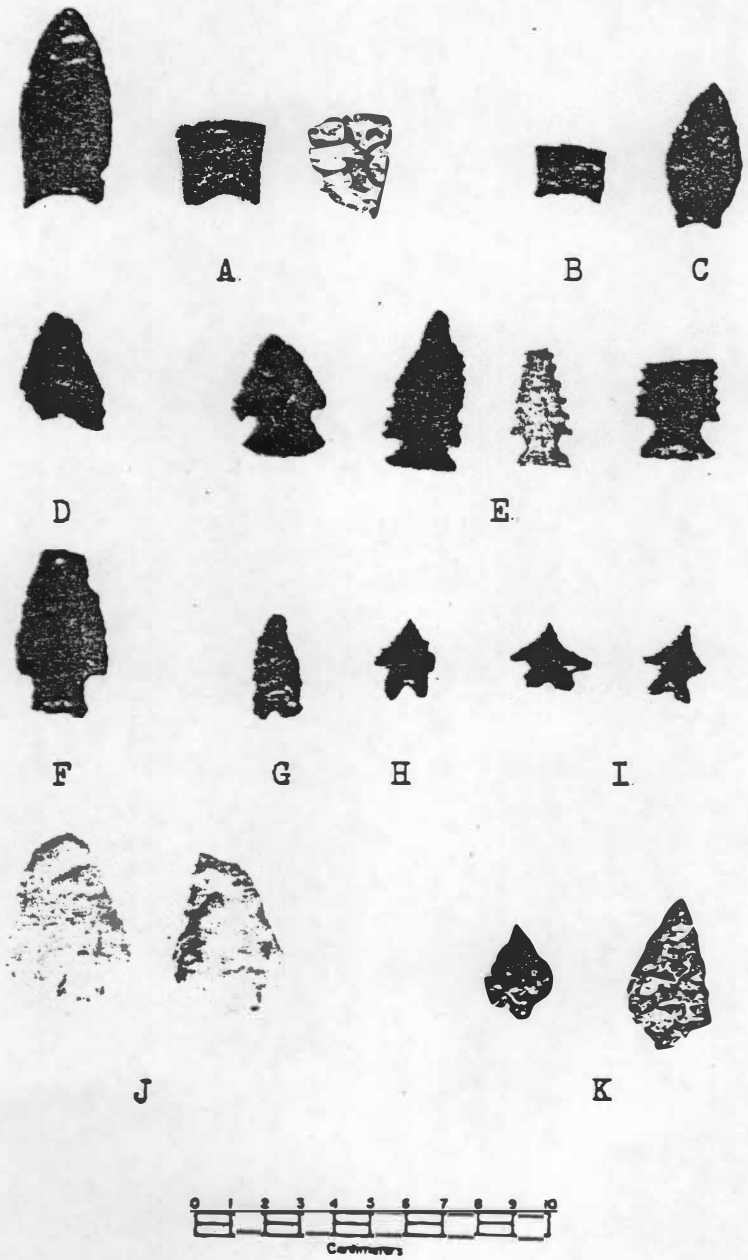


Figure 2. Projectile Points/Knives: Paleo-Indian; Early and Middle Archaic. A. Clovis; B. Small Fluted; C. Wheeler-like; D. Hardaway-Dalton; E. Kirk; F. McCorkle; G. St. Albans; H. LeCroy; I. Kanawha; J. Stanly; K. Morrow Mountain.

above Clovis points at the Thunderbird site (44WR11) in Warren County, Virginia. Gardner (1974:15) has suggested a middle Paleo sub-phase association for this type.

Wheeler (Cambron 1957:19) (Figure 2C)

One point which resembles the Wheeler Recurvate type is included in the sample. Cambron and Hulse (1969:114) have suggested a transitional Paleo-Indian to Archaic association for this type.

Hardaway-Dalton (Coe 1964:64) (Figure 2D)

Two fragmentary specimens of this type were recovered from one site during the survey. This is apparantly a transitional type from Paleo-Indian to Early Archaic (Chapman 1977:49).

Kirk Corner Notched (Coe 1964:69-70) (Figure 2E)

A total of 27 specimens from 14 sites are included in the sample. Examples from four additional sites were observed in private collections. Suggested dates of 7500 to 6900 B.C. have been proposed for the Kirk phase (Chapman 1976:1).

MacCorkle Stemmed (Broyles 1966:23) (Figure 2F)

One specimen of this type was recovered during the survey. Broyles (1971:71) suggested a date between 6850 and 6750 B.C. based on their stratigraphic position above Kirk and below St. Albans strata at the St. Albans site in Kanawha County, West Virginia.

St. Albans Side Notched (Broyles 1966:23-25) (Figure 2G)

Six examples of this type from six sites are included in the sample. This type is also present in a private collection from one other site. The St. Albans strata at the Rose Island site on the Little Tennessee River produced radiocarbon dates ranging from 6710±180 to 6850±270 B.C. (Chapman 1976:6).

LeCroy Bifurcated Stem (Lewis and Kneberg 1955:79,81; Broyles 1966:26-27) (Figure 2H)

Four examples of this type were observed from three sites. Archaeomagnetic dating at the Rose Island site and a radiocarbon date from the St. Albans site suggest a date of around 6300 B.C. for this type (Broyles 1966:40; Chapman 1976:6).

Kanawha Stemmed (Broyles 1966:27) (Figure 2I)

This type is represented by four examples from three sites. A radiocarbon date of 6210±100 B.C. was obtained for this type at the St. Albans site (Broyles 1966:40).

Bifurcate Variants (Chapman 1975:110-114)

Five bifurcated base points from three sites do not conform to the previously described types which represent the bifurcate tradition. Bifurcate variants were also observed in private collections from two other sites. These points probably fit within a general time frame of 6800 to 6100 B.C. as suggested by Chapman (1976:1) for the Early Archaic bifurcate phases.

Stanly Stemmed (Coe 1964:35) (Figure 2J)

This type is represented by six examples from three sites. An additional specimen was observed in a private collection from one other site. Chapman (1976:1) has suggested a date of around 5800 B.C. for the Stanly phase based on dates from Archaic sites along the Little Tennessee River.

Morrow Mountain (Coe 1964:37) (Figure 2K)

A total of 25 examples of this type was observed from 11 sites. A radiocarbon date of 5045±245 B.C. was obtained from the Morrow Mountain stratum at the Icehouse Bottom site (Chapman 1976:8).

Guilford lanceolate (Coe 1964:43) (Figure 3A)

Eight examples of this type from four sites are included in the sample. Coe (1964:44) has suggested a minimum date of 4000 B.C. for this type.

Cedar Creek (Joseph L. Benthall, personal communication 1978) (Figure 3B)

Ten sites produced 16 examples of this type. Additional examples from two other sites were observed in private collections. Excavations at the Dougherty Cave site on the Clinch river in Russell county, Virginia, have placed this type stratigraphically below the Savannah River type. A radiocarbon date of 3740±260 B.C. was obtained for the stratum which produced this type (Joseph L. Benthall, personal communication 1978).

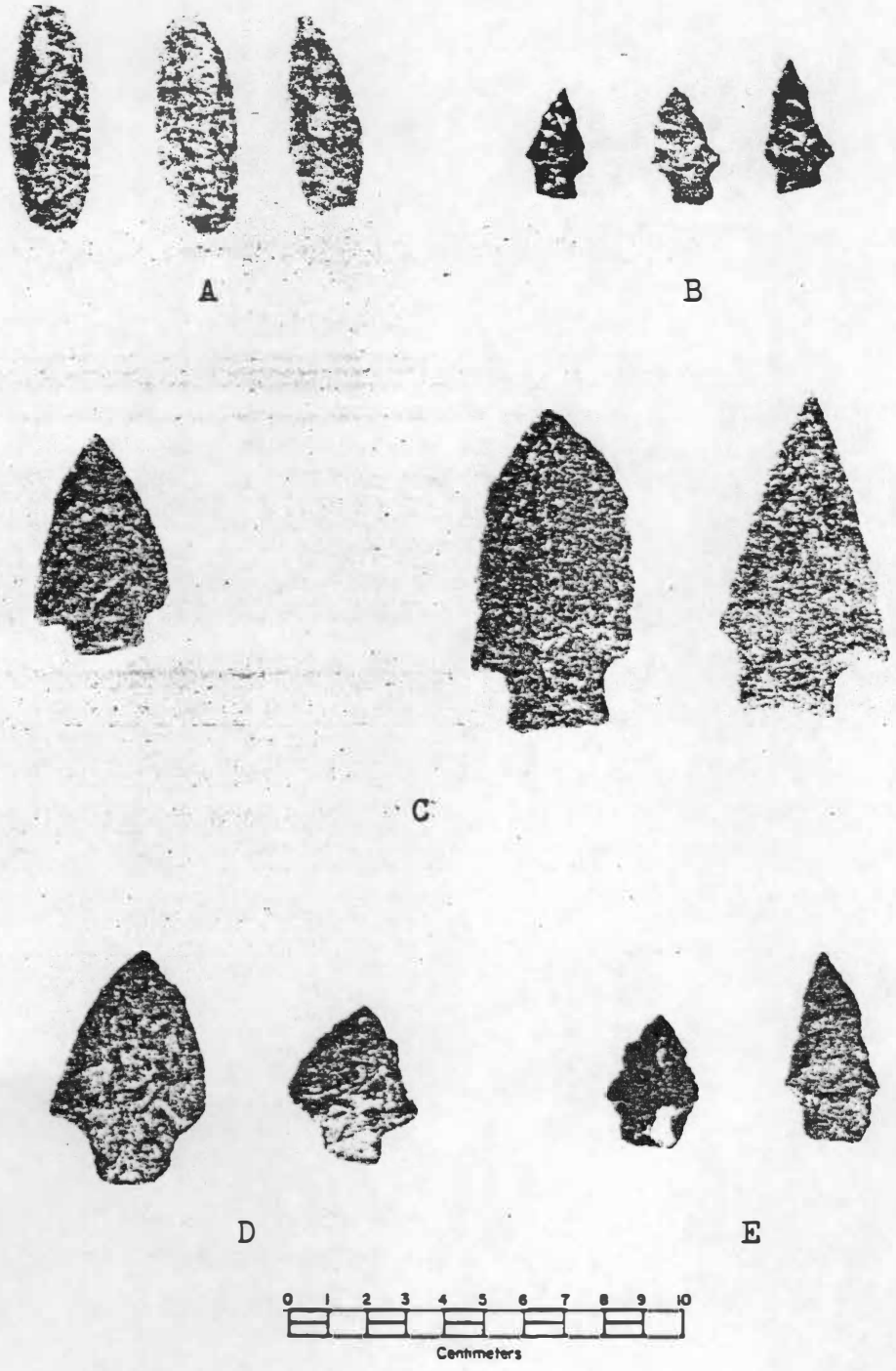


Figure 3. Projectile Points/Knives: Middle and Late Archaic; and Woodland. A. Guilford; B. Cedar Creek; C. Savannah River; D. Otarre; E. Swannanoa.

Savannah River (Coe 1964:44-45) (Figure 3C)

A total of 46 points of this type were recovered from 11 sites. Examples in private collections were observed from four additional sites. A radiocarbon date of 1944± 250 B.C. was obtained from a stratum which produced this type at the Gaston site in Halifax County, North Carolina (Coe 1964:97).

Otarre Stemmed (Keel 1976:194) (Figure 3D)

Seventeen examples of this type were recovered from seven sites. Keel (1976:196) felt that this was the last point type produced in the Southern Appalachians prior to the introduction of ceramics.

Swannanoa Stemmed (Keel 1976:196-198) (Figure 3E)

A total of nineteen examples were observed from 11 sites. Specimens from one additional site were observed in a private collection. Keel (1976:198) assigned this type to the Early Woodland Swannanoa phase in North Carolina and cited Tennessee equivalents from the Nickajack Reservoir (Faulkner and Graham 1966:Plate 19), the Tellico Reservoir (Salo 1969:Plate 28f), and the Rankin site in Cocke County (Smith and Hodges 1968:Plate VIII).

Plott Short Stemmed (Keel 1976:126-127) (Figure 4A)

This type is represented by 10 specimens from five sites. Association with Swannanoa ceramics in North Carolina (Keel 1976:127) and grit-tempered cord and fabric

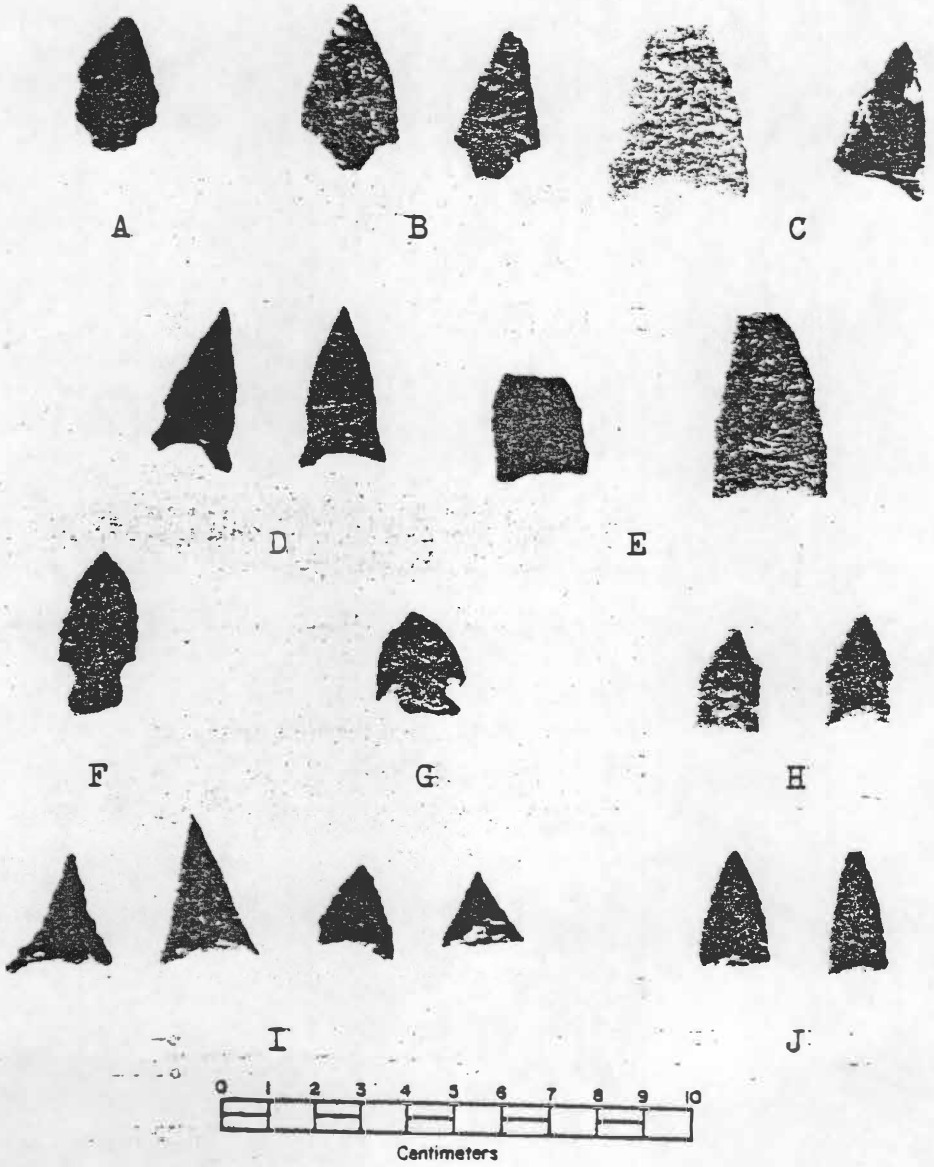


Figure 4. Projectile Points/Knives: Woodland and Mississippian. A. Plott; B. Ebenezer; C. Camp Creek; D. Nolichucky; E. Greeneville; F. Swan Lake; G. Jacks Reef Corner Notched; H. Jacks Reef Pentagonal; I. Hamilton; J. Late Mississippi Triangular.

marked ceramics in eastern Tennessee (Faulkner and Graham 1966:73) suggest that this is an Early Woodland type.

Ebenezer (Cambron and Hulse 1969:36) (Figure 4B)

This type is represented by nine examples from six sites. Specimens from one other site were observed in a private collection. An Early Woodland association is suggested for this type based on its' occurrence at the Camp Creek site in Greene County (Lewis and Kneberg 1957:21), and the Rankin site in Cocke County (Smith and Hodges 1968: 64).

Camp Creek (Kneberg 1956:23) (Figure 4C)

Twelve specimens were recovered from four sites. This type was also observed in private collections from three other sites. The Camp Creek type is often found in association with the Greeneville and Nolichucky types in eastern Tennessee. Keel (1976:131) felt that this type might be related to the Garden Creek Triangular type in North Carolina. These triangular point types appeared during the Early Woodland period and continued in use into the Middle Woodland period.

Greeneville (Kneberg 1957:64) (Figure 4E)

This type is represented by 15 examples recovered from five sites. Specimens from three additional sites were observed in private collections. An Early to Middle Woodland time frame similar to that of the Camp Creek type appears to be appropriate for this type.

Nolichucky (Kneberg 1957:65) (Figure 4D)

A total of 11 examples from five sites is placed in this type. Examples observed in private collections had been recovered from three additional sites. Association with Camp Creek and Greeneville types suggest that this type was produced during the Early and Middle Woodland periods.

Swan Lake (Cambron and Hulse 1969:108) (Figure 4F)

Five examples of this type were recovered from four sites. This type is similar to the Plott Short Stemmed type from North Carolina (Keel 1976:126-127). It appears to be associated with the Middle Woodland period in eastern Tennessee.

Jacks Reef Corner Notched (Ritchie 1961; Cambron and Hulse 1969:69) (Figure 4G)

Five sites yielded six examples of this type. Specimens from two other sites were observed in private collections. Similar points have been found associated with Late Woodland components at sites in eastern Tennessee (Graham 1964:31; Lewis and Kneberg 1946:111-112).

Jacks Reef Pentagonal (Ritchie 1961; Cambron and Hulse 1969:60) (Figure 4H)

Six examples of this type were recovered from three sites. A private collection from one other site included specimens of this type. Similar pentagonal types have

Late Woodland (Cambron and Hulse 1969:60) through proto-historic (Coe 1964:49) associations in the eastern United States.

Hamilton (Kneberg 1956:24) (Figure 4I)

A total of 56 small triangular points is placed in this category. These points were recovered from 12 sites and were observed in private collections from one other site. The range of variation within the sample probably includes examples which belong to the Late Woodland type originally described by Kneberg, as well as Mississippian types associated with the Pisgah (Dickens 1976:135-136) and Cherokee (Keel 1976:53-54) occupations. No further subdivision of this category was attempted due to the small size and surface nature of the sample.

Late Mississippi Triangular (Kneberg 1956:24) (Figure 4J)

This type is represented by six examples from four sites. One specimen from an additional site was observed in a private collection. Specimens in the sample are similar to those described as typical of the Dallas culture (Lewis and Kneberg 1946:113-114).

Broken or Untyped Projectile Points/Knives

This category included 104 fragmentary or amorphous specimens which could not be identified as belonging to one of the previously established types described above.

Other Chipped Stone Artifacts

Bifacial Knife (Figure 5A)

This category consists of asymetrical bifaces which exhibit a single, finely retouched lateral edge. Two examples were recovered from two sites. Specimens from two additional sites were observed in private collections.

Flake Knife (Figure 5B)

Eight flakes which display acute-angle retouched edges on one or both lateral edges were recovered from four sites. An example from one other site was observed in a private collection.

End Scraper (Figure 5C)

A total of 27 flakes displays relatively steep marginal retouch which forms a convex working edge at the distal end. Several specimens display moderate to heavy wear on the working edge. Examples of this tool type were recovered from 15 sites and were observed in private collections from two additional sites.

Side Scraper (Figure 5D)

Three flakes have one or more steeply retouched lateral edges. These were recovered from two sites.

Stemmed Scraper (Figure 5E)

Seven bases of stemmed projectile points/knives had been reworked to form a steep transverse working edge at

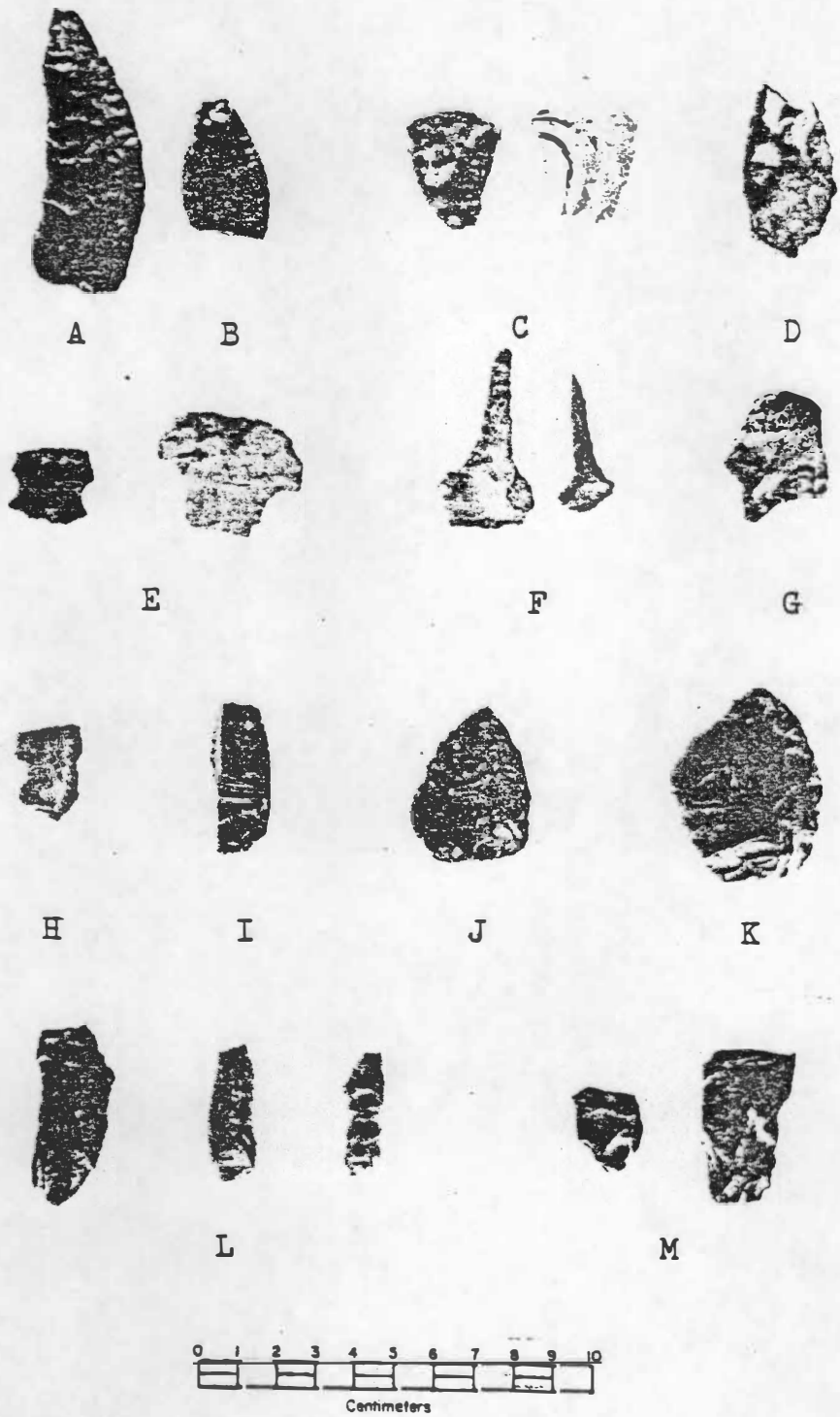


Figure 5. Miscellaneous Chipped Stone Artifacts. A. Bifacial Knife; B. Flake Knife; C. End Scraper; D. Side Scraper; E. Stemmed Scraper; F. Drill; G. Graver/perforator; H. Spokeshave; I. Pièce Esquillée; J. Preform; K. Biface; L. Blade-like Flake; M. Utilized Flake.

the distal end. These were recovered from four sites. Additional examples were observed in private collections from three other sites.

Chopper (Figure 6H)

Two bifacially worked implements displaying evidence of battering or heavy wear along the lateral edges were recovered from two sites. One of these examples is the basal portion of a large stemmed quartzite biface which resembles the Savannah River projectile point/knife type.

Drill (Figure 5F)

Four bifaces with long rod-like blades were recovered from three sites. One specimen from another site was observed in a private collection.

Graver/Perforator (Figure 5G)

Two flakes recovered from separate sites display a small pointed projection formed by unifacial retouch along both sides of the tip.

Spokeshave (Figure 5H)

Six flakes with a concave scraping edge were recovered from four sites.

Pièce Esquillée (Figure 5I)

A total of 25 flakes and core fragments display a ridge on one or more margins which appear to have been produced by extensive crushing. These artifacts may

represent the end product of the bipolar manufacturing technique, or they may have been produced through use as wedges for splitting hard substances such as bone or antler. Pieces Esquillees were recovered from fourteen sites and were observed in a private collection from one other site.

Preform (Figure 5J)

This category includes 27 bifaces which had been roughly shaped to projectile point/knife-like proportions. Most specimens are triangular or ovoid in outline, have thick irregular edges showing no pressure retouch, and require further modification to establish a hafting area. Preforms were recovered from nine sites, and one example was observed in a private collection from another site.

Biface (Figure 5K)

A total of 184 amorphous or fragmentary bifacially worked implements is placed in this category. These may include crude cutting or chopping tools as well as unfinished implements which were broken or discarded during various stages of the manufacturing process. Examples were recovered from 32 sites.

Blade-like Flake (Figure 5L)

A total of 61 narrow, generally parallel sided prismatic flakes is placed in this category. These were recovered from 13 sites and additional examples were observed in a private collection from one other site. Some of

the specimens in this category may represent true blades struck from prepared cores as the product of a systematic flaking technique. Blade-like flakes at the Icehouse Bottom site (40MR23) were recovered almost exclusively from Early Archaic strata (Chapman 1977:71). True blades from the same site were associated with the Middle Woodland occupation. The blade and core technology was thought to represent a stimulus diffusion from Hopewellian contacts (Chapman 1973:91-93).

Utilized Flake (Figure 5M)

A total of 552 flakes which display some form of use or edge "nibbling" were recovered from 41 sites. The edge damage on many of these specimens was undoubtedly caused by use of the flake as a functional tool. However, it is quite probable that many of the flakes received edge damage from recent agricultural activities or during cleaning and storage after they were collected.

Notched Hoe

One large quartzite spall exhibiting notches on both lateral edges and a bifacially flaked bit at one end is placed in this category.

Chipping Debris

This category includes various unmodified flakes, modified and unmodified chert nodules, tabular chert

fragments, and nodule fragments. A total of 4709 specimens was recovered from 41 sites.

Ground or Pecked Stone Artifacts

Grooved Ax (Figure 6A)

One complete fully grooved ax and one ax fragment were recovered from two sites.

Celt (Figure 6B)

Seven celt fragments were recovered from six sites. Additional examples were observed in private collections from two other sites.

Pitted Cobble (Figure 6C)

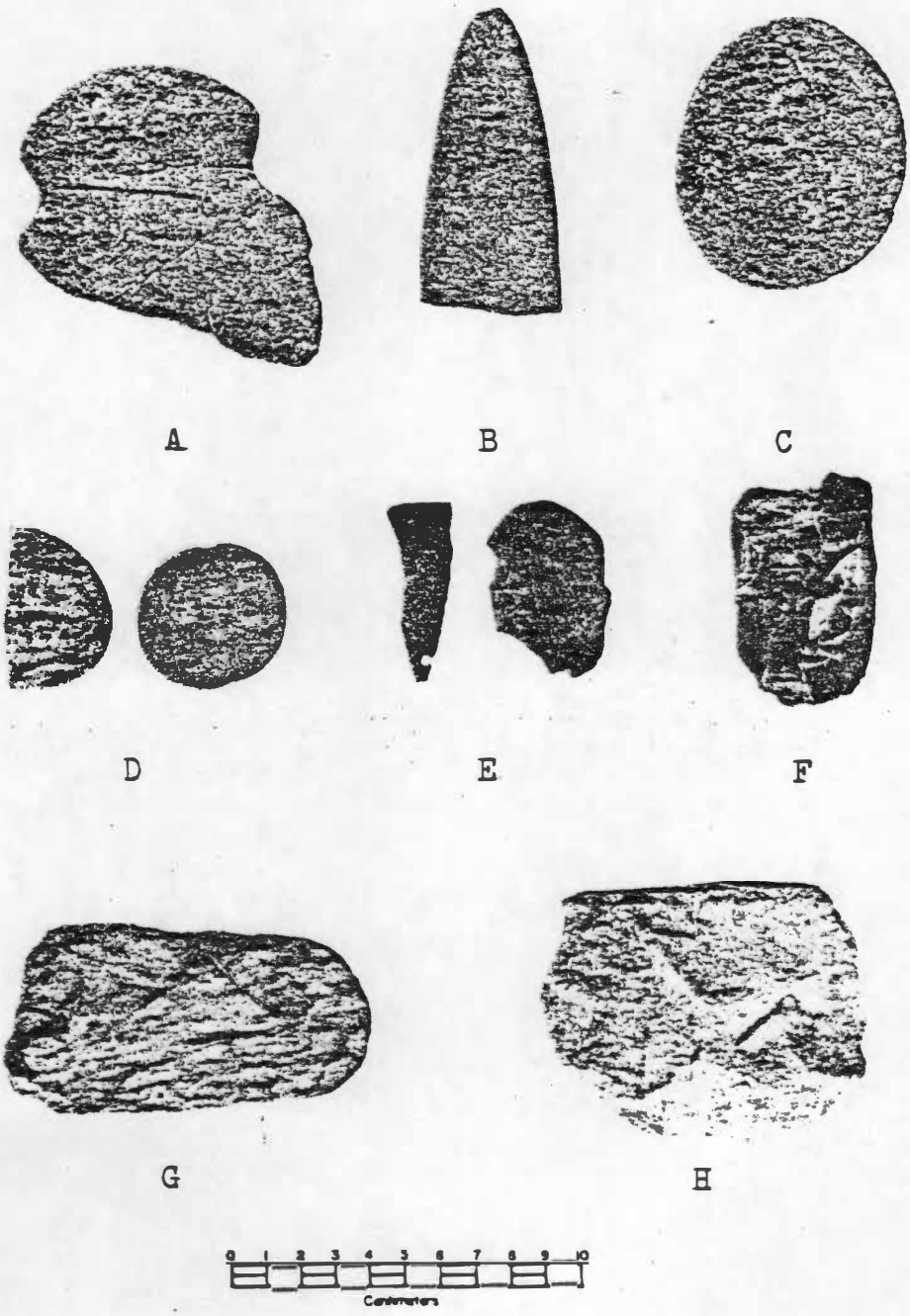
Eight cobbles possessing a single pit on both sides were recovered from six sites. Each specimen exhibits some degree of battering or abrasion along the lateral edges. Examples from one other site were observed in a private collection.

Pestle

One cylindrical pestle was recovered during the survey. A bell-shaped pestle was observed in a private collection from another site.

Mortar

One large quartzite cobble with a circular depression on one side was recovered during the survey.



Fugure 6. Miscellaneous Ground and Chipped Stone Artifacts. A. Grooved Ax; B. Celt; C. Pitted Cobble; D. Discoidal; E. Gorget; F. Crude Subconical Core; G. Abrader; H. Chopper.

Discoidal (Figure 6D)

Two fragments of polished stone discoidals were recovered from a Mississippian site.

Gorget (Figure 6E)

Three fragments of tabular green slate were recovered from two sites. Each displays one or two biconically drilled holes. A fragmentary specimen from one other site was observed in a private collection.

Abrader (Figure 6F)

One fragment of siltstone displays several shallow straight grooves on one side.

CHAPTER III

OCCURRENCE AND UTILIZATION OF LITHIC RESOURCES

Perhaps the most commonly found evidence of the presence of aboriginal man in the southeastern United States is the chipped stone artifacts he made and the debris produced during their manufacture. The availability of artifact quality chert or other suitable types of stone within a geographic area was an important environmental factor to which prehistoric man had to adapt and which his culture in part reflected (Myers 1970:iii).

Two factors are considered in determining the types of lithic raw materials which are available in the middle Nolichucky River Basin: how they were utilized by aboriginal man, and what changes in lithic preferences occurred through time. First, geology of the survey area is described as it relates to the availability of artifact quality raw materials. Secondly, artifacts recovered during the survey are examined to compare lithic materials with possible sources. In this phase of analysis, projectile points/knives are used as phase markers to indicate lithic preferences during the broadly-defined cultural periods (Paleo-Indian to Mississippian) represented in the survey area.

Results of these investigations should help to determine where in the survey area lithic raw materials can be found and indicate the parent rock formations or soils in which they occur. They should also reflect the types of

raw materials which were utilized by aboriginal man and show changes in preference for certain materials with respect to time.

Geology

The middle portion of the Nolichucky River Basin is located on the southeast side of the Ridge and Valley Physiographic Province. The rocks in this area consist of 30,000 to 40,000 feet of folded and faulted Paleozoic sediments in the second cycle of erosion (Fenneman 1938:195-196). Relief in this area is characterized by numerous parallel low ridges and valleys which lie in a general northeast-southeast direction (USDA Soil Conservation Service 1958a:3).

The predominant formations outcropping in the survey area are Ordovician limestones and dolomites of the Knox Group. Hardeman (1966) describes these formations as "Siliceous, well-bedded dolomite and magnesium limestone in the central and northeast belts of the valley...with much sparsely cherty dark limestone to the southeast." Formations containing chert in the Knox Group include the Mascot and Chepultepec Dolomites, and the Kingsport Formation. A geologic outcrop map of the survey area is provided in Figure 7.

Another important chert source in this area is the Cambrian Honaker Dolomite which outcrops in a series of narrow bands which run northeast to southwest (Hardeman 1966).

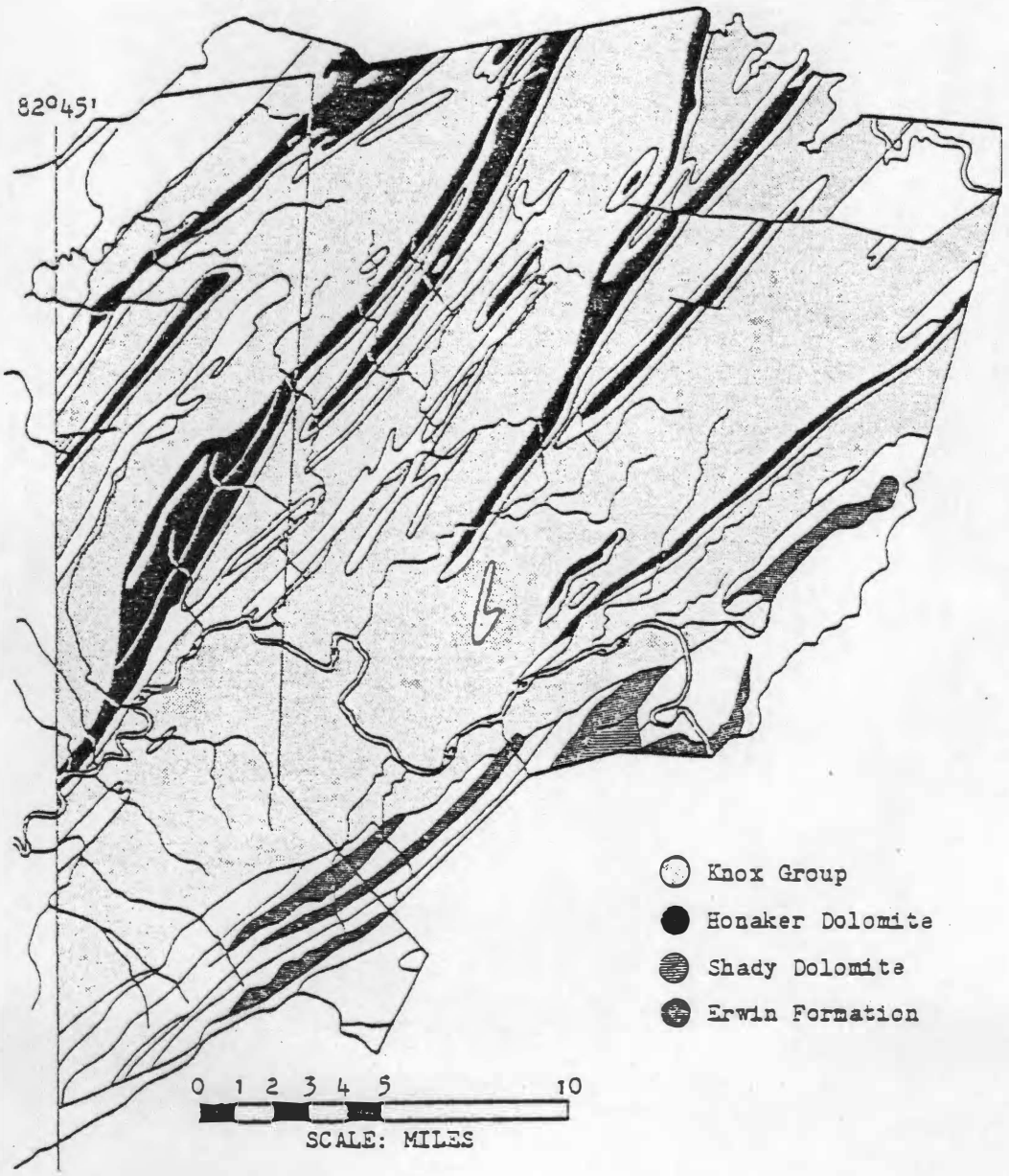


Figure 7. Map of Washington County and Eastern Greene County, Tennessee Showing Geologic Formations Containing Raw Materials Utilized in the Production of Chipped Stone Implements.

The Cambrian Shady Dolomite is found in isolated outcrops near the contact zone between the Ridge and Valley and Blue Ridge Physiographic Provinces. One such outcrop occurs in the Bumpass Cove area along the southern border of Washington County. This formation may have been an important source of chalcedony and "jasperoid" (Hardeman 1966).

The Cambrian Erwin Formation is exposed in several bands along the southeast border of the survey area at the edge of the Blue Ridge Physiographic Province. This formation contains massive beds of vitreous quartzite which varies from a light gray in weathered surfaces or detached masses to a brownish or rusty color in the uppermost part of the formation due to iron oxide staining (Butts 1940:39).

Other Cambrian and Precambrian formations outcropping to the southeast of the survey area in the Blue Ridge Physiographic Province undoubtedly provided other resources such as vein quartz, rhyolite, slate, and basalt. These materials were redeposited in stream gravels by the Nolichucky River and its tributaries throughout the middle and lower floodplain.

Two important chert-bearing soil types, the Dunmore and Groseclose series, cover 8.9% of Washington County (USDA Soil Conservation Service 1958a:7) and 10.6% of Greene County (USDA Soil Conservation Service 1958b:11). Both of these soils were derived from residuum which weathered from dolomitic limestones. Both soils are confined to the

uplands and colluvial slopes adjacent to the uplands (USDA Soil Conservation Service 1958a:10-11). A composite map of these soils extracted from county soil survey reports is provided in Figure 8 (USDA Soil Conservation Service 1958: Sheets 1-41). These soils tend to occur in parallel bands running from northeast to southwest, with the highest frequency to the northwest and decreasing in frequency to the southeast.

A comparison of Figures 7 and 8 shows that geologic outcrops of the Honaker Dolomite and chert-bearing soils of the Dunmore and Groseclose series occur in the same general areas. This would suggest that these soils, and the cherts contained in them, are derived largely from the Honaker Formation. Other locations where the Dunmore and Groseclose chert-bearing soils occur overlie formations of the Knox Group. Since detailed geologic outcrop maps have not been completed for this portion of eastern Tennessee, it could not be determined from which specific formations within the Knox Group these soils were derived.

Lithic Raw Materials

To date, no standardized description of lithic raw materials has been formulated for the eastern Tennessee Valley. Because of the wide range of variability of cherts in the sample, a tentative descriptive system was devised based on gross observations of color, texture, and degree of translucency. While there was some degree of

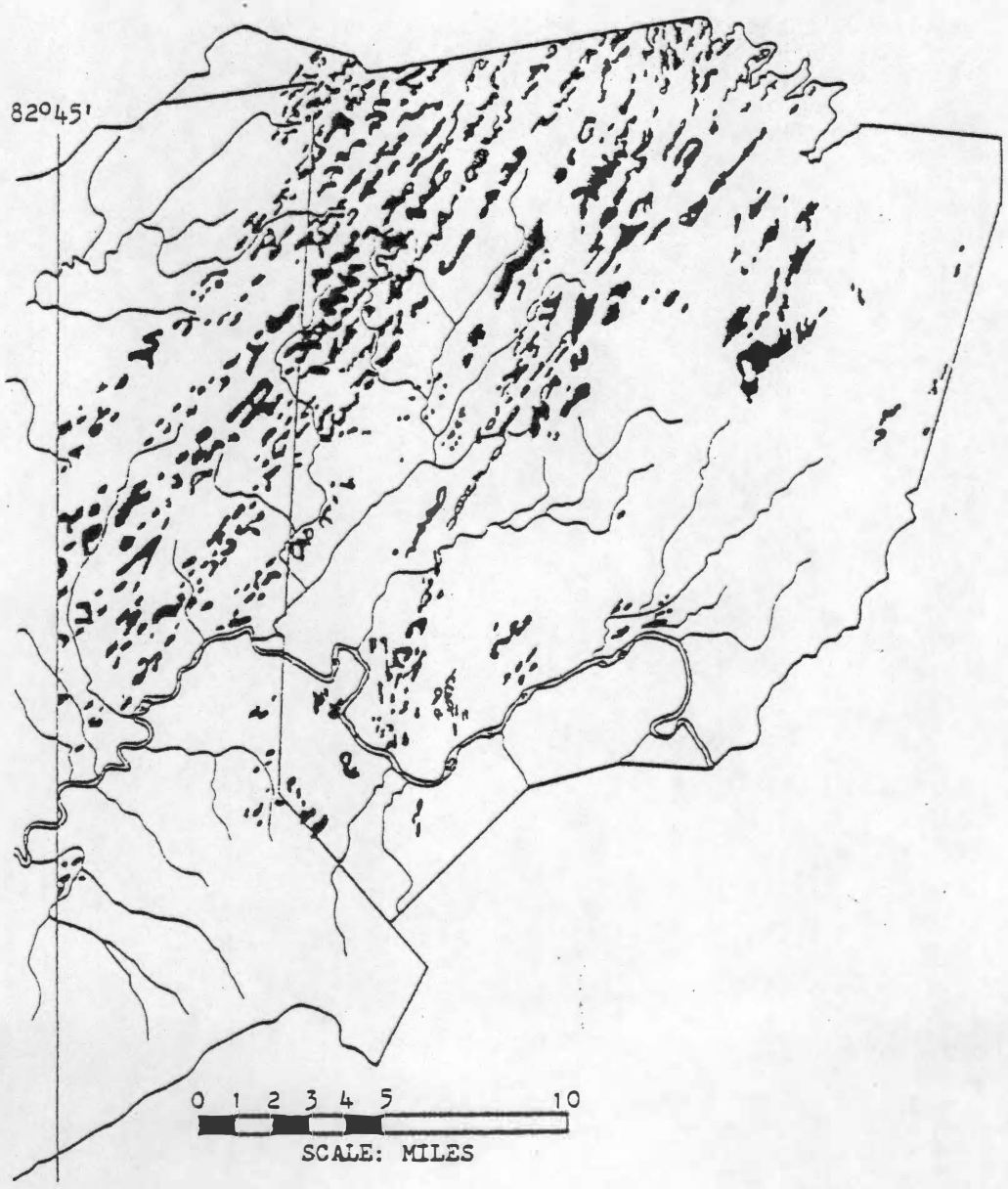


Figure 8. Map of Washington County and Eastern Greene County, Tennessee Showing Locations of Chert-Bearing Soils of the Dunmore and Groseclose Series.

intergrading between groups, most chert artifacts could be placed in one of the following groups: Black to dark gray, gray, translucent gray, light gray to white, and tan. Other raw materials for chipped stone artifacts include chalcedony, jasperoid, vein quartz, quartzite, rhyolite, and crystal quartz.

Black and gray cherts were the most commonly used raw material for the manufacture of chipped stone artifacts in the survey area. Black and dark gray chert was found in nodular form and angular fragments at several types of locations in the research area. The only bedrock location observed was in a two meter wide band in an outcrop of limestone from the Knox Group. This outcrop is located in a cliff overlooking the north bank of the Nolichucky River about 200 meters upstream from site 40WG7. Scattered nodules ranging from two to 15 centimeters in length were observed scattered throughout this band. Nodules up to seven centimeters long tended to be free of fractures, while larger nodules were badly fractured.

Residual black and gray chert was found at numerous locations along upland slopes near small limestone or dolomite outcrops. Most of this chert occurs in angular fragments up to 20 centimeters long and is badly fractured. A few of the smaller fragments are not fractured and would have been suitable for the manufacture of small chipped stone artifacts.

Redeposited black and gray chert was found at six locations eroding out of slopes along the edges of stream terraces. Chipping debris and artifacts found on sites 40WG24, 40WG25, 40WG27, and 40GN13; which are located along the crests of these terraces, suggest that these deposits were being exploited heavily by Early Archaic inhabitants. These deposits appear to have been exploited to a lesser extent by Woodland and Mississippian groups.

A distinctive variety of translucent gray chert appears to have been used extensively by Mississippian inhabitants of sites located in the broad alluvial floodplain of the Nolichucky River. Two examples of Early Archaic bifurcated base projectile points/knives made of this material were also recovered from separate stream terrace sites.

Scattered small angular fragments of this material were recovered from a recently deposited gravel bar in the Nolichucky River adjacent to site 40WG35. Similar fragments were recovered from a buried gravel deposit eroding out of the river bank adjacent to site 40WG6. A colluvial slope, eroding from an unknown member of the Knox Group, produced a number of angular fragments of translucent gray chert ranging up to eight centimeters in length. Most of these fragments are free of fractures and would have been suitable for the manufacture of chipped stone artifacts. This deposit, located adjacent to site 40WG45, also contained numerous chunks of badly fractured white and tan chert.

Large quantities of quartzite cobbles were observed throughout the middle Nolichucky River Basin, both in recent stream and river gravels, and in older gravel deposits in the higher terraces. Smaller cobbles of vein quartz and rhyolite were observed in these same deposits, but were not as abundant as quartzite.

Changes in Lithic Preference Through Time

The artifacts and chipping debris collected during the survey consisted entirely of surface material and most sites had been occupied by more than one cultural group. Therefore, it was necessary to use only those artifacts which could be identified as having been produced during a particular cultural phase to indicate preferences of lithic materials. A total of 326 projectile points/knives, which could be identified as belonging to previously established types, were used in this aspect of analysis. A comparison of lithic materials used to manufacture projectile points/knives during each of the cultural periods represented in the survey area is presented in Table 3.

The Paleo-Indian period is represented by Clovis, Small Fluted, and Hardaway-Dalton types (N=6). Another point which resembles the Wheeler type may also belong to this period and is tentatively included in the sample. Five (71%) of these artifacts were manufactured from black or dark gray chert. The small fluted specimen is made of a

TABLE 3. Lithic Materials used for the Production of Projectile Points/Knives

Cultural Period	Types of Materials*												
	A	B	C	D	E	F	G	H	I	J	K	L	Total
Paleo-Indian	2	3				1	1						7
Early Archaic	17	15	2	10			1	1			1		47
Middle Archaic	7	1		2				1	20	7	1		39
Late Archaic	11	6		1	3		1	1	4	44	8		79
Woodland	31	12	2	10			5	6	5	10			81
Mississippian	25	6	21	19			1	1				1	74
Total	93	43	25	42	3	1	9	10	29	61	10	1	327

*A Black or Dark Gray Chert
B Gray Chert
C Translucent Gray Chert
D Light Gray or White Chert
E Tan Chert
F Pink Chert (Possibly thermally altered)
G Chalcedony
H Jasperoid
I Vein Quartz
J Quartzite
K Rhyolite
L Crystal Quartz

pink chert which appears to have been thermally altered. Another specimen, which appears to represent the basal portion of an unfinished Clovis point broken during removal of the first flute, is made of chalcedony.

The Early Archaic period is represented by Kirk Corner Notched, MacCorkle Stemmed, St. Albans Side Notched, LeCroy Bifurcated Stem, Kanawha Stemmed, and Bifurcate Variant types (N=47). Black or dark gray chert appears to have been the preferred material during this period and was used for the manufacture of 32 (68%) specimens. Ten (21%) points are light gray or white chert and two bifurcated points are made of translucent gray chert. Chalcedony, jasperoid, and rhyolite are each represented by one point.

Stanly Stemmed, Morrow Mountain, and Guilford types (N=39) represent the Middle Archaic period. A marked shift in lithic preference occurred during this period with 20 (51%) points in the sample being made of vein quartz, and seven (18%) of quartzite. Ten (26%) points are made of chert, one of jasperoid, and one of rhyolite.

The Late Archaic period is represented by Cedar Creek, Savannah River, and Otarre Stemmed types (N=79). Quartzite was used predominantly for the production of Savannah River points. A total of 44 (56%) points are made of this material. Twenty-one (25%) points are made of chert, which was used exclusively in the manufacture of Cedar Creek points. Otarre Stemmed ppints are predominantly made of rhyolite,

while one quartzite and several chert examples are included in the sample.

Specific Woodland and Mississippian periods, and phases within these periods, have been established primarily based on the presence and relative frequencies of ceramic types. The occurrence of specific projectile/knife types does not correlate exactly with these periods or phases derived from ceramic data. For this reason, the Woodland and Mississippian periods are each treated as a generalized time period for the purpose of this analysis.

The Woodland period is represented by Swannanoa Stemmed, Plott Short Stemmed, Ebenezer, Camp Creek, Greeneville, Nolichucky, and Swan Lake types (N=80). Fifty-four (68%) examples are made of chert, ten (12%) of quartzite, five (6%) each of vein quartz and chalcedony, and six (8%) of jasperoid. While 82% of the stemmed types are made of chert, only 48% of the stemless triangular types are made of this material. A significant change in preference is noted with only 5% of the stemmed points being made of quartzite or vein quartz, while 46% of the triangular points are made from these materials. While jasperoid represents only a minority material type, it does appear to have been used more frequently during the Woodland period than in the preceding Paleo-Indian and Archaic periods.

Included in the Mississippian sample are several types which may have appeared during the Late Woodland period and continued to be used into Mississippian times. For the

purpose of this analysis Jacks Reef Corner Notched, Jacks Reef Pentagonal, Hamilton, and Late Mississippi Triangular types (N=74) will be considered as Mississippian. High quality chert was used almost exclusively for the manufacture of points during this period. While 71 (96%) points are made of chert, 21 (28%) of these are of a distinctive translucent gray variety. Of the remaining examples, one is made of chalcedony, one of jasperoid, and one of crystal quartz.

Conclusions

Possible source locations for most of the raw materials represented in the lithic sample were found during the survey. In many cases, these locations were in close proximity to archaeological sites. This would indicate that most of the raw materials utilized by aboriginal man for the production of lithic artifacts were locally available and did not have to be obtained from outside the immediate geographic area. Definite temporal changes in preference of lithic materials can be demonstrated by comparing projectile point/knife types with the materials from which they were produced.

Comparisons of geologic outcrop and soil survey maps with samples collected during the survey indicate that most of the recognizable chert types were derived from limestones and dolomites of the Knox Group and from the Honaker Dolomite. Chert-bearing soils of the Dunmore and Groseclose

series appear to have been derived from these formations. Sources of jasperoid and chalcedony were not observed during the survey. However, both of these materials have been observed in the Shady Dolomite (Amari n.d.), which outcrops in the Bumpass Cove area along the southern border of Washington County.

Quartzite from the Erwin Formation, vein quartz, rhyolite, slate, and basalt were transported from the Blue Ridge Physiographic Province by the Nolichucky River and tributary streams originating in the mountains to the south. Cobbles of these materials are found in stream gravels throughout the floodplains of the survey area.

A comparison of projectile points/knives and the raw materials from which they were produced shows definite changes in preference of lithic materials through time. Local cherts were used almost exclusively during the Paleo-Indian and Early Archaic periods. Middle Archaic points show a shift in preference to vein quartz, with chert and quartzite appearing in smaller percentages.

The Late Archaic period presents a more complex picture. Small stemmed points such as the Cedar Creek type are made exclusively of chert throughout the research area. These points appear to be followed chronologically by the Savannah River type, a large stemmed point made predominantly of quartzite. The Otarre Stemmed type, which occurs near the end of the Late Archaic period in North Carolina, is smaller in size than the Savannah River type, and is made chiefly

of rhyolite. The preference of lithic materials for these three projectile point/knife types shows a direct relation to the average size of each type. The small size of artifact quality chert nodules in the survey area would limit the use of local cherts to the production of small artifacts. This material would only have been suitable for the Cedar Creek and smaller examples of the Otarre points. Large cobbles of quartzite are found abundantly throughout much of the survey area. Rhyolite is also available, but to a lesser extent than quartzite. Use of these materials for production of Savannah River and larger examples of Otarre points may have been a matter of expediency, since no other suitable lithic raw materials were locally available.

During the Woodland period, chert was used almost exclusively in the production of stemmed points, while nearly half of the triangular points were made of quartzite or vein quartz. A similar pattern of lithic preference appears to exist in the Appalachian Summit Area during the Early Woodland and beginning of the Middle Woodland periods (Keel 1976:127-131, and 196). Although jasperoid represents only a minority material type, it does appear to have been used more frequently during the Woodland period than in either earlier or later times.

High quality cherts were used almost exclusively for the production of points during the Mississippian period. All of these cherts, including the translucent gray variety, appear to have been locally available in the survey area.

CHAPTER IV

CERAMICS

A total of 731 ceramic sherds was recovered from 15 sites during the survey. Ninety additional sherds collected by Dr. Lewis W. McIlhany from two of these sites, 40WG6 and 40WG13, are included in the following analysis. The 821 sherds in the sample represent four major and two minor ware categories based on tempering agents. Crushed quartz grit was the most commonly used tempering agent. This category includes 352 (42.9%) sherds. Other major categories include 173 (21.1%) limestone, 171 (20.9%) sand, and 120 (14.6%) shell-tempered sherds. Four (0.5%) soapstone-tempered sherds and one (0.1%) clay-tempered sherd represent minor categories present in the sample. Each of the ware categories was further divided into previously described ceramic types based on paste characteristics, exterior and interior treatment, decoration, and other diagnostic traits.

Of the 15 sites from which ceramics were recovered, only two sites produced more than 100 sherds. Six sites produced between 25 and 100 sherds, and seven sites produced less than 25 sherds. Errors in accuracy of ceramic type frequencies for each site may exist due to the small size of the ceramic sample and the fact that it represents only a surface sample. Relative proportions of ceramic

types may, however, provide some idea of their general distribution within the survey area.

After initial identification of ware categories and types, the ceramic sample was divided into two temporal groups for analysis. Woodland ceramics include 223 sherds which were recovered from 11 sites. The Mississippian period is represented by 598 cherds from 15 sites.

Woodland Ceramics

Crushed quartz and sand were used as tempering agents in 30 fabric impressed and cord marked sherds. These sherds conform to the Watts Bar Fabric Marked and Watts Bar Cord Marked types (Lewis and Kneberg 1957:7). Similar types in the Appalachian Summit Area of western North Carolina are assigned to the Swannanoa phase, which appeared about 700 to 600 B.C. and lasted until about 200 B.C. (Keel 1976:241). An additional 19 sand-tempered sherds from site 40WG35 are too eroded or fragmented to identify the surface finish, but are thought to belong to the Watts Bar series based on their similarity to other sherds from that site.

One crushed quartz-tempered sherd from site 40WG6 has a plain exterior surface which exhibits tooling marks, and an irridescent sheen on both the interior and exterior surfaces. This sheen produced by rubbing with a steatite pebble is characteristic of the Middle Woodland Pigeon series ceramics in western North Carolina (Keel 1976:256).

Crushed limestone was used as the tempering agent in 173 sherds. Forty-nine body sherds and two straight rim sherds represent the Long Branch Fabric Marked type (Haag 1939:10; Heimlich 1952:17). Wright Check Stamped (Haag 1939:12) is represented by 38 body and five rim sherds. All of the rims are straight. Three are undecorated, while one is notched, and one is decorated with small punctations. Thirty-one plain surfaced sherds conform to the Mulberry Creek Plain type (Haag 1939:9;Heimlich 1952:15-17). This total includes two plain rims, one straight and one flared. These rims may have been from plain surfaced vessels, or they could represent plain rim areas of vessels which exhibit another form of surface decoration.

Cord marked and simple stamped sherds represent minority types within the limestone-tempered category. Seventeen sherds, including one straight rim, are of the Candy Creek Cord Marked type (Lewis and Kneberg 1946:102-103). Bluff Creek Simple Stamped (Haag 1939:18; Heimlich 1952:18) consists of eight body sherds and one straight notched rim. Twenty-two limestone-tempered sherds are too eroded or fragmented to identify the surface finish.

Mississippian Ceramics

The Mississippian period is represented by three major and two minor ware categories. Crushed quartz, sand,

and shell were used as tempering agents in the vast majority of the Mississippian wares, while soapstone and clay-tempered sherds were found in minor quantities.

Crushed quartz-tempered ceramics appear to represent a continuum in which the Qualla series developed out of the earlier Pisgah series as suggested by Dickens (1976: 200-201). Eight body sherds and one thickened rim sherd recovered from four sites are characteristic of the early Pisgah phase. These sherds are tempered with finely pulverized quartz and exhibit a narrow rectilinear complicated stamped design on the exterior surface (Dickens 1976: 172-175).

Ceramics of the late Pisgah phase and the Qualla series are quite similar in paste characteristics and surface treatment. While the rim sherds for each of these series are distinctive, the body sherds are difficult to distinguish from each other.

Fourteen collared and folded rim sherds are assigned to the late Pisgah phase. While several of these rims are plain, most are decorated with from one to four rows of linear punctations running parallel to the rim. One rim sherd exhibits a notched lug.

The Qualla series is represented by 43 rim sherds. Most of the Qualla rims are either plain or everted with a finger impressed fillet running parallel to the rim. Cazuela bowl sherds frequently exhibit bold incising near the rim. Four plain and two incised rim sherds are

decorated with a series of closely spaced notches. One rim sherd has a row of small circular punctations just below and parallel to the rim.

Eleven incised body sherds from cazuela bowls and six sherds with burnished interior and exterior surfaces are identified as belonging to the Qualla series. The remaining 248 crushed quartz-tempered body sherds could not be positively identified as belonging to either the late Pisgah or the Qualla series, and are treated as a single unit for the purpose of this analysis.

The combined crushed quartz ceramic unit includes 106 plain surfaced sherds, 86 stamped sherds, and 56 sherds which are too eroded or fragmented to identify the surface finish. One lug and one node are included in the plain surfaced group. While many of the plain sherds exhibit a well-smoothed surface, some appear to have been stamped prior to smoothing.

The most common type of stamping consists of broad parallel lands and grooves. Seventy sherds are included in this category. On some of the smaller sherds it is not possible to determine whether this pattern represents simple stamping or portions of rectilinear complicated stamped designs. However, many of the larger sherds exhibit portions of intersecting perpendicular lines which would indicate complicated stamping.

Five sherds exhibit portions of curvilinear complicated stamped designs. Four of these sherds are either

too small or too eroded to identify the design motif. The design on the fifth sherd appears to represent a portion of the filfot cross design associated with Etowah ceramics in Georgia (Sears 1958:155).

The 11 check stamped sherds vary considerably in both size and shape of the design. The shape of the checks includes both squares and rectangles, and size of the checks varies from three to eight millimeters across.

The second most abundant Mississippian ceramic category consists of 142 sherds which are tempered with fine to medium grained sand. Of the 93 plain surfaced sherds in this category, 14 exhibit bold incised designs. Six of the incised sherds represent rim sherds from cazuela bowls. One strap handle is also included in this category. Twenty-eight sherds are burnished on the exterior and have varying degrees of burnishing on the interior surface. One sand-tempered sherd is cord marked and three sherds are too eroded or fragmented to identify the surface finish. Of the 17 plain surfaced rims in this category, one has a node just below the rim, one exhibits a notched flange, four are decorated with a series of closely spaced notches, two have a finger impressed fillet running parallel to the rim, and 9 are plain with no decoration.

The sand-tempered Mississippian ceramics were recovered from six sites which also produced crushed quartz-tempered wares. They may be related to the quartz-tempered ceramics

and represent the Qualla Plain, Qualla Burnished, and Qualla Cord Marked types (Egloff 1967:40-42).

A total of 120 shell-tempered sherds was recovered from seven sites. Of the 65 plain-surfaced body sherds, two are decorated with bold incised designs. One node is also included in this category. Thirteen sherds exhibit burnishing on the exterior surface. Some of these also have varying degrees of burnishing on the interior surface. Sixteen sherds exhibit cord marking on the exterior surface and two have brushed surfaces. These sherds conform to the McKee Island Cord Marked and McKee Island Brushed types (Heimlich 1952:27-28) which are commonly associated with Dallas ceramics. Four body sherds are too eroded or fragmented to determine the surface finish.

Of the 20 shell-tempered rim sherds, eight are straight and exhibit no decoration. One cazuela bowl rim is decorated with bold incised lines, nine rims have a finger impressed fillet running parallel to the rim, one has a narrow undecorated collar, and one is too eroded to determine the type of surface or decoration.

The shell-tempered Mississippian ceramics appear to represent the Dallas tradition as described by Lewis and Kneberg (1946:100). Decorative techniques such as incising, nodes, and rim fillets conform to the Dallas Decorated type (Ibid.:105). These techniques are usually associated with plain surfaced vessels, and are rarely found on cord marked vessels.

Four soapstone-tempered sherds were recovered from three sites. Types of surface treatment include one plain, one smoothed-over cord marked, and two sherds with a broad rectilinear complicated stamped design. One of the stamped sherds contains a portion of the rim. An applique strip near the rim is decorated with reed punctations.

One plain surfaced sherd from site 40WG6 is tempered with small angular fragments of fired clay. Although this type of pottery is not commonly found in the upper eastern Tennessee Valley, two plain clay-tempered sherds were recovered from the Higgs site (40LO45) in Loudon County (McCollough and Faulkner 1973:86). This type may be related to mixed shell-clay-grit-tempered ceramics associated with late Mississippian Dallas occupations at the Citico (40MR7) and Mayfield I (40MR26) sites in the Little Tennessee River Valley (Salo, ed., 1969:71-72). Similar mixed temper sherds constitute 2.2% of the ceramic sample recovered by Howard Earnest, Jr. (n.d.:7) from ten Mississippian sites in the Nolichucky River Valley.

Ceramic type frequencies and distribution by sites are presented in Tables 4 and 5 respectively. Sherds representing each ceramic type are illustrated in Figures 9, 10, and 11.

TABLE 4. Frequencies of Ceramic Types

Type	Number	Percent
Woodland		
Crushed Quartz- or Sand-Tempered		
Fabric Marked (Watts Bar)	17	2.07
Cord Marked (Watts Bar)	13	1.58
Plain (Pigeon)	1	.12
Unclassified	19	2.31
Total Crushed Quartz- or Sand-Tempered	50	6.08
Limestone-Tempered		
Fabric Marked (Long Branch)	51	6.21
Cord Marked (Candy Creek)	17	2.07
Plain (Mulberry Creek)	31	3.78
Check Stamped (Wright)	43	5.24
Simple Stamped (Bluff Creek)	9	1.10
Unclassified	22	2.68
Total Limestone-Tempered	173	21.08
Total Woodland	223	27.16
Mississippian		
Crushed Quartz-Tempered		
Complicated Stamped (Early Pisgah)	9	1.10
Plain	106	12.91
Burnished	6	.73
Incised	11	1.34
Check Stamped	11	1.34
Rectilinear Complicated Stamped	70	8.53
Curvilinear Complicated Stamped	5	.61
Rims (Late Pisgah)	14	1.70
Rims (Qualla)	43	5.24
Unclassified	56	6.82
Total Crushed Quartz-Tempered	331	40.32
Shell-Tempered		
Plain	63	7.67
Burnished	13	1.58
Incised	2	.24
Cord Marked (McKee Island)	16	1.95
Brushed (McKee Island)	2	.24

TABLE 4 (continued)

Type	Number	Percent
Shell-Tempered--continued		
Rims	20	2.44
Unclassified	4	.49
Total Shell-Tempered	120	
Sand-Tempered		
Plain	79	9.62
Burnished	28	3.41
Incised	8	.97
Cord Marked	1	.12
Rims	23	2.80
Unclassified	3	.37
Total Sand-Tempered	142	17.30
Soapstone-Tempered		
Plain		.12
Smoothed-over Cord Marked	1	.12
Rectilinear Complicated Stamped	2	.24
Total Soapstone-Tempered	4	.49
Clay-Tempered		
Plain	1	.12
Total Clay-Tempered	1	.12
Total Mississippian	598	72.84
TOTAL CERAMIC SAMPLE	821	100.00

TABLE 5. Ceramic Distribution by Site

Type	40WS-3	4	6a	6b	7	11	13	32	33	34	35	36	40CH-37	16	17	18	Totals
Woodland																	
Crushed Quartz- or Sand-Tempered																	
Fabric Marked (Watts Bar)	1		1		2						13						17
Cord Marked (Watts Bar)			2		1	6		1			3						13
Plain (Pigeon)			1														1
Unclassified											19						19
Total	1		4		3	6		1			35						50
Limestone-Tempered																	
Fabric-Marked (Long Branch)	2		1		1			23	2		21	1					51
Cord Marked (Candy Creek)				1	9			4			3						17
Plain (Mulberry Creek)		2	2	2	4	1		18		1	1						31
Check Stamped (Wright)	1			2	32	5		3									43
Simple Stamped (Bluff Creek)			3		4	1		1									9
Unclassified	1		1		5	1		9			5						22
Total	4	2	7	5	55	3		58	2	1	30	1					173
Total Woodland	5	2	11	5	58	14		59	2	1	65	1					223
Mississippian																	
Crushed Quartz-Tempered																	
Complicated Stamped (E. Pisgah)		1	1			5	1			1							9
Plain	8	2	21		6	37	21	3			4		1	1		2	106
Burnished						4	2										6
Incised						2	3								1		11
Check Stamped	2		2			4	1	2									11
Rectilinear Comp. Stamped	5	1	20	1	4	37	1	1									70
Curvilinear Comp. Stamped						4	1										5
Rims (E. Pisgah)	1		4		2	3	2			2							14
Rims (Qualla)			8			8	27										43
Unclassified	2	2	5	1	1	23	3	5	1	4	4					5	56
Total	18	6	61	2	13	127	67	11	1	7	8		1	1	1	7	331
Shell-Tempered																	
Plain					3	14	23				2		20			1	63
Burnished						2	4						7				13
Incised						1	1										2
Cord Marked (McKee Island)						7	9										16
Brushed (McKee Island)							1						1				2
Rims							15						5				20
Unclassified			1			2	1										4
Total			1		3	26	54				2		33			1	120
Sand-Tempered																	
Plain	2				2	24	42						7			2	79
Burnished						9	15						4				28
Incised					1		4						3				8
Cord Marked													1				1
Rims						9	13						1				23
Unclassified						2							1				3
Total	2				3	44	74						17			2	142
Soapstone-Tempered																	
Plain							1										1
Smoothed-over Cord Marked							1										1
Rectilinear Comp. Stamped			1			1											2
Total			1			1	2										4
Clay-Tempered																	
Plain						1											1
Total						1											1
Total Mississippian	20	6	63	2	19	199	197	11	1	7	10		51	1	1	10	598
TOTAL CERAMIC SAMPLE	25	8	74	7	77	213	197	70	3	8	75	1	51	1	1	10	821

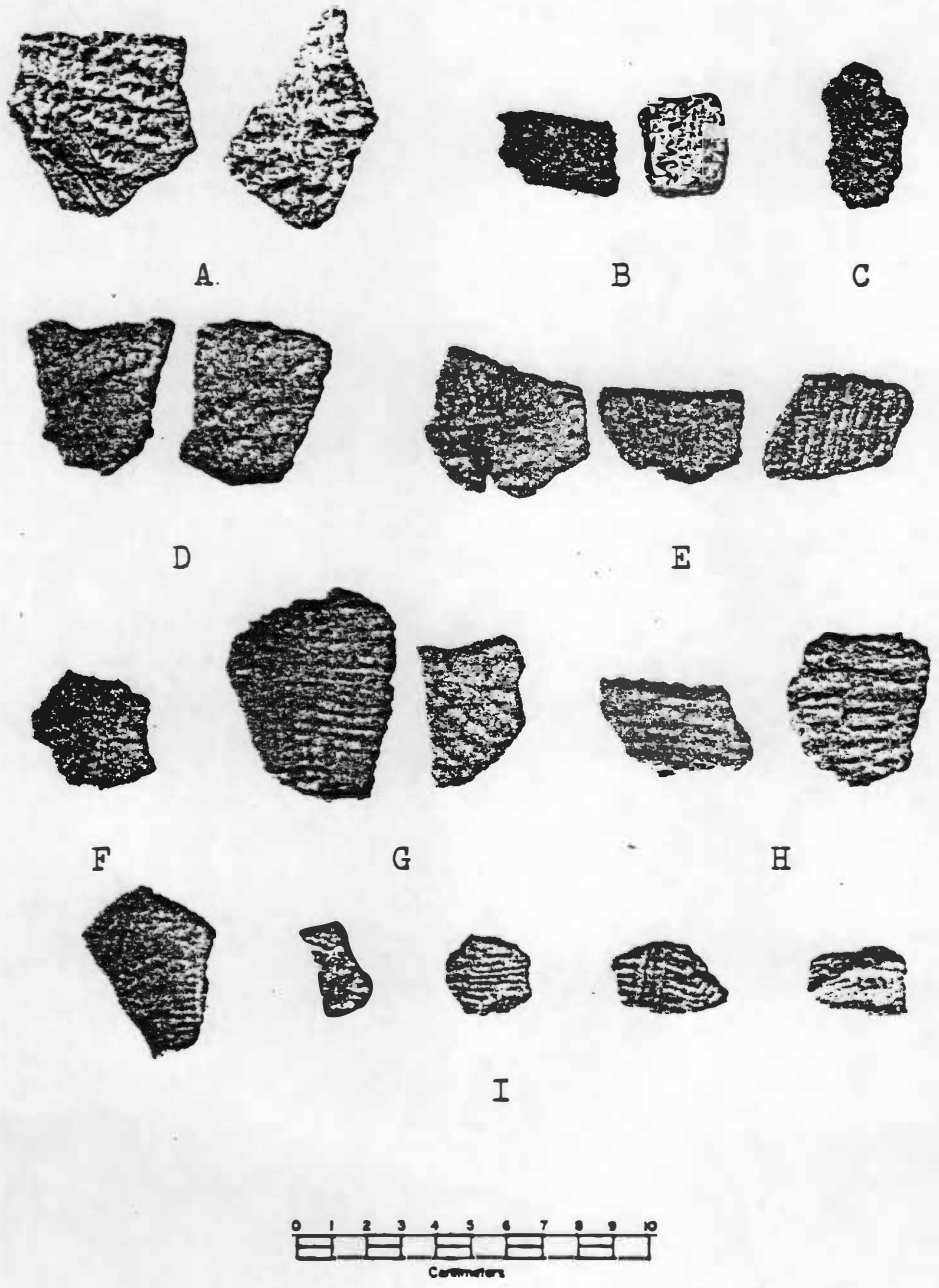


Figure 9. Ceramics: Woodland and Early Pisgah Sherds. A. Watts Bar Fabric Marked; B. Watts Bar Cord Marked; C. Pigeon Plain; D. Long Branch Fabric Marked; E. Candy Creek Cord Marked; F. Mulberry Creek Plain; G. Wright Check Stamped; H. Bluff Creek Simple Stamped; I. Early Pisgah Rectilinear Complicated Stamped.

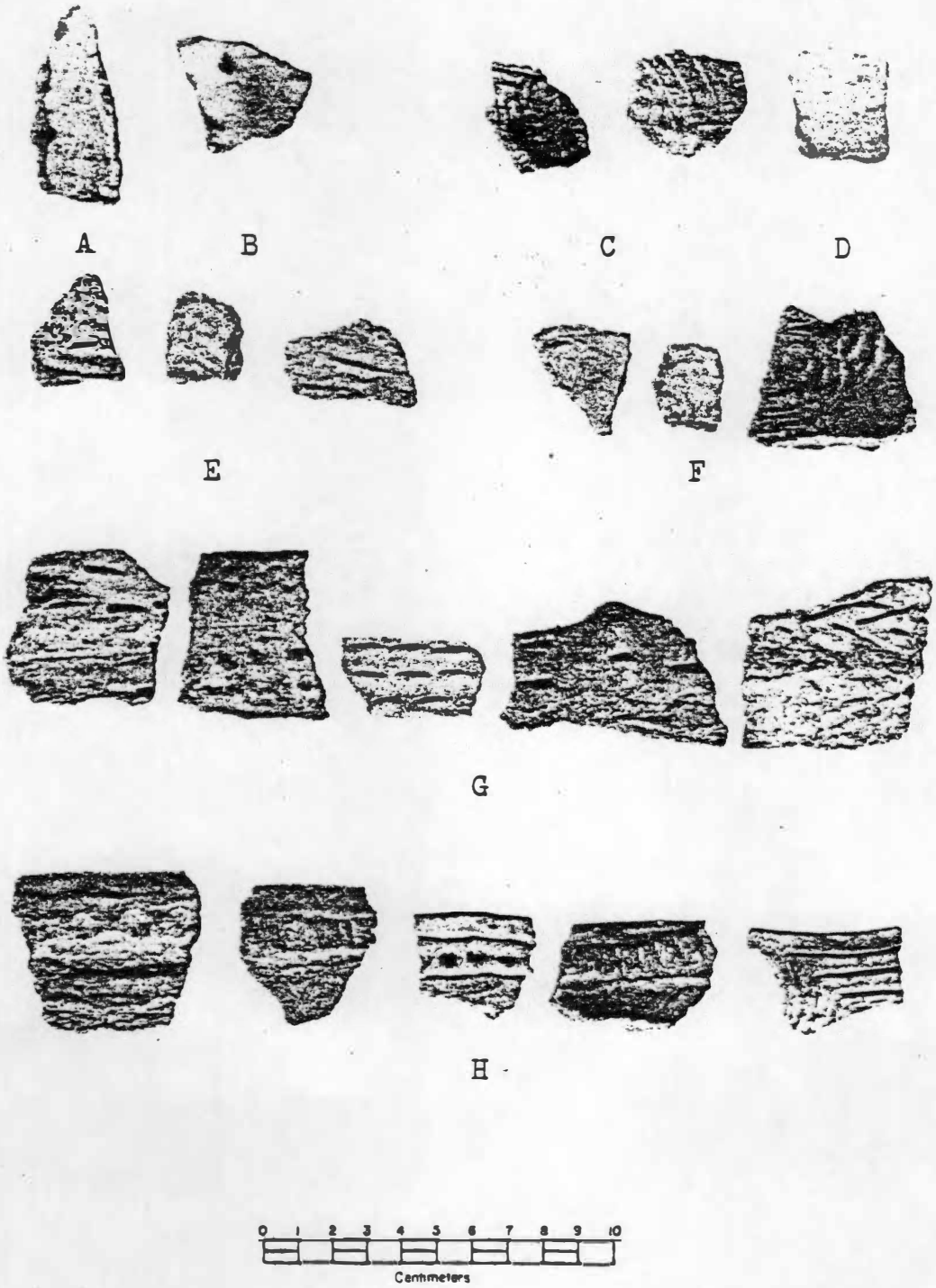


Figure 10. Ceramics: Mississippian Crushed Quartz-Tempered Sherds. A. Plain; B. Burnished; C. Incised; D. Check Stamped; E. Rectilinear Complicated Stamped; F. Curvilinear Complicated Stamped; G. Late Pisgah Rims; H. Qualla Rims.

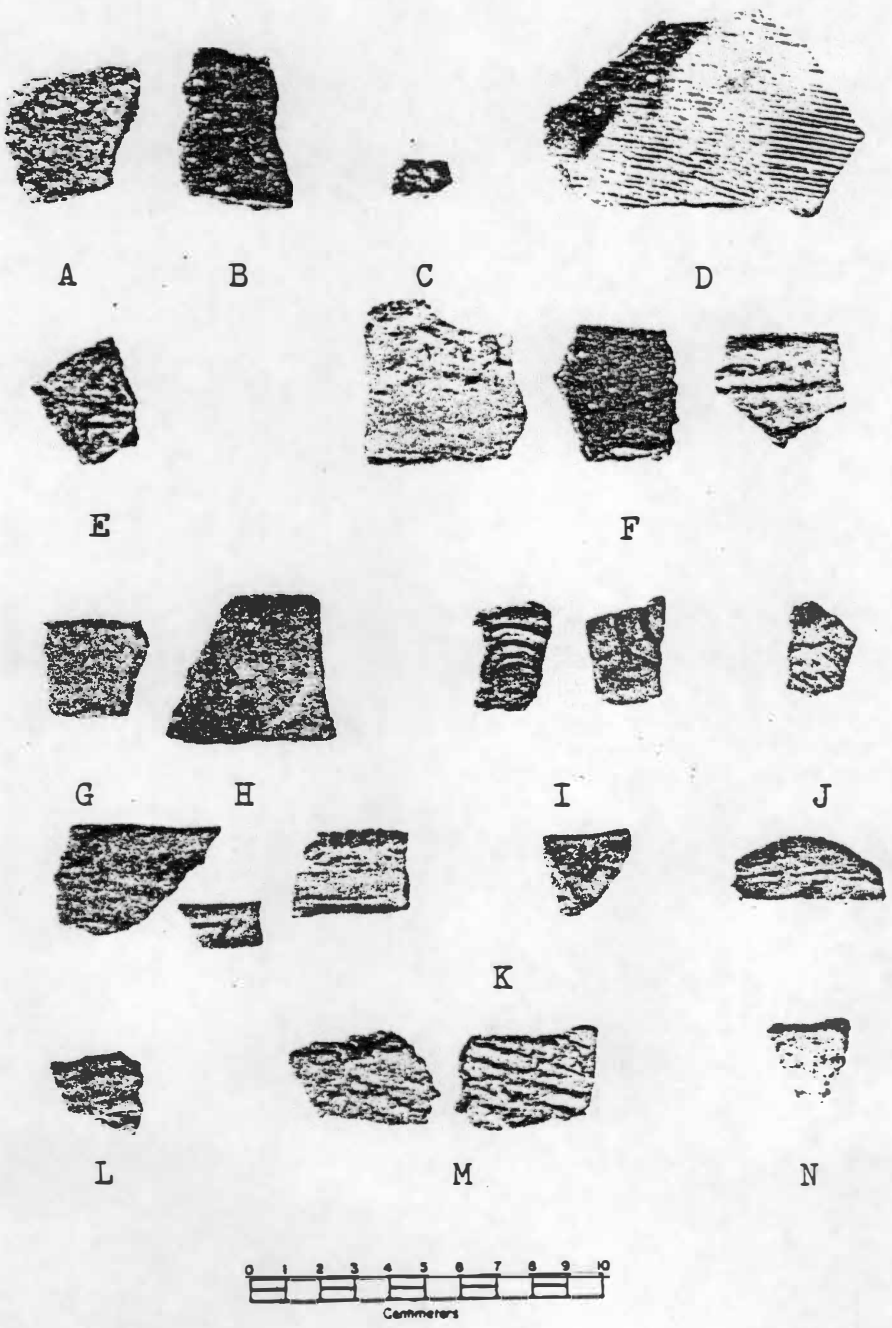


Figure 11. Ceramics: Mississippian Shell-, Sand-, Soapstone-, and Clay-Tempered Sherds. Shell-Tempered: A. Plain; B. Burnished; C. Incised; D. Cord Marked; E. Brushed; F. Rims. Sand-Tempered: G. Plain; H. Burnished; I. Incised; J. Cord Marked; K. Rims. Soapstone-Tempered: L. Plain; M. Rectilinear Complicated Stamped. Clay-Tempered: N. Plain.

Conclusions

The Woodland period is represented by 201 sherds from 11 sites. Watts Bar quartz or sand-tempered and Long Branch Limestone-tempered wares suggest an Early Woodland occupation at eight of these sites. The presence of limestone-tempered cord marked, stamped, and plain ceramics indicates a Middle Woodland occupation of nine sites. The occurrence of one Pigeon series sherd may represent trade with the Appalachian Summit region during the Middle Woodland period.

Mississippian ceramics include 598 sherds from 15 sites. The early Pisgah phase is represented by nine sherds from five sites. Approximate dates for the early Pisgah phase range from A.D. 1000 to 1250 (Dickens 1976: 198). Dickens has suggested a temporal range for the late Pisgah phase which lasted from approximately A.D. 1250 to 1450. Incorporation of Lamar styles into the repertoire of Pisgah potters produced the styles of the Qualla series by around A.D. 1450 (Ibid.: 198-199).

The occurrence of both late Pisgah and Qualla rim types, and the similarities in paste characteristics and surface treatment in the crushed quartz-tempered category may indicate that many of the sites which produced these ceramic types were occupied during the Pisgah-Qualla transition period.

In an analysis of Mississippian ceramics from ten sites along the Nolichucky River in Washington and Greene counties, Earnest (n.d.:24) noted a gradual transition from Pisgah-Lamar-like (sic) ceramics to a mixture of shell-tempered and sand-tempered pottery. Ceramics recovered during test excavations at two of these sites, 40WG17 and 40GN9, represent both ends of the transitional sequence from quartz to shell and sand-tempered wares. At 40WG17 a five by five foot test pit yielded both Pisgah and Qualla rim types associated with rectilinear complicated stamped designs in all levels of an undisturbed midden which extended over two feet below the surface. Shell and sand-tempered sherds constitute over 90% of the ceramic sample in all features and all levels at 40GN9. Several burials and a large refuse pit at this site yielded historic trade materials (Ibid.:21-22).

The geographic position of the middle Nolichucky River Basin was a key factor in the ceramic complexes which developed in this area during the Mississippian period. This area's position on the periphery of the zone of early Pisgah development was reflected in the small number of sherds from the early Pisgah phase, and the fact that all but one of these sherds were recovered from sites near the upstream end of the research area. Toward the end of the late Pisgah phase the introduction of Lamar styles from the south led to development of the Qualla series (Dickens 1976:199). The greater frequency of ceramics which may reflect this

transitional period could be due to an expansion of the Pisgah sphere of influence from the Appalachian Summit area into the Ridge and Valley area of East Tennessee along the valleys of rivers such as the Nolichucky which flow from the mountains in a general westward direction.

The transition from crushed quartz to shell- and sand-tempered ceramics may have been due to two factors. The appearance and increase in popularity of shell-tempered ceramics during the Late Mississippian period would seem to reflect increasing Dallas influence from the southwest along the Ridge and Valley area of eastern Tennessee. Egloff (1967:38) referred to the use of sand as a tempering agent in Qualla ceramics. The progressive increase in the use of sand and decrease in the use of crushed quartz as a tempering agent may have been due to outside influence from an unknown source, or it may reflect a local change in preference within the research area.

The one clay-tempered sherd in the ceramic sample is probably associated with the late Mississippian period. Minor quantities of soapstone-tempered ceramics may be associated with the late Pisgah phase (Dickens 1976:174), or they could represent trade wares of the Catawba series from Piedmont North Carolina (Keeler 1971).

CHAPTER V

SITE DESCRIPTIONS

During the survey of the middle Nolichucky River Basin, prehistoric cultural materials were recovered or observed from 41 sites. Some of these sites produced only small amounts of cultural materials. Artifacts previously collected from the surface of nine of these sites by Dr. Lewis W. McIlhany and several other individuals helped to provide a more complete idea of which cultural groups had inhabited each site. Two of these sites were not examined during the survey but have been included based on data and surface materials provided by Dr. McIlhany. Distribution of lithic and ceramic artifacts for each site is presented in Table 1 (page 22), Table 2 (page 23), and Table 5 (page 68). A map showing distribution of these sites within the survey area is presented in Figure 12. A brief description of each site is provided in Table 6.

Periods of occupancy for each site are identified by the presence of diagnostic artifacts which can be attributed to a particular cultural period. Materials from most sites indicate that they were occupied during more than one of these periods. Several of the sites are identified as having been occupied during only one cultural period. These sites may have been occupied during other periods. However, diagnostic artifacts representing these periods were not recovered during the survey. Since samples of

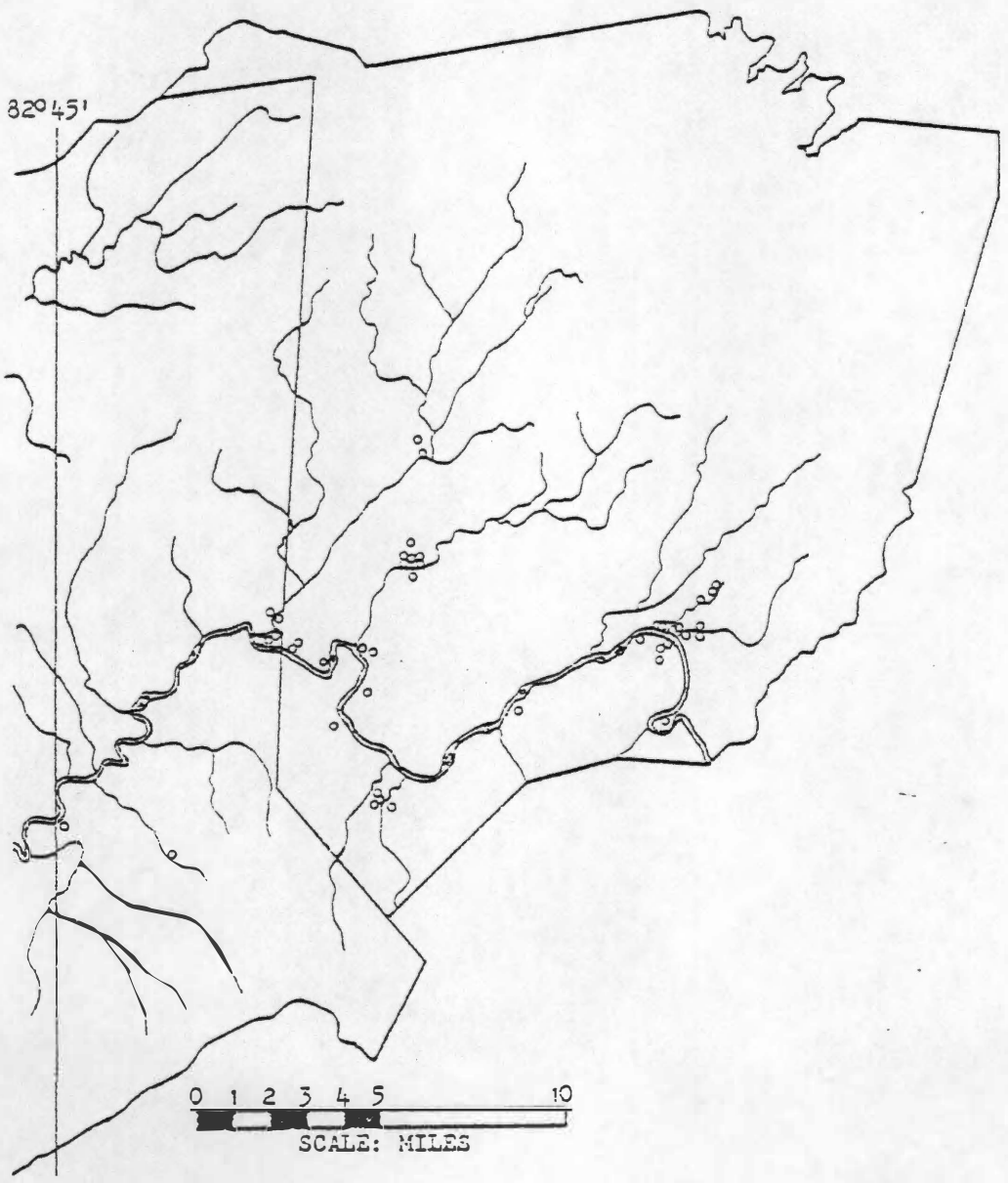


Figure 12. Map Showing Distribution of Sites Within the Survey Area.

TABLE 6. Description of Sites Included in Survey

Site Number	Biogeographic Zone	Dimensions of Site	Cultural Periods During Which Site Was Occupied
40WG3	Floodplain	450x125 m	Early, Middle, and Late Archaic; Woodland; and Mississippian.
40WG4	Floodplain	200x50 m	Early and Late Archaic; Woodland; and Mississippian.
40WG5	Terrace	450x75 m	Paleo-Indian; Late Archaic; and Mississippian.
40WG6	Floodplain	200x200 m	Area A: Late Archaic; Woodland; and Mississippian. Area B: Early, Middle, and Late Archaic; Woodland; and Mississippian.
40WG7	Floodplain	400x125 m	Woodland and Mississippian.
40WG11	Floodplain	450x125 m	Early and Late Archaic; Woodland; and Mississippian.
40WG13	Floodplain	325x80 m	Early, Middle, and Late Archaic; Woodland; and Mississippian.
40WG24	Terrace	200x100 m	Early, Middle, and Late Archaic; and Woodland.
40WG25	Terrace	200x100 m	Early, Middle, and Late Archaic; Woodland; and Mississippian.
40WG26	Terrace	160x60 m	Early, Middle, and Late Archaic; and Woodland.
40WG27	Terrace	300x100 m	Early, Middle, and Late Archaic; possible Woodland and Mississippian.

TABLE 6 (continued)

Site Number	Biogeographic Zone	Dimensions of Site	Cultural Periods During Which Site Was Occupied
40WG28	Terrace	300x100 m	Paleo-Indian; Early, Middle, and Late Archaic; Woodland; and possible Mississippian.
40WG29	Terrace	200x75 m	Early and Late Archaic; and Woodland.
40WG30	Terrace	200x60 m	Late Archaic and Woodland.
40WG31	Terrace	100x40 m	Possible Late Archaic.
40WG32	Floodplain	250x75 m	Woodland and Mississippian.
40WG33	Floodplain	400x75 m	Woodland; possible Late Archaic and Mississippian.
40WG34	Terrace	200x100 m	Late Archaic; Woodland; and Mississippian.
40WG35	Floodplain	300x50 m	Late Archaic; Woodland; and Mississippian.
40WG36	Terrace	500x50 m	Early Archaic; possible Woodland and Mississippian.
40WG37	Floodplain	125x100 m	Mississippian.
40WG38	Terrace	175x50 m	Unknown.
40WG39	Floodplain	150x40 m	Early and Middle Archaic.
40WG40	Terrace	75x75 m	Paleo-Indian.
40WG41	Upland	300x125 m	Possible Late Archaic.
40WG42	Upland	300x75 m	Early Archaic.
40WG43	Slope/Bluff	50x50 m	Late Archaic.
40WG44	Slope/Bluff	250x125 m	Woodland.

TABLE 6 (continued)

Site Number	Biogeographic Zone	Dimensions of Site	Cultural Periods During Which Site Was Occupied
40WG45	Terrace	175x175 m	Early, Middle, and Late Archaic; Woodland; and possible Mississippian.
40WG46	Upland	175x100 m	Early and Middle Archaic.
40WG47	Slope/Bluff	350x100 m	Unknown.
40WG48	Floodplain	175x100 m	Early and Late Archaic.
40WG49	Upland	300x250 m	Late Archaic.
40WG50	Terrace	100x75 m	Late Archaic.
40GN13	Terrace	600x200 m	Early, Middle, and Late Archaic; Woodland; and Mississippian.
40GN14	Floodplain	250x175 m	Early, Middle, and Late Archaic; and Mississippian.
40GN15	Floodplain	200x100 m	Early, Middle, and Late Archaic; Woodland; and Mississippian.
40GN16	Upland	450x175 m	Paleo-Indian; Early, Middle, and Late Archaic.
40GN17	Terrace	150x75 m	Early Archaic and Mississippian.
40GN18	Floodplain	150x75 m	Mississippian.

cultural materials from each site are small and often represent multiple occupancy, no attempt is made to infer site functions or activities performed during a specific period of occupancy.

A more accurate idea of site frequencies may be obtained if adjustments are made to account for differences in the total area surveyed within each biogeographic zone. Approximately 40% of the total area surveyed was in the floodplain zone. Older terraces accounted for about 20% of the area, slopes and bluffs 15%, and uplands 25%. These differences reflect the smaller percentage of land in the terrace and slopes and bluffs zones, as well as differing amounts of land under cultivation within the various zones.

CHAPTER VI

SITE LOCATIONS AND SETTLEMENT PATTERNS

Prehistoric cultural materials were recovered or observed from 41 sites during the survey. Of this total, 16 sites are located on first terraces of the alluvial floodplain, 17 are on the earlier second and third terraces, three are located on slopes and bluff tops, and five are on the rolling uplands, ridge summits, and hilltops. Identification of specific cultural phases which inhabited each site is based on the presence of diagnostic types of projectile points and ceramics.

Problems in interpretation were encountered as a result of small sample size, the limited number of sites surveyed, multiple occupancy of many sites, and difficulty of ascribing most functional tool types to a specific cultural period. Tentative statements concerning physiographic distribution of sites as they relate to settlement patterns are presented for each of the broad cultural periods. However, no attempt is made to present specific statements regarding specific cultural periods or site functions.

The physiographic distribution of sites for each cultural period, as they relate to the biogeographic zones defined in Chapter I, is presented below.

Paleo-Indian

The Paleo-Indian period is represented by Clovis, Small Fluted, and Hardaway-Dalton projectile point/knife types. Four sites included in the survey produced Paleo-Indian points as shown in Table 7. A possible Wheeler type point was also recovered from one of these sites.

TABLE 7. Paleo-Indian Sites by Biogeographic Zone

	Biogeographic Zones				
Projectile Point/ Knife Types	Flood-plain	Older Terraces	Slopes and Bluffs	Uplands	Total
Clovis		2			2
Small Fluted		1			1
Hardaway-Dalton				1	1
Wheeler-like		1			1
Total Sites Per Zone		3		1	4

Early Archaic

The Early Archaic period is represented by Kirk Corner Notched, MacCorkle Stemmed, St. Albans Side Notched, LeCroy Bifurcated Stem, Kanawha Stemmed, and Bifurcate Variant point types. Table 8 provides a summary of the 22 sites which produced Early Archaic projectile points/knives.

TABLE 8. Early Archaic Sites by Biogeographic Zone.

Projectile Point/ Knife Types	Biogeographic Zones: Flood-plain	Older Terraces	Slopes and Bluffs	Uplands	Total
Kirk	7	8		3	18
MacCorkle		1			1
St. Albans	2	5			7
LeCroy	1	2			3
Kanawha		3			3
Bifurcate Variants	2	3			5
Total Sites Per Zone	9	10		3	22

Middle Archaic

Stanly Stemmed, Morrow Mountain, and Guilford point types represent the Middle Archaic period. The 15 sites which produced these types are summarized in Table 9.

TABLE 9. Middle Archaic Sites by Biogeographic Zone.

Projectile Point/ Knife Types	Biogeographic Zones: Flood-plain	Older Terraces	Slopes and Bluffs	Uplands	Total
Stanly	1	2		1	4
Morrow Mountain	4	6		1	11
Guilford	1	3			4
Total Sites Per Zone	6	7		2	15

Late Archaic

The Late Archaic period is represented by Cedar Creek, Savannah River, and Otarre Stemmed point types. A summary of the 23 sites which produced Late Archaic points is provided in Table 10.

TABLE 10. Late Archaic Sites by Biogeographic Zone.

Projectile Point/ Knife Types	Biogeographic Zones				
	Flood-plain	Older Terraces	Slopes and Bluffs	Uplands	Total
Cedar Creek	6	4	1	1	12
Savannah River	5	10			15
Otarre	5	2			7
Total Sites Per Zone	10	11	1	1	23

Woodland

The Woodland period is represented by 24 sites which produced a variety of ceramic and projectile point/knife types. As stated in Chapter III, specific Woodland periods and phases within these periods have been established primarily based on the presence and relative frequencies of ceramic types. The occurrence of specific point types does not correlate exactly with periods or phases defined on the basis of ceramic data. A particular point or ceramic

type may, for instance, have been introduced during the Early Woodland period and continued in use into the Middle Woodland period. Most of the sites produced points and ceramics which could have been produced during more than one of the Woodland periods. Because of the limited sample size, no attempt is made to assign a specific period or phase of occupancy to these sites. Eleven Woodland sites are located on the first terraces of the alluvial floodplain, 11 on the older terraces, one on a bluff top, and one at an upland location.

Mississippian

A total of 21 sites produced Mississippian ceramic or point types. Twelve of these sites are located on first terraces of the alluvial floodplain and nine are on older terraces. All of the floodplain sites yielded ceramics which represent more than one Mississippian temporal phase. Three terrace sites produced scattered sherds which may represent isolated activity areas associated with large Mississippian sites on the adjacent floodplains. Points assigned to the Hamilton type appear to have been produced from the Late Woodland period into historic times. As with the Woodland period, the Mississippian period is treated as a generalized time period for the purpose of this analysis.

Settlement Patterns

Paleo-Indian projectile points/knives were recovered or observed from three terrace sites and one upland site during the survey. While no Paleo-Indian artifacts were observed in the floodplain areas surveyed, deeply-buried sites could exist in this zone. Sites such as the Thunderbird site in Virginia indicate that man was inhabiting river floodplains of the east during the Paleo-Indian period (Gardner 1974).

Of the 30 sites which produced Archaic cultural materials, 11 are located on the floodplains, 14 are on older terraces, one is on a bluff top, and four are on the uplands. The apparent utilization of varied biogeographic zones from the beginning to the end of the Archaic period indicates that the inhabitants of the middle Nolichucky River Basin during these times were exploiting a wide range of environmental resources. A procurement system based on seasonality and scheduling may have been established early in the Archaic period and continued through Late Archaic times (Chapman 1975:233-234).

During the Woodland period the larger, more permanent sites appear to have been concentrated on the alluvial floodplains. Of the 11 sites which produced Woodland ceramics, nine are located on the floodplains. Two terrace sites each produced one sherd. These two sites are located on terraces adjacent to large Woodland floodplain sites, and the sherds may indicate separate activity areas

associated with the larger sites, or isolated artifact occurrences.

A hunting and gathering subsistence base augmented with cultivation of plants such as marshelder (Iva sp.) and sunflower (Helianthus sp.) (Chapman 1973:131) may account for a shift to more permanent settlements on the fertile soils of the floodplains. Temporary seasonal sites on the terraces and uplands may have been used for hunting and exploitation of wild plant foods and lithic resources.

Eleven large Mississippian sites are located along the broad alluvial floodplains of the Nolichucky River. These sites are all located on or adjacent to loamy soils of the Congaree series which are well suited for agriculture (USDA Soil Conservation Service 1958a:17). These sites may represent nucleated villages which were relying on intensive horticulture as a primary subsistence base.

One small site on the floodplain of a large tributary stream and six terrace sites may have been dispersed temporary habitation sites occupied during exploitation of a variety of resources in support of the floodplain villages. Three other terrace sites produced single points or sherds, which may represent isolated artifact occurences or activity areas associated with larger villages on the adjacent floodplains.

CHAPTER VII

SUMMARY AND CONCLUSIONS

The principle goal of this work is to establish a tentative historical framework of cultural development and change in the middle Nolichucky River Basin. Particular emphasis has been placed on distribution of aboriginal sites within the various biogeographic zones in the survey area and utilization of lithic raw materials. Cultural materials and data recovered from 41 sites in the survey area indicate that the area has been inhabited by man for over 10,000 years. Six broad cultural periods of occupancy are represented at the sites surveyed. These include the Paleo-Indian, Early Archaic, Middle Archaic, Late Archaic, Woodland, and Mississippian periods.

The small sample size and limited number of sites surveyed does not provide sufficient data to make specific conclusions about patterns of settlement and subsistence for individual cultural periods. However, tentative statements concerning physiographic distribution of sites as they relate to settlement patterns and preference of lithic materials are presented below for each of the broad cultural periods.

The first evidence of aboriginal occupation in the middle Nolichucky River Basin is associated with the Paleo-Indian period. One upland and three terrace sites produced Clovis, Small Fluted, and Hardaway-Dalton projectile

points/knives. One of these sites also produced a Wheeler-like point which may have been made during the Paleo-Indian period. These few artifacts indicate that the area was probably sparsely inhabited at least 10,000 years ago. Although the sample of Paleo-Indian artifacts is small, it appears that local cherts were predominantly used for the manufacture of lithic implements during this period.

Intensive occupation of the middle Nolichucky River Basin began during the Early Archaic period. This period is represented by Kirk Corner Notched, MacCorkle Stemmed, St. Albans Side Notched, LeCroy Bifurcated Stem, Kanawha Stemmed, and Bifurcate Variant projectile point/knife types. Twenty-two sites produced Early Archaic materials, and 18 of these were occupied during the Kirk phase. A starting date of around 7500 B.C. has been suggested for the Kirk phase based on radiocarbon dates from sites in the lower Little Tennessee River Valley (Chapman 1976:1). Chert was used for the manufacture of 94% of the Early Archaic projectile points/knives, with black and dark gray varieties predominating.

The Middle Archaic period is represented by Stanly Stemmed, Morrow Mountain, and Guilford projectile point/knife types. Radiocarbon dates of around 5800 B.C. were obtained for Stanley phase materials in the Little Tennessee River Valley (Ibid.). A marked shift in preference of lithic materials occurred during this period, with 69% of the projectile points/knives in the sample being made of vein quartz or quartzite.

Late Archaic materials were recovered from 24 sites. Projectile points/knives which are diagnostic of this period include the Cedar Creek, Savannah River, and Otarre types. A radiocarbon date of 3740±260 B.C. was obtained for the stratum which produced Cedar Creek points at a site on the Clinch River in Virginia (Joseph L. Benthall, personal communication 1978). This point type is represented by 16 examples, all of which are made of chert. Intensive occupation during the Savannah River phase is evidenced by the 46 examples of this point type recovered from 15 sites. With the increased size of the Savannah River point type came a shift to the use of quartzite as the preferred lithic material.

Throughout the Archaic period, inhabitants of the middle Nolichucky River Basin were apparently utilizing a wide range of environmental resources within the varied biogeographic zones. A procurement system based on seasonality and scheduling may have been established during the Early Archaic period and continued through Late Archaic times (Chapman 1975:233-234).

The Woodland period is marked by the introduction of ceramics and a probable hunting and gathering subsistence base augmented with cultivation of plants (Chapman 1973: 131). Larger, more permanent sites appear to have been concentrated on the alluvial floodplains during this period. Temporary seasonal sites on the terraces and uplands may represent temporary seasonal sites for hunting and

exploitation of wild plant foods and other resources. Stemmed projectile point/knife types, such as Swannanoa Stemmed, Plott Short Stemmed, Ebenezer, and Swan Lake, are made almost exclusively of chert. Almost half of the stemless triangular points, such as the Camp Creek, Greeneville, and Nolichucky types, are made of quartzite or vein quartz. The use of jasperoid in the production of projectile points/knives appears to have played a minor but significant role in the Woodland chipped stone industry (Amari n.d.).

Limestone and crushed quartz-tempered ceramics appear similar to those found throughout the upper Tennessee Valley. The presence of one Pigeon series sherd suggests contact with the Appalachian Summit region.

The recovery of only nine early Pisgah phase sherds from five sites may indicate that the middle Nolichucky River Basin was only sparsely inhabited during the period from A.D. 1000 to 1250. The larger sample of late Pisgah, Qualla, and Dallas ceramics indicates an intensive occupation from around A.D. 1250 until early historic times. Changes in ceramics during this period may reflect influences from the Appalachian Summit area to the east as well as from the lower eastern Tennessee Valley to the southwest.

A shift to nucleated villages which relied on intensive horticulture as a primary subsistence base is suggested by the 11 large Mississippian sites located on the broad alluvial floodplains of the Nolichucky River. These sites appear to have been purposely located on or near the most

fertile and easily worked soils. Smaller terrace sites represent isolated activity or resource exploitation areas in support of the floodplain villages. High quality chert was used almost exclusively for the manufacture of points, with a distinctive translucent gray variety constituting 28% of the sample.

Prehistoric occupation of the middle Nolichucky River Basin is evidenced during six broad cultural periods spanning approximately 10,000 years. Patterns of variation in the intensity of occupation are indicated for individual cultural periods. However, no attempt is made to quantify these patterns based on the limited size of the sample recovered during the survey.

In 1964 Joffre L. Coe demonstrated the existence of stratified early sites in alluvial valleys. Subsequent excavations by Broyles (1966, 1971) and Chapman (1975, 1977) have shown that such sites may be deeply buried and extend to a considerable depth. Future deep testing along the first terraces of the Nolichucky River may show the existence of buried early sites for which no evidence can be seen on the present land surface.

Local materials were used almost exclusively in the production of lithic implements. Marked changes in lithic preference appear to be directly related to the relative size of the implement desired. Chert was used predominantly in the manufacture of small implements. Where larger implements, such as Savannah River projectile points/knives

were desired, lithic materials which were available in larger naturally occurring sizes were used.

This work represents a preliminary survey of the middle Nolichucky River Basin and only limited conclusions have been made based on the small amount of data and materails recovered. It is hoped that the information presented herein will serve as a data base which will aid in future survey and problem oriented research in this area.

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