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An Analysis of the Lithic Artifact Assemblage From the Forbush Creek Site (31Yd1), Yadkin County, North Carolina

by

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INTRODUCTION

The analysis of the lithic assemblage, including stone tools and debitage, from the Forbush Creek site (31Yd1) was undertaken to provide information about the technology and subsistence-related activities of Late Prehistoric period Indians of the North Carolina Piedmont (Figure 1). This investigation was undertaken in conjunction with the Siouan Project, which is presently being conducted by the Research Laboratories of Anthropology at the University of North Carolina at Chapel Hill. The goal of the Siouan Project is to interpret culture change among the Piedmont Indian groups of North Carolina and southern Virginia during the Historic period (Dickens et al. 1987:1). The analysis of the Forbush Creek material, one of only a few detailed investigations of late prehistoric lithic artifacts from the Piedmont area, provides a basis for comparison with the later Historic period assemblages. With such a comparative base, changes in the technology resulting from the introduction of European metal tools can be more clearly identified.

The initial archaeological investigations at the Forbush Creek site, conducted by the Research Labs in November and December of 1957, salvaged 28 human burials, two dog burials, and 42 features from construction of the westbound lanes of US 421. These investigations indicated that further work should be done before the the eastbound lanes were constructed. Additional excavations at the Forbush Creek site were conducted between March 6 and May 11, 1972 by the Research Labs in cooperation with the State Department of Archives and History and the State Highway Commission (Figure 2). The fieldwork salvaged 84 additional archaeological features from construction of the eastbound lanes of US 421 (Figure 3).

The site lies along the crest of a natural levee 500 feet west of the Yadkin River, west of Winston-Salem, in Yadkin County. Village remains are scattered along the levee in an area about 350 feet wide and about 400 feet north and south of the highway.

The stratigraphy of the site includes an uppermost stratum of plowed soil which overlies three other soil types. Midden built up by the Indian occupation consists of fine to medium sand and cultural debris including potsherds, lithic artifacts, ash, charcoal, bone, and shell. Some of the midden eroded and filled washed out areas along the eastern margin of

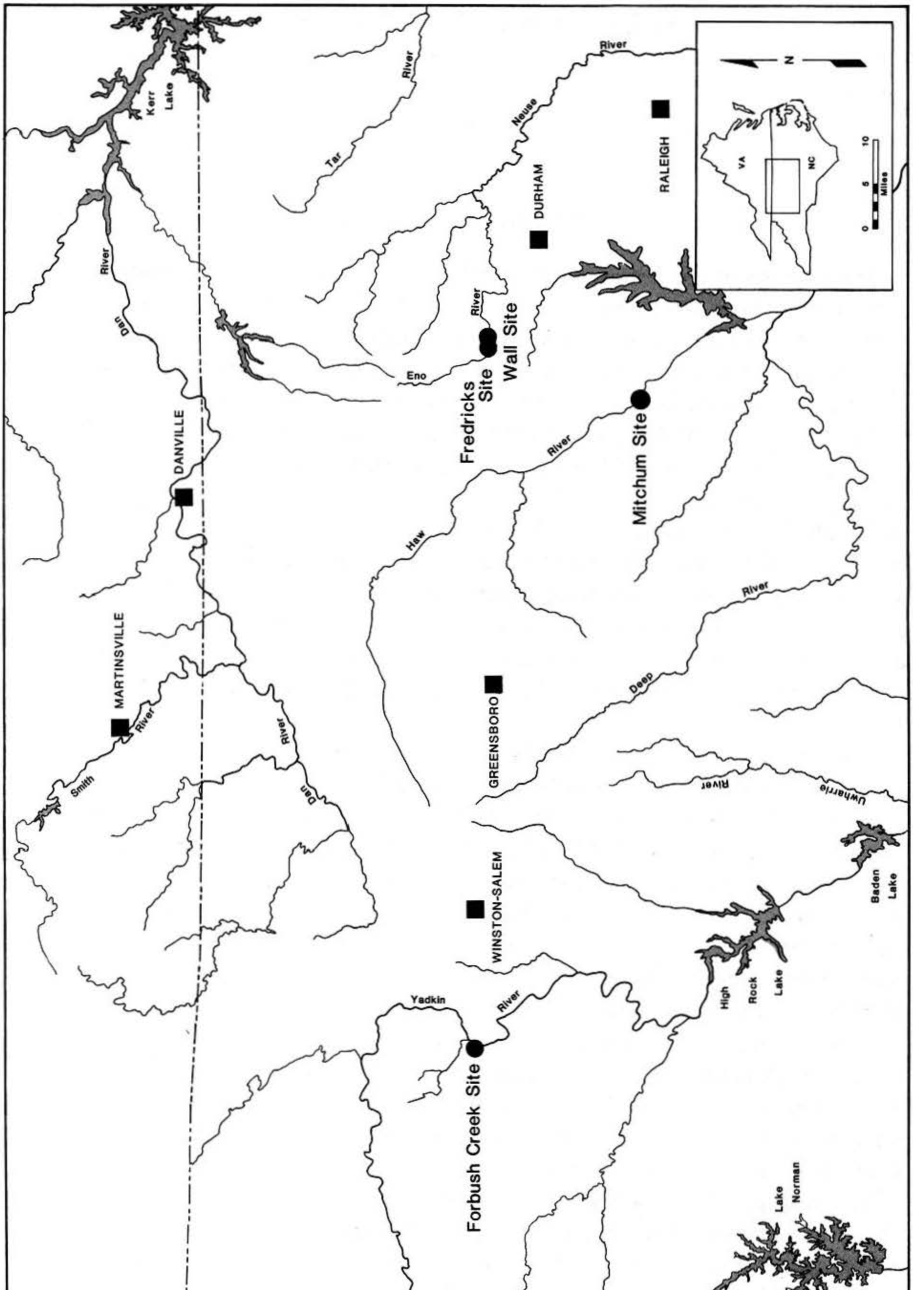

Figure 1.

Location of the Forbush Creek site, the Fredricks site, the Mitchum site, and the Wall site.

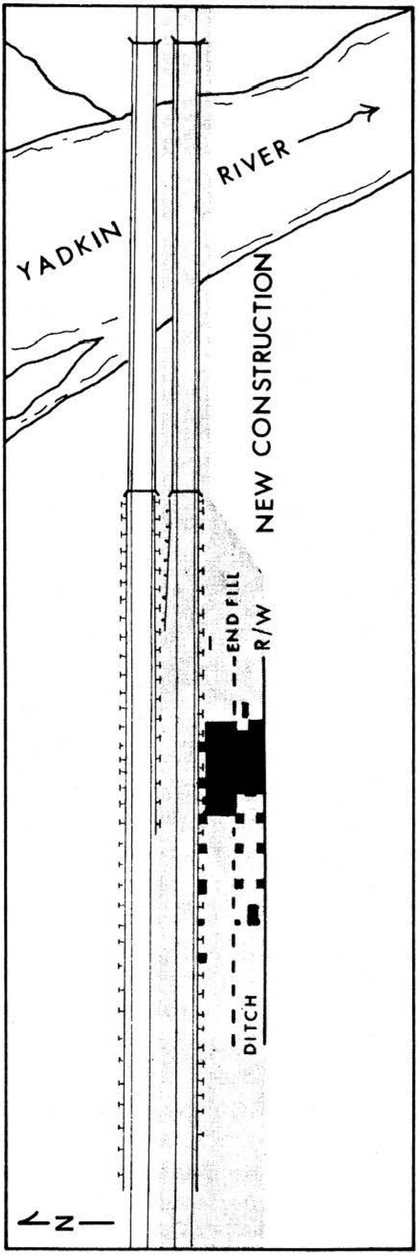

Figure 2.
Excavations superimposed over the US 421 construction plan.

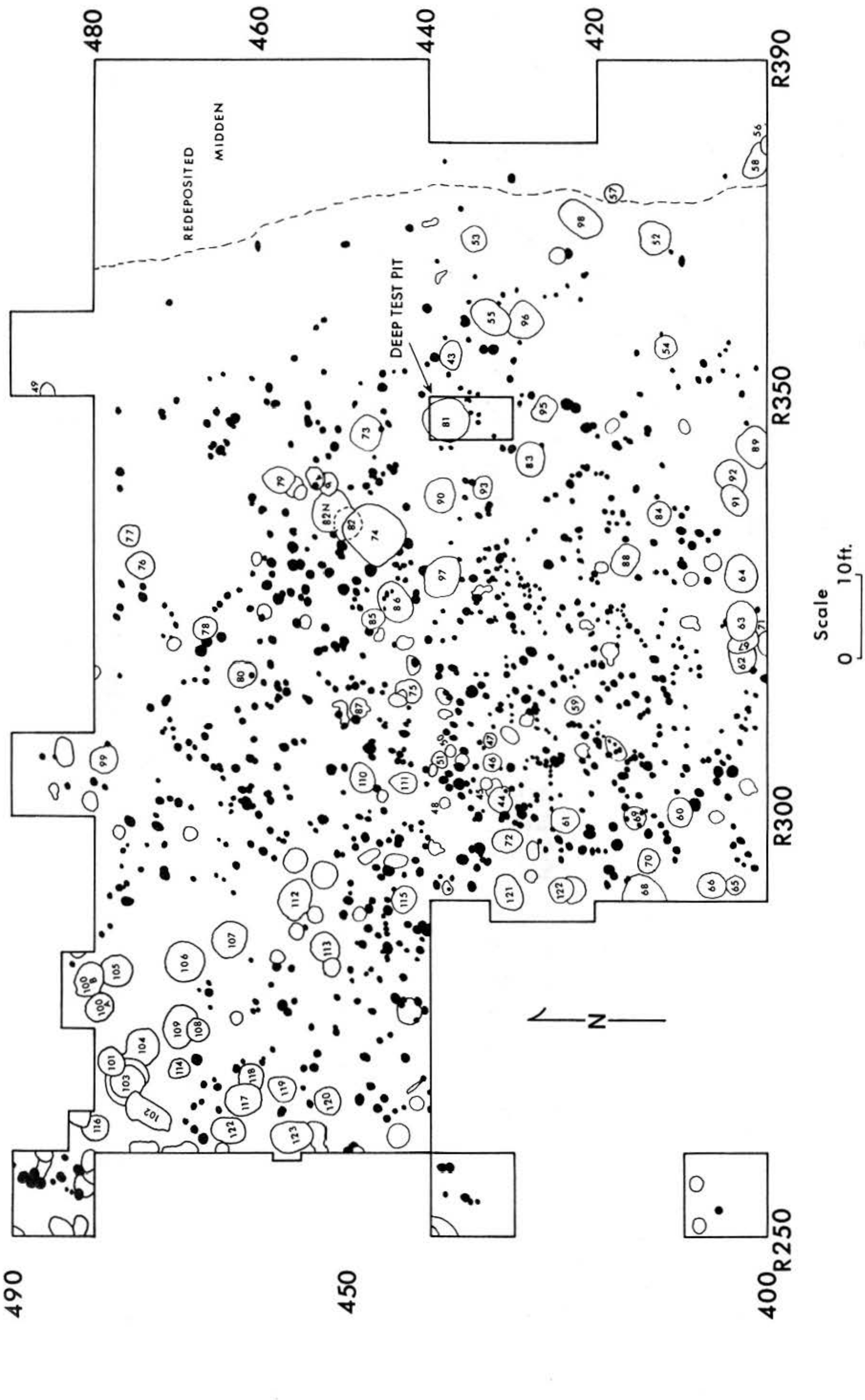

Figure 3.
Plan of 1972 excavation area.

the levee. This redeposited midden consists of the same fine sand and cultural debris. Below all deposits lies the subsoil of fine-grained sediments.

The site is thought to have been occupied during the early to middle part of the Late Woodland period, ca. AD 1200 to 1400 (Coe 1972:13). Among the non-lithic artifacts recovered at the site are potsherds of the Uwharrie tradition with cord-marked and net-impressed surfaces and ceramic pipe fragments. Bone implements include awls, beamers, beads, and turtle carapace bowls. Masses of ocher, faunal remains, and ethnobotanical remains were also recovered at the site.

The analysis was limited to all lithic implements and debris from Features 43–126, excavated in 1972. Coe (1972:9–10) placed these features into four functional categories based on their size, shape, the nature of their contents, and inferences concerning their use. The categories are: storage pits, refuse pits, hearths, and tree stumps. Figure 4 shows examples of hearths, refuse pits, and storage pits encountered at the Forbush Creek site. The assemblage of analyzed lithic implements and debris from these features consists of 4,722 specimens, including 270 projectile points, 421 stone tools or ornaments, and 4,031 flakes and debris (see Appendix A).

The initial objective of this study was to describe the lithic assemblage, using a computer-based analysis format. Within this format, blank category, working edge category, raw material type, tool condition, and various metric data were determined for each specimen. Each specimen was then placed in a techno-functional type category based on unique combinations of blank and working edge categories. The tools have not undergone microwear analysis (see Keeley 1980); instead, all functional designations are based on macroscopic observations of tool form and use wear.

In an effort to illuminate changes in the technology of the Piedmont Indians during the Late Prehistoric and early Historic periods, the Forbush Creek site lithics were compared to those from three sites which were excavated and analyzed during the 1983–1987 Siouan Project research period. Tippitt and Daniel (1987) have analyzed the lithic assemblages from one Late Prehistoric/Protohistoric site and two early Historic sites: the Wall site (31Or11), the Mitchum site (31Ch452), and the Fredricks site (31Or231), respectively. The occupations of these sites span the early 1500s to early 1700s (Figure 1). Comparisons made between these sites focused on projectile point size and overall assemblage composition.

The specific research questions addressed by this study are:

1. What are the characteristics of a late prehistoric lithic assemblage from the North Carolina Piedmont, and what impact did the introduction of metal tools have on the composition of lithic assemblages used during the Historic period;
2. What subsistence-related activities are represented by the tool types found in the Forbush Creek site assemblage, and how do they compare with those represented at the Historic period Fredricks site; and

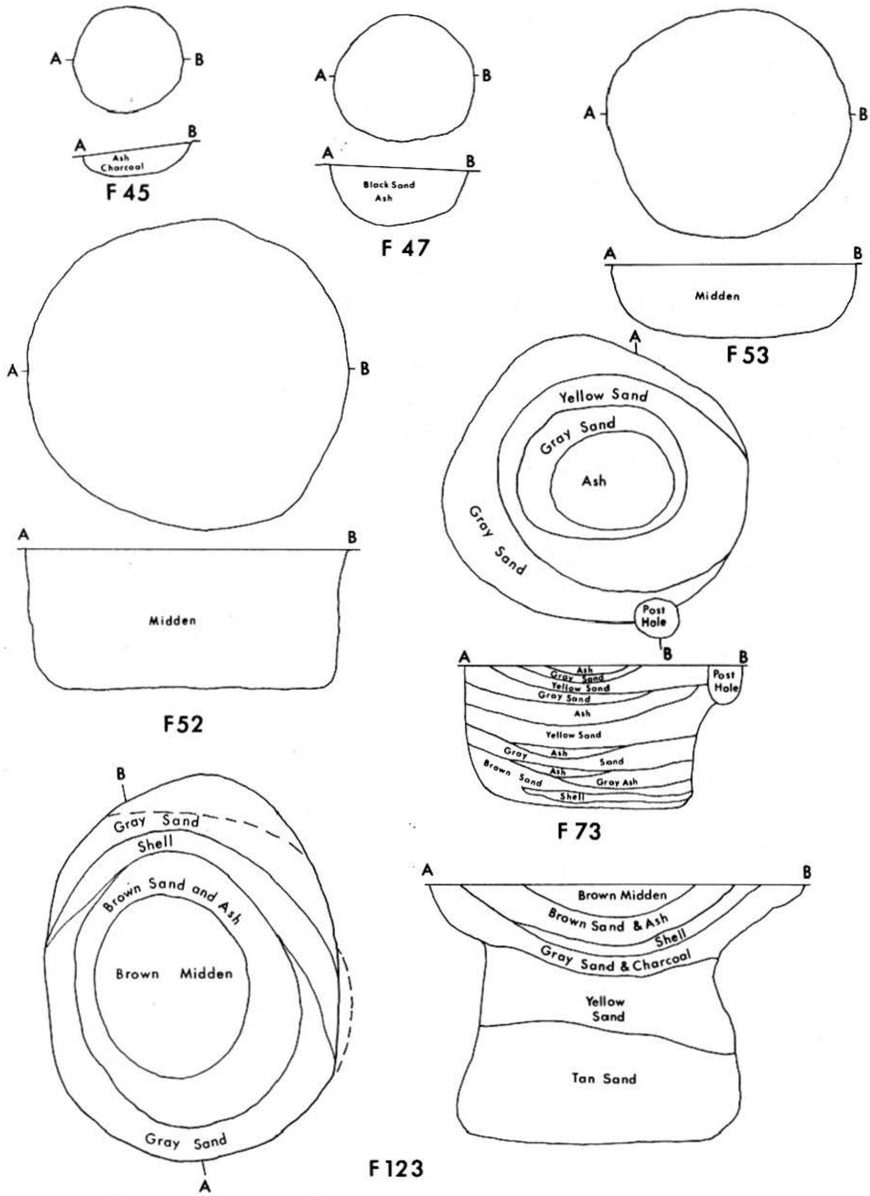

Figure 4.

Types of features encountered at the Forbush Creek site. Hearths, F-45 and F-47; Refuse pits, F-52 and F-53; Storage pits, F-73 and F-123.

3. When data from the Forbush Creek site are combined with those obtained by Tippitt and Daniel from the other three sites, is it possible to detect changes through time in the morphology and construction of triangular projectile points, and, if so, can these changes be related to changes in the subsistence systems in which the lithic assemblages were embedded?

RAW MATERIALS

Five raw material classes were recognized within the chipped stone tool assemblage at the Forbush Creek site and include: undifferentiated chert, vein quartz, crystal quartz, rhyolite, and other metavolcanic rock. The most prevalent raw material category found in the debitage was other metavolcanic rock, comprising 89.25% of the assemblage; rhyolite was the second most common with 4.15%; vein quartz with 4.03%; undifferentiated chert with 1.34%; and crystal quartz with 1.23%. Chert was the only non-local raw material present in the chipped stone assemblage.

The ground stone tool asssemblage is comprised of seven raw material classes: vein quartz, andesite, diorite, gabbro, schist, slate, and soapstone. Vein quartz accounts for 51% of the ground stone tool raw material, with river cobbles most often being utilized as fabricators and processing tools such as hammerstones, anvils, and manos. Phaneritic igneous rocks were most often chosen as raw material for the production of tools such as ground celts, abraders, and metates. Andesite (20%) was the most frequently utilized igneous rock, followed by diorite (3%) and gabbro (3%). Various types of schists (14%), slates (6%), and soapstone (3%) were utilized in the manufacture of non- utilitarian items such as gorgets, pendants, beads, and pipes. All these raw materials may be found locally, with the possible exception of soapstone.

DEBITAGE

Debitage consists of all lithic raw material and the residual debris resulting from lithic tool manufacture. The debitage has been subdivided into morphological categories which represent the various stages of lithic reduction and the reduction techniques employed. Eleven categories of debitage were recovered at the Forbush Creek site. Figure 5 illustrates several of these and their distinctive characteristics.

Primary Decortication Flakes

Sample Size: n=118, %=2.5.

Raw Material: 1 Undifferentiated Chert, 7 Vein Quartz, 1 Crystal Quartz, 7 Rhyolite, 102 Other Metavolcanic Rock.

Form: These flakes have a bulb of percussion and cortex on the striking platform as well as on at least 95% of the dorsal surface.

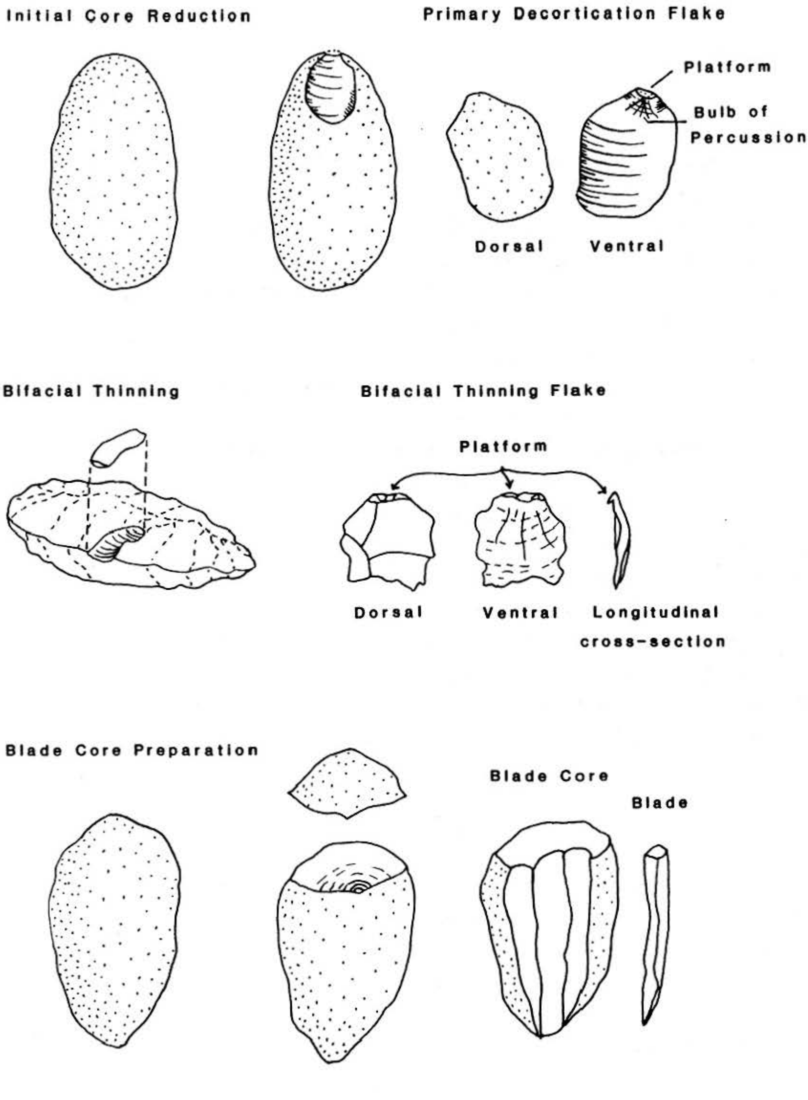

Figure 5.

Types of flakes in the Forbush Creek site assemblage (after Crabtree 1972:43 and Muto 1971:Figure 8).

Comments: Primary decortication flakes are the first flakes removed from a core and are struck from the core by a blow with a percussor (e.g., a hammerstone or antler billet). Such a reduction technique is termed percussion flaking. Primary decortication flakes represent the initial stage of core or nodule reduction.

Secondary Decortication Flakes

Sample Size: n=1128, %=23.88.

Raw Material: 22 Undifferentiated Chert, 17 Vein Quartz, 2 Crystal Quartz, 44 Rhyolite, 1043 Other Metavolcanic Rock.

Form: Secondary decortication flakes are the same as primary decortication flakes, except that they have cortex on less than 95% of the dorsal surface and none on the striking platform.

Comments: These flakes represent a secondary stage of core or nodule reduction which involves removing the last bits of cortex from the core.

Interior and Bifacial Thinning Flakes

Sample Size: n=2543, %=53.85.

Raw Material: 29 Undifferentiated Chert, 112 Vein Quartz, 37 Crystal Quartz, 105 Rhyolite, 2260 Other Metavolcanic Rock.

Form: These flakes exhibit no cortex but show evidence of previous flake removals on the dorsal surface. Some show evidence on the striking platform of being removed from a biface.

Comments: Interior and bifacial thinning flakes represent the final stage of lithic reduction, which involves shaping and thinning of stone tools and bifaces. These flakes were detached using either percussion flaking or possibly pressure flaking techniques.

Core Rejuvenation Flakes

Sample Size: n=4, %=0.08.

Raw Material: 4 Other Metavolcanic Rock.

Form: These flakes exhibit multiple hinge or step fracture scars on the dorsal surface.

Comments: Certain irregularities or impurities in the composition of stone can cause a flake to terminate prematurely. If a core has such structural impurities, many flakes can terminate in the same spot, rendering the core useless. To restore the core, a core rejuvenation flake must be detached which removes the portion of the core containing the impurity and the flake termination scars.

Blades

Sample Size: n=144, %=3.03.

Raw Material: 2 Undifferentiated Chert, 2 Vein Quartz, 5 Crystal Quartz, 4 Rhyolite, 131 Other Metavolcanic Rock.

Form: These flakes possess a regularity in shape, parallel sides, a length twice the width, a perpendicular striking platform, and a pronounced bulb of percussion.

Comments: Blades are products of special core preparation, as illustrated in Figure 5. The blades present in this assemblage are products of rudimentary blade production and do not exhibit highly distinguished features.

Shatter Fragments

Sample Size: n=89, %=1.88.

Raw Material: 32 Vein Quartz, 1 Crystal Quartz, 8 Rhyolite, 48 Other Metavolcanic Rock.

Form: A shatter fragment is any angular stone fragment produced during core reduction which has no identifiable platform area or bulb of percussion.

Comments: None.

Raw Materials

Sample Size: n=2, %=0.04.

Raw Material: 1 Vein Quartz, 1 Other Metavolcanic Rock.

Form: This category includes any utilizable lithic material which is neither the product nor by-product of reduction.

Comments: None.

A comparison of flake size by category within the Forbush Creek site assemblage was made and, not surprisingly, the flakes representing the final stages of lithic reduction (interior and bifacial thinning flakes) tended to be smaller than those representing initial stages of lithic reduction (primary and secondary decortication flakes). In conjunction with the proposed decrease in projectile point size, flakes should become smaller from the Middle Woodland to the Historic period. Table 1 presents the distibution of flakes by size. This information is presented with the caution that all feature fill was dry screened through ½-in mesh screen. Such a recovery method leads to a sample biased toward large-sized flakes and thus reduces the comparative value of the debitage.

Table 1. Distribution of flakes by size.

	Size											
	<1 cm		**1-2 cm**		**2-4 cm**		**4-6 cm**		**>6 cm**		**Total**	
Flake Type	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Primary Decortication	2	.05	46	1.05	66	1.50	6	.14	2	.05	122	2.78
Secondary Decortication	29	.66	521	11.87	646	14.72	47	1.07	3	.07	1246	28.38
Interior	150	3.42	1125	25.63	1130	25.74	46	1.05	3	.07	2454	55.90
Bifacial Thinning	16	.36	173	3.94	104	2.37	3	.07	0	.00	296	6.74
Core Rejuvenation	0	.00	0	.00	2	.05	1	.02	1	.02	4	.09
Blade	3	.07	41	.93	105	2.39	8	.18	0	.00	157	3.58
Shatter Fragment	1	.02	22	.50	66	1.50	9	.21	0	.00	98	2.23
Unidentified	0	.00	2	.04	5	.11	2	.04	4	.09	13	.30
Total	201	4.58	1930	43.96	2124	48.38	122	2.78	13	.30	4390	100.00

CHIPPED STONE IMPLEMENTS

Chipped stone implements from the Forbush Creek site were produced by percussion or pressure flaking techniques. A total of 388 chipped stone implements were recovered.

Utilized Flakes

Sample Size: n=243, %=5.14.

Raw Material: 3 Undifferentiated Chert, 3 Vein Quartz, 3 Crystal Quartz, 6 Rhyolite, 228 Other Metavolcanic Rock.

Form: Utilized flakes exhibit systematic edge modification with flake scars extending less than 2 mm from the edge.

Comments: The edge modification is thought to be caused by aboriginal use or damage. Each of the above flake categories have been utilized in this manner, with the majority (62%) of those being interior and bifacial thinning flakes.

Retouched Flakes

Sample size: n=49, %=1.04.

Raw Material: 1 Undifferentiated Chert, 1 Vein Quartz, 2 Crystal Quartz, 4 Rhyolite, 41 Other Metavolcanic Rock.

Form: Retouched flakes exhibit systematic edge modification with flake scars extending at least 2 mm from the edge.

Comments: The edge modification probably resulted from the flakes being used as *ad hoc* cutting and scraping tools. Secondary decortication flakes comprise 37% of this category, while interior and bifacial thinning flakes comprise 55%.

Utilized/Retouched Flakes

Sample Size: n=19, %=0.40.

Raw Material: 1 Undifferentiated Chert, 1 Vein Quartz, 2 Rhyolite, 15 Other Metavolcanic Rock.

Form: These flakes have retouched edges and subsequent flake scars along the worked edge.

Comments: The edge modification appears to have been caused by extended use or damage. The majority (58%) of these are secondary decortication flakes.

Cores (Figure 6)

Sample Size: n=3, %=0.06.

Raw Material: 1 Crystal Quartz, 2 Other Metavolcanic Rock.

Form: Cores are nuclei from which flakes have been removed.

Comments: Three cores were recovered. Two were random cores (Figure 6:a–b) with irregular, non-patterned flake removals, and the third was an exhausted quartz blade core (Figure 6:c).

Bifaces

Sample Size: n=19, %=0.4.

Raw Material: 13 Other Metavolcanic Rock, 4 Vein Quartz, 2 Undifferentiated Chert.

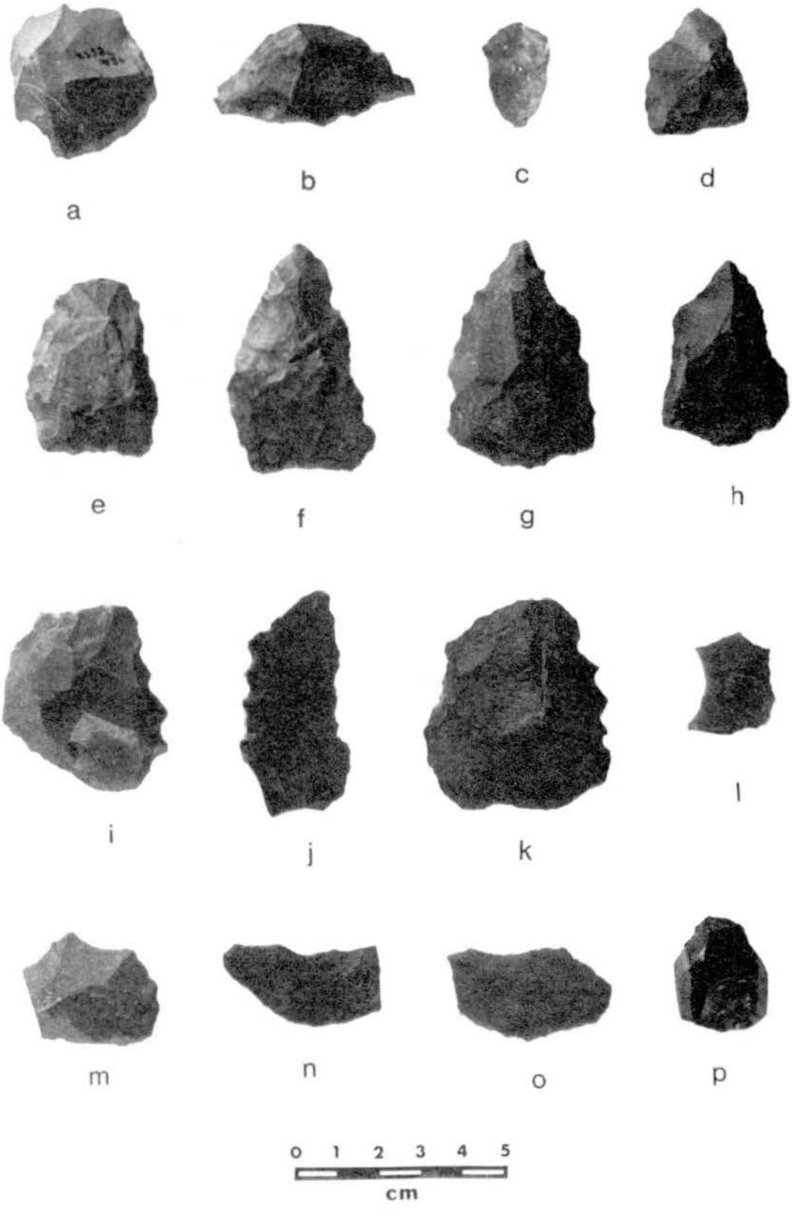

Figure 6.

Small chipped stone tools: cores (a–c); preforms (d–h); denticulates (i–o); and pièce esquilleé (p).

Form: A biface is a blank that exhibits flake removal scars, from percussion or pressure flaking, on both faces.

Comments: Eight of these are small fragments of unidentifiable bifaces. The remainder may represent unfinished or *ad hoc* tools.

Drills (Figure 7)

Sample Size: n=11, %=0.23.

Raw Material: 9 Other Metavolcanic Rock, 2 Rhyolite.

Form: A drill is a tool that exhibits an expanded base and bifacial retouch along the major portion of the implement, forming a parallel-sided, rod-like projection. This projection is the bit of the drill and is usually biconvex or diamond-shaped in cross section.

Comments: One drill has flakes removed from the bit only, leaving the unworked striking platform as the base (Figure 7:a). Two are bit fragments, while the remaining eight have bifacially worked bases. The drill bits appear to have been used in a twisting motion to bore holes in dense material such as leather, wood, bone, antler, or soft stone.

End Scrapers (Figure 7)

Sample Size: n=7, %=0.15.

Raw Material: 5 Other Metavolcanic Rock, 1 Vein Quartz, 1 Crystal Quartz.

Form: End scrapers are characterized by steep, regular retouch resulting in a convex or straight working edge that is perpendicular to the longitudinal axis of the flake.

Comments: The end scrapers recovered from the Forbush Creek site are not formalized. Five have bifacial flaking on the working end (Figure 7:h–j), one is unifacially worked (Figure 7:k), and one is a reworked stemmed projectile point (Figure 7:l). The steepness and regularity of the working edge suggests that these tools were used to scrape soft materials such as animal hides.

Gravers (Figure 7)

Sample Size: n=3, %=0.06.

Raw Material: 2 Other Metavolcanic Rock, 1 Crystal Quartz.

Form: A graver is a lithic tool that possesses fine retouch resulting in a sharp, triangular projection.

Comments: One graver has been unifacially retouched on the proximal end of a flake (Figure 7:n), one has been bifacially worked from the distal end of a flake (Figure 7:m), and one is a unifacially retouched projectile point tip (Figure 7:o). The sharp, triangular projection on each tool appears to have been used to engrave or score dense material such as wood, bone, and antler.

Perforators (Figure 7)

Sample Size: n=15, %=0.32.

Raw Material: 13 Other Metavolcanic Rock, 2 Rhyolite.

Form: A perforator is a lithic tool that possesses fine retouch resulting in a converging point, usually larger than a graver.

Comments: Three types of perforators where recovered at the Forbush Creek site. Five had bifacial retouch (Figure 7:p–r), five had unifacial retouch (Figure

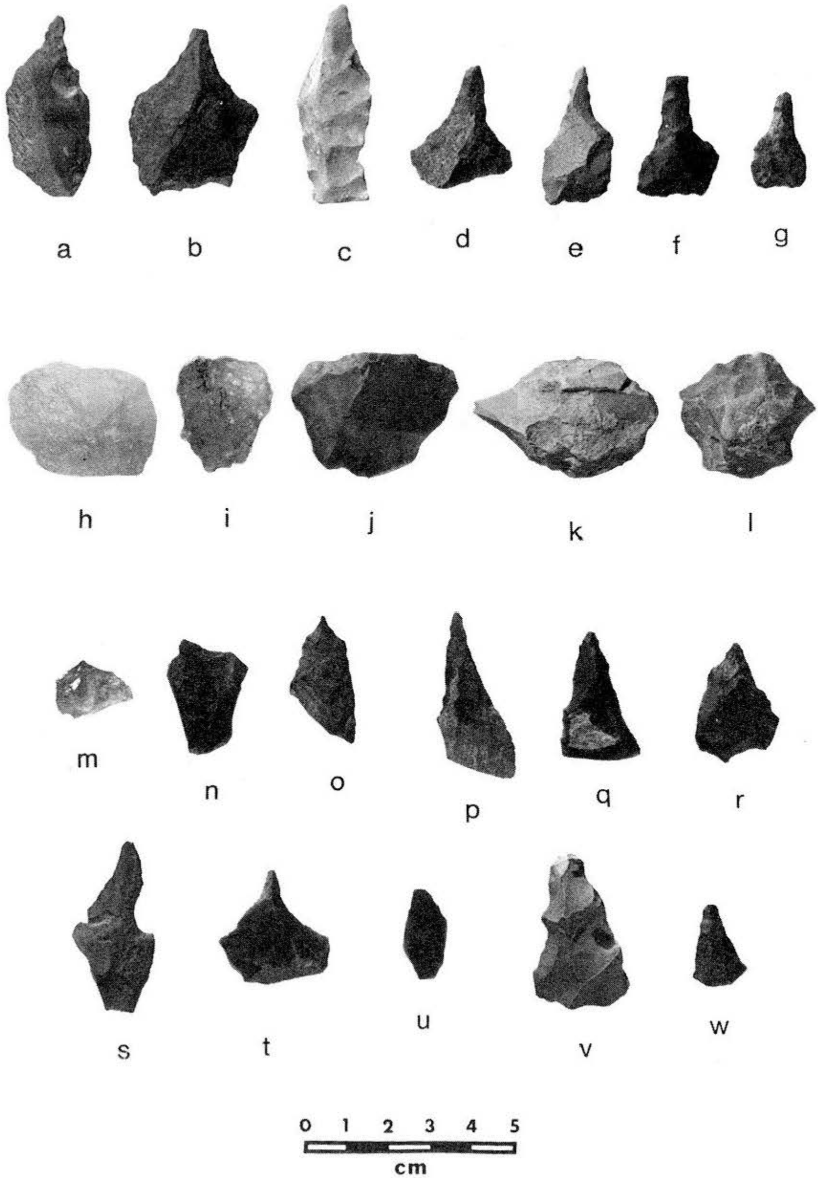

Figure 7.

Small chipped stone tools: drills (a–g); end scrapers (h–l); gravers (m–o); and perforators (p–w).

7:s–t), and five had alternate flaking (including one on a blade, shown in Figure 7:u). Two of these were reworked from bifaces (Figure 7:v–w). The morphology of these tools suggests that they were used to punch holes in less dense material such as leather.

Denticulates (Figure 6)

Sample Size: n=10, %=0.21.

Raw Material: 9 Other Metavolcanic Rock, 1 Rhyolite.

Form: A denticulate is a tool with fine, regularly-spaced retouch defining a series of small sharp projections along the implement edge (i.e., a toothed or serrated edge).

Comments: Of the denticulates recovered at the Forbush Creek site, seven were on flakes, one was on a blade, one was on a shatter fragment, and one was on a biface. Four of these were exhausted (Figure 6:m–o) and exhibited rounded projections. The toothed edge probably was used in a sawing action to cut less dense material, such as meat and vegetable material.

Pièce Esquilleé (Figure 6)

Sample Size: n=1, %=0.02.

Raw Material: 1 Knox Black Chert.

Form: This pièce esquilleé is a nodule that was modified by repeated bipolar percussion blows resulting in crushed working edges with sharp perpendicular corners.

Comments: The crushed working edges of this tool could have been used to scrape or slot dense material such as bone.

Chopper/Scraper (Figure 8)

Sample Size: n=1, %=0.02.

Raw Material: 1 Other Metavolcanic Rock.

Form: A chopper/scraper is a large chipped stone tool that exhibits flake removals along the periphery and subsequent crushing and smoothing along the working edge.

Comments: The use wear on the working edge of this tool is indicative of heavy chopping and scraping activities.

Chopper (Figure 8)

Sample Size: n=1, %=0.02.

Raw Material: 1 Vein Quartz.

Form: This chopper is a large river cobble with percussion flake removals along one face, creating an angular chopping edge.

Comments: The bit exhibits crushing and small step fractures indicative of heavy chopping activity. The center of the unworked face of the cobble has a battered area, indicating that it was also used as an anvil. This is one of many multi-purpose tools in this assemblage.

Chipped Hoes (Figure 9)

Sample Size: n=5, %=0.11.

Raw Material: 4 Other Metavolcanic Rock, 1 Rhyolite.

Form: These hoes are large flakes or slabs reduced by percussion flaking to form a bifacial convex working edge perpendicular to the long axis.

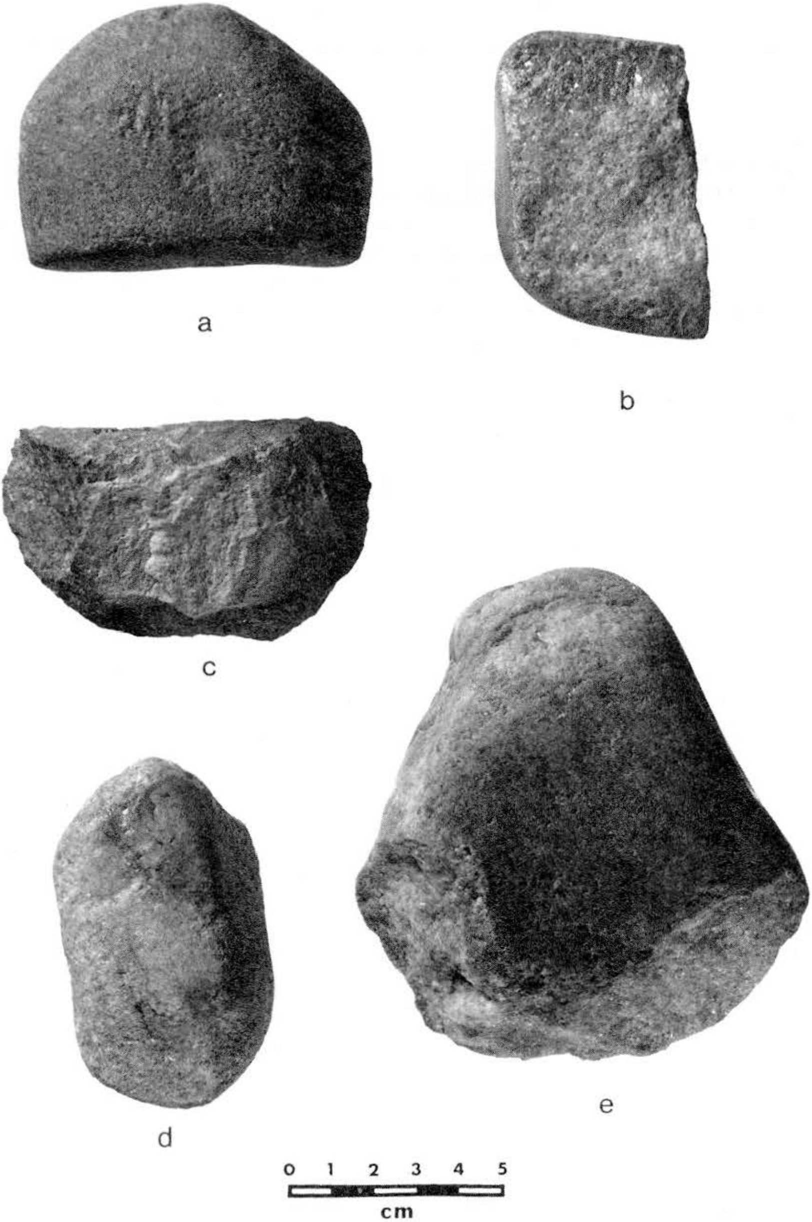

Figure 8.

Large cobble tools: anvil/mano/hammerstones (a–b); chopper/scraper (c); hammerstone (d); and chopper/anvil (e).

Comments: All specimens exhibit damage or wear along the lateral edges, suggesting they were lashed onto a handle. One specimen has a small degree of soil polish indicative of use as a digging implement. Otherwise, the working edges show little sign of damage.

Chipped Axe (Figure 9)

Sample Size: n=1, %=0.02.

Raw Material: 1 Other Metavolcanic Rock.

Form: This axe was made from a slab that was initially pecked into a rough wedge shape. The polar edges were then percussion flaked on both faces to form a primary and secondary bit.

Comments: The midsection shows no evidence of hafting, but the axe may have been hafted and was probably used to chop dense material such as wood.

CHIPPED STONE PROJECTILE POINTS

A total of 270 projectile points was recovered. Of these, 64 were too framentary to identify. The remaining 206 were assigned to morphological type categories. These projectile points were hafted and used in hunting activities as arrow and spear tips.

Pee Dee Pentagonal (Figure 10)

Sample Size: n=20, %=0.42.

Raw Material: 1 Undifferentiated Chert, 3 Rhyolite, 16 Other Metavolcanic Rock.

Form: Pee Dee Pentagonal projectile points (Coe 1964:49) have incurvate bases, usually have straight sides, and possess a symmetrical shape.

Comments: The shape of these projectile points varies. Nine have parallel sides, eight have expanding sides (Figure 10:o–s), one has convergent sides (Figure 10:j), and two are indeterminate. The specimens with expanding sides are generally larger than the other points. Of those recovered, nine are complete points, two are represented by lateral edge fragments, and nine are basal fragments.

Small Stemmed (Figure 10)

Sample Size: n=2, %=0.04.

Raw Material: 2 Vein Quartz.

Form: These points have stems with rounded bases and excurvate blades, and are thought to be of the Gypsy type associated with the Late Archaic period (Oliver 1981:188–189).

Comments: One of these specimens is a basal fragment (Figure 10:d) and the other is a complete point with heavy retouch along the lateral edges, indicating it had been resharpened (Figure 10:e). The assemblage contained a third stemmed projectile point, which had been reworked into an end scraper and was included in that category (Figure 7:l). These points are thought to be specimens made during the Late Archaic period and recycled by the Late Woodland population. Both the morphology and raw material are uncharacteristic for this assemblage.

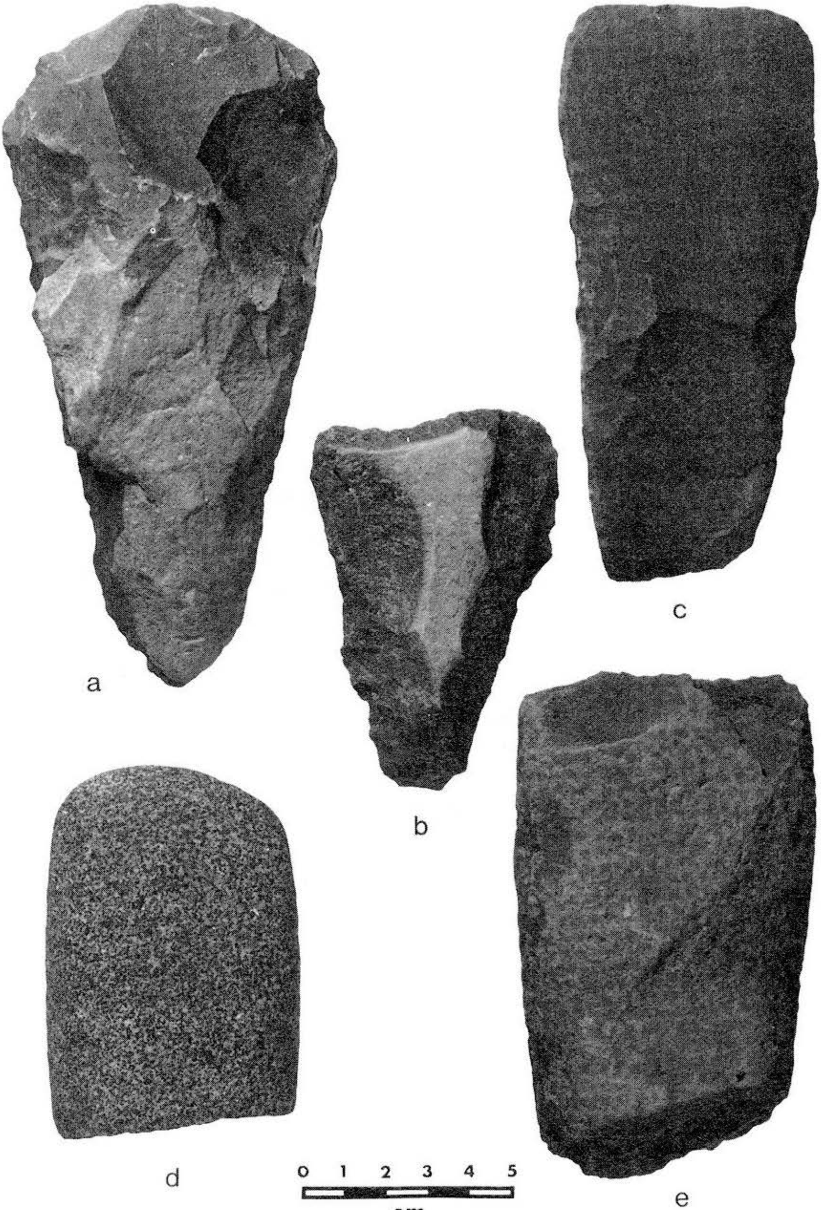

Figure 9.

Large tools: chipped stone hoes (a–c); ground celt (d); and chipped stone axe (e).

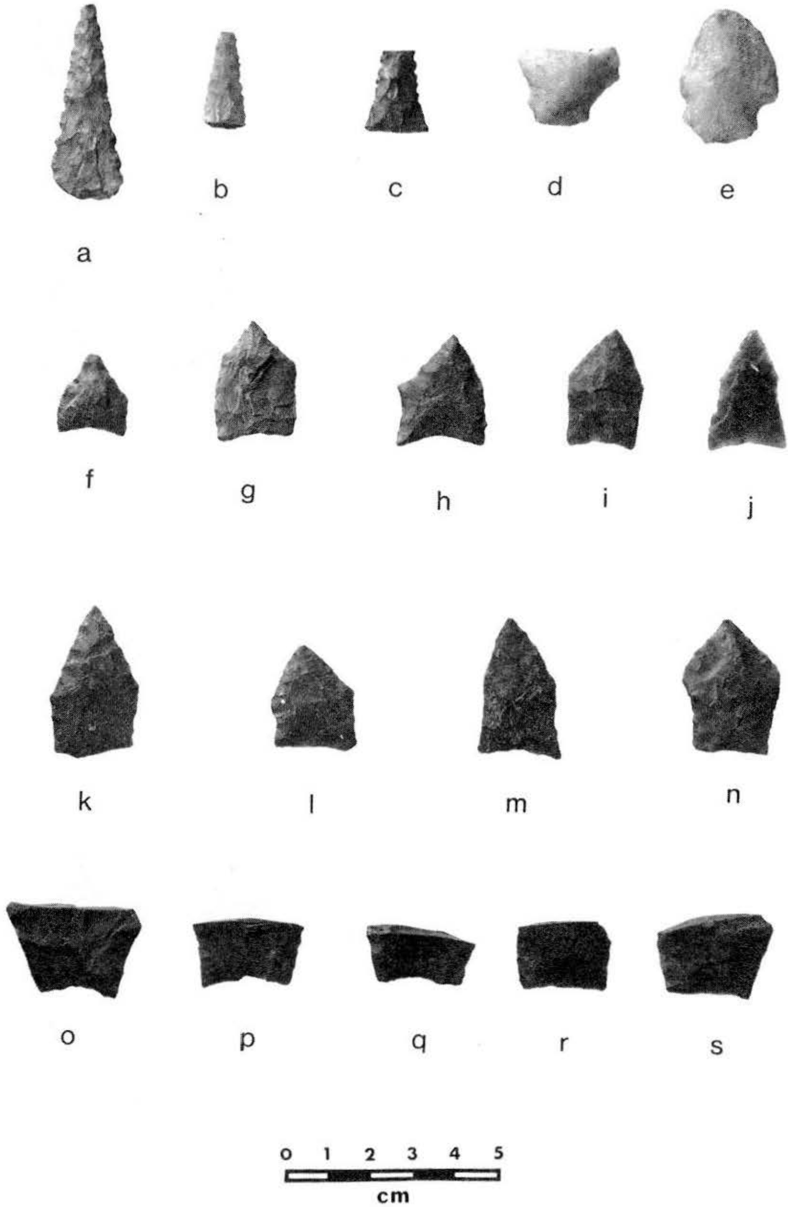

Figure 10.

Chipped stone projectile points: serrated projectile point fragments (a–c); small stemmed projectile points (d–e); and pentagonal points (f–s).

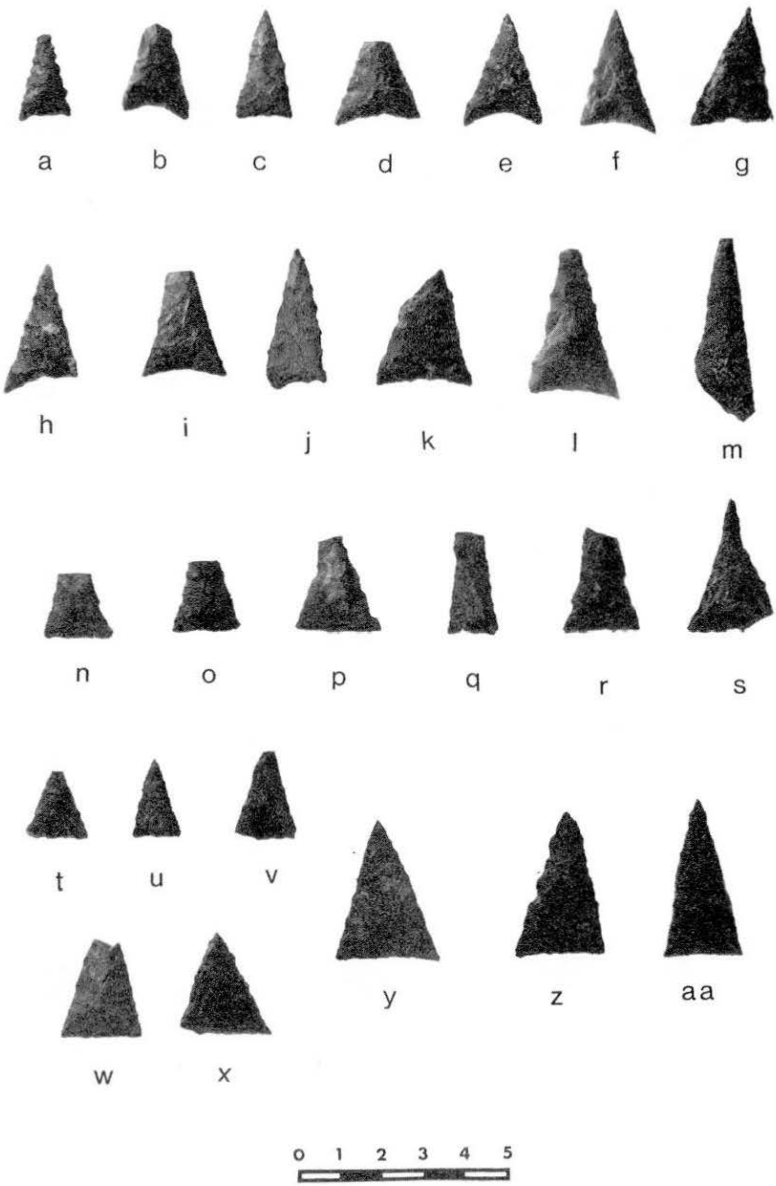

Figure 11.

Small triangular projectile point types: incurvate base/straight blade (a–m); straight base/incurvate blade (n–s); and straight base/straight blade (t–aa).

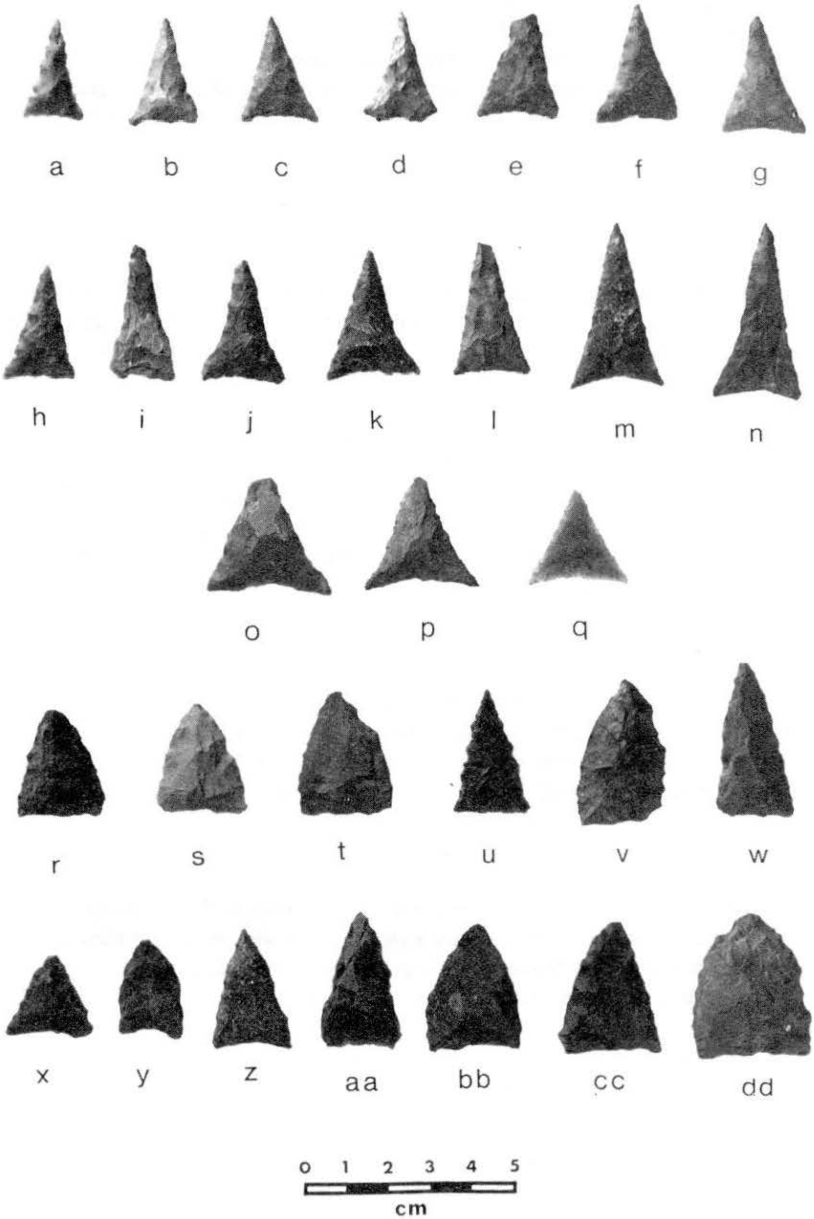

Figure 12.

Small triangular projectile point types: incurvate base/incurvate blade (a–q); straight base/excurvate blade (r–w); and incurvate base/excurvate blade (x–dd).

Small Triangular (Incurvate Base-Straight Blade) (Figure 11)

Sample Size: n=28, %=0.59.

Raw Material: 1 Rhyolite, 27 Other Metavolcanic Rock.

Form: These triangular points have incurvate bases and straight blades.

Comments: Eleven of these are complete points and 17 are basal fragments. Two have serrated edges.

Small Triangular (Straight Base-Incurvate Blade) (Figure 11)

Sample Size: n=8, %= 0.17.

Raw Material: 8 Other Metavolcanic Rock.

Form: These triangular points have straight bases and incurvate blades.

Comments: Of the total, one is a complete point, two have broken distal ends, and five are basal fragments.

Small Triangular (Straight Base-Straight Blade) (Figure 11)

Sample Size: n=14, %=0.29.

Raw Material: 14 Other Metavolcanic Rock.

Form: The triangular points in this category have straight bases and straight blades.

Comments: This projectile point category includes eight complete specimens. Three have broken distal ends and three are basal fragments.

Small Triangular (Incurvate Base-Incurvate Blade) (Figure 12)

Sample Size: n=35, %=0.74.

Raw Material: 2 Rhyolite, 33 Other Metavolcanic Rock.

Form: Both the bases and blades of these triangular points are incurvate.

Comments: Of the 35 specimens, 17 are complete points, three have broken tangs, eight have broken distal ends, and seven are basal fragments. One has serrated edges.

Small Triangular (Straight Base-Excurvate Blade) (Figure 12)

Sample Size: n=12, %=0.25.

Raw Material: 1 Knox Black Chert, 1 Rhyolite, 10 Other Metavolcanic Rock.

Form: These triangular points have straight bases and excurvate blades.

Comments: Eight specimens in this category are complete. Two others have broken distal ends, and two have broken tangs.

Small Triangular (Incurvate Base-Excurvate Blade) (Figure 12)

Sample Size: n=21, %=0.44.

Raw Material: 1 Rhyolite, 20 Other Metavolcanic Rock.

Form: The bases of these triangular points are incurvate, while the blades are excurvate.

Comments: Of the total, 15 are complete points, one has a broken distal end, two have broken tangs, and three are basal fragments.

Unidentified Triangular

Sample Size: n=66, %=1.40.

Raw Material: 3 Rhyolite, 2 Vein Quartz, 61 Other Metavolcanic Rock.

Form: Included within this category are fragments of unidentifiable triangular points (n=30), flakes with fine retouch along the edges to form irregularly shaped triangular projectile points (n=22), and triangular projectile points possessing bilateral asymmetry (n=14).

Comments: None.

Projectile Point Fragments (Serrated) (Figure 10)

Sample Size: n=3, % =0.06.

Raw Material: 3 Other Metavolcanic Rock.

Form: This type category includes fragments of unidentifiable projectile points which have serrated edges.

Comments: Of the total, two are distal end fragments and one is a basal fragment.

Unidentified Projectile Point Fragments

Sample Size: n=61, % =1.29.

Raw Material: 3 Rhyolite, 58 Metavolcanic.

Form: Included within this category are fragments of unidentified projectile points.

Comments: Of the total, forty-four are distal end fragments, four are lateral edge fragments, nine are basal fragments, and four are unidentifiable fragments.

Preforms (Figure 6)

Sample Size: n=7, % =0.15.

Raw Material: 1 Undifferentiated Chert, 6 Other Metavolcanic Rock.

Form: Preforms are charcterised by pressure or percussion flake scars on both faces, forming roughly triangular projectile point blanks.

Comments: These specimens represent unfinished triangular projectile points. They are larger, thicker, and exhibit less regular edges than the finished triangular projectile points in the assemblage.

GROUND STONE IMPLEMENTS

Ground stone implements were produced by abrasion either through use as a fabricator or as a result of being shaped by grinding. A total of 35 ground stone specimens was recovered. Of these, five were multi-purpose implements.

Ground Celt Fragments (Figure 9)

Sample Size: n=2, % =0.04.

Raw Material: 1 Diorite, 1 Andesite.

Form: Ground stone celts have parallel sides and biconvex working edges. They were manufactured using various combinations of percussion flaking, pecking, and grinding.

Comments: Linear striations running perpendicular to the bit edge are visible on the diorite celt fragment (Figure 9:d). These were presumably caused by heavy chopping of dense material such as wood. The bit of the andesite fragment is broken and the resulting edge has been damaged in a manner indicating subsequent use.

Abrader

Sample Size: n=1, %=0.02.

Raw Material: 1 Gabbro.

Form: This specimen is a slab with a ground surface caused by the abrasion of ground stone or bone tools.

Comments: Tool edges were often ground during the reduction sequence to produce a stronger, larger striking platform. This specimen does not appear to have been used for an extended period of time, as the utilized surfaces do not exhibit deep striations or grooves.

Metates (Figure 13)

Sample Size: n=2, %=0.04.

Raw Material: 2 Andesite.

Form: Metates are large slabs or cobbles that possess worn concave surfaces resulting from the processing of plant or animal foods.

Comments: Both of the specimens are fragmentary and show little evidence of long term use.

Mano/Hammerstone

Sample Size: n=1, %=0.02.

Raw Material: 1 Andesite.

Form: This specimen is a squared cobble with two surfaces worn down by heavy abrasion. The edges exhibit battering from use as a percussor.

Comments: The worn surfaces suggest that this implement was used as a grinding stone, probably in food processing, and as a percussor in flint knapping.

Anvil/Hammerstone/Manos (Figure 8)

Sample Size: n=4, %=0.08.

Raw Material: 3 Vein Quartz, 1 Andesite.

Form: This tool category includes cobbles that have one or more depressed, crushed areas, one or more surfaces worn smooth from gross abrasion, and evidence of battering along the edges.

Comments: These specimens appear to have been used as anvils (possibly for nut cracking), as percussors, and as grinding stones for food processing.

Hammerstones (Figure 8)

Sample Size: n=14, %=0.3.

Raw Material: 13 Vein Quartz, 1 Andesite.

Form: These cobbles exhibit battered edges from use as a percussor during lithic reduction.

Comments: The battered areas on these cobbles range in size from very small, isolated spots suggesting limited use, to larger zones (up to 6 cm^2 in surface area) suggesting extended use.

Pitted Cobbles (Figure 13)

Sample Size: n=2, %=0.04.

Raw Material: 1 Vein Quartz, 1 Andesite.

Form: These specimens are cobbles with one or more depressions resulting from possible use as an anvil during nut processing.

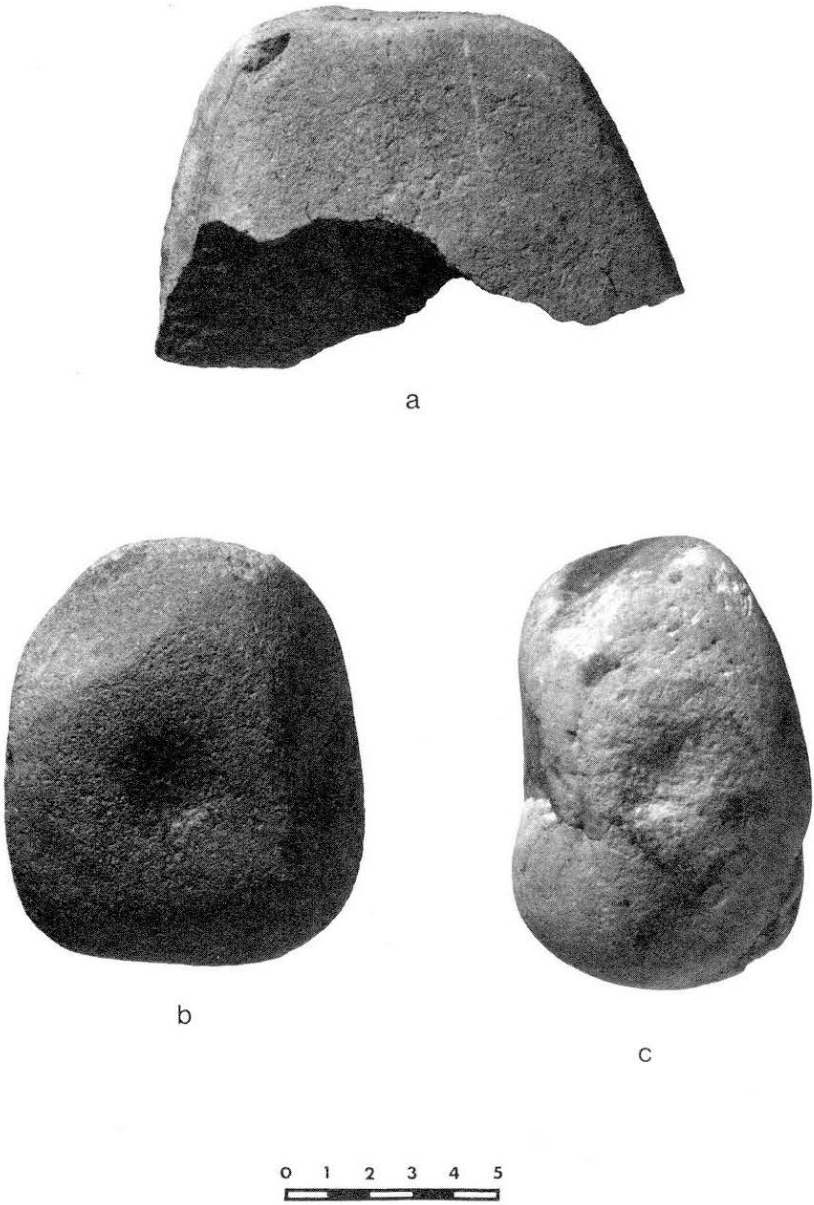

Figure 13.

Large processing tools: metate fragment (a) and pitted cobbles (b–c).

Comments: Such crushed, depressed areas may also be the result of bipolar lithic reduction; however, since bipolar debitage was not present in the Forbush Creek assemblage, it is unlikely that these specimens were utilized in this manner.

Pecked Ball (Figure 14)
Sample Size: n=1, %=0.02.
Raw Material: 1 Vein Quartz.
Form: This is a small stone that was pecked into a spherical shape.
Comments: Its function is unknown, but similar specimens found elsewhere have been classified as gaming stones (e.g., South 1959:180).

Ground Gorgets (Figure 14)
Sample Size: n=2, %=0.04.
Raw Material: 1 Chloritic Schist, 1 Banded Slate.
Form: These specimens were ground into a tabular form, but both are fragmentary and their complete shape is indeterminate.
Comments: The chloritic schist fragment has a tapered shape and has been gouged out at one of the broken ends (Figure 14:e).

Ground Stone Pendants (Figure 14)
Sample Size: n=2, %=0.04.
Raw Material: 1 Slate, 1 Schist.
Form: These have been ground into an oval-to-triangular shape and have a single hole drilled near the apex.
Comments: The slate pendant is engraved on both faces (Figure 14:b). One face has an "X" design while the other face possesses a series of parallel lines running transverse to the long axis.

Stone Bead (Figure 14)
Sample Size: n=1, %=0.02.
Raw Material: 1 Mica Schist.
Form: This bead has been ground into a flat, circular shape with a scalloped edge and central perforation.
Comments: None.

Stone Pipe Fragments (Figure 14)
Sample Size: n=3, %=0.06.
Raw Material: 2 Chloritic Schist, 1 Soapstone.
Form: Two of these specimens are rim fragments from small pipe bowls. The other represents a bowl fragment from a large polished tubular pipe with a grooved interior.
Comments: The smaller pipes were probably used for day-to-day smoking, while the larger pipe was may have been reserved for ceremonial purposes.

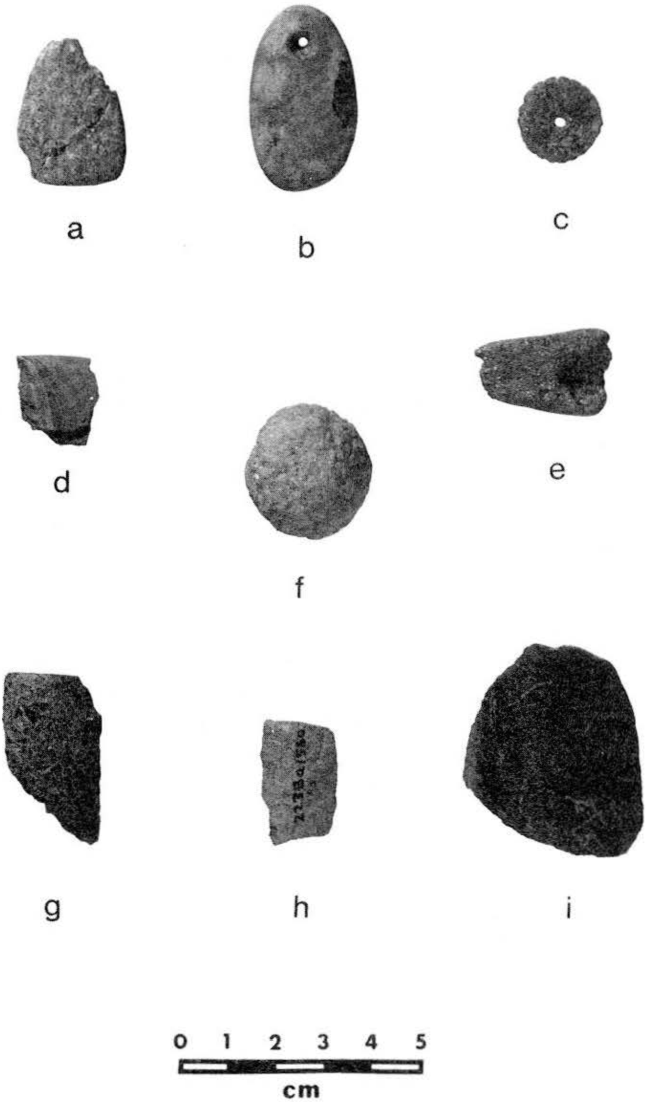

Figure 14.

Non-utilitarian items: stone pendants (a–b); stone bead (c); ground stone gorget fragments (d–e); pecked ball (f); stone pipe fragments (g–h); and large polished pipe fragment (i).

DISCUSSION

Assemblage Characteristics

The lithic assemblage from Forbush Creek represents, for the most part, raw materials that were obtained locally. Rhyolite and other metavolcanic types, vein and crystal quartz, andesite, diorite, gabbro, schist, slate, and soapstone were readily available. Only a small percentage (1.34%) of the raw material consisted of non-local chert from the Ridge-and-Valley region to the west.

The complete reduction sequence, from initial decortication to bifacial thinning, is evidenced by the debitage categories in the assemblage. Percussion and pressure flaking are well represented; however, there is no evidence to suggest the use of bipolar reduction techniques. Furthermore, rudimentary blade production is suggested by only a small percentage (3%) of the debitage.

The chipped stone projectile point types characteristic of this assemblage consist primarily of pentagonal and small triangular forms. Though slightly smaller, the triangular projectile points from the Forbush Creek site fit within the ranges of the Caraway and Uwharrie types defined by Coe (1952:308, 1964:49) for the North Carolina Piedmont. Other stone tools within the assemblage include small tools made from flakes, large tools made from cobbles, and other masses of raw material.

The small tools consist of drills, end scrapers, gravers, perforators, denticulates, utilized and retouched flakes, and a single pièce esquilleé. These tools were made with an economy of workmanship and are not highly formalized. The larger tools include choppers, anvils, chipped hoes, chipped axes, hammerstones, pitted cobbles, ground celts, abraders, metates, and manos.

The assemblage also contains non-utilitarian stone items, such as pendants, gorgets, beads, and personal items such as smoking pipes. The large tubular pipe fragment is similar to specimens found elsewhere in the Southeast in mortuary contexts (e.g., Chapman 1979:217) and may have had a ceremonial function. A small pecked stone ball is also present in the assemblage and may have been a gaming stone.

The Introduction of European Metal Tools

To determine what impact the introduction of metal tools had on the composition of aboriginal lithic assemblages used during the early Historic period, a comparison was made between the Forbush Creek site assemblage and the Fredricks site (ca. AD 1700) assemblage analyzed by Tippitt and Daniel as part of the 1983–1987 Siouan Project research. The only apparent difference in the small tools used at these sites is that no denticulates were recovered during excavations at the Fredricks site. There are greater differences in the larger tool sub-assemblages. Neither formalized chipped hoes, chipped axes, anvils, nor manos were present in the assemblage used at the later Fredricks site. Furthermore, personal items of stone such as pendants, gorgets, and beads, also were absent from the Fredricks site assemblage.

The introduction of European tools may not be the sole reason for these changes. Other possible explanations include cultural and environmental differences between these sites and possible differences in subsistence emphasis. Tippitt and Daniel (1987) recognized that crudely shaped stone choppers and utilized flakes may have been used at the Fredricks site in place of more formalized hoes, axes, and denticulates. In addition, European iron hoes, knives, and axes were used by the occupants at the Fredricks site, and glass trade beads, shell beads and gorgets, metal ornaments, and kaolin pipes seem to have been preferred over their earlier stone counterparts.

Lithic Tools and Subsistence Activities

The lithic assemblage from the Forbush Creek site reflects subsistence-oriented activities related to the procurement and processing of faunal and botanical resources. Although both faunal and botanical samples remain unanalyzed, Coe (1972:13) observed during the excavation of the Forbush Creek site that deer, rabbit, raccoon, birds, and mussels were among the species of animals eaten by the people at the site. Not unexpectantly, deer appeared to be the most common food item. The utilization of these resources required the use of projectile points for hunting; choppers, scrapers, and denticulates for butchering; end scrapers, perforators, and drills for hide processing; and pièces esquillés for bone working.

Plant food remains observed at the site included corn, acorns, and nuts. Crop production and gathering of wild plant foods were accomplished with stone hoes as well as tools and vessels made of perishable raw materials. Pitted cobbles, manos, and metates were used to process these foods. Other botanical resources, such as wood, would have been gathered and worked using stone axes and celts.

Flint knapping was an extremely important component of the prehistoric technology underlying these subsistence-related activities. Stone tools were fashioned from raw material; flakes were struck from cores using hammerstones and antler percussors. Preforms were made and probably carried or stored until new tools were needed. Abraders appear to have been used by the flintknappers to dull sharp tool edges. Table 2 summarizes all tool types and their inferred uses.

These activities appear to be consistent with those represented by the historic Fredricks site assemblage (see Tippitt and Daniel 1987). However, implements such as iron knives, axes, hoes, and rifles also had been incorporated into the resource acquisition and processing strategies of the occupants at the Fredricks site. Additionally, European kaolin pipes, glass trade beads, and metal trade items had also been added to their inventory of personal items (Dickens et al. 1987).

Table 2. Tool types and inferred uses.

Activity	Tool Type	Inferred Use
Hunting	Projectile Point	Weapon
Butchering	Chopper	Heavy Chopping
	Denticulate	Cutting
Hide Processing	Chopper/Scraper	Heavy Chopping and Scraping
	End Scraper	Light Scraping
	Perforator	Punching Holes
	Drill	Boring Holes
Bone Working	Pièce Esquillée	Scraping and Slotting
	Graver	Engraving and Scoring
Agriculture	Hoe	Planting and Harvesting
Food Processing	Mano	Grinding
	Metate	Grinding
	Pitted Cobble	Nut Cracking and Crushing
Wood Working	Axe and Celt	Heavy Chopping
		Shelter Construction
Flint Knapping	Hammerstone	Percussor
	Abrader	Grinding Tool Edges
Non-Lithic Tool Manufacture	Drill	Boring Holes
	Abrader	Grinding Tool Edges

Small Triangular Projectile Points

The projectile point typology defined for the North Carolina Piedmont by Coe (1964) indicates a decrease in the size of triangular points from the Middle Woodland to the Historic period. To examine this trend further, a comparison of mean length and width was made between the projectile points from the Forbush Creek site and three later sites: the Wall (31Or11), Mitchum (31Ch452), and Fredricks (31Or231) sites. These later sites were occupied during the Late Prehistoric/ Protohistoric, early Historic, and Historic periods, respectively. Though few variations were greater than the standard deviation values, the points from the Forbush Creek site appear to be larger than those from the later sites. However, the projectile points do not appear to reduce in size from the Protohistoric to Historic periods. The graph in Figure 15 illustrates this relationship. Tables 3–5 present the length, width, and thickness measurements for selected projectile point categories in the Forbush Creek site assemblage.

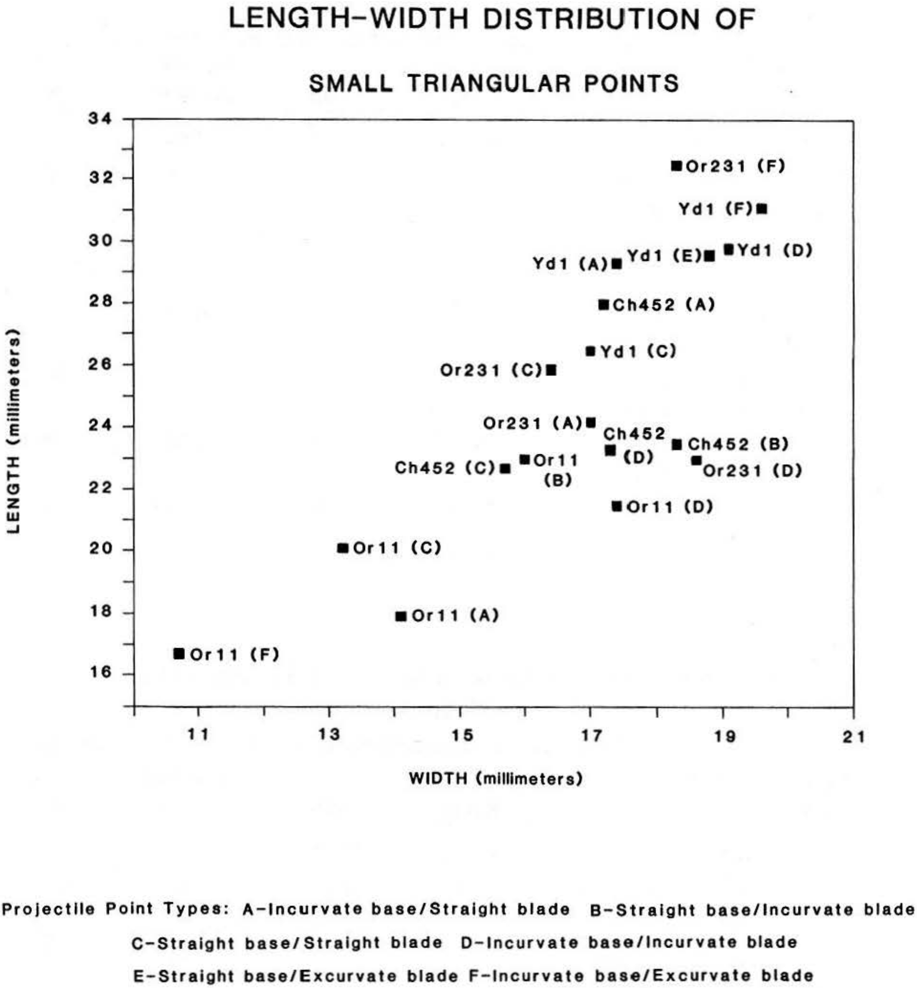

Figure 15.

Length-width distribution of small triangular projectile points from the Forbush Creek (31Yd1), Wall (31Or11), Mitchum (31Ch452), and Fredricks (31Or231) sites.

Table 3. Length measurements for selected projectile point categories (all measurements are in millimeters).

Projectile Point Category	Range	Mean	Standard Deviation	N
Pee Dee Pentagonal	19–36	28.44	4.98	9
Small Triangular—Incurvate Base/Straight Blade	22–38	29.25	4.71	8
Small Triangular—Straight Base/Incurvate Blade	—	—	—	0
Small Triangular—Straight Base/Straight Blade	18–38	26.50	6.74	8
Small Triangular—Incurvate Base/Incurvate Blade	23–42	29.76	5.07	17
Small Triangular—Straight Base/Excurvate Blade	26–37	29.56	4.03	9
Small Triangular—Incurvate Base/Excurvate Blade	21–43	31.13	5.48	15

Table 4. Width measurements for selected projectile point categories (all measurements are in millimeters).

Projectile Point Category	Range	Mean	Standard Deviation	N
Pee Dee Pentagonal	14–32	20.55	4.41	11
Small Triangular—Incurvate Base/Straight Blade	11–23	18.44	3.51	25
Small Triangular—Straight Base/Incurvate Blade	12–21	17.43	3.10	7
Small Triangular—Straight Base/Straight Blade	11–25	18.00	4.49	13
Small Triangular—Incurvate Base/Incurvate Blade	15–31	20.13	3.43	31
Small Triangular—Straight Base/Excurvate Blade	13–24	19.80	3.22	10
Small Triangular—Incurvate Base/Excurvate Blade	13–29	20.63	3.72	16

Table 5. Thickness measurements for selected projectile point categories (all measurements are in millimeters).

Projectile Point Category	Range	Mean	Standard Deviation	N
Pee Dee Pentagonal	3–6	4.40	0.97	10
Small Triangular—Incurvate Base/Straight Blade	3–7	4.55	1.00	20
Small Triangular—Straight Base/Incurvate Blade	4–6	4.80	1.10	5
Small Triangular—Straight Base/Straight Blade	3–65	4.25	0.75	12
Small Triangular—Incurvate Base/Incurvate Blade	3–7	4.57	0.82	30
Small Triangular—Straight Base/Excurvate Blade	3–8	5.70	1.77	10
Small Triangular—Incurvate Base/Excurvate Blade	2–10	5.47	1.84	19

The results of the analysis of the ceramic assemblage from these same sites offers a possible explanation for the apparent trend toward larger points within the early Historic period (Davis 1987). Since the ceramics recovered from the Wall Site (31Or11) indicate a single occupation, it is likely that all projectile points recovered from the site are attributable to the Late Prehistoric/Protohistoric period. According to the original hypothesis, the projectile points from the Mitchum and Fredricks sites should be smaller than those at the Wall site. This is clearly not the case. Let us examine the results of the ceramic analysis from these two sites.

The pottery types from the Mitchum and Fredricks sites suggest that activity occurred at these sites prior to the Historic period (Davis 1987). Potsherds with net-impressed surfaces were recovered from both sites, suggesting prehistoric occupations during the Late Woodland period. The presence of such occupations at these sites could help explain both the occurence of larger projectile points at these sites and the similar clustering of the projectile point sizes between the sites.

For this explanation to be viable, the majority of projectile points recovered at these sites would have to be from the earlier Late Woodland period occupations, rather than from the later Historic period occupations. Davis (personal communication) expresses the opinion that due to the introduction of European goods, including rifles, the projectile point industry could have greatly deteriorated by the time of the Historic occupations. Therefore, despite the fact that the Historic period occupations represent the most intense activity at these sites, they could have produced and used significantly fewer projectile points. If so, then the projectile point samples should largely reflect the earlier occupations.

To test this hypothesis, the proveniences (excavated contexts) of the projectile points from the Mitchum and Fredricks sites were examined. The vast majority of points at both sites were recovered from the plowzone, and very few were recovered from features containing historic artifacts, thus allowing the possibility of mixed prehistoric and historic samples. In addition, an examination was made of the sizes of projectile points found in features containing historic artifacts. The graph in Figure 16 includes only those projectile points from the Mitchum and Fredricks sites that were found in association with historic artifacts. The mean length and width measurements of these presumably Historic period points are smaller than those of the points found in the plowzone. When size comparisons are made with the points from the Wall site, the Historic period points are roughly longer, but more narrow than the Protohistoric period points from the Wall site. This evidence suggests that there is too much variability in the size of triangular projectile points within the Protohistoric and Historic periods to use projectile point size as a useful criterion for chronological identification.

SUMMARY

In summary, the lithic assemblage from the Forbush Creek site reflects a community that utilized local raw materials to provide the needed stone tools. The tool types present in the assemblage and the faunal and ethnobotanical remains recovered at the site suggest the following subsistence activities occurred at the Forbush Creek site. The people hunted local wildlife, including deer, raccoon, rabbit, and birds, with small pentagonal and triangular projectile points. Meat was butchered with choppers, scrapers, and denticulates. Hide processing appears to have been an important activity and involved the use of scrapers and a large number of perforators and drills. River mussels, nuts, and acorns were gathered and processed with pitted cobbles, manos, and metates. Using chipped stone hoes and various other tools, the inhabitants of the Forbush Creek site planted and harvested corn and probably other cultigens as well. Wood was gathered and worked with ground stone celts and chipped stone axes. These stone tools were produced from bifacially worked preforms, flake blanks, cobbles, and tabular slabs using hammerstones, billets, pressure flakers, and abraders. The people also possessed non-utilitarian ground stone items including ground gorgets, pipes, beads, and pendants.

The introduction of European metal tools apparently did not have a profound impact on the aboriginal stone tool assemblage. However, the stone tool assemblage from the historic Fredricks site did lack some of these tool types. The sub-assemblage of small tools did not include denticulates. The large tool sub-assemblage lacked formalized chipped hoes, chipped axes, anvils, and manos. Additionally, the assemblage did not contain any stone

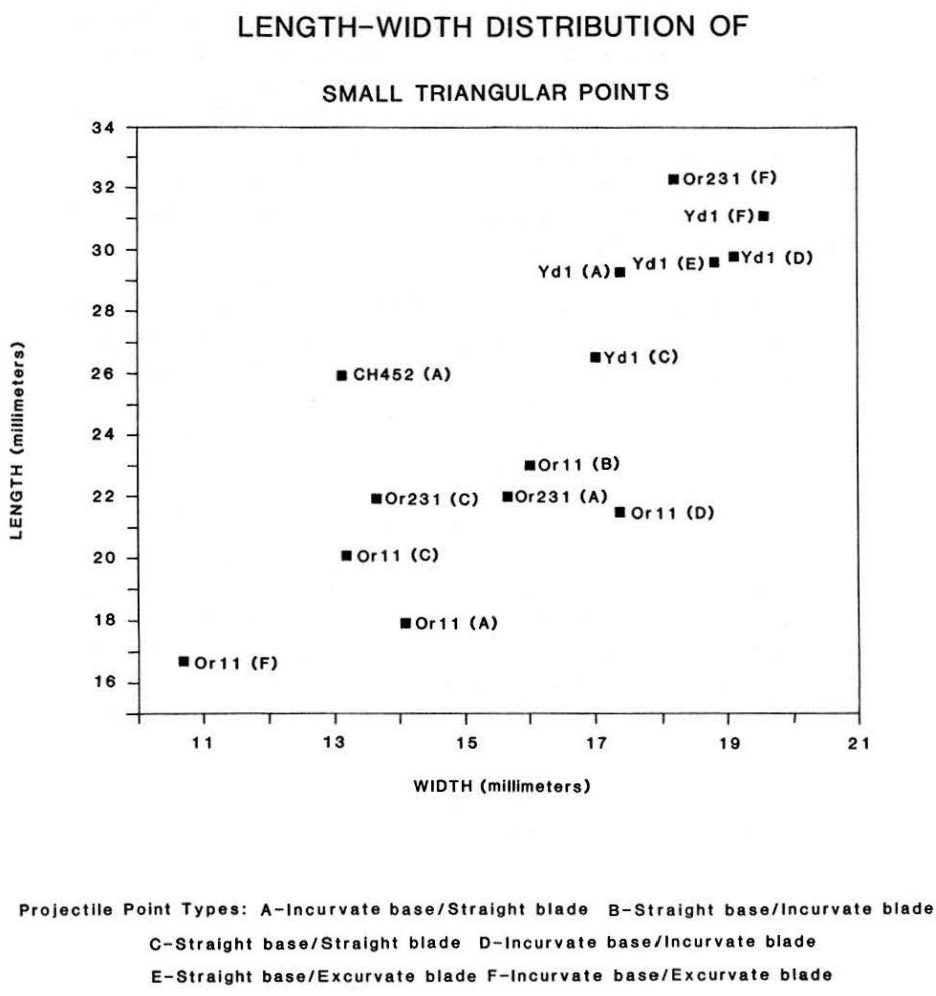

Figure 16.

Length-width distribution of small triangular projectile points from the Forbush Creek (31Yd1), Wall (31Or11), Mitchum (31Ch452), and Fredricks (31Or231) sites (including only those points from Mitchum and Fredricks that were found in association with historic artifacts).

ornaments. The stone tools may have been replaced by European metal tools or with less formalized stone tools. The stone ornamnets appear to have been replaced by European trade goods and shell ornaments. However, the differences between the prehistoric and historic assemblages may also be attributable to cultural or environmental differences.

This analysis suggests that small triangular projectile points decreased in size between the Late Woodland and Protohistoric periods; however, there is too much variability in triangular projectile point size during the Protohistoric and Historic periods to use projectile point size as a criterion for chronological identification.

In conclusion, this paper describes the characteristics of a late prehistoric lithic assemblage from the North Carolina Piedmont. An initial comparison with another lithic assemblage from an historic site suggests that there may not be significant changes in aboriginal technology as a result of the introduction of European metal tools. Hopefully, this study will help provide a better comparative base for future studies of aboriginal culture change in the North Carolina Piedmont.

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Appendix A. Distribution of lithic artifacts by features.

		Artifact Categories									
Feature	**Type**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
43	Refuse Pit	2	18	30	—	2	—	3	—	—	—
44	Tree Stump	2	12	18	—	1	—	2	—	—	—
45	Hearth	—	—	—	—	—	—	—	—	—	—
46	Hearth	—	5	14	—	—	—	2	1	—	—
47	Hearth	—	—	—	—	—	—	—	—	—	—
48	Refuse Pit	—	—	3	—	—	—	—	—	—	—
49	Refuse Pit	—	11	25	—	1	—	4	—	—	—
50	Hearth	—	—	—	—	—	—	—	—	—	—
51	Hearth	—	—	1	—	—	1	—	—	—	—
52	Storage Pit	1	3	2	1	—	—	3	1	—	—
53	Refuse Pit	—	5	13	—	1	—	3	—	—	—
54	Refuse Pit	—	1	—	—	—	—	—	—	—	—
55	Refuse Pit	—	4	9	—	—	—	3	2	—	1
56	Refuse Pit	—	—	3	—	—	—	1	—	—	—
57	Hearth	—	2	1	—	—	—	—	—	—	—
58	Refuse Pit	—	1	8	—	—	—	1	—	—	—
59	Refuse Pit	—	7	33	—	4	—	1	—	—	—
60	Refuse Pit	3	34	141	—	3	—	2	—	—	—
61	Storage Pit	3	36	57	—	2	—	3	2	—	—
62	Refuse Pit	—	1	2	—	—	—	—	1	—	—
63	Refuse Pit	—	9	3	—	—	—	1	—	—	—
64	Refuse Pit	—	2	4	—	—	—	1	—	—	—
65	Refuse Pit	1	11	34	—	—	—	1	1	—	—
66	Refuse Pit	4	5	10	—	—	—	3	—	—	—
67	Refuse Pit	—	1	1	—	—	—	—	—	—	—
68	Refuse Pit	—	2	10	—	—	—	—	—	—	—
69	Refuse Pit	4	5	9	—	1	—	2	—	—	—
70	Refuse Pit	1	—	5	—	—	—	—	—	—	—
71	Refuse Pit	—	—	—	—	—	—	—	—	—	—
72	Tree Stump	—	5	10	—	1	—	1	—	—	—
73	Storage Pit	1	8	29	—	—	—	4	2	—	—
74	Storage Pit	18	174	336	—	18	—	36	2	2	—
75	Storage Pit	3	27	163	—	4	—	3	—	—	—
76	Storage Pit	—	2	8	—	1	—	—	—	—	—
77	Storage Pit	—	7	14	—	3	—	2	1	—	—
78	Storage Pit	2	16	44	—	—	—	—	—	—	—
79	Refuse Pit	—	17	17	—	1	—	4	—	—	—
80	Refuse Pit	2	5	42	—	2	—	4	1	—	—
81	Storage Pit	4	20	38	—	2	—	8	—	—	—
82	Storage Pit	5	41	76	—	2	—	8	6	—	—
83	Storage Pit	3	15	44	—	4	—	4	1	1	—
84	Refuse Pit	1	4	23	—	1	—	1	—	—	—
85	Refuse Pit	—	2	11	—	—	—	3	2	—	—

Appendix A Continued.

		Artifact Categories									
Feature	**Type**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
86	Storage Pit	3	32	66	—	—	1	16	1	1	—
87	Storage Pit	—	—	—	—	1	—	—	—	—	—
88	Storage Pit	2	16	28	—	—	—	5	1	—	—
89	Refuse Pit	1	4	5	—	—	—	1	—	—	—
90	Storage Pit	6	66	120	—	17	—	10	2	1	—
91	Refuse Pit	2	9	8	—	4	—	6	—	—	—
92	Refuse Pit	10	170	329	—	23	—	2	1	—	—
93	Refuse Pit	—	6	7	—	4	—	1	—	—	—
94	Refuse Pit	1	5	9	—	—	—	1	—	—	—
95	Refuse Pit	2	6	11	—	—	—	3	2	—	1
96	Storage Pit	—	3	14	—	1	—	4	1	—	—
97	Storage Pit	—	1	4	—	—	—	8	2	—	—
98	Storage Pit	—	15	20	—	1	—	4	1	1	—
99	Refuse Pit	1	6	5	1	—	—	—	—	—	—
100	Storage Pit	4	21	81	—	5	—	4	—	4	1
101	Storage Pit	1	17	30	—	—	—	1	1	2	—
102	Refuse Pit	—	1	6	—	—	—	—	—	—	—
103	Storage Pit	1	18	31	—	2	—	5	—	—	—
104	Refuse Pit	1	2	4	—	2	—	1	—	—	—
105	Storage Pit	4	22	54	—	2	—	2	1	2	—
106	Storage Pit	—	6	13	—	—	—	10	1	—	—
107	Storage Pit	3	15	38	—	2	—	4	1	3	—
108	Storage Pit	1	8	10	—	1	—	7	1	—	—
109	Storage Pit	—	14	28	—	1	—	4	2	—	—
110	Storage Pit	—	10	19	—	—	—	5	—	1	—
111	Storage Pit	1	2	4	—	1	—	—	—	—	—
112	Storage Pit	1	16	34	—	2	—	5	—	—	—
113	Storage Pit	—	3	17	—	1	—	2	—	—	—
114	Storage Pit	—	1	2	—	—	—	—	—	—	—
115	Storage Pit	—	22	34	1	2	—	3	—	—	—
116	Storage Pit	1	5	7	—	1	—	1	—	—	—
117	Storage Pit	—	5	7	—	—	—	—	1	—	—
118	Storage Pit	1	—	14	—	—	—	1	—	—	—
119	Storage Pit	—	3	12	—	1	—	—	—	—	—
120	Storage Pit	2	7	12	—	3	—	3	1	1	—
121	Storage Pit	—	24	42	1	5	—	1	—	—	—
122	Storage Pit	1	19	33	—	3	—	—	—	—	—
123	Storage Pit	—	14	40	—	4	—	6	—	—	—
124	Storage Pit	—	5	12	—	—	—	—	2	—	—
125	Storage Pit	7	7	30	—	—	—	3	4	—	—
126	Storage Pit	1	4	12	—	1	—	—	—	—	—
Total		118	1128	2543	4	144	2	243	49	19	3

Appendix A Continued.

	Artifact Categories												
Feature	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
43	—	—	—	—	—	—	—	—	—	—	—	—	—
44	—	—	—	—	—	—	—	—	—	—	—	1	—
45	—	—	—	—	—	—	—	—	—	—	—	—	—
46	1	—	—	—	—	—	—	1	—	—	—	—	—
47	—	—	—	—	—	—	—	—	—	—	—	—	—
48	—	—	—	—	—	—	—	—	—	—	—	—	—
49	—	—	—	—	—	—	—	—	—	—	—	—	—
50	—	—	—	—	—	—	—	—	—	—	—	—	—
51	—	—	—	—	—	—	—	—	—	—	—	—	—
52	1	—	—	—	—	—	—	—	—	—	—	—	—
53	—	—	—	—	—	—	—	—	—	—	—	—	—
54	—	—	—	—	—	—	—	—	—	—	—	—	—
55	—	—	—	—	—	—	—	—	—	—	—	1	—
56	—	—	1	—	—	—	—	—	—	—	—	—	—
57	1	—	—	—	—	—	—	—	—	—	—	—	—
58	—	—	—	—	—	—	—	—	—	—	—	1	—
59	—	—	—	—	—	—	—	—	—	—	—	—	—
60	—	—	—	—	2	—	—	—	—	—	—	—	—
61	1	—	—	—	—	—	—	—	—	—	—	—	—
62	—	—	—	—	—	—	—	—	—	—	—	—	—
63	—	—	—	—	—	—	—	—	—	—	—	—	—
64	—	—	—	—	—	—	—	—	—	—	—	—	—
65	—	—	—	—	—	—	—	—	—	—	—	—	—
66	—	—	—	—	—	—	—	—	—	—	—	—	—
67	—	—	—	—	—	—	—	—	—	—	—	—	—
68	—	—	—	—	—	1	—	—	—	—	—	—	—
69	—	—	—	—	1	—	—	—	—	—	—	—	—
70	—	—	—	—	—	—	—	—	—	—	—	—	—
71	—	—	—	—	—	—	—	—	—	—	—	—	—
72	—	—	—	—	—	—	—	—	—	—	—	—	—
73	—	—	—	—	—	—	1	—	—	—	—	—	1
74	2	—	1	—	1	1	—	—	—	—	—	2	—
75	—	—	1	—	—	—	—	—	—	1	—	—	—
76	—	—	—	—	—	—	—	—	—	—	—	—	—
77	—	—	—	—	—	—	—	—	—	—	—	2	—
78	—	—	1	—	1	—	—	—	—	—	—	—	—
79	—	—	—	—	—	—	—	—	—	—	—	2	—
80	—	—	—	—	—	—	—	—	—	—	—	—	—
81	—	—	—	—	—	—	—	—	—	—	—	—	—
82	—	—	1	1	—	—	—	—	—	1	1	—	—
83	—	—	—	—	—	—	—	—	—	—	—	—	—
84	—	—	—	—	2	1	—	—	—	—	—	—	—

Appendix A Continued.

	Artifact Categories												
Feature	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**
85	—	1	—	—	—	—	—	—	—	—	—	—	—
86	—	—	—	—	—	—	—	—	—	—	—	3	—
87	—	—	—	—	—	—	—	—	—	—	—	—	—
88	—	—	—	—	—	—	—	—	—	1	—	—	—
89	—	—	—	—	—	—	—	—	—	—	—	—	—
90	—	—	—	1	1	—	—	—	—	—	—	—	—
91	—	—	—	—	—	—	—	—	—	—	—	1	—
92	—	—	—	1	—	—	—	—	—	—	—	2	—
93	—	—	—	—	—	—	—	—	—	—	—	—	—
94	—	—	—	—	—	—	—	—	—	—	—	—	—
95	—	—	—	—	—	—	—	—	—	—	—	—	—
96	—	—	—	—	—	—	—	—	—	—	—	—	—
97	—	1	—	—	—	—	—	—	—	—	—	1	—
98	—	—	—	—	1	—	—	—	—	—	—	—	—
99	—	—	—	—	—	—	—	—	—	—	—	—	—
100	—	1	—	—	—	—	1	—	—	—	—	1	—
101	1	—	—	—	1	1	—	—	—	1	—	—	1
102	—	—	—	—	—	—	—	—	—	—	—	—	—
103	4	—	1	—	—	—	—	—	—	—	—	—	—
104	—	—	—	—	—	—	—	—	—	—	—	—	—
105	—	3	1	—	—	—	—	—	—	—	—	—	—
106	—	—	—	—	1	—	—	—	—	—	—	—	—
107	1	1	—	—	—	—	—	—	—	—	—	—	—
108	—	—	—	—	—	—	—	—	—	—	—	—	—
109	—	—	—	—	—	—	—	—	—	—	—	—	—
110	—	—	—	—	—	—	—	—	—	—	—	—	—
111	—	—	—	—	—	—	—	—	1	—	—	—	—
112	—	—	—	—	—	—	—	—	—	—	—	1	—
113	—	—	—	—	—	2	—	—	—	—	—	—	—
114	1	—	—	—	—	—	—	—	—	—	—	2	—
115	—	—	—	—	—	1	—	—	—	—	—	—	—
116	—	—	—	—	—	1	—	—	—	—	—	—	—
117	—	2	—	—	1	—	—	—	—	—	—	—	—
118	—	—	—	—	1	—	—	—	—	—	—	—	—
119	—	—	—	—	—	—	—	—	—	—	—	—	—
120	—	—	—	—	1	—	—	—	—	—	—	—	—
121	1	—	—	—	—	—	—	—	—	—	—	—	—
122	—	—	—	—	—	—	—	—	—	1	—	—	—
123	2	1	—	—	1	—	—	—	—	—	—	—	—
124	—	—	—	—	—	—	—	—	—	—	—	—	—
125	3	—	—	—	—	—	—	—	—	—	—	—	—
126	—	2	—	—	—	—	—	—	—	—	—	—	—
Total	19	12	7	3	15	8	2	1	1	5	1	20	2

Appendix A Continued.

	Artifact Categories											
Feature	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
43	—	—	—	—	—	—	—	—	—	—	—	—
44	1	—	—	—	—	—	—	—	—	—	—	—
45	—	—	—	—	—	—	—	—	—	—	—	—
46	—	—	—	—	—	—	—	—	—	—	—	—
47	—	—	—	—	—	—	—	—	—	—	—	—
48	—	—	—	—	—	—	—	—	—	—	—	—
49	1	—	—	—	—	—	—	—	—	—	—	—
50	—	—	—	—	—	—	—	—	—	—	—	—
51	—	—	—	—	—	—	—	—	—	—	—	—
52	1	—	—	—	—	—	—	—	—	—	—	—
53	—	—	—	—	—	—	—	—	—	—	—	—
54	—	—	—	—	—	—	—	—	—	—	—	—
55	—	—	—	—	—	—	—	—	—	—	—	—
56	—	—	—	—	—	—	—	—	—	—	—	—
57	—	—	—	—	—	—	—	—	—	—	—	—
58	—	—	—	—	—	—	—	—	—	—	—	—
59	—	—	—	—	—	—	—	—	—	—	—	—
60	2	—	—	—	—	—	—	—	—	—	—	—
61	4	—	—	—	—	—	—	—	—	—	—	—
62	1	—	—	—	—	—	—	—	—	—	—	—
63	—	—	—	—	—	—	—	—	—	—	—	—
64	—	—	—	—	—	—	1	—	—	—	—	—
65	—	—	—	—	—	—	—	—	—	—	—	—
66	—	—	—	—	—	—	—	—	—	—	—	—
67	—	—	—	—	—	—	—	—	—	—	—	—
68	—	—	—	—	—	—	—	—	—	—	—	—
69	—	—	—	—	—	—	—	—	—	—	—	—
70	—	—	—	—	—	—	—	—	—	—	—	—
71	—	—	—	—	—	—	—	—	—	—	—	—
72	—	—	—	—	—	—	—	—	—	—	—	—
73	8	—	—	—	—	—	—	—	—	—	—	—
74	17	—	—	—	1	—	1	—	—	—	1	1
75	5	—	—	—	—	—	—	—	—	—	—	—
76	1	—	—	—	—	—	—	—	—	—	—	—
77	—	—	—	—	—	—	—	—	—	—	—	—
78	1	—	—	—	—	—	—	—	—	—	—	—
79	1	—	—	—	—	—	2	—	—	—	—	—
80	—	—	—	—	—	—	—	—	—	—	—	—
81	4	—	—	—	—	—	1	—	—	—	—	—
82	5	1	—	—	—	—	—	2	—	—	—	—
83	5	—	—	—	—	—	—	—	—	—	—	—
84	2	—	—	—	—	—	—	—	—	—	—	—

Appendix A Continued.

	Artifact Categories											
Feature	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
85	—	—	—	—	—	—	—	—	—	—	—	—
86	9	—	—	—	—	1	2	—	1	—	—	—
87	—	—	—	—	—	—	—	—	—	—	—	—
88	—	2	—	—	—	—	—	—	—	—	—	—
89	1	—	—	—	—	—	—	—	—	—	—	—
90	7	—	—	—	—	—	—	—	—	—	—	—
91	1	—	—	—	—	—	1	—	—	—	—	—
92	4	—	—	—	—	—	—	—	—	—	—	—
93	—	—	—	—	—	—	2	—	—	—	—	—
94	—	—	—	—	—	—	—	—	—	—	—	—
95	2	—	—	—	—	—	—	—	—	—	—	—
96	—	—	—	—	—	—	—	—	—	—	—	—
97	5	—	—	—	—	—	1	—	—	—	—	—
98	2	—	—	—	—	—	—	—	—	—	—	—
99	—	—	—	1	—	—	—	—	—	—	—	—
100	9	—	—	—	—	—	—	—	—	—	—	—
101	4	—	—	—	—	—	1	—	—	—	—	—
102	1	—	—	—	—	—	—	—	—	—	—	—
103	10	1	—	—	—	—	—	—	—	—	—	—
104	1	—	—	—	—	—	—	—	—	—	—	—
105	5	—	—	—	—	—	—	—	—	—	—	—
106	11	—	—	—	—	—	—	—	—	—	—	—
107	7	—	—	—	—	—	1	—	—	—	—	—
108	8	—	—	—	—	—	—	—	—	—	—	—
109	4	—	—	—	—	2	—	—	—	—	—	—
110	2	—	—	—	—	—	—	—	—	1	—	—
111	—	—	—	—	—	—	—	—	—	—	—	—
112	3	—	—	—	—	1	—	—	—	—	—	—
113	1	—	—	—	—	—	—	—	—	1	—	—
114	6	—	—	—	—	—	—	—	—	—	—	—
115	—	—	—	—	—	—	—	—	—	—	—	—
116	5	—	1	—	—	—	—	—	—	—	—	—
117	—	—	—	—	—	—	—	—	—	—	—	—
118	—	—	—	—	—	—	—	—	—	—	—	—
119	—	—	—	—	—	—	—	—	—	—	—	—
120	—	—	—	—	—	—	—	—	—	—	—	—
121	3	—	—	—	—	—	—	—	—	—	—	—
122	1	—	—	1	—	—	—	—	—	—	—	—
123	3	—	—	—	—	—	—	—	—	—	—	—
124	—	—	—	—	—	—	—	—	—	—	—	—
125	2	—	—	—	—	—	—	—	—	—	1	—
126	6	—	—	—	—	—	1	—	—	—	—	—
Total	184	2	1	2	1	4	14	2	1	2	2	1

Appendix A Continued.

	Artifact Categories				
Feature	**36**	**37**	**38**	**39**	**Total**
43	—	1	1	—	57
44	—	—	—	—	37
45	—	—	—	—	0
46	—	1	—	—	25
47	—	—	—	—	0
48	—	—	—	—	3
49	—	2	—	—	44
50	—	—	—	—	0
51	—	—	—	—	2
52	—	—	—	—	13
53	—	—	—	—	22
54	—	—	—	—	1
55	—	—	—	—	20
56	—	—	—	—	5
57	—	—	—	—	4
58	—	1	—	—	12
59	—	—	—	—	45
60	—	2	1	—	190
61	—	1	—	1	110
62	—	—	—	—	5
63	—	—	—	—	13
64	—	—	—	—	8
65	—	—	—	—	48
66	—	—	—	—	22
67	—	—	—	—	2
68	—	—	—	—	13
69	—	—	—	—	22
70	—	—	1	—	7
71	—	—	—	—	0
72	—	2	—	—	19
73	—	—	3	—	57
74	—	10	13	1	638
75	—	1	—	—	208
76	—	—	—	—	12
77	—	—	1	—	30
78	—	1	—	—	66
79	—	1	—	—	45
80	—	2	—	—	58
81	1	3	—	1	82
82	—	5	—	—	155
83	—	2	1	1	81
84	—	—	—	—	35
85	—	—	—	—	19

Appendix A Continued.

	Artifact Categories				
Feature	36	37	38	39	Total
86	—	2	4	—	142
87	—	—	—	—	1
88	—	3	—	—	58
89	—	—	—	—	12
90	—	2	4	1	238
91	—	—	—	—	32
92	—	—	3	—	545
93	—	—	—	—	20
94	—	1	—	—	17
95	—	—	—	—	27
96	—	—	—	—	23
97	—	—	2	—	25
98	—	1	—	—	46
99	—	1	—	1	16
100	—	6	6	1	145
101	—	1	—	—	63
102	—	—	—	—	8
103	—	4	—	—	77
104	—	1	1	—	13
105	—	1	—	—	97
106	—	—	1	—	43
107	1	3	1	—	81
108	—	1	—	—	37
109	—	—	2	—	57
110	—	3	1	—	42
111	—	—	1	—	10
112	—	3	—	—	66
113	—	5	1	—	33
114	—	—	1	—	13
115	—	5	—	—	68
116	—	2	—	—	24
117	—	1	2	—	19
118	—	1	—	—	18
119	—	—	—	—	16
120	—	1	—	—	31
121	—	—	2	—	79
122	—	3	—	—	62
123	—	—	1	—	72
124	—	—	3	—	22
125	1	3	—	—	61
126	—	—	1	—	28
Total	3	89	58	7	4722

[1]KEY TO ARTIFACT CATEGORY CODES.

1. Primary Decortication Flake
2. Secondary Decortication Flake
3. Interior/Bifacial Thinning Flake
4. Core Rejuvenation Flake
5. Blade
6. Raw Material
7. Utilized Flake
8. Retouched Flake
9. Utilized/Retouched Flake
10. Core
11. Biface
12. Drill
13. End Scraper
14. Graver
15. Perforator
16. Denticulate
17. Pièce Esquillée
18. Chopper/Scraper
19. Chopper
20. Chipped Hoe
21. Chipped Axe
22. Pentagonal Projectile Point
23. Stemmed Projectile Point
24. Triangular Projectile Point
25. Ground Celt
26. Abrader
27. Metate
28. Mano/Hammerstone
29. Anvil/Hammerstone/Mano
30. Hammerstone
31. Pitted Cobble
32. Pecked Ball
33. Ground Gorget
34. Stone Pendant
35. Stone Bead
36. Stone Pipe Fragment
37. Shatter Fragment
38. Projectile Point Fragment
39. Projectile Point Preform