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Update on NRS Paleoindian and Pre-Clovis Research: Surface Surveys and Excavations (1992-2012)

Introduction

Objective

Part-I, Clovis Settlement Patterns, published in 1992 was directed to local Clovis research. Since then, NRS research has revealed much more concerning this unique Paleoindian tradition, several other traditions of the Paleoindian period, and it has revealed the existence of at least one tradition we define as pre-Clovis. Some prefer the term Paleoamerican, but to avoid confusion the terms Paleoindian and pre-Clovis will be used throughout this work. The objective of this chapter is to update the NRS Paleoindian and pre-Clovis research in Virginia after 1992.

Presentation and Organization

This chapter is presented before the excavation chapters since much of the most interesting new Paleoindian and pre-Clovis research is a result of a continuation of the NRS site survey (pedestrian survey) work and the associated laboratory work. However, significant new research findings have resulted from the site excavations. Where individual site excavation chapters contain detailed findings and analyses of Paleoindian and/or pre-Clovis subjects, the most significant information will be summarized, but the work will not be repeated here in great detail. An example is the pre-Clovis work at Cactus Hill (Chapter 5), which is briefly discussed here along with a discussion of presumed pre-Clovis assemblages recovered from other local sites through surface surveys.

Research work not addressed in another chapter will be discussed here in more detail. An example is the newly discovered Little Rocky Creek site weathering amber chalcedony quarry and associated Clovis base camp in Hanover County, Virginia. This site is not within the Nottoway River drainage, but as a major project with significant implications for research at many Clovis sites in the drainage, it is presented in some detail. The following thirteen primary sections in this chapter are organized under four general headings.

Clovis Quarry-Related Research

The Brunswick County Chert Quarry

The Brunswick County chert quarry was first discussed in *Part-I* (McAvoy 1992:28), but the exact location was not known at that time. After an intensive search in May 2004, a concentration of chert platelets and nodules with the typical fibrous structure was discovered by NRS in low ground adjacent to Greensville Creek. The creek forms the border between Greensville County and Brunswick County, Virginia and is just north of the Meherrin River. The chert occurs over a distance of several hundred yards on the surface of low hilltops as

isolated fragments within the general boundary zone between granite and mafic and felsic volcanic rocks. Also, in the immediate area there are deposits of Pliocene-age sand and gravel.

Most of the chert at this location appears to be a replacement material in a metavolcanic or metasedimentary stone that initially formed in multiple thin layers. Chert-like stone in various stages of silicification has been observed in quarry debitage occurring with other materials. Little of this chert-like stone is solid and homogeneous, and most fractures in thin, parallel surfaces, a quality usually rendering the material unsuitable for knapping artifacts. Colors most often observed with the poorer quality layered stone are gray, green, brown, and red.

In contrast, a small percentage of this material is a very solid chert with a fibrous, layered structure (Figure 2.1). Colors most frequently observed in this material are white, cream, yellow, gray, blue, and brown. Associated with the chert in the low-ground adjacent to Greenville Creek is a small amount of fine-grain chalcedony in the form of small nodules. The nodules range in color from white to dark brown, and some nodules are very colorful with mixtures of browns, reds, and yellows. It would appear that the area discovered by NRS is one of the locations producing the chert we previously described as Brunswick County quarry fibrous chert; however, given the size and nature of this occurrence, there are likely more such small outcrops in this area not yet discovered.

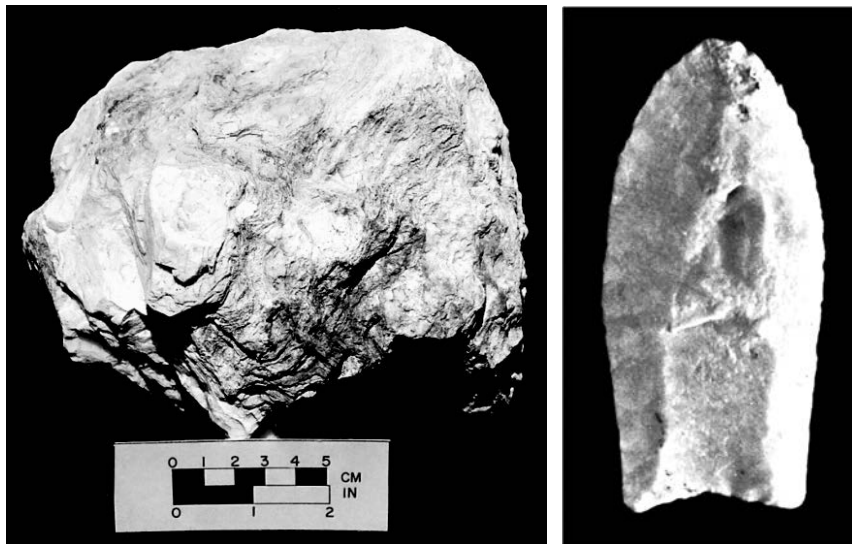


Figure 2.1. Brunswick County quarry chert. **Left**, seven-inch-wide cream-white and gray fibrous chert fragment or platelet recovered by NRS in May 2004 during the initial discovery of the Brunswick County, Virginia chert quarry site along Greenville Creek. **Right**, gray-white, coarse fibrous chert Clovis point of the same type of chert as found by NRS at the Brunswick County, Virginia quarry. The point is 76 mm (3 inches) in length, and was found west of the quarry near the Meherrin River, three miles south of Lawrenceville, in Brunswick County. The point is in the William Allgood collection at Lawrenceville Virginia. (Left, NRS photograph; right, VRCA photograph)

Plowed fields and recently logged and cleared areas east, west, and south of the creek produced quarried fragments, a few flake tools, biface fragments, and a few Early Archaic projectile points of this colorful chert. One small quarry-related site was located on a terrace above Greenville Creek, and it produced biface fragments and end scrapers consistent in shape and stone material with those from Palmer and Clovis sites along both the Nottoway River and Meherrin River.

Clovis points of this material (Figure 2.1) are rare in Virginia, but Palmer points and related Early Archaic tools are more common. At the base of several stratified sites tested by NRS within the Nottoway River drainage in the 1980s and 1990s, levels were excavated containing Palmer-age artifacts including some of fibrous Brunswick County quarry chert identical to that recovered on Greenville Creek. To the east of the quarry in Greenville County, Middle

Archaic sites along the Meherrin River produce some points of the lower quality chert-like layered metavolcanic or metasedimentary stone found here. This layered stone is also known in small quantities from Middle Archaic sites to the northeast on the Nottoway River and the Blackwater River.

The Little Rocky Creek Clovis Site

Introduction

Since the publication of *Part-I* in 1992, the most significant Clovis site, or Clovis locality, discovered by NRS in Virginia is the Little Rocky Creek site, which is a Clovis base camp with associated chalcedony outcrops (chalcedony quarry). The base camp portion of the site, Figure 2.2, is situated east of the chalcedony outcrops, which are adjacent to Little Rocky Creek. This complex of sites is located in the Virginia Piedmont in northwestern Hanover County along a high ridge south of the North Anna River within the York River drainage.

The site was discovered by Mr. James P. McAvoy in March 2004 after a search of 10 years. Mr. McAvoy performed numerous field surveys both north and south of the James River, and he inspected many local collections of artifacts to help narrow the location of the site. It is important to note that no fluted points had been recorded from either the site or the immediate site area before his discovery. Based upon Virginia fluted point survey data, this general area of Hanover County would have been described as one where there was an absence of Clovis points.

After the site was located, the principal property owner was contacted and informed of the significance of the discovery, and he has worked closely with NRS to protect the site and to make part of the site available for our fieldwork. Starting in 2005, a small portion of the site, which previously had been cleared of vegetation, was plowed at NRS request, but most of the site area remains wooded. Permanent grid markers were established at the periphery of the plowed area, and surface collections have been made each year within the grid. As the artifact density was fairly heavy in this area, a large amount of material (formal tools and debitage) was recovered and recorded by grid position. The find locations of the more interesting formal tools and cores were precisely plotted.



Figure 2.2. The Little Rocky Creek site. The Clovis base camp near weathering amber chalcedony outcrops (quarry areas) in Hanover County, Virginia is shown in July 2004 being tested by Mr. J. P. McAvoy; the view is looking north across a recently cleared area of the site. One area of maximum artifact density (Figure 2.5) is visible in the field in the background to the far left, and an area of lower artifact density is visible on the hillside near the tree line in the background to the far right. (NRS photograph)

Other NRS techniques of investigation have included shovel testing and a limited amount of excavation in five-foot-square and ten-foot-square units. Surveys were conducted to record land elevations and general site-area topographies, and samples of the chalcedony recovered at the quarry and from the base camp were submitted for detailed petrographic analysis.

The chalcedony, which NRS has described as “weathering amber chalcedony” (McAvoy 1992:30), was first mentioned by Ben C. McCary in his 1956 report on an isolated find of a fluted point, number 264 in his survey, in southeastern Rockbridge County, Virginia. Dr. McCary’s description of the stone material of this point and his conclusions concerning the likely non-local source of the stone are insightful and merit repeating:

“The first thing that attracts the attention is the material. It is a variety of chert that I have found at only one site in Virginia - the Williamson Paleo-Indian site. I have examined thousands of Indian arrowheads found in the state, and I have never seen a single one made of this stone. But the Williamson site has produced several fluted points of this same unique lithic material. It has acquired during the ages a deeply weathered white surface and, at first sight, appears opaque. If examined against the light, however, it proves to be translucent at many irregular crystalline spots and veins, and of pale pink color.” McCary continues, “It should be pointed out that the Williamson site has also produced two or three scrapers of this material, but no flakes or cores. In other words, only finished products have appeared. What is the significance of the presence of this chert at the Williamson site and at Natural Bridge Station? It might be suggested that the rock is not native to either section, and it was brought in by those people who finally settled at the Williamson site. As they moved eastward, they lost some of this distinctive, peculiar, and foreign chert.”

While McCary’s suggested direction of movement of the weathering amber chalcedony now seems incorrect, he had only two site locations with which to work. However, NRS now has a much larger database of sites producing artifacts of this material, including the quarry, and many of these locations are identified below.

Distribution of Weathering Amber Chalcedony Clovis Artifacts

Gregory and Peebles (1990) reported finding weathering amber chalcedony in the form of flakes, several nearly completed broken points (manufacturing failures), two fragments of a very long completed point (Figure 2.3, #5), scrapers, and other tools on a Clovis site they discovered near Claremont close to the James River in Surry County, Virginia. Some of these artifacts can be viewed on the web site of the Virginia Foundation for Archaeological Research, which is the group based in Surry County, Virginia that conducted this research.

A few miles to the west in Prince George County, Virginia, the material in the form of flakes, tools, and at least one Clovis point (McCary fluted point survey number 889) was recovered from a small Clovis site near historic Flowerdew Hundred Plantation, also near the James River. Below this location but still in Prince George County, a Clovis point of the material was reported to J. M. McAvoy in 1966 by a local collector as an isolated find near a small swamp just south of the community of Disputanta; this point is shown as #8 in Figure 2.3.

Harold Conover found 10 artifacts of the material in the form of three Clovis points (Figure 2.3, #3, #4, and #11), scrapers, and flakes on the Conover Clovis site in Dinwiddie County (McAvoy 1992:105) in the early 1980s. In December 1980, Jim Livesay, Sr., and Jim Livesay, Jr., working together found a small Clovis point (Figure 2.3, #10), at least two scrapers, and several flakes of weathering amber chalcedony on a small Clovis site along the Appomattox River in Chesterfield County, Virginia near the community of Matoaca. To the south of the other discoveries, in Greensville County, Virginia, at least one finished Clovis point (Figure 2.3, #6), a preform fragment, end scrapers, side scrapers, two biface fragments, and flakes (Table 2.3,

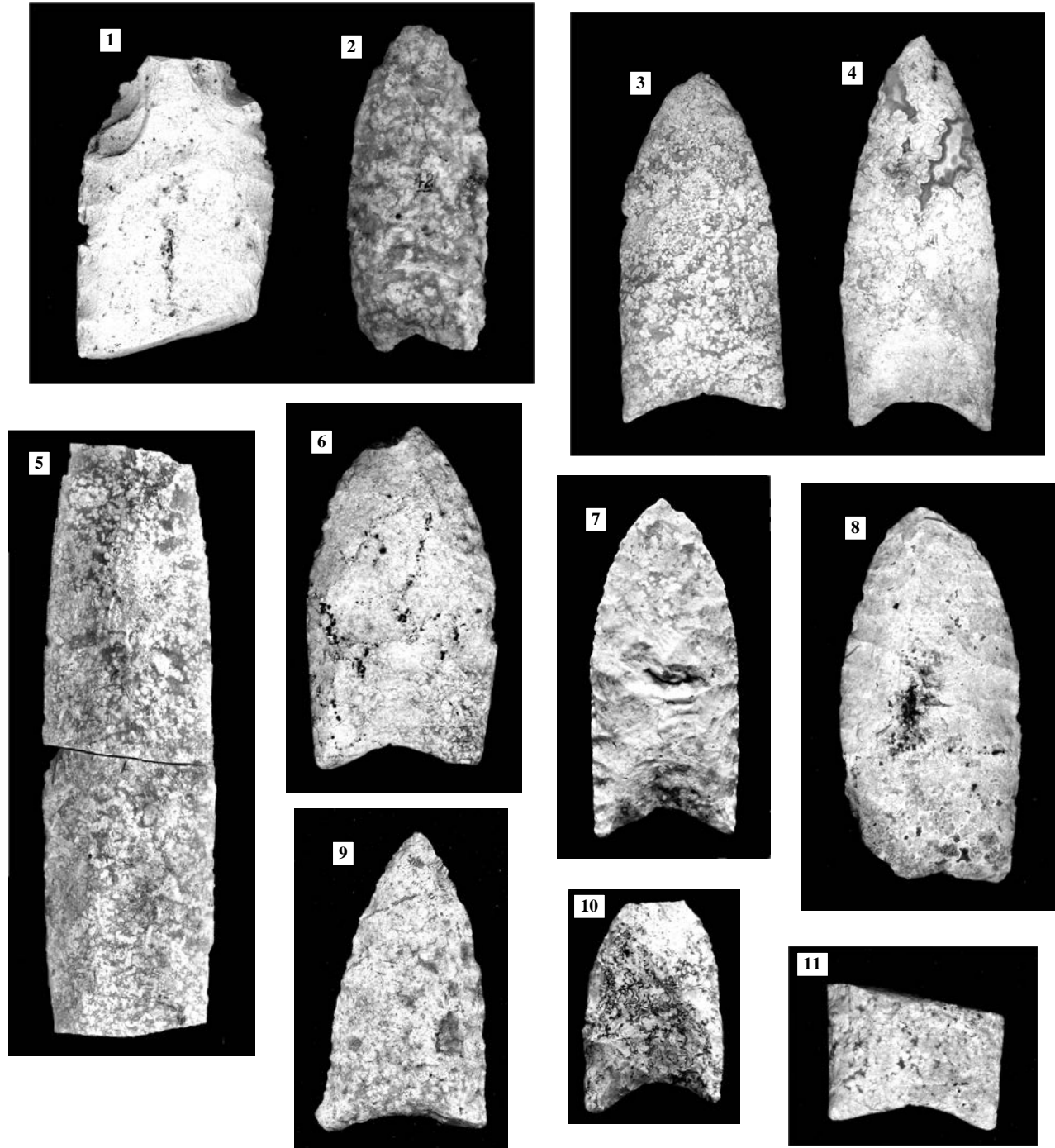


Figure 2.3. Representative examples of weathering amber chalcedony fluted points (mostly Clovis) from find locations south of the James River in southeastern Virginia: **1** and **2**, the Williamson site, Dinwiddie County; **3**, **4**, and **11**, the Conover Clovis site, Dinwiddie County; **5**, the Clovis site at Claremont, Surry County; **6**, the Greenville County Clovis site, Greenville County; **7**, unknown find location in the Dinwiddie-Sussex-Chesterfield County area; **8**, isolated find, south of Disputanta, Prince George County; **9**, isolated point find, Sussex County; and **10**, small Clovis site near Matoaca, Chesterfield County. The points were photographed and/or scanned in such a manner as to highlight the characteristics of the material texture, structure, and inclusion patterns, but this photographic technique in the majority of cases sacrificed most flaking pattern details. (All points are shown natural size; all are NRS photographs except for the photograph of point #5, which was provided by Mr. L. B. Gregory of the Virginia Foundation for Archaeological Research, Surry County, Virginia.)

material type 18) totaling 76 artifacts were recovered on a site along the Meherrin River. This site, found and worked in the 1980s and 1990s by Mr. J. H. Boney of Emporia, Virginia, and his family, was described as the Greensville County Clovis site (McAvoy 1992:121), a large hunting-related Clovis base camp. An update on the research associated with the Greensville County Clovis site and site artifacts appears later in this chapter. Two unifacial tools and three flakes of the material were recovered in NRS excavations at the Cactus Hill site (Chapter 5) in Sussex County, Virginia in Clovis artifact clusters, and a Redstone-like fluted point (Figure 2.3, #9) of this material was recorded as a surface find just northwest of the Cactus Hill site above the Nay site (Chapter 10) along Beaver Pond Swamp. Also, flakes and tools of weathering amber chalcedony have been found on several of the small Nottoway River Clovis camps in Sussex County (McAvoy 1992:78, 81, 95).

Overall, Clovis camps containing this material, and isolated finds of Clovis points of this material, have been observed by NRS from Hanover County, Caroline County, Stafford County, the City of Newport News, Prince George County, Chesterfield County, Gloucester County, Mathews County, Sussex County, Dinwiddie County, Greensville County, Rockbridge County, Alleghany County, Patrick County, and Bedford County, Virginia. Identical material has been observed as well from the Clovis component at the Higgins site in Anne Arundel County, Maryland (Ebright 1992). Also, a verbal report and photographs of three Clovis points of identical stone from two different private collections representing two locations in Dorchester County on the Maryland Eastern Shore have been provided to the authors (Darrin Lowry, personal communication, 2009). A photograph of a Clovis point of identical material from Caroline County, Maryland has been seen, and reports of two Clovis points of similar material from northeastern North Carolina were provided to NRS by collectors, but the artifacts have not been examined. Figure 2.4 shows distance/direction vectors from the quarry to most locations.

In August 2004, a detailed inspection was made by NRS of the old Williamson Family collection recovered on the Williamson Clovis site complex (the Williamson Farm and the Ampy Farm) from the 1940s through the middle 1970s. The collection, now at the College of William and Mary in Williamsburg, Virginia, revealed several points, a biface fragment, and a few unifacial tools of weathering amber chalcedony. This observation supports the earlier statements made by McCary (1956, 1975) and the author (McAvoy 1992:45) that a small amount of this material in the form of finished points (Figure 2.3, #1 and #2) and tools was present on the Williamson site and particularly on the Ampy Farm portion of that site.

While the Little Rocky Creek site weathering amber chalcedony quarry is located north of the James River and within the York River drainage, more than 70 percent of the finished points and most of the unifacial tools of this material have been reported south of the James River and appear to be associated with a group or groups of Clovis hunters who eventually visited the Williamson site. Small quantities of this material are quite widespread across Virginia and into the Chesapeake Bay area of Maryland. The known distribution of weathering amber chalcedony Clovis artifacts is as shown in Figure 2.4, which indicates that most of the finds have been reported from the western Coastal Plain or eastern Piedmont in the Fall Zone. Weathering amber chalcedony appears to have routinely moved greater distances from the Little Rocky Creek site in Hanover County than even the distinctively colored and patterned Little Cattail Creek chert and chalcedony from the well-known and very large Williamson quarry in Dinwiddie County. The significance of these observations is addressed in a later section of this chapter concerning an update of the NRS hypothesized Clovis settlement patterns first presented in *Part-I* in 1992.

The Range of Movement of Weathering Amber Chalcedony Clovis Artifacts from the Quarry

Map Scale: 100 Miles

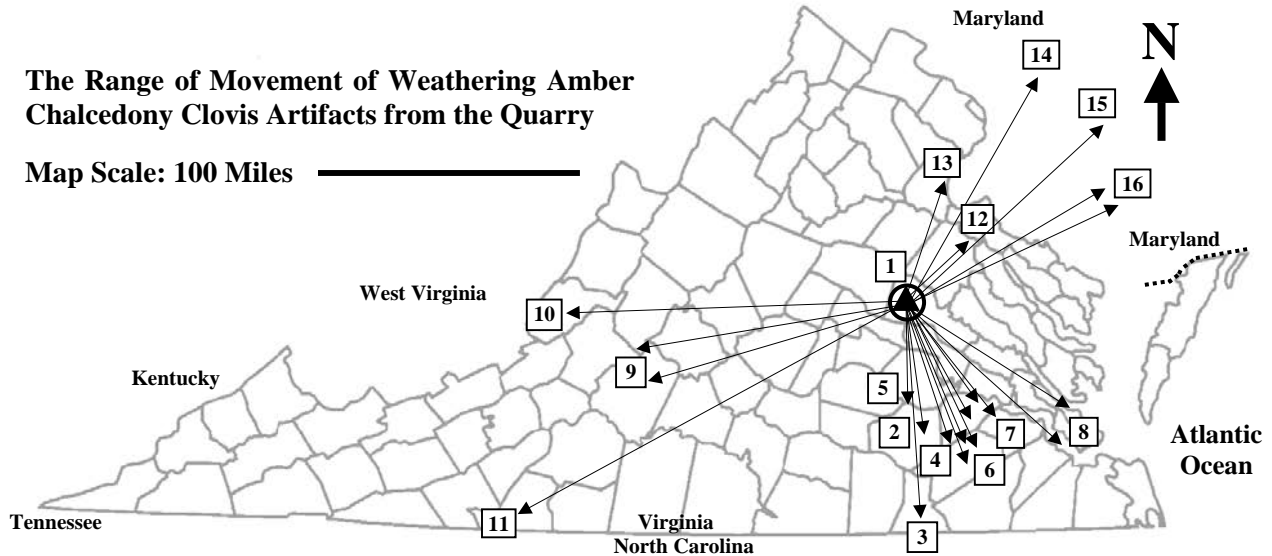


Figure 2.4. Distance/direction vectors showing the movement of selected weathering amber chalcedony (WAC) Clovis artifacts across Virginia and into Maryland from the quarry site in Hanover County, Virginia: **1**, the Little Rocky Creek site WAC quarry and Clovis base camp, western Hanover County, Virginia, York River drainage; **2**, numerous Clovis artifacts, the Williamson Clovis site, Dinwiddie County, Little Cattail Creek, Nottoway River drainage; **3**, numerous Clovis artifacts, the Greenville County, Virginia, Clovis site, Meherrin River, Greenville County; **4**, Clovis artifacts, the Conover Clovis site, Dinwiddie County, Rowanty Creek, Nottoway River drainage; **5**, Clovis artifacts, the Matoaca (water treatment plant) site, Chesterfield County, Appomattox River; **6** (three locations), Clovis artifacts, the Cactus Hill site; a Redstone point near the Cactus Hill site; and a Clovis point near Stony Creek, all Sussex County, all Nottoway River; **7** (three locations), numerous Clovis artifacts, the Claremont Clovis site, Surry County, James River; Clovis artifacts, unnamed small Clovis site, Prince George County, James River; Clovis point, south of Disputanta, Prince George County, Blackwater River drainage; **8** (two locations), Clovis point, Mulberry Island, City of Newport News, James River; Clovis point, Gloucester County, York River; **9** (two locations), Clovis point, Bedford County, Terrapin Mountain, James River drainage divide; Clovis point, Natural Bridge Station, Rockbridge County, James River; **10**, Clovis point, near City of Covington, Alleghany County, Jackson River (James River drainage); **11**, Clovis point, headwaters of Smith River, base of the Blue Ridge Mountains, Patrick County, 170 miles, the maximum distance of movement from the quarry of a point as known in 2012; **12**, Clovis point and flakes, east of Fredericksburg, Caroline Co., Rappahannock River; **13**, Clovis point, Aquia Creek, Government Island, Stafford County, 40 miles; **14**, Clovis artifacts, the Higgins Site, Ann Arundel County, Maryland (Western Shore), 95 miles; **15**, Clovis point, Caroline County, Maryland (Eastern Shore); **16** (two locations), at least two Clovis points from one location and one Clovis point from a second location, Dorchester County, Maryland (Eastern Shore), about 80 miles. (Note that the location of the weathering amber chalcedony quarry as shown on this map is approximate, and that where distances are given in miles from the quarry location to find locations they are straight-line distances and are approximate.)

Characteristics of Weathering Amber Chalcedony

The chalcedony occurs at the Little Rocky Creek locality as disassociated fragments in linear surface outcrops, which as of 2012 had been traced by J. P. McAvoy for over 7,000 feet, primarily along a single ridge. In straight-line distance, the two largest outcrops of chalcedony currently known are approximately 1,500 feet to the southwest and 2,500 feet to the northwest of the Clovis base camp. The chalcedony fragments vary in maximum dimension from a few inches to more than two feet, and isolated pieces weighing over 40 pounds have been observed along the ridgeline. The primary artifact clusters (Figure 2.5) at the base camp have produced only a few untested nodules or platelets of the chalcedony, and all have been small.

Based upon NRS observations, this Virginia chalcedony is unique in structure as shown in Figure 2.6 and Figure 2.7. The laboratory conducting the petrographic analysis, Spectrum Petrographics, Inc., describes a typical sample of weathering amber chalcedony as an altered, likely claystone (protolith) breccia. The sample studied by the lab was 67% chalcedony, 15% opal, 10% kaolinite, 3% sericite, 2% quartz (crystal), 2%, iron hydroxide, 1% tremolite, and 1%

apatite. The greater mass of this material is described as multigenerational structural cement, and it is dominated by chalcedony with lesser opal, kaolinite, and iron hydroxide. Colors of material found at the quarry and at the associated Clovis base camp are red, amber, pink, orange, yellow, white, gray, brown, and clear, but all of this material has similar irregular, blocky, and linear inclusions of opalized kaolin. Cavities in the matrix are filled with quartz crystals, and structural weld seams are chalcedony. The most common colors are amber, orange, and reddish brown, while the clear, which weathers to a light bluish gray, is fairly rare. There is a small amount of material at the quarry defined as jasper, but it retains the unique inclusions observed in all of this stone, which clearly distinguish it from other jaspers found in Virginia.

Foreign Lithic Materials Recovered at the Little Rocky Creek Clovis Base Camp

The most common lithic materials foreign to the area (not from the local quarry) recovered from the Little Rocky Creek Clovis base camp are: 1) orthoquartzites in white, yellow, gray, and blue colors, 2) a brown or dark brown jasper, which is often streaked with yellow and is weathered, and 3) a dark grayish-green to black stone, possibly a chert, a tuff, or a metarhyolite, which occurs in smaller amounts than the other two. Other materials occurring in very small amounts, usually as trim flakes, are common quartzite, white quartz, and crystal quartz. A single biface is of a chert similar to that found at the Bourne quarry (McAvoy 1974:59) in southwestern Hanover County. There are two artifacts of a brown and gray onondaga-like chert, and a single artifact of gray chert. A finished Clovis point tip with an impact fracture represents the single diagnostic tool of a gray-white translucent mylonite chalcedony.

It would appear that orthoquartzite was the closest stone material foreign to this site considered suitable for the manufacture of large Clovis points, and most of the Clovis preforms of foreign material recovered on site are of this material. The closest known outcrops of orthoquartzite are in Stafford County, Virginia near Fredericksburg and 25-30 miles northeast of the Hanover County site. Orthoquartzite has also been reported to occur to the northwest along the Potomac River and to the northeast near the Potomac River and the Chesapeake Bay.

For end scrapers, jasper is the most common foreign material. The oddly colored brown and yellow streaked jasper might be from any of several quarries in the Piedmont or Mountains of Virginia, and some of the material could have been obtained from Coastal Plain stream cobbles. A source of jasper from the same general area as the orthoquartzite seems likely, and, again, probably from a location north of the Little Rocky Creek Clovis site.

Not a single artifact of the three easily identified cherts (Williamson chert, Bolsters Store chert, and Mitchell chert) from quarries south of the James River has been found on this site. However, weathering amber chalcedony has been found at many of the Clovis sites south of the James River and particularly at the Williamson chert quarry and Clovis residential base camp where artifacts of all of these cherts have been found.

The Controlled Surface Collection

A controlled surface collection made at the Clovis base camp by J. P. McAvoy in 2005 resulted in the artifact distribution pattern shown in Figure 2.5. After being deeply plowed, the eastern two-acre portion of the base camp was divided into 147 primary, individually flagged, 25-foot-square units. Then a controlled surface collection was made by recovering all of the visible artifacts from each unit approximately six times from March through September as the

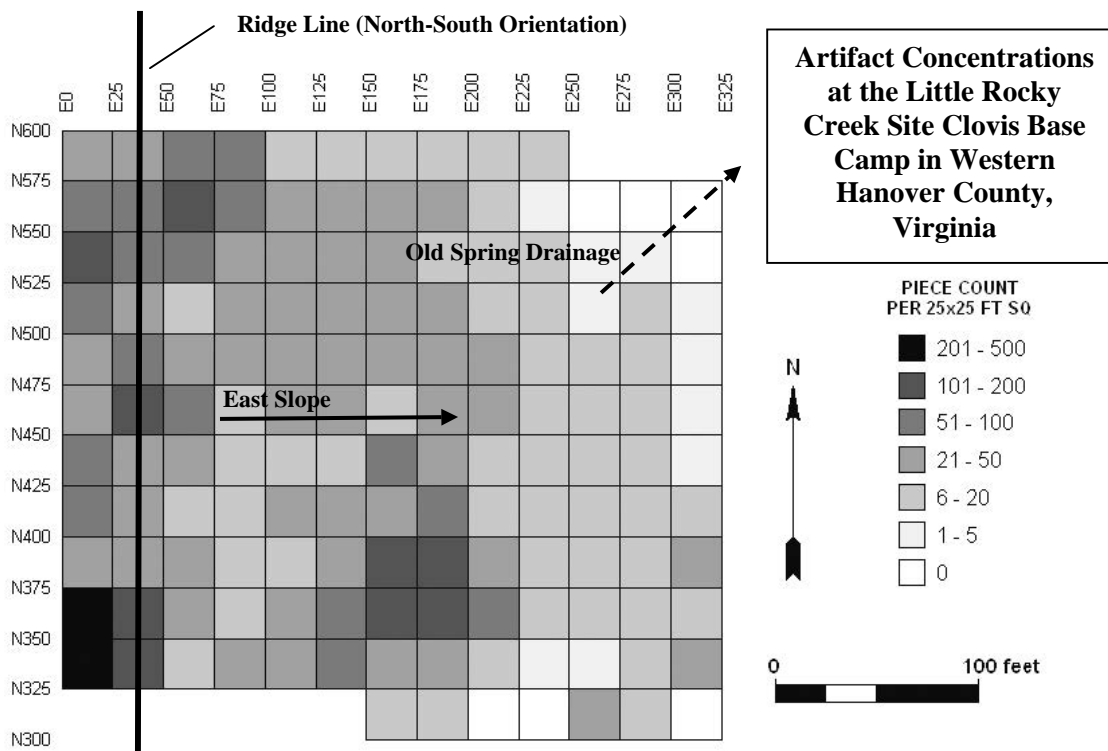


Figure 2.5. Little Rocky Creek site year 2005 surface collection artifact density plot (cluster data). Data is shown for the eastern portion of the Clovis base camp near the weathering amber chalcedony outcrops (quarry) in western Hanover County, Virginia. The plot shows high to low artifact density areas and the location of the apparent old spring basin and drainage area to the northeast. (See Figure 2.2 for a view from south-to-north across the western portion of this area.) (Data and figure were provided by Mr. J. P. McAvoy of NRS.)

site continually washed. Mr. McAvoy followed this procedure using the same 147 primary units for several more years as the site was plowed; however, at the time of preparation of this chapter, the individual unit datasets for the years beyond 2005 had not been plotted. All data sets will be analyzed in the future, and a detailed report on this site containing more complete descriptions of the fieldwork and all of the artifacts will be published separately by J. P. McAvoy.

The Artifacts

Representative examples of the artifacts recovered at the Little Rocky Creek site Clovis base camp by Mr. McAvoy from 2004 through 2010 are shown in Figures 2.7, 2.8, 2.9, and 2.10. The artifacts include finished but mostly fragmentary Clovis points, Clovis point preforms (mostly manufacturing failures), unspecialized bifaces, end scrapers, side scrapers, edge-worked flakes, edge-snapped tools (some made upon broken Clovis points), edge-used flakes, limace-like tools, several types of drills, graters, denticulates, a small number of chisel-wedges, several grinding or smoothing stones, a few hammerstones, bifacial cores, blade cores, block cores, and a large amount of debitage including blade flakes, bifacial core flakes, and irregular shatter and trim flakes.

Interestingly, there is very little primary decortication debitage, which seems unusual as close as the base camp is to the chalcedony outcrops. The artifact categories, except for chisel-wedges and a large number of finished points, are the same and are in similar ratios to those recovered upon the large Williamson quarry and Clovis base camp site in Dinwiddie County, Virginia.

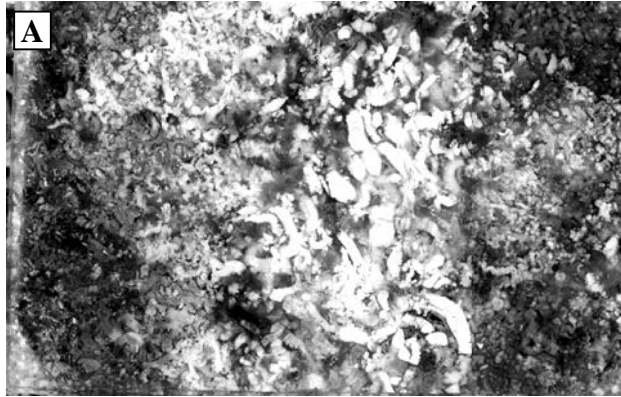


Figure 2.6. Low magnification thin-section structures (petrographs) of weathering amber chalcedony from the Little Rocky Creek site chalcedony outcrops (quarry) in Hanover County, Virginia. **A**, outer edge of sample, showing elongated linear opalized kaolin fragments in chalcedony-like fill with zones of brown, red, white, amber and yellow. **B**, internal structure of fine (small) irregular opalized kaolin fragments in chalcedony-like fill with zones of amber, yellow, and white. **C**, internal structure, streaked in appearance with massive fractured opalized kaolin in blocky form with chalcedony-like fill and zones of orange, amber, yellow, and white. All of the samples were collected by NRS. All structures were prepared by Spectrum Petrographics, Inc.

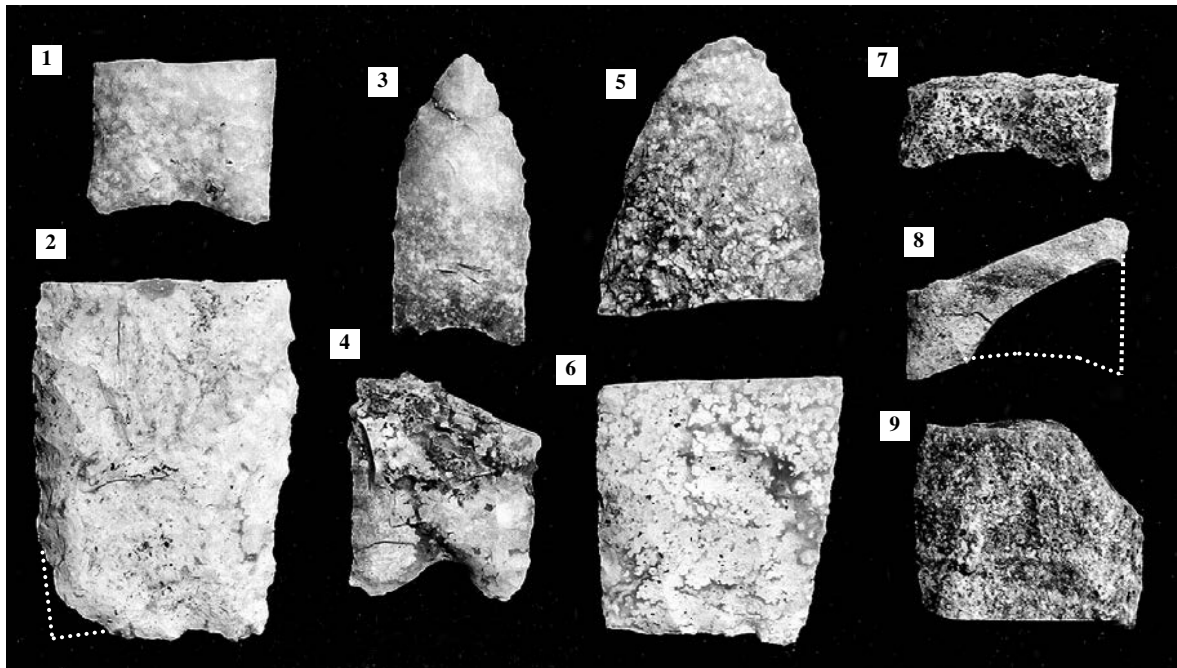
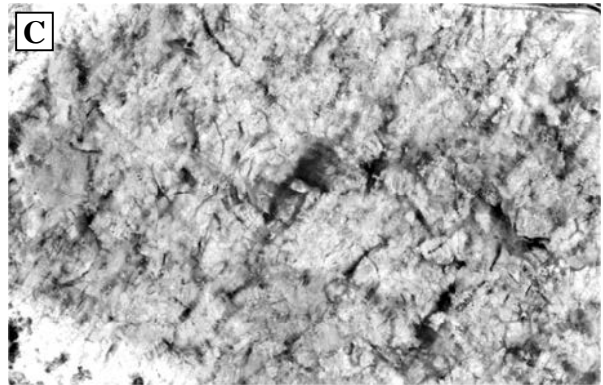
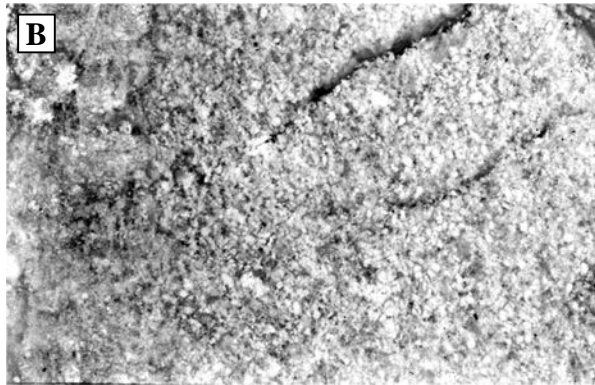


Figure 2.7. Representative biface and fragments showing some of the variations in structure of lithic materials recovered at the Little Rocky Creek site Clovis base camp in Hanover County, Virginia. Artifacts **1**, **2**, **3**, **4**, **5**, and **6** show various structures and weathering conditions of weathering amber chalcedony completed and unfinished fluted points. The point numbered **4** has a collapsed basal concavity from a failed fluting effort resulting in the false appearance of an intentionally deep concave base. Artifacts **7**, **8**, and **9** show structure and weathering conditions of fragments of completed fluted points of orthoquartzite; two of the fragments were recycled into snapped-flake tools. (J. P. McAvoy collection; NRS photograph) (All are shown 88 percent natural size.)

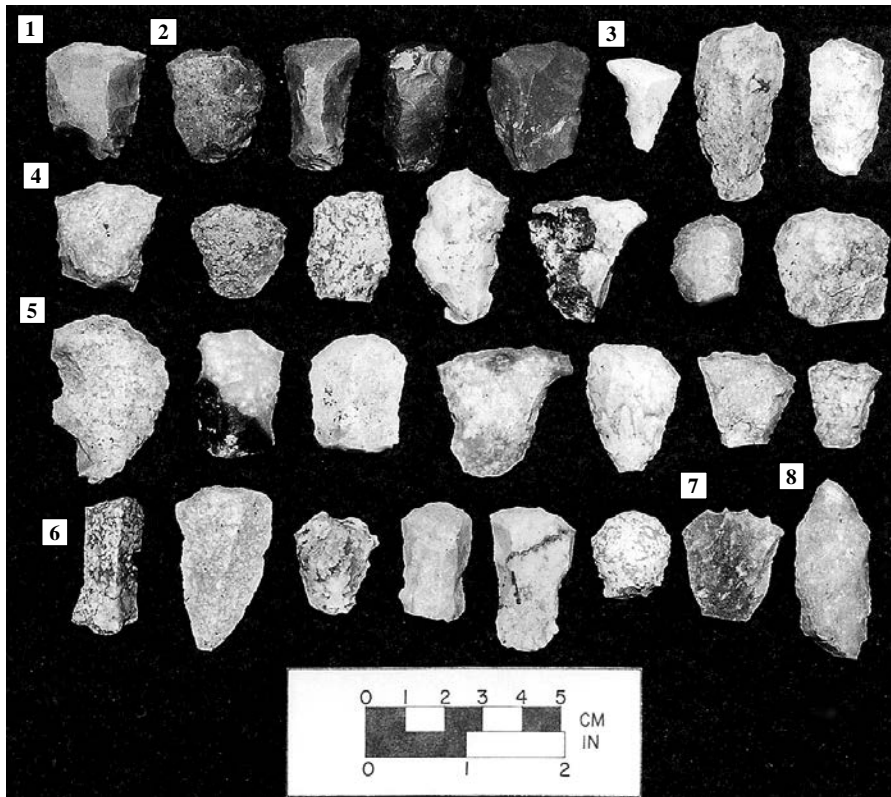


Figure 2.8. 30 Representative small tools from the Little Rocky Creek site Clovis base camp: **1**, end scraper of a grayish-green chert; **2**, four jasper end scrapers, second from left with a crushed bit, second and fourth from left are thermally altered to a red color; **3**, three weathering amber chalcedony (WAC) end scrapers; **4**, seven WAC end scrapers, third from left with crushed bit, fifth from left is red and white near-cortex stone; **5**, seven end scrapers, all WAC, seventh from left has a deeply crushed bit; **6**, six WAC end scrapers, third from left with a highly localized crushed area on the bit; **7**, one denticulate or a graver-like tool with multiple (four) sharp tips, thermally altered, red colored WAC; and **8**, a narrow, small (short) limace-like tool, partly broken on end, steeply worked from white and gray WAC with inclusions. (Collection of J. P. McAvoy; NRS photograph)

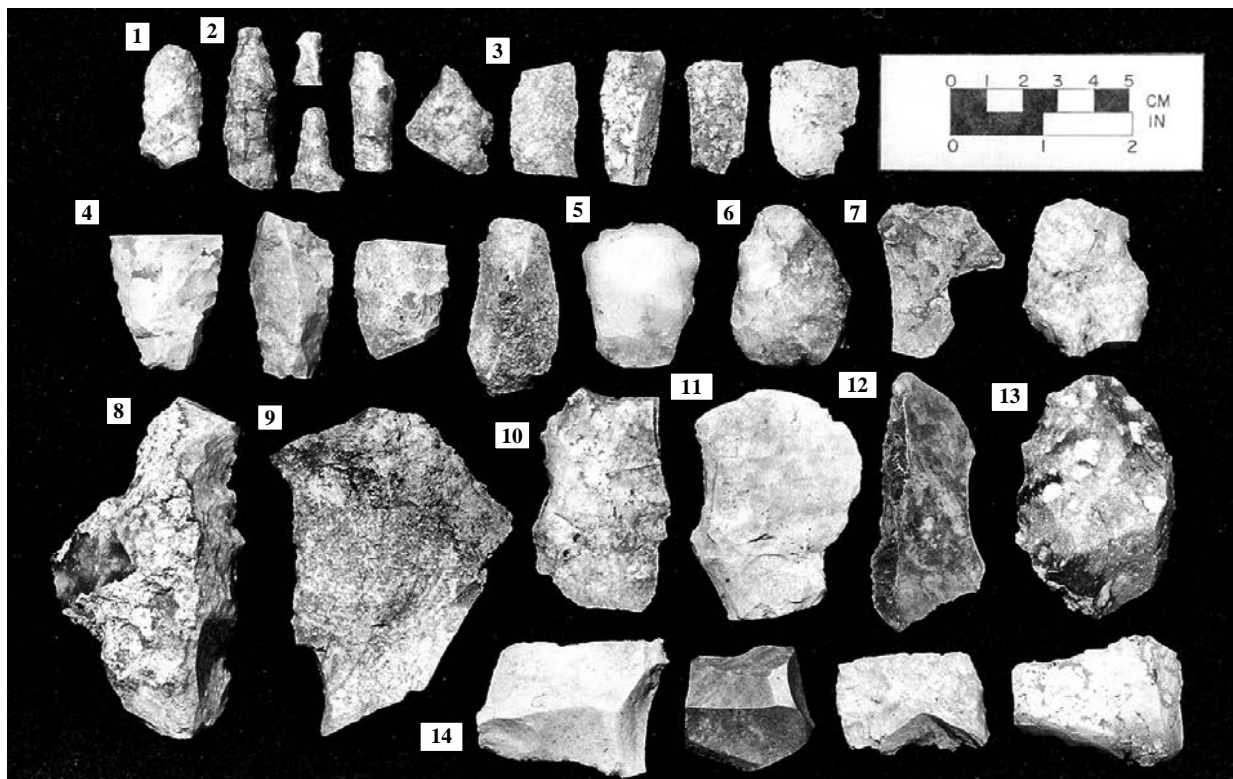


Figure 2.9. Other representative tools from the Little Rocky Creek site Clovis base camp: **1**, limace-like tool; **2**, five drills and fragments; **3**, four small core-blades; **4**, four small side scrapers; **5**, quartz end scraper; **6**, small side scraper; **7**, two flake knives (edge-worked); **8**, large side scraper/denticulate; **9**, large edge-worked flake or side scraper; **10**, side scraper; **11**, large edge-worked and worn flake; **12** jasper side scraper; **13**, small, thick biface possibly used as a scraper; and **14**, four edge-worked and/or end-worked blade-like flakes, one jasper. All are WAC except as noted. (J. P. McAvoy collection; NRS photograph)

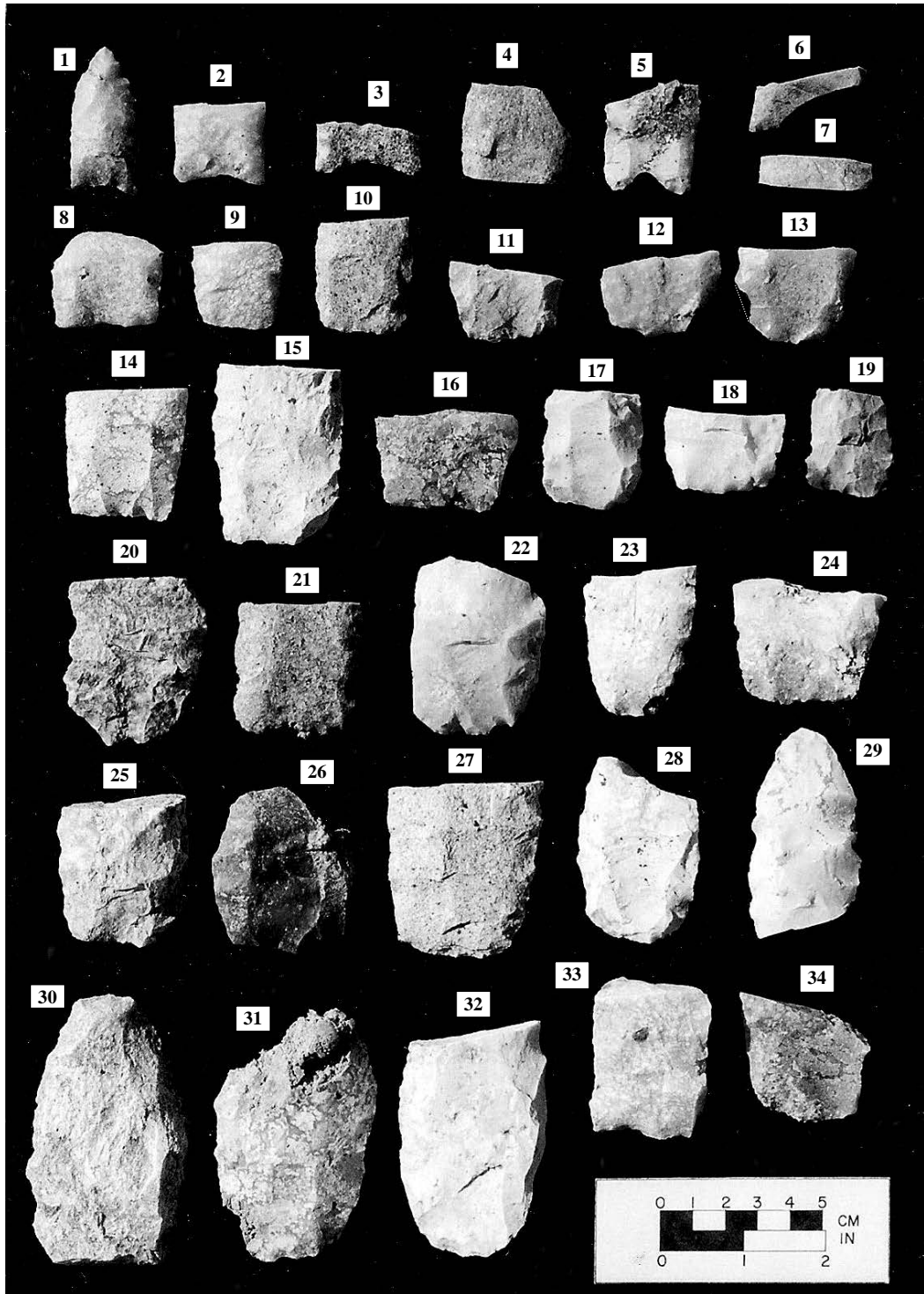


Figure 2.10. Thirty-four bifaces in different stages of completion and representative of the approximately 200 recovered through surface collecting on the Little Rocky Creek site Clovis base camp in western Hanover County, Virginia near the weathering amber chalcedony outcrops (quarry). The artifacts are described as follows: 1, completed point; 2, 3, 4, 6, and 7, five completed point fragments; 5, 8 through 29, and 31 through 34, 27 broken-in-process Clovis projectile points/bifaces; and 30, biface, probably discarded because of excessive thickness. The broken-in-process points numbered 8 and 26 are flute reverse hinge fractures or overshot failures, and broken-in-process points numbered 24 and 28 are transverse thinning failures. Most of the remaining broken-in-process points represent bend breaks when fluting or end thinning. Artifact numbers correspond to the numbers and point descriptions presented in Table 2.1. (J. P. McAvoy collection; NRS photograph)

[Note that in regard to tool categories and artifact ratios, the Williamson site work is summarized to some degree in this chapter and in more detail in Chapter 11, which contains a report on the NRS field and laboratory work related to that site conducted from 1998 through 2003.]

Table 2.1 provides data for the 34 artifacts shown in Figure 2.10: one finished Clovis point, four finished Clovis point fragments, 27 preform fragments, and a one unbroken preform. The data show that for the 17 most nearly completed basal fragments of the 27, the average broken length is 36.2 mm, the average width at the basal end is 28.4 mm, the average maximum width (usually at the break) is 35.0 mm, and the average thickness is 7.9 mm. Thus, for the broken preform basal ends, the length and maximum width are about equal, and the length probably represents 20 to as much as 50 percent of the original preform length. The apparent mode of failure as listed is usually “bend break,” which indicates that most preforms failed in a bending mode. This brittle fracture failure mode is commonly associated with end thinning or fluting. Edge or transverse thinning failure, and overshot fluting failure, together account for only four of the 27 failures.

Table 2.1. Description of Selected Clovis Points and Point Preforms, Shown in Figure 2.10, from the Little Rocky Creek Site Clovis Base Camp Adjacent to Weathering Amber Chalcedony (WAC) Outcrops or Quarry Areas, Western Hanover County, Virginia (Collection of J. P. McAvoy, NRS).

Item Number in Fig. 2.10	Artifact Description, Material, and Failure Mode	Length (mm) ⁽¹⁾	Width at Base (mm)	Max. Width (mm)	Max. Tks. (mm)	Length Flute(s) Side 1 (mm)	Length Flute(s) Side 2 (mm)	Basal Treatment
1	Small finished Clovis point, WAC ⁽²⁾ with very fine structure, quarry base-camp discard due to size(?)	44	19.5	20	6.5	9.5, Multiple	None, flat surface of flake	2 mm concavity, no, or very light, basal grinding
2	Clovis basal end, WAC, broken in spear shaft (hafted)	24 (B) ⁽³⁾	27	27 (B)	5.5	18, Single	13, Multiple	2 mm concavity, basal grinding
3	Clovis basal end, Orthoquartzite, broken in spear shaft (hafted)	14 (B)	30.5	30.5 (B)	6	12 (B), Single	12 (B), Single	3 mm concavity, basal grinding
4	Clovis midsection with some of the flute scar, Orthoquartzite, recycled into a SFT ⁽⁵⁾	30 (B)	N/A ⁽⁴⁾	33 (B)	9	8 (B), Single	None extended this far	Short section of grinding one edge
5	Nearly completed Clovis point basal end, WAC, bend break failure and collapsed basal platform resulting in deep concavity during final fluting	33 (B)	27	28 (B)	7.5	19, Single	17, (Collapsed platform), Multiple	5.5 mm concavity, some basal platform grinding
6	Clovis point basal end fragment, Orthoquartzite, recycled into a SFT	13 (B)	N/A	31 (B), approx.	6	12 (B), Single	12 (B), Single	Concavity depth?, basal grinding
7	Small fragment of Clovis point mid-section, WAC, recycled into a SFT	9 (B)	N/A	34 (B)	6	None present	None present	N/A
8	Clovis preform basal end, WAC, overshot reverse hinge fracture	27 (B)	30	32 (B)	7.5	27 (B), Single	12, Single	Ground basal platform
9	Clovis preform basal end, WAC, bend break	24 (B)	22	26 (B)	6	15, Multiple	11, Multiple	No basal grinding
10	Clovis preform basal end, Orthoquartzite, bend break	34 (B)	25.5	29 (B)	6	22, Single	12, Multiple	No basal grinding
11	Clovis preform basal end, WAC, bend break	21 (B)	28	33 (B)	8.5	20, Single	20, Single	No basal grinding
12	Clovis preform basal end, thermally altered WAC, thermal fracture	23 (B)	23	35 (B)	7.5	23, Single	21, Single	Ground basal striking nipple
13	Clovis preform basal end, thermally altered(?) WAC, bend break	27 (B)	27	35 (B)	8	27, Single	26 (B), Single	Ground basal platform
14	Clovis preform basal end, WAC, bend break	37 (B)	28	35 (B)	7	27, Single	9, (Collapsed platform)	Ground basal platform
15	Clovis preform basal end, WAC, bend break(?)	52 (B)	34	38 (B)	8	29, Single	23, Single	Nipple remnant in center of base

Item Number in Fig. 2.10	Artifact Description, Material, and Failure Mode	Length (mm) ⁽¹⁾	Width at Base (mm)	Max. Width (mm)	Max. Tks. (mm)	Length Flute(s) Side 1 (mm)	Length Flute(s) Side 2 (mm)	Basal Treatment
16	Clovis preform basal end, WAC, bend break	29 (B)	31	43 (B)	10	26, Single	None	Ground basal platform
17	Clovis preform basal end, WAC, bend break	35 (B)	25	29 (B)	9	32, Single	12, Multiple	No basal grinding
18	Clovis preform basal end, WAC, unknown failure mode	24 (B)	28	36 (B)	8	19, Single	None	No basal grinding
19	Clovis preform basal end, thermally altered(?) striped jasper, bend break	32 (B)	24	26 (B)	8	15, Multiple	12, Multiple	No basal grinding
20	Clovis preform basal end, jasper-like brown WAC, bend break	50 (B)	34	38 (B)	9	28, Single	None	Large basal striking nipple remnant
21	Clovis preform basal end, WAC, bend break	40 (B)	35	37 (B)	8	40, Single	None	No basal grinding
22	Clovis preform basal end, WAC, bend break	55 (B)	34	39 (B)	10	35, Single	26, Single	Ground basal platform
23	Clovis preform basal end, WAC, bend break	43 (B)	20	33 (B)	7	15, Single	None	No basal grinding
24	Clovis preform basal end, WAC, transverse fracture resulting from edge thickness reduction	36 (B)	33	46 (B)	9	34, Single	None	No basal grinding
25	Clovis preform basal end, WAC, bend break	48 (B)	40	36 (B)	11.5	25, Single	18, Single	Ground basal platform
26	Clovis preform basal end, jasper-like WAC, overshot reverse hinge fracture	50 (B)	35	42 (B)	13.5	49, (B) Single	None	Nipple remnant in center of base
27	Clovis preform basal end, Orthoquartzite, unknown failure mode	52 (B)	33	45 (B)	8	35, Single	25, Multiple	No basal grinding
28	Clovis preform basal end, WAC, transverse fracture resulting from edge thickness reduction	57 (B)	30	35 (B)	10	34, Single	None	No basal grinding
29	Clovis preform distal end, WAC, failure mode is likely bend break	66 (B)	N/A	35 (B)	10	8 (B)	None	N/A
30	Early stage Clovis preform, WAC, reason for discard possibly excessive thickness vs. width	81	34	46	19	None	None	Fractured base striking platform, no basal grinding
31	Early stage Clovis preform basal end, WAC, transverse fracture from poor stone quality (zone of very heavy porosity at break location)	78 (B)	35 (B)	47 (B)	18	31, Single	25, Multiple	No basal grinding
32	Early stage Clovis preform basal end, WAC, bend break	73 (B)	33	44 (B)	12	28, Single	26, Single	Ground basal platform
33	Clovis preform basal end, WAC, unknown failure mode	48 (B)	33	34 (B)	13.5	None	None	No basal grinding
34	Clovis preform basal end, thermally altered(?), WAC, bend break	32 (B)	29	36 (B)	8.5 (B)	30, Multiple	None	Basal striking nipple, no grinding

Notes: 1) (mm) is millimeters. 2) WAC is weathering amber chalcedony. 3) (B) is broken. 4) N/A is not applicable. 5) SFT is snapped-flake tool.

Clovis Cobble Quarry Activity at the Cactus Hill Site

The recovery over a period of 40 years by collectors of 14 quartzite Clovis points and fragments on the Williamson Clovis chert quarry and base camp (McAvoy 1992:66) led to speculation in *Part-I* that many may have been made on nearby Nottoway River sites at cobble outcrops. Based upon limited data from sites such as the Fannin site (Chapter 3), it was postulated that there existed Clovis hunting camps along the river in Sussex County, Virginia with associated quartzite [cobble] quarry activity (McAvoy 1992:144, 151). However, it was not until the excavation of Clovis levels and features on the Cactus Hill site, primarily in area A-B, that definitive in situ Clovis cobble quarry activity was revealed (Chapter 5).

In addition to quartzite cobbles, it was found that other cobbles from the adjacent Nottoway River were knapped at Cactus Hill including white quartz, coarse-grain chert, and rhyolite. Cobbles of quartzite and quartz were used primarily for production of Clovis bifaces, but a few small unifacial tools were made of these materials as well. Metarhyolite and coarse-grain chert cobbles were used primarily to produce flakes and small unifacial tools, but at least one Clovis preform was recovered of the chert. Typical cobble materials available in the shoals and banks along the river are shown in the Fannin site report, Chapter 3, Figure 3.15. One 20-foot-square area of the Cactus Hill site in excavation area A-B/west produced 11 Clovis point preform manufacturing failures of which 10 are considered to be made of locally available cobble material. One of the 11 points is Williamson chert quarried at the Williamson site, one is coarse river cobble chert, two are white quartz, and seven are quartzite (see Chapter 5, Figure 5.62). Eight preforms of river cobbles from area A-B/west are shown in Figure 2.11 as numbers 2, 4, 6, 8, 9, 10, 11, and 12. Preforms numbered 1 and 5 were recovered in area B, and preforms numbered 3 and 7 were recovered in area A-B/east. Representative identifiable Clovis preforms of cobble material recovered by NRS at Cactus Hill are detailed in Table 2.2.

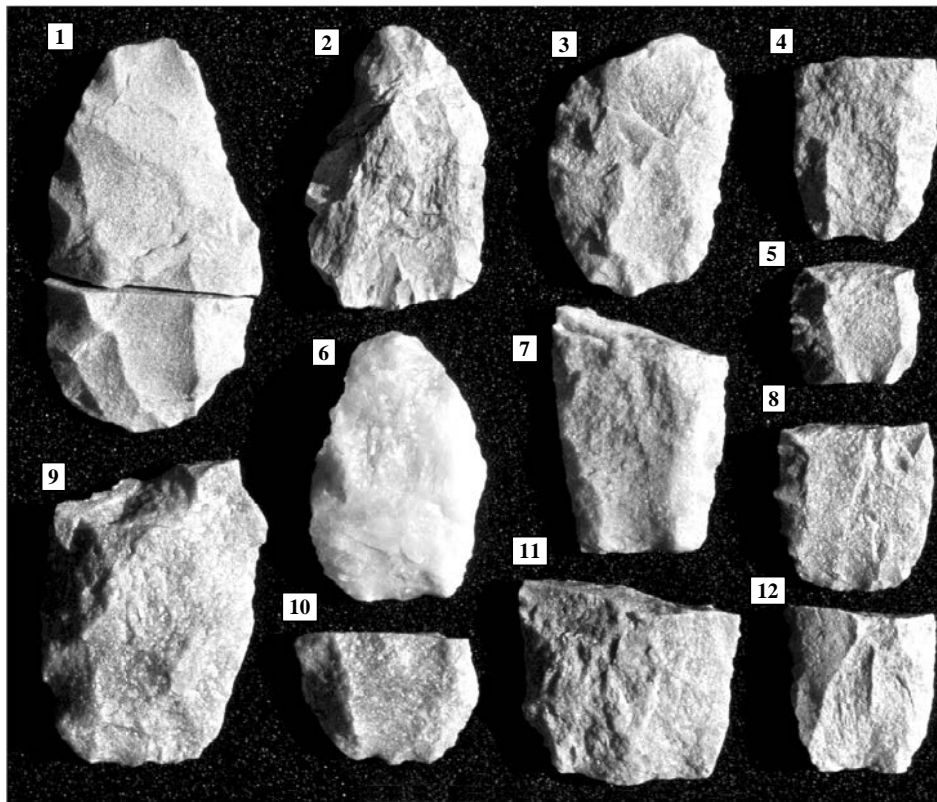


Figure 2.11. Representative Clovis preforms from river cobbles from the deep Clovis levels in areas B and A-B of the Cactus Hill site, Sussex County, Virginia (see Table 2.2 below): **1**, very fine-grain, light gray quartzite; **2**, coarse-grain chert; **3**, light brown quartzite; **4**, brown, coarse-grain quartzite; **5**, burned, reddish-brown fine-grain quartzite; **6**, dull white quartz; **7**, brown quartzite; **8**, dark and light brown, fine-grain quartzite; **9**, coarse-grain, light gray quartzite; **10**, dark gray, fine-grain, glassy quartzite; **11**, coarse-grain dark brown quartzite; and **12**, light brown quartzite. Items 3, 5, and 12 are made upon flake preforms rather than thick bifacial preforms as are most Clovis bifaces from the chert quarry sites in the Fall Zone to the west. (NRS photograph) (Scale: 57% natural size)

No finished quartzite Clovis points were recovered by NRS at Cactus Hill, but the unfinished bifaces of cobble material, mostly quartzite, average 10.6 mm in thickness. Most of these would be classified as the early middle stage to the early late stage of production. Ben C. McCary (1975) provides a tabulation of the thickness of Williamson site Clovis points including eight finished points of white, gray, and brown quartzite as: 7, 9, 8, 6, 7, 6, 9, and 9 mm. These values average 7.6 mm. Isolated finds of finished quartzite Clovis points from central and eastern sections of Virginia have been reported in McCary's fluted point survey as typically in the

thickness range of 6 to 11 mm, but many of the quartzite Clovis points in the McCary survey are on the high end of this range at 9 to 11 mm.

The manufacturing sequence of the unfinished quartzite points from Cactus Hill appears to have been the same as for chert points from the Williamson site and from the newly discovered Little Rocky Creek Clovis base camp near the weathering amber chalcedony outcrops (quarry) in Hanover County. Most were reduced as large, thick bifaces, rather than being made upon thinner flakes. In addition, they show a variety of platform preparations for flute removal including: 1) ground, curved platforms, 2) straight, beveled platforms, 3) flat, fracture surfaces, and 4) heavily ground “striking nipple” projections (Figure 2.11, numbers 3, 10, and 11) from bifacially flaked basal edges. As with the chert Clovis preforms from other sites, the Cactus Hill quartzite preforms do not consistently show heavy basal grinding prior to flute removal, and on some examples the traces of basal grinding appear to have been removed during fluting.

Table 2.2. Dimensions of the Figure 2.11 Clovis Point Preforms and Preform Fragments of Nottoway River Cobbles Excavated by NRS on the Cactus Hill Site, 44SX202, Areas B and A-B, Sussex County, Virginia.

Number in Figure 2.11	Artifact Description, Material, and Failure Mode	Length (mm) ⁽¹⁾	Width at Base (mm)	Max. Width (mm)	Max. Tks. (mm)	Length Flute(s) Side 1 (mm)	Length Flute(s) Side 2 (mm)	Basal Treatment
1	Clovis preform, Quartzite, fine-grain; bend break in fluting (cross-mend)	84	38	46	9	35, Multiple	22, Single	Ground basal platform
2	Clovis preform, Chert, coarse-grain; transverse thinning failure	65	37	40	13.5	22, Multiple	0	No basal grinding
3	Clovis preform basal end, Quartzite; unidentified failure mode	61 (B) ⁽²⁾	28	38	9	31, Single	0	Ground basal striking nipple
4	Clovis preform basal end, Quartzite; unidentified failure mode	42 (B)	25	32 (B)	11	21.5, Single	0	No basal grinding
5	Clovis preform basal end, Quartzite, fine-grain; flute overshot reverse hinge	27.5 (B)	19	29 (B)	8	27, Single	0	Light basal grinding
6	Clovis preform, Quartz, white; discarded due to transverse crack	62	29	38.5	13	16, Multiple	0	Ground basal platform
7	Clovis preform basal end, Quartzite; transverse thinning failure	56 (B)	28.5	39 (B)	9.5	25, Single	23, Single	No basal grinding
8	Clovis preform basal end, Quartzite; transverse thinning failure	37 (B)	27	33 (B)	8.5	32, Multiple	0	No basal grinding
9	Clovis preform basal end, Quartzite; transverse thinning failure	71 (B)	36	47	16.5	28, Single	0	Remnant basal grinding
10	Clovis preform basal end, Quartzite; bend break in fluting	31 (B)	24	39 (B)	8	30(B), Single	0	Light basal grinding
11	Clovis preform basal end, Quartzite; bend break in fluting	45 (B)	45.5	49 (B)	12.5	19, Multiple	0	Ground basal striking nipple
12	Clovis preform basal end, Quartzite; unidentified failure mode	37 (B)	24	34.5 (B)	9	29, Single	0	Ground basal platform

Notes: 1) mm is millimeters; 2) (B) is broken length or width.

Clovis Tradition and Post-Clovis-Fluted-Point Tradition Research

Differences in Tool Assemblages Observed at Two Local Fluted Point Sites

Significant differences have been noticed in the tool inventory at two Virginia Paleoindian sites within the Nottoway River drainage, the Williamson site (Chapter 11) and the Clovis levels of the Cactus Hill site (Chapter 5), as shown in Figure 2.12. The Williamson chert quarry and base camp in Dinwiddie County, Virginia has produced about 180 finished fluted points, but almost all of the points are of the Clovis type with perhaps two or three of the Deep- or Deeper-Concave-Base type. The Cactus Hill site, Chapter 5, a quartzite cobble quarry and hunting camp

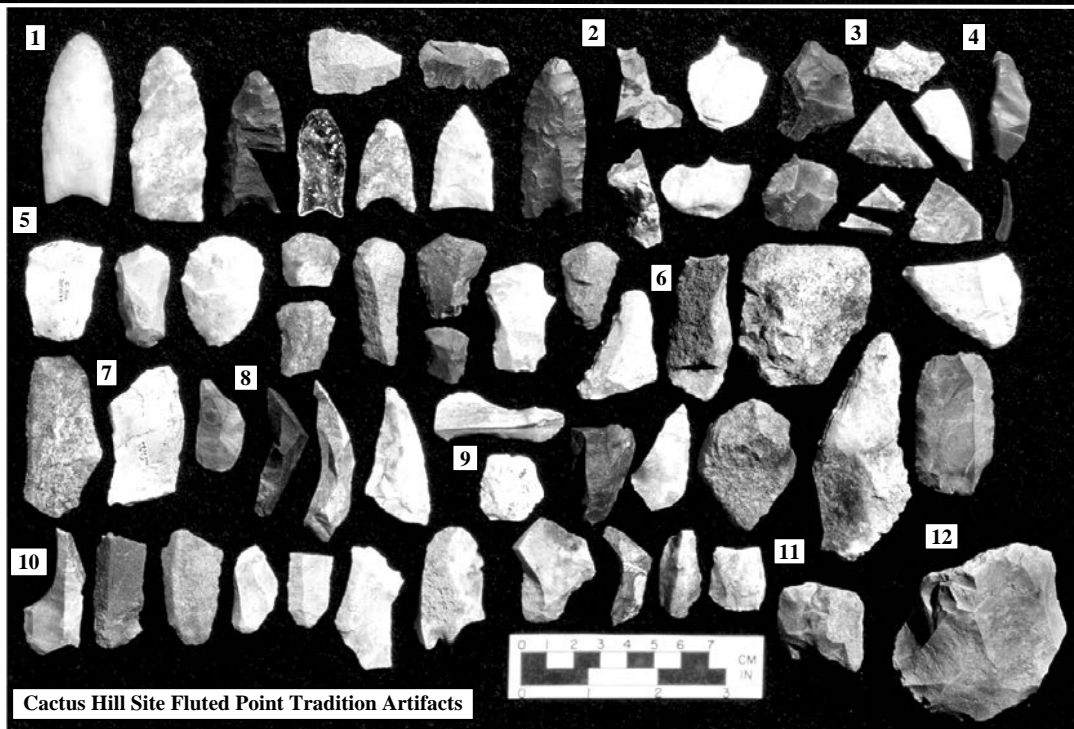
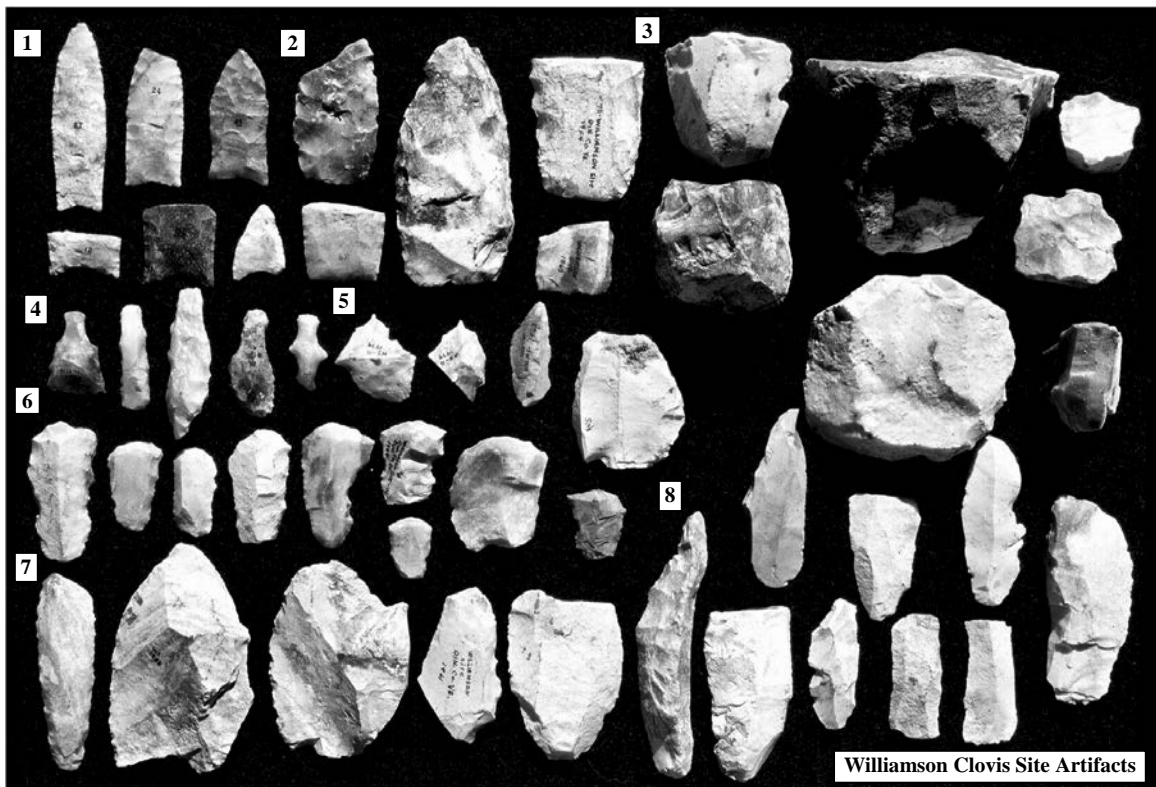


Figure 2.12. Clovis artifacts from two local sites. **Top photograph**, the typical Williamson site assemblage, except for chisel-wedges (see Chapter 11), which contains: **1**, classic Clovis points; **2**, chert Clovis point preforms; **3**, chert cores of all forms; **4**, chert drills; **5**, graters and awls (rare); **6**, chert end scrapers; **7**, chert side scrapers; and **8**, edge-worked and edge-used blade-like flakes. **Bottom photograph**, the typical Cactus Hill assemblage, except for quartzite Clovis point preforms (see above section), which contains: **1**, Classic Clovis points and Deep- or Deeper-Concave-Base fluted points and channel flakes; **2** graters; **3**, snapped-flake tools; **4**, limace tool (rare); **5**, end scrapers; **6**, side scrapers; **7**, edge-worked flake knives; **8**, awls; **9**, edge-worked flakes; **10**, blade-like flakes; **11**, chisel-wedges (rare); and **12**, core (rare). (NRS photograph) (All items in both photographs are to the same scale.)

adjacent to the Nottoway River has produced 11 fluted points known to NRS, and they represent five finished Clovis points, two nearly finished chert Clovis points (preforms), and as many as four Deep- or Deeper-Concave-Base fluted points. There are also 15 or more fluted point preforms of river-cobble stone, mostly quartzite, which were broken in process and are assumed to be Clovis related. The coarse-grain river cobbles were rarely if ever used for the thinner Deep- or Deeper-Concave-Base points in Virginia. While the more strategically located Cactus Hill site was used by both Clovis and post-Clovis fluted point traditions, it appears that the Paleoindian component of the Williamson site was almost pure Clovis.

The most numerous of the lithic tools from the Williamson site in the NRS study collection are chisel-wedges. This is a tool often found clustered in large numbers on the site (see the section below on bipolar objects at the Williamson site), and it was used to make other tools of wood, bone, antler, or tusk (see Chapter 11). Chisel-wedges are present in the NRS surface collection from the Williamson site in a ratio to fluted points of a least 16:1. Only one cluster of chisel-wedges has been recovered at the Clovis level of the Cactus Hill site, and otherwise even isolated finds there of chisel-wedges from the Clovis levels are rare. A large number of chert bifacial and block cores as well as blade cores are present on the Williamson site, but only two cores, one a bifacial chert core and one a hoof or wedge-shaped quartzite blade-flake core, are known from Clovis levels on Cactus Hill. As noted above, most bifaces from the Clovis levels on Cactus Hill are projectile point preforms of river cobble quartzite.

While there are more end scrapers than any other type of scraper in the artifact assemblage from Williamson, there are more side scrapers in the Cactus Hill assemblage. End scrapers at the Williamson site occur in a ratio of approximately 7:1 to the fluted points while at the Cactus Hill site the ratio of end scrapers to fluted points is much lower at a little more than 1:1. Also, as a percentage of all tools, there are more edge-worked flakes in the Clovis levels at Cactus Hill than in the collections from Williamson. Bend-break, or snapped-flake tools occur on both sites, but they are a higher percentage of the overall tool inventory at Cactus Hill.

The Clovis tool inventory from the Williamson site contains perhaps one classic flaked graver for every four fluted points, but the Cactus Hill site inventory contains a larger ratio of approximately one graver per point. Stone awls or piercers are often found with graters in the Clovis levels at Cactus Hill while they are present but comparatively rare in surface collections from the Williamson site. Drills in a large variety of shapes and sizes are fairly common on the Williamson site, but none, other than recycled points used as drills, has been recovered from the Clovis levels at Cactus Hill. A large number of the finished fluted points found upon the Williamson site are broken bases some of which seem to have been intentionally snapped upon reaching the end of their useful life to make right-angled scraping planes. Such scraping planes served the same purpose as other snapped-flake tools, and they were likely used to shave the surface of items such as handles or rods of wood or bone. In contrast, all but one of the finished fluted points known from Cactus Hill are complete, and most of these are greatly resharpened. This suggests that points were scarce, and that they were usually retained/recycled as bifaces.

The difference in tool assemblages at the two sites suggests more diverse and perhaps more basic heavy manufacturing activities over extended periods at the Williamson site while at Cactus Hill it points to maintenance of perhaps clothing, shelter, and tools with some limited processing of animal products during short visits. Some heavy quarry work involving quartzite cobbles did occur at Cactus Hill, but the scope of this activity was very limited and nothing like the level of quarry work with chert at the Williamson site. In short, based upon the size and type

of the tool assemblage from each site, the Cactus Hill site was a convenient short-term hunting camp that offered a limited resource base while Williamson was a long-term residential base camp with a much greater resource base enabling a larger number and variety of activities.

Fluted and Basally Thinned/Single-Face-Fluted Paleoindian Point Types

Points in this Study

If the Dalton variants and equivalents, the Hardaway Side Notched points and variants, and the postulated pre-Clovis points (as from Cactus Hill) are omitted, there are eight recurring shapes and basal treatments of fluted or basally thinned/single-face-fluted lanceolate Paleoindian points now recognized by NRS throughout the greater Nottoway-Blackwater-Meherrin (upper Chowan River) drainage and from the general area of eastern Virginia. These shapes and basal treatments allow separation of the eight types based upon stylistic, if not temporal, differences. Separation based upon temporal differences would require stratigraphic positioning and/or ¹⁴C dating of associated features, which has not been accomplished locally for at least five or six of these point types. For the eight point types, the assigned position by NRS in the chronological sequence is based upon: 1) ¹⁴C dates reported from sites outside this area, 2) a comparison of the associated debitage and tools for some of the point types with similar debitage and tools of other known and dated or stratigraphically positioned Paleoindian assemblages, or 3), for two and possibly three of the point types, ¹⁴C dating at Cactus Hill (see the following section).

Figures 2.13, 2.14, 2.15, 2.16, and 2.25 show examples of the different fluted and basally thinned/single-face-fluted lanceolate Paleoindian point types identified by NRS. Seven of these eight lanceolate Paleoindian point types (the seven fluted types) defined below are shown in Figure 2.13. This figure is a selection of 42 points from across Virginia that are known to be authentic and are representative of the shapes and preferred stone materials. In addition, there are three points from central North Carolina and one point from Maryland found just north of the Potomac River above Virginia. Points 3, 18, 35, and 38 (nine percent) are from the Virginia mountains, and points 16, 21, 22, 23, 24, 26, 29, 30, 39, and 45 (22 percent) are from the Piedmont of Virginia and North Carolina. The Fall Zone of the eastern Piedmont and the extreme western Coastal Plain of Virginia and North Carolina produced points 1, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 17, 19, 27, 28, 31, 36, and 42 (39 percent), and the west-central and eastern Coastal Plain of Virginia and Maryland produced points 2, 4, 9, 20, 25, 32, 33, 34, 37, 40, 41, 43, 44, and 46 (30 percent).

In contrast to Figure 2.13, Figure 2.14 shows 20 fluted lanceolate Paleoindian points from only one relatively small area, Mecklenburg County in the Virginia Piedmont. Of the 20 points, 18 fall within six of the NRS basally thinned/single-face-fluted point types defined below, and the remaining two points in the figure are considered Hardaway Daltons or Dalton variants. This figure was added to show the number of different point types known to occur within even a small area in central Virginia. Only the Barnes or Cumberland-like fluted points and the basally thinned/single-face-fluted Appomattox River points are absent from this collection. The Appomattox River points (Figure 2.25, numbers 10-15) are known to NRS from the Fall Zone/western Coastal Plain and from the central and eastern Coastal Plain of Virginia. The majority of the points of this type were found in Chesterfield County, Dinwiddie County, Sussex County, and Greensville County in the Fall Zone/western Coastal Plain, but a few have been found to the east along or near the western shore of the Chesapeake Bay. Although undated, the

Appomattox River point tool assemblage is essentially identical to that excavated locally upon Clovis sites. Based upon the nearly identical tool types, Appomattox River points are postulated to date slightly later than Clovis points.

Clovis Fluted Points

Clovis points are considered to represent a single tradition, and they are defined by NRS as four very similar types or shapes within the grouping as follows:

Type 1, Clovis fluted point, parallel sided but no basal constriction or flare to base, generally sharp ears, short to moderate flutes, shallow basal concavity, generally rounded (high included angle) tip, heavy basal edge grinding, a common form and perhaps the oldest Clovis type in eastern Virginia; for representative examples see Figure 2.13, numbers 1 and 2, and see Figure 2.14, numbers 18 and 20.

Type 2, Clovis fluted point, expanding sides but no abrupt basal constriction or flare, sharp to rounded ears, short flutes, shallow basal concavity, rounded (high included angle) tip, heavy basal edge grinding, a common form in eastern Virginia; for representative examples see Figure 2.13, numbers 8 and 11; Figure 2.14, numbers 17 and 19; and Figure 2.15, number 9.

Type 3, Clovis fluted point, expanding sides with a slight stem-like basal extension or constriction but no, or very little, flare to base, sharp to rounded ears, short flutes, generally shallow basal concavity, generally rounded (high included angle) tip, heavy basal edge grinding, a relatively common form in eastern Virginia; see Figure 2.13, numbers 15, 18, and 19, and see Figure 2.14, number 13 for representative examples.

Type 4, Clovis fluted point, very similar to type 3, expanding sides with stem-like basal constriction producing a slight to moderate "waisting" or flare to the base, sharp to rounded ears, short to moderate flutes, generally shallow basal concavity, generally rounded (high included angle) tip, heavy basal edge grinding, typical "Williamson Clovis" type, a common form in eastern Virginia; for examples representative of this type see Figure 2.13, numbers 22 and 26; Figure 2.14, number 10, 11, 12, 14, 15, and 16; and Figure 2.15 (left), number 8, which is an unusual, greatly resharpened example with a sharp tip.

Post-Clovis-Age Fluted Points

Presumed post-Clovis-age fluted points may represent more than one tradition, and the points are defined as three types as follows:

Type 5, post-Clovis-age fluted point, similar to Barnes and to some Cumberland points, expanding sides, sharp ears, basal constriction or "waisting" with moderate flare to base (ears), full face fluted on one or both faces, which is likely punch or "instrument assisted" (Goodyear 2006:210) fluting, shallow to moderate basal concavity, rounded (high included angle) to sharply pointed (low included angle) tip, moderate to thin cross section if full-face-fluted on both sides, generally moderate basal edge grinding, a rare form in eastern Virginia; for representative examples, see Figure 2.13, numbers 34 and 35.

Type 6, post-Clovis-age Deep- or Deeper-Concave-Base fluted point, parallel to expanding sides but with no waisting or flare to base, sharp to rounded ears, deeper concave base, moderately long to long flutes (likely punch or instrument assisted fluting), rounded (high included angle) to sharply pointed (low included angle) tip, heavy basal edge grinding, a moderately rare form in eastern Virginia; for examples representative of this type see Figure 2.13, numbers 37 and 41, and see Figure 2.14, numbers 5-9.

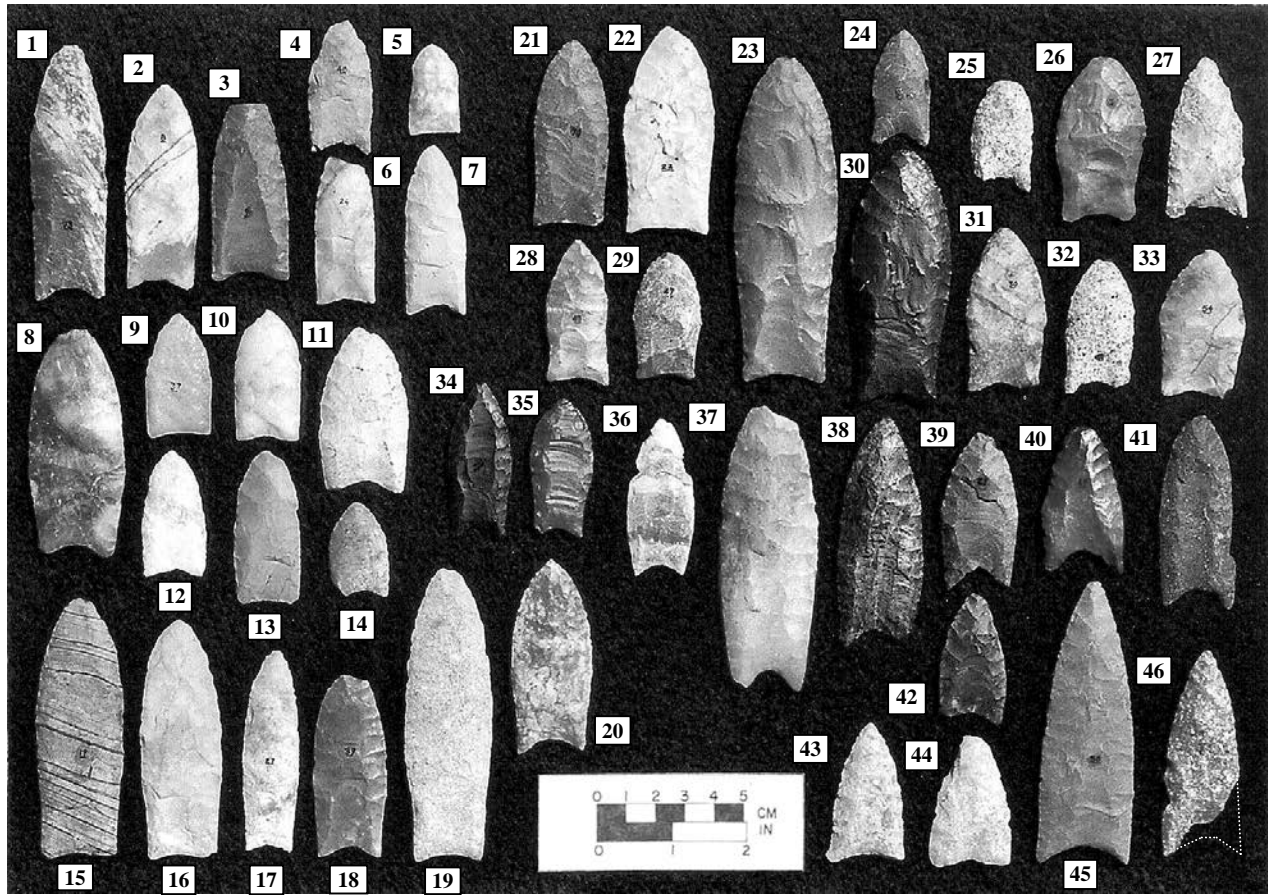


Figure 2.13. Representative Clovis and post-Clovis-age fluted points. **1-33 Clovis fluted points** from across Virginia, also two from North Carolina (N.C.) and one from Maryland as noted for comparison, defined as: Type 1, parallel sided; Type 2, expanding sides; Type 3, expanding sides with basal constriction; and Type 4, parallel to expanding sides with constricted base and flaring ears (waisted): **1**, a classic Type 1 Clovis, metarhyolite, Harnett County, N.C., Cape Fear R.; **2**, a classic Type 1 Clovis, Bolsters Store green chert, Prince George County near Disputanta, Second Swamp, Blackwater R. drainage; **3**, unidentified metavolcanic (MV) or metasedimentary (MS) stone, Amherst County area, James R.; **4**, unidentified gray chert (burned?), Prince George County near Disputanta, Blackwater R.; **5**, Williamson quarry (Little Cattail Creek) chalcedony, Greenville County Clovis site, near Emporia, Meherrin R.; **6**, Williamson quarry chert, Williamson Clovis site, Dinwiddie County, Little Cattail Creek, Nottoway R. drainage; **7**, unidentified MV/MS stone, Williamson Clovis site, Dinwiddie County, Little Cattail Creek, Nottoway R. drainage; **8**, a classic Type 2 Clovis, Williamson quarry chalcedony, north of Williamson Clovis site, Dinwiddie County, Gravelly Run, Nottoway R. drainage; **9**, yellow quartz, Cypress Chapel, old Nansemond County, Great Dismal Swamp; **10**, white quartz, Greenville County Clovis site, near Emporia, Meherrin R.; **11**, weathering amber chalcedony (Hanover County quarry), Greenville County Clovis site, near Emporia, Meherrin R.; **12**, fibrous Mitchell-like chert, Greenville County Clovis site, near Emporia, Meherrin R.; **13**, tuff, Greenville County Clovis site, near Emporia, Meherrin R.; **14**, orthoquartzite, Dinwiddie County, Arthur Swamp, Nottoway R. drainage; **15**, banded tuff, Chesterfield County, James River; **16**, tuff, Mecklenburg County, Buffalo Creek, Roanoke River drainage; **17**, Williamson quarry chert, Williamson Clovis site, Dinwiddie County, Little Cattail Creek, Nottoway R. drainage; **18**, gray (flint-like) chert, Rockingham County, South River, Shenandoah R. drainage; **19**, a classic Type 3 Clovis, deeply weathered coarse-grain jasper, Hanover County, Pamunkey R.; **20**, yellow and red chalcedony, old Nansemond County, swamps forming Somerton Creek drainage, Chowan R. drainage; **21**, flow-banded metarhyolite, Campbell County, Big Falling River, Roanoke R. drainage; **22**, a classic Type 4 Clovis, Williamson quarry chert, Brunswick County, found on a drainage divide, Meherrin and Nottoway Rivers; **23**, metarhyolite, Buckingham County, Bear Garden Creek, James R. drainage; **24**, metarhyolite, Granville County, N.C., Tar R. drainage; **25**, orthoquartzite, Charles County, Maryland, Zekiah Swamp, Potomac R. drainage; **26**, a classic Type 4 Clovis, blue chalcedony (burned tip?), Mecklenburg County, Roanoke R.; **27**, weathered Williamson jasper, Sussex County, Nottoway R. drainage; **28**, Williamson quarry jasper and blue chert, Williamson Clovis site, Dinwiddie County, Little Cattail Creek, Nottoway R. drainage; **29**, flow-banded metarhyolite, Brunswick County, Roanoke R.; **30**, chert-like stone (metarhyolite?), Prince Edward County, Appomattox R. drainage; **31**, Williamson quarry chert (burned), Sussex County, Nottoway R. drainage; **32**, orthoquartzite, King George County, Rappahannock R.; and **33**, Williamson quarry chert, Southampton County, Meherrin R. **34-46, post-Clovis-age fluted points** from Virginia, and one from North Carolina, defined as: Type 5, expanding sides with constricted base and flaring ears (waisted) full face fluted; Type 6, parallel to expanding sides with deeper basal concavity and longer flutes; and Type 7, Redstone, trianguloid with longer flutes and sharp tip: **34**, a classic Type 5 post-Clovis-age point, black chert, Prince George County, headwaters of Blackwater Swamp, Blackwater R. drainage; **35**, a classic Type 5 post-Clovis-age point, jasper (burned), Tazewell County, Clinch R.; **36**, flow-banded metarhyolite, Caroline County, Pamunkey R.; **37**, a classic Type 6 post-Clovis-age point, yellowish-orange chalcedony, old Princess Anne County, near Lake Tecumseh, Atlantic Ocean; **38**, blue-black chert, Rockingham County, South River, Shenandoah R. drainage; **39**, metarhyolite, Powhatan County, Swift Creek, James R. drainage; **40**, jasper (burned), Isle of Wight County, James R.; **41**, a classic Type 6 post-Clovis-age point, metarhyolite, Greenville County, Meherrin R.; **42**, metarhyolite, Sussex County, Nottoway R. drainage; **43**, weathering amber chalcedony (Hanover County quarry), Sussex County northwest of the Cactus Hill site, Nottoway R. drainage; **44**, quartzite, old Norfolk County, exact drainage unknown; **45**, a classic Type 7 post-Clovis-age Redstone point, unidentified MV/MS stone (tuff or vitric tuff?), Rowan County, N.C., Yadkin R.; and **46**, orthoquartzite, Southampton County, Blackwater R. (NRS photograph)

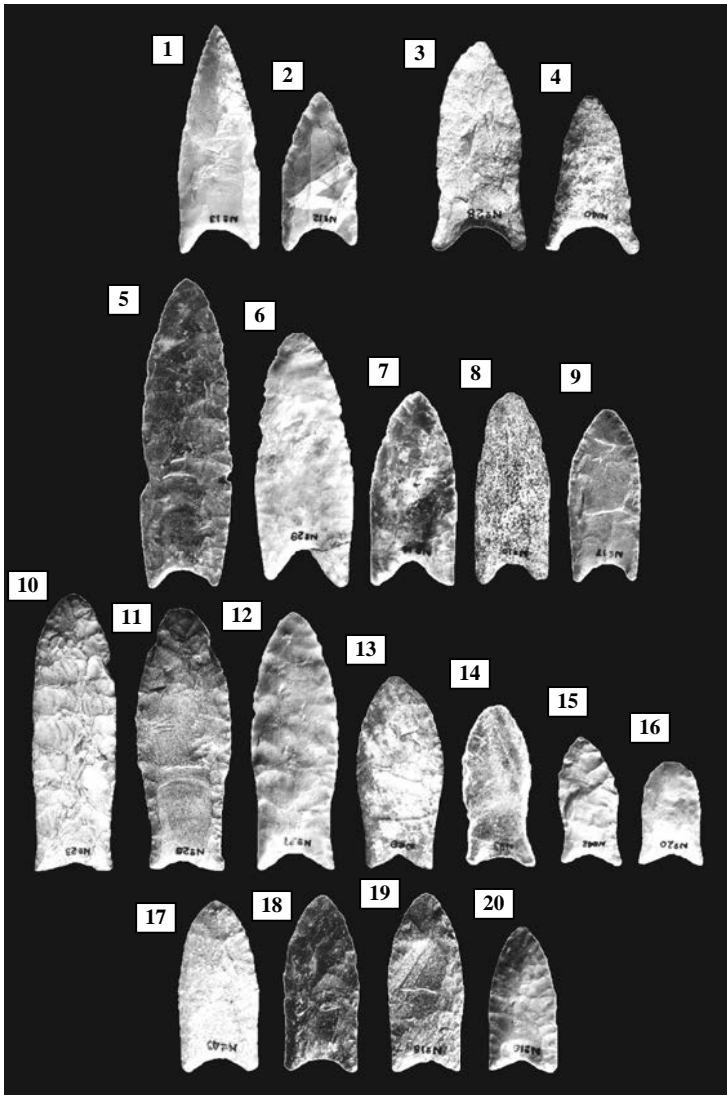


Figure 2.14. Shapes of representative fluted points from the old Arthur Robertson collection, Chase City area of Mecklenburg County in south-central Piedmont Virginia. The fluted points are arranged in rows based upon shape with the presumed older points toward the bottom of the photograph: **1** and **2**, NRS fluted point Type 7, Redstone-like, trianguloid with longer flutes and sharper tip, both are made of unknown metavolcanic or metasedimentary (MV/MS) stone; **3** and **4**, Dalton/Hardaway Dalton points, both are of metarhyolite or tuff; **5** through **9**, NRS Type 6, parallel to expanding sides with deeper concavity and longer flutes, **5** and **8**, metarhyolite or tuff (**8** is greatly weathered and eroded); **9**, tuff(?); **6** and **7**, chert (**6** is restored); **10**, **11**, **12**, **14**, **15**, and **16**, all are NRS Type 4, Clovis, parallel to expanding sides with constricted base and flaring ears (waisted), **10** tuff (greatly weathered); **11**, probably metarhyolite; **12**, **15**, and **16**, chert; **14**, crystal quartz; **13**, NRS Type 3, Clovis, expanding sides with basal constriction but without flaring ears, greatly weathered stone (MV/MS?); **17** through **20**, NRS Type 1, classic Clovis shape, parallel sided (points **18** and **20**), and very similar NRS Type 2, classic Clovis shape, parallel to expanding sides (points **17** and **19**), **17**, is unidentified MV/MS stone; **18** and **19**, metarhyolite; **20**, is a gray fossiliferous(?) chert. All points in this photograph are shown approximately 40 percent natural size (point number **5** was recorded in the 1947 McCary fluted point survey as 102 mm in length). Composite photograph by NRS from photographs taken earlier; numbers printed on projectile points are the Arthur Robertson collection numbers dating from the 1940s into the 1960s.

Type 7, post-Clovis-age fluted point, similar to the Redstone type, trianguloid, but many early stage/not resharpened examples are almost parallel sided for approximately one-third of the point length from the base, sharper ears, generally long flutes in better grades of lithic materials, shallow to deep concave base often depending upon length of flutes (longer flutes are generally associated with a deeper basal concavity and likely punch or instrument assisted fluting), light to heavy basal edge grinding, sharply pointed (low included angle) tip, a moderately rare form in eastern Virginia but more common to the south in North Carolina; for representative examples, see Figure 2.13, numbers 43, 45, and 46, and see Figure 2.14, numbers 1 and 2.

Basally Thinned/Single-Face-Fluted Points

Type 8, post-Clovis-age Appomattox River point, basally thinned point with some examples showing a single flute or multiple flutes on one face (McAvoy 1979:93), very thin, parallel sided to slightly expanding, no flare to base, usually one or both faces show short multiple thinning flakes, rounded (high included angle) to sharply pointed (low included angle) tip, most points show moderate to little basal edge grinding, a rare form in eastern Virginia; for representative examples, see Figure 2.25, numbers 10-15.

Dating Clovis and Deep- or Deeper-Concave-Base Fluted Point Traditions at Cactus Hill

Only one site, Cactus Hill (Chapter 5), within the Nottoway River drainage and indeed in all of Virginia has produced acceptable radiocarbon dates for the fluted point traditions. Figure 2.15 shows the artifacts from Cactus Hill recovered directly with charcoal from two hearths producing Clovis dates and other artifacts from Clovis levels in areas B and A-B/east and west of the site. The most common fluted point tradition artifacts recovered across the Cactus Hill site are Clovis. Most of the Clovis-age artifacts recovered in situ (see above sections and Chapter 5) are chert tools, small fragments of chert tools, unfinished points of local river cobbles, and chert debitage. The two hearths clearly of Clovis age recovered by NRS at Cactus Hill in area B and area A-B/east produced charcoal dating $10,920\pm250$ and $10,910\pm40$ RCYBP, respectively.

At Cactus Hill, there are fewer fluted points and other artifacts representing the Deep- or Deeper-Concave-Base fluted point tradition, Figure 2.16 and Chapter 5. These points have basal

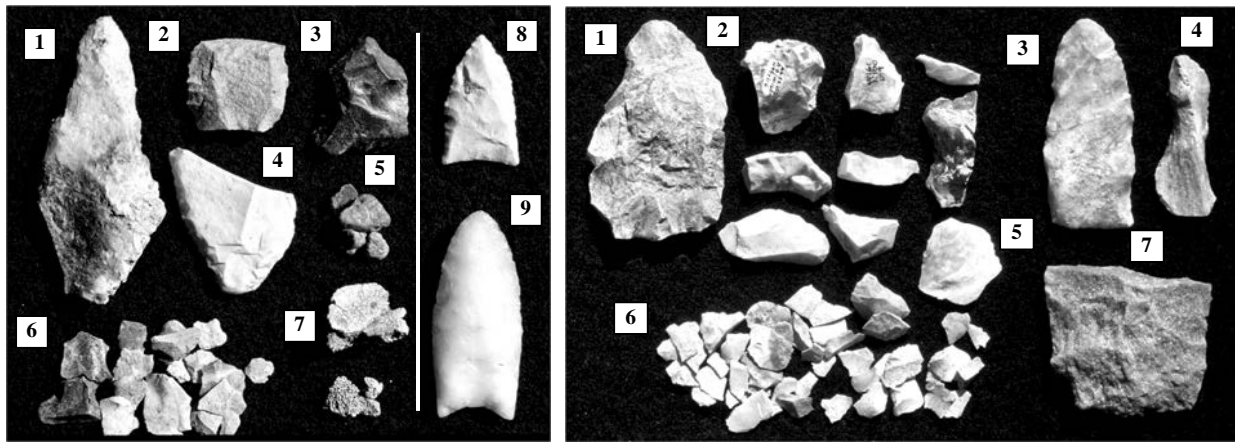


Figure 2.15. Clovis artifacts. **Left photograph**, 1 through 7, Clovis artifacts and burned bone found with the hearth dating $10,920\pm250$ in excavation area B at Cactus Hill: **1**, Williamson chert side scraper; **2**, cobble quartzite preform base; **3**, chert graver; **4**, fibrous chert side scraper; **5**, red ochre fragments; **6**, burned Williamson chert, Mitchell chert, jasper, and quartz trim flakes; and **7**, burned bone (larger mammal). Items **8** and **9**, Clovis points from Cactus Hill, area B, of similar materials (**8**, Mitchell chert; and **9**, quartz) to the trim flakes from the Clovis hearth. **Right photograph**, 1 through 7, Clovis artifacts from excavation area A-B, west and east locations, at Cactus Hill: **1**, cobble chert Clovis preform; **2**, eight Williamson and Mitchell chert tool fragments; **3**, Williamson chert Clovis preform; **4**, Williamson chert spokeshave; **5**, edge-used Williamson chert flake; **6**, burned Williamson chert and jasper trim flakes, some from the Clovis hearth in area A-B/east dated $10,910\pm40$; and **7**, cobble quartzite Clovis preform base. (NRS photographs; scale 43 percent natural size; dates are radiocarbon years BP)

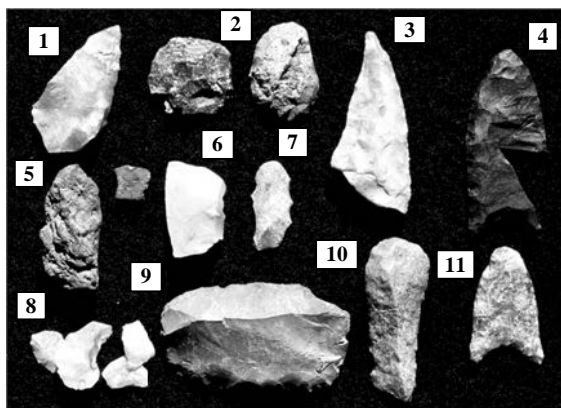


Figure 2.16. Artifacts representing the Cactus Hill area B post-Clovis-age Deep- or Deeper-Concave-Base fluted point tradition: **1**, fire-damaged (burned) chalcedony side scraper recovered above charred material dating $10,840\pm40$; **2**, two burned jasper end scrapers; **3**, a chert side scraper fragment; **4**, black chert, Deep- or Deeper-Concave-Base point, the tip recovered above a single charred organic material fragment dating $10,860\pm60$; **5**, red ochre fragments; **6**, an edge-used chert flake; **7**, a weathered, burned jasper snapped-flake graver (possibly of Early Archaic age?); **8**, burned chert and jasper trim flakes from a post-Clovis-age, Deep- or Deeper-Concave-Base fluted point hearth dating $10,810\pm40$; **9**, a jasper side scraper; **10**, an orthoquartzite end scraper on a blade; and **11**, a heavily resharpened, Redstone or Deeper-Concave-Base fluted point of weathered yellow and brown jasper. (NRS photograph; scale 54 percent natural size; dates are in radiocarbon years BP)

concavities 5 mm or deeper compared to local Clovis points with basal concavities of 1-3 mm, and they are of exotic stone such as brown orthoquartzite, glossy black chert, tuff or dark gray-black metarhyolite, and an unusual jasper foreign to this area. There is no evidence of the use of river cobble quartzite as with the Clovis tradition by the post-Clovis-age fluted point traditions. One area of Cactus Hill produced a concentration of Deep- or Deeper-Concave-Base fluted point tradition artifacts (Figure 2.16) and three acceptable radiocarbon dates on ligninized organic matter (structureless charcoal) of $10,810\pm 40$, $10,840\pm 40$, and $10,860\pm 60$ RCYBP.

If the fluted point tradition dates from Cactus Hill are correct, Clovis points found there date to approximately $10,910(\pm)$ RCYBP or slightly earlier, and an intercept of this radiocarbon age with the calendar-age calibration curve (INTCAL04, as provided by the dating laboratory, Beta Analytic) represents a date of 12,960 calendar years before present. The Deep- or Deeper-Concave-Base points found there date to approximately $10,840(\pm)$ RCYBP, and an intercept of this radiocarbon age with the same calendar-age calibration curve represents a date of 12,900 calendar years before present. However, with associated errors, all of the radiocarbon dates at the 2-sigma range have considerable overlap and they all could be considered the same. Still, based upon stylistic differences, in the opinion of NRS there is an age difference in the two types of fluted points of perhaps as much as a century. The Deep- or Deeper-Concave-Base points recovered at Cactus Hill are considered by NRS to be of post-Clovis age, and they may be the oldest of the post-Clovis-age fluted points in the mid-Atlantic region.

Greensville County Clovis Base Camp Research Update

New Discoveries

Chapter 7 of *Part-I* (McAvoy 1992:117) describes the Greensville County hunting-related Clovis base camp. This site, generally referred to simply as the Greensville County Clovis site, was discovered and worked through surface collecting by Mr. J. H. Boney of Emporia, Virginia from the early 1980s until about 2002. The tract containing the site has now been reforested and is no longer available for surface collecting. After publication of the site report in 1992, Mr. Boney continued to surface collect from the site, and he continued to work a smaller Clovis site across the Meherrin River to the north, which he had discovered in the 1960s. This smaller site was referred to in the 1992 publication as the Meherrin River North site.

According to Mr. Boney, the primary site, the Greensville County Clovis site, is located on the south side of the Meherrin River as described in *Part-I*. The artifacts recovered more recently on the Greensville County Clovis site but not recorded in the 1992 site report include a white orthoquartzite Clovis point, a small white chert Clovis point, and several chert end scrapers. This would bring the total number of finished Clovis points from the site to 11 plus one small fragment of the ear of what appears to be a twelfth Clovis point. The number of end scrapers now known from the site is over 170. Also, according to Mr. Boney, since the 1992 report the smaller site across the river to the north has produced two more Clovis points as well as approximately 15 end scrapers. The total number of finished Clovis points known from this smaller site is now four.

The Greensville County Clovis site and the smaller satellite camp directly across the river together are very significant as they represent the second largest number of finished Clovis points and tools known from a small area in Virginia. The Williamson Clovis site and associated

peripheral satellite camps located in Dinwiddie County, Virginia still rank first producing more finished Clovis points than any other small area in Virginia by a factor of at least ten. The Cactus Hill site in Sussex County and the Hanover County Little Rocky Creek site, with the finished Clovis point tabulation known in 2014, are in a tie for third, and it appears that the Thunderbird quarry and Clovis base camp with small satellite hunting camps could rank fourth. It may rank higher, but there is no compilation of completed fluted points from this site area.

Recent Laboratory Work

After the publication of the site report in 1992, NRS continued to do laboratory work with the artifacts collected by Boney and his family at the site through 1991. We were very interested in how many different lithic materials and even individual cores were represented in the collection, the distance these materials moved from the most likely quarry locations to the Greenville County Clovis site, and the tools represented by each material. Using a binocular microscope with 20x and 40x magnification to help identify structure and inclusions, a minimum of 37 different material descriptions were noted (Table 2.3), which represented in some cases different materials from different quarries and in other cases differently colored and patterned materials likely from the same quarry. There were a few instances where a single artifact was made from an unidentified material, or a material from an unidentified source, but these single occurrences are not considered except for one artifact of green tuff.

Most of the larger flakes, tools, and cores recovered on the Greenville County Clovis site are of materials identical to those occurring in large quantity upon the Williamson chert quarry to the north, and they would be described simply as “Williamson chert.” Small chert artifacts do not contain sufficient surface area to clearly identify the distinctive color patterns, and thus approximately 1,100 of the 1,700 or so items recovered upon the site cannot be identified down to the level of a specific core, but most of these appear to be Williamson chert. The majority of the large Williamson chert artifacts in the Greenville County Clovis site assemblage seem to have been obtained from no more than 21 to perhaps 23 large quarry-blocks or fragments. The fragments were likely reduced to some degree at the Williamson quarry into smaller and more easily transported cores, specialized unifacial tools, and Clovis point preforms. Because none of the chert biface reduction flakes found at the Greenville County site is a refit to a Clovis point preform found there, most of the preforms were probably made elsewhere, likely on the Williamson site, and then transported to the Greenville site for completion. The overall conclusion from the new laboratory work is that at least some Clovis hunters who were at the Greenville County site had recently been at the Williamson site, and that they may have traveled directly from Williamson to Greenville County with freshly made chert cores and tools.

Table 2.3. Greenville County Clovis Site Artifact Numbers/Identifications by Material Types and the Likely Sources.

Matl. Type or Core	Material Description (Each material description may possibly represent more than one core)	Cores and Types	Large Flakes	ES ⁽¹⁾	SS ⁽²⁾	W/U ⁽³⁾ Flakes	Bifaces	Other Items (As noted)	Total #
1	Williamson chert, cream and brown, dark-black dendrite-like inclusions, subtranslucent	1, block	6	2	-	-	1 (large)	1 Clovis preform, 1 preform tip, 1 graver	13
2	Williamson chert, blue and white striped, medium to coarse structure, subtranslucent	1, block	3	-	-	-	-	-	4
3	Williamson chert, blue with brown chert or jasper, fine structure, partly translucent	1, bifacial; 3, block	22	3	-	-	-	1 UTF ⁽⁴⁾	30

Matl. Type or Core	Material Description (Each material description may possibly represent more than one core)	Cores and Types	Large Flakes	ES⁽¹⁾	SS⁽²⁾	W/U⁽³⁾ Flakes	Bifaces	Other Items (As noted)	Total #
4	Williamson chert, white and blue with minor red and yellow, some striping, partly translucent, nearly chalcedony	2, large thick flake cores	-	-	-	-	-	-	2
5	Williamson chert, variegated white with some blue, some banding, subtranslucent	1, bifacial	1	2	-	-	-	-	4
6	Williamson chalcedony, cream, blue, and yellow, fine waxy texture, translucent	1, small fragment	7	1	1	2	-	-	12
7	Williamson chert, variegated cream, blue, and yellow, medium texture, subtranslucent	1, block	4	12	-	1	-	-	18
8	Williamson chert, cream with zones of brown jasper, deeply weathered, fine structure, completely opaque	-	8	5	2	2	1	-	18
9	Williamson chert, white with minor blue and gray, deeply weathered, coarse texture, subtranslucent	1, small block fragment	5	3	-	1	-	-	10
10	Williamson chalcedony, white, fine texture, deeply weathered, highly translucent	-	41	7	-	1	-	1 Clovis preform, 1 Clovis preform fragment	51
11	Williamson-like chalcedony, translucent cream-white, deeply weathered, fine texture	-	3	2	-	-	-	-	5
12	Williamson chert, cream to light pinkish-tan with minor blue, small dark inclusions, subtranslucent to translucent	-	6	28	1	8	-	1 Clovis preform broken and small	44
13	Brunswick Co. quarry fibrous chert, yellowish brown, coarse grain, macro-quartz inclusions, slightly translucent in areas	-	2	1	1	2	-	1 Clovis preform, 1 Clovis preform fragment	8
14	Williamson chert, variegated cream and brown, fine structure, partly translucent	-	8	1	-	4	-	-	13
15	Bolsters Store "green chert" (metarhyolite) greenish gray, medium texture, subtranslucent to translucent	1, bifacial	2	-	1	2	-	-	6
16	WAC ⁽⁵⁾ -like chalcedony, blue, white, and brown with inclusions, coarse structure, translucent	1, block	-	-	-	-	-	-	1
17	Silicified wood, multiple sources, white, blue, brown and cream colored, fine structure, opaque	1, block "log" fragment	2	1	-	2	-	-	6
18	WAC ⁽⁵⁾ , weathered cream, amber, rose and orange, coarse to fine structure, partly translucent to translucent	-	58	8	4	2	2, fragments	1 Clovis point, 1 Clovis point preform fragment	76
19	Mitchell quarry chert, white to yellowish-white, fibrous, macro-quartz inclusions, partly translucent	1, small fragment	14	6	1	1	-	1 Clovis point, 1 awl, 1 graver	26
20	Mitchell chert, white to blue-white, granular to fine structure, partly translucent	-	14	2	2	3	-	1 worked piece, 1 graver	23
21	Williamson chert, striped to variegated dark blue and white with some brown, fine structure, generally subtranslucent	-	29	13	2	3	1	1 Clovis point, 1 Clovis point preform, 1 graver	51
22	Williamson chert, blue-white with	-	12	4	2	3	-	-	21

Matl. Type or Core	Material Description (Each material description may possibly represent more than one core)	Cores and Types	Large Flakes	ES⁽¹⁾	SS⁽²⁾	W/U⁽³⁾ Flakes	Bifaces	Other Items (As noted)	Total #
Similar to #12	small blue inclusions, fine structure, partly translucent								
23 Similar to #21	Williamson chert, blue and white with streaks, swirls, and fine lines, fine structure, partly translucent	1, block	36	-	1	2	1	1 awl	42
24	Williamson chert, white with minor cream and brown, small blue inclusions and blue streaks, medium structure, subtranslucent	1, bifacial	12	4	3	5	1	1 Clovis point preform	27
25	Williamson chalcedony, blue with minor brown, fine waxy texture, translucent	1, bifacial	10	3	1	3	2	-	20
26 Similar to #8	Possibly Williamson chert (?), yellow with brown chert or jasper with minor blue and brown inclusions, medium to fine texture, subtranslucent	1, block	-	3	1	-	-	-	5
27	Chert, unknown source, whitish-brown with small spherical brown inclusions, somewhat porous, medium texture, subtranslucent	-	4	-	2	1	-	-	7
28	Chert, unknown source, white with blue inclusions, and irregular spots, fine grained and waxy texture, subtranslucent	-	-	6	-	2	-	2 tool fragments, UTF ⁽⁴⁾	10
29	Jasper, unknown source but possibly the Powhatan Co. quarry, glossy yellow with streaks and swirls of green, blue, and light brown, heavily weathered, opaque	-	-	2	-	-	-	-	2
30	Flint-like chert, unknown source, fossiliferous gray, fine waxy texture, mostly subtranslucent	-	-	8	2	2	-	1 very small chisel-wedge	13
31	Flint-like chert, unknown source, modeled dark blue and gray, very fine grained texture, glossy, subtranslucent	-	-	1	1	-	-	1 beak or denticulate tool	3
32	Williamson chalcedony, blue and cream with minor red and brown zones, weathered light blue, fine structure, highly translucent	-	-	3	1	2	-	1 Clovis point, broken by plow strike	7
33	Williamson chert, multicolored cream-blue-white-yellow and brown, medium texture, light weathering, subtranslucent	-	-	1	-	-	-	1 Clovis point preform, 2 tool fragments, UTF ⁽⁴⁾	4
34	Williamson yellow jasper and blue chert, fine texture, lightly weathered, subtranslucent	-	-	2	-	-	-	-	2
35	Williamson-like chert, cream with light brown areas and some minor amount of blue, some green weathering or staining, fine texture, subtranslucent	-	-	8	2	1	-	-	11
36	Quartz, multiple sources, white and crystal, fine crystalline structure, unweathered, translucent to transparent	-	-	1, white	-	-	-	1 Clovis point, white quartz, 1 Clovis point, crystal quartz	3
37	Green tuff, multiple sources, fine texture, weathered, opaque	-	-	-	-	-	-	1 Clovis point	1
Total Number of Items in Each Group		20	309	143	31	55	9	32	599

Notes:

1) ES is end scraper. 2) SS is side scraper. 3) W/U is worked or utilized. 4) UTF is unidentified tool fragment. 5) WAC is weathering amber chalcedony from the Hanover County, Virginia, Little Rocky Creek site chalcedony outcrops (quarry).

Chert Bipolar Objects at the Williamson Clovis Site

The presence of large numbers of chert bipolar objects at the Williamson site, and the theory that they were used as cutting/wedging tools rather than cores, was presented in *Part-I* (McAvoy 1992:45). Based upon the most recent investigation by NRS of the Williamson site in 1998-2003 (Chapter 11), our original conclusion that most all of these objects are chisel-wedges, and not cores, is now considered to be confirmed. The confirmation is based upon the finding by NRS of an activity area on the Williamson site involving primarily the use of this single tool type and the subsequent analysis of the excavated tools for use-wear.

The artifact cluster was identified by NRS in site excavation area 7 (Chapter 11), and only chisel-wedges, broken chisel-wedges, spalls from use of such artifacts, and apparent blanks for new chisel-wedges occurred there in any number. From the wear analysis, the chisel-wedges seemed to have been used for splitting and cutting bone, antler, or tusk, but there were few or no tools there for shaving, planing, or drilling the split pieces. This suggested that only one material was worked there, and that the activity related to that material was initial procurement.

The area containing the chisel-wedge cluster is currently poorly drained, and if similar in the time of Clovis use, as we believe it was, this location would not have been a very desirable place to work. The choice of this area as a work location would have been related to the presence of the bone, antler, or tusk resource, which apparently was not easily transportable even a few hundred feet east or west to higher, better drained locations. All of this strongly suggests a kill-site location where initial procurement of bone, antler, or tusk from a large, heavy animal was the principal activity (Chapter 11).

Based upon the excavation of this cluster of chisel-wedges, and several similar isolated clusters identified on the site through surface collecting, it is now considered conclusive that these items were not simply bipolar cores. This position is supported by the NRS observation that few of the flake tools recovered from the Williamson site are made upon the distinctive, irregular, and poorly controlled percussion spalls typically resulting from bipolar battering.

Clovis Settlement Pattern Update for Eastern Virginia

In *Part-I*, it was hypothesized that Clovis settlement areas or territories involving cyclical patterns of movement by microbands existed in southeastern and south-central Virginia, particularly in association with the Williamson chert quarry and Clovis base camp (McAvoy 1992: 155-163). Nothing has changed regarding this hypothesis. However, with the discovery of the Hanover County weathering amber chalcedony quarry and associated Clovis base camp near Little Rocky Creek in central Virginia north of the Williamson-related settlement area, it appears from the preliminary investigation that a unidirectional, non-cyclical element (Figure 2.17) of population or group movement should be added to the settlement pattern model.

The proposed non-cyclical element is based upon the recovery of weathering amber chalcedony Clovis artifacts upon the Williamson chert quarry and Clovis base camp and other sites further to the south, but the absence of Williamson chert Clovis artifacts, or artifacts of any stone material known from a quarry to the south, at the Little Rocky Creek site weathering amber chalcedony quarry and Clovis base camp in Hanover County to the north (Figure 2.17). While we do not know the exact direction of movement of the Clovis people to the Hanover County quarry, the combination of foreign materials (orthoquartzite and a striped jasper) left there seems

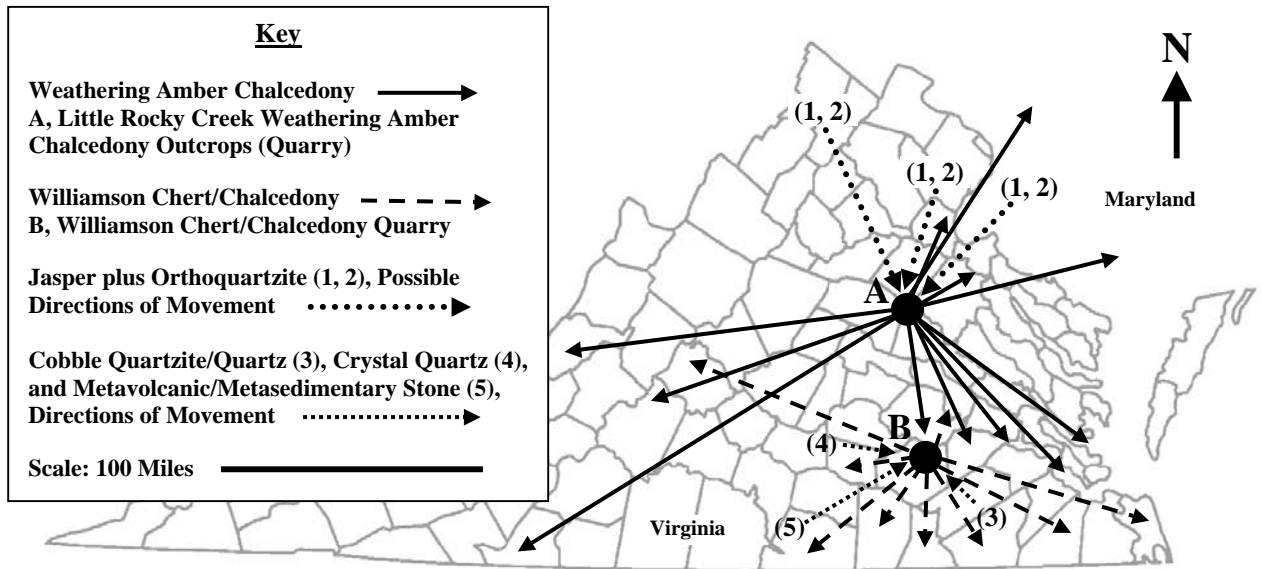


Figure 2.17. Direction/distance vectors showing the movement of Clovis artifacts of Williamson chert, weathering amber chalcedony, cobble quartzite and cobble white quartz, crystal quartz, and metavolcanic/metasedimentary stone, and the possible directions and distances of movement of jasper plus orthoquartzite, from known and postulated quarry and collection locations in Virginia. A non-cyclical unidirectional element of population movement is postulated based upon the recovery of weathering amber chalcedony Clovis artifacts upon the Williamson chert quarry and Clovis base camp and other sites further to the south but the lack of Williamson chert Clovis artifacts or artifacts of any stone material known from a quarry to the south upon the Little Rocky Creek site weathering amber chalcedony quarry and Clovis base camp in Hanover County to the north. The postulated movement of jasper plus orthoquartzite south to the Little Rocky Creek site weathering amber chalcedony quarry, and a movement of weathering amber chalcedony back to the north or northeast suggests a cyclical pattern of movement within a previously unidentified Clovis territory to the north. The movement of crystal quartz, metavolcanic/metasedimentary stone, and quartzite to the east, northeast, and northwest from known sources to the Williamson chert quarry, and the movement of Williamson chert back to these areas represents a cyclical pattern of movement within a territory as previously defined (McAvoy 1992).

to be most available to the north from the Potomac River or to the northeast from the Stafford County area, which is bounded by the Potomac River. There is one reported find of a weathering amber chalcedony fluted point very near the Potomac River in Stafford County, and artifacts of weathering amber chalcedony are known from that general direction on the eastern and western shores of the Chesapeake Bay in Maryland. This suggests a cyclical pattern of movement within a territory extending to the north from the Little Rocky Creek site quarry (Figure 2.17).

On the Williamson site, there are clusters of weathering amber chalcedony artifacts on the Ampy Farm portion of the site very close to Little Cattail Creek but not further away from the creek. This is in contrast to the many clusters of local Williamson chert Clovis artifacts found on the site several hundred yards south of the creek. It appears that the Clovis people bringing weathering amber chalcedony to the Williamson site may have been among the first groups to use the site considering that their use-areas did not extend much further to the south of Little Cattail Creek than the area thought to have contained the major outcrops or natural debris fields with blocks or large fragments of Williamson chert. In addition, the observation that these people were among the earliest users of the site seems to be supported by the difference in style between typical weathering amber chalcedony Clovis points and typical Williamson chert Clovis points. Most points of weathering amber chalcedony have a distinctive “classic” Clovis shape (Figure 2.3) with parallel to slightly expanding sides and a shallow concave base but very little basal constriction. These are NRS Type 1 and Type 2 Clovis points. In contrast, the shape of many Clovis points of Williamson chert is somewhat constricted at the base with a slight flare to

the ears. This is NRS Clovis point Type 4. The typical Williamson chert Clovis point shape (Type 4) may have evolved out of the classic Clovis shape and is perhaps somewhat younger.

There is much more information available concerning the direction of movement of the Clovis people from the Williamson site. Based upon several finds of Williamson chert Clovis artifacts (Figure 2.17), Williamson chert is known to have moved to the south to the Conover site, to the Mitchell complex of sites, and to the Greensville County site, and to the southeast, southwest, and west. In addition, it would seem that the Clovis people moving south from the Williamson site still possessed a small number of artifacts of weathering amber chalcedony from the Hanover County, Virginia location. Small numbers of these artifacts were discarded in clusters of predominantly Williamson chert artifacts at the Conover Clovis site and Greensville County Clovis site.

As shown in Figure 2.17, quartzite and white quartz Clovis points move from the Coastal Plain river cobble deposits northwest to the Williamson site while Williamson chert Clovis points move to the Coastal Plain sites. Locations to the west and southwest of the Williamson site produce metavolcanic and metasedimentary stone Clovis points and crystal quartz Clovis points, which are found on the Williamson site. In turn, Williamson chert Clovis points are found in these areas in counties such as Amelia and Mecklenburg, although in small numbers. The movement of Williamson chert Clovis artifacts into counties to the southeast, southwest, and west, and the movement of Clovis artifacts of other distinctive materials from these areas back to the Williamson site is indicative of a cyclical pattern.

In summary, the distribution of Clovis points in eastern Virginia from both of the large quarry locations, Williamson and Little Rocky Creek, is primarily to the south, southwest, and southeast, and it seems likely that the Williamson site was visited early, perhaps initially, by the people from the Hanover locality traveling south. The fact that NRS has found no evidence indicating that these people returned to the Hanover County Little Rocky Creek quarry location, or to any area that far to the north with stone material from the south, strongly suggests that some Clovis group movement from territory to territory within Virginia was unidirectional and not cyclical. But, a cyclical site-use pattern is observed with the Clovis groups using the Williamson site as there is significant evidence of local movement of stone material to and from that quarry.

Pre-Clovis Tradition and Post-Fluted-Point Tradition Research

A Newly Recognized late Paleoindian Point Type

On sites within the middle region of the Nottoway River drainage, particularly in the areas of Prince George County, Dinwiddie County, and Sussex County near the community of Carson, NRS has identified a new local late Paleoindian point type in addition to the previously identified late Paleoindian/early Early Archaic Hardaway Side Notched point (Coe 1964:67). The newly defined local type, described by NRS as the Carson Lanceolate, Figure 2.18, is postulated to be of post-fluted-point age. This point is an unfluted, basally-thinned and edge-ground lanceolate form, which is usually wide and thin with a high width to thickness ratio (Table 2.6), parallel sided to somewhat trianguloid, and has shallow to deep basal concavity, but the type is without basal constriction. Resharpener resulted in either a rounded or a sharp V-shaped tip and often resulted in a subtriangular shape. There is no side notching, blade beveling, or blade serrations as observed with Dalton points, and there is no basal flare as observed with Quad points.

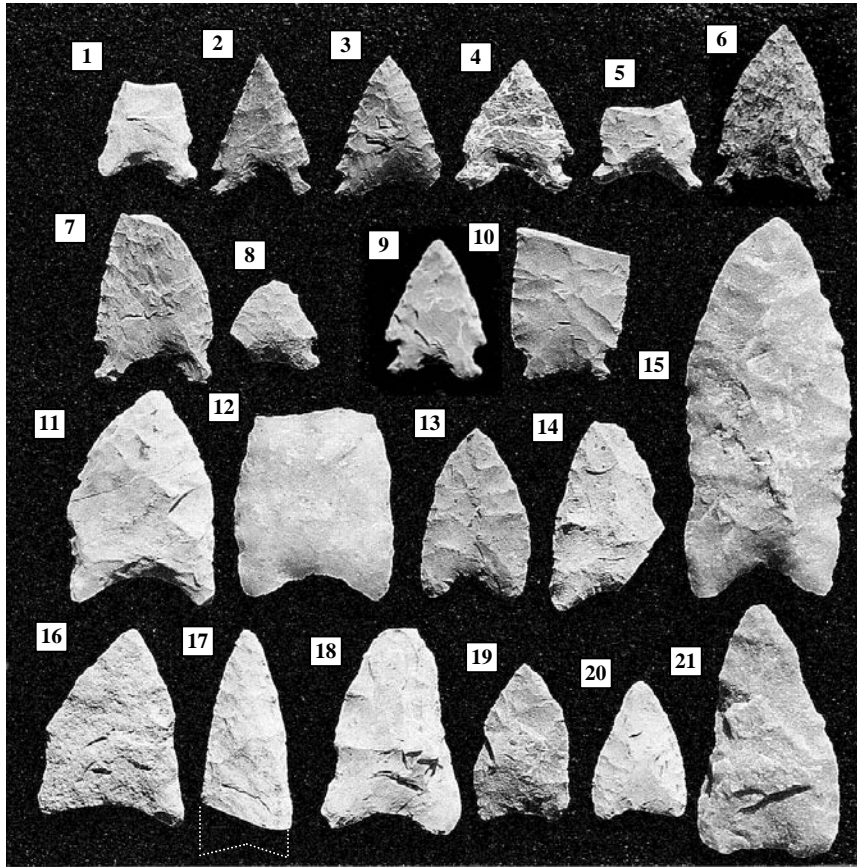


Figure 2.18. Late Paleoindian and late Paleoindian/early Early Archaic points from sites in the Nottoway River area of Virginia: 1 through 6, Hardaway Side Notched points, all recovered as surface finds; 7 through 10, Hardaway Side Notched points, all recovered in NRS excavations; and 11 through 15, newly identified Carson Lanceolate points, all recovered as surface finds; 16 through 21 are Carson Lanceolate points, all recovered in NRS excavations. Location and stone material: 1, Stony Creek site #4, tuff; 2, Fannin site, jasper; 3, 14, and 15, the Hill Farm site, green tuff, highly weathered gray rhyolite, and quartzite, respectively; 4 and 5, Stith site, yellow jasper and tuff, respectively; 6, 9, 10, 13, 20, and 21, Slade Farm complex of sites, rhyolite, tuff, dark green tuff, rhyolite, highly weathered yellow tuff, and light brown quartzite, respectively; 7, 8, 18, and 19, from the Cactus Hill site, all are types of rhyolite; 11, China Doll North (Nay Farm) site, Bolsters Store green chert; 12, Baskerville Farm site, white fine-grain quartzite; and 16 and 17, E. T. Gray site, weathered and eroded argillite like stone, and striped gray rhyolite or tuff, respectively. (17, found with 16, is likely a Carson Lanceolate point tip) (Scale 58% natural size; NRS photo)

Based upon a sample of 12 points in the NRS study collection, lengths range from 31 to 88 mm (average 52 mm), widths from 22 to 38 mm (average 30), and thickness from 4 to 9.5 mm (average 6). The Carson Lanceolates are most often observed of metarhyolite, tuff, or fine-grain quartzite, but a few are known of Bolsters Store green chert. A point similar to the Carson Lanceolate is the classic Dalton in the completed “preform” stage before resharpening as defined by Goodyear (1974:24), and there is some similarity to some of the Hardaway Blades shown by Coe (1964:65). Carson Lanceolate points representing the typical range of sizes and shapes are shown in Figure 2.18 as points numbered 11-21, and two of these (13 and 20) resemble the overall shape of Hardaway Side Notched points (Figure 2.18, 1-10) without the notches.

In the Nottoway River drainage, Carson Lanceolates excavated by NRS on the Slade site, the Cactus Hill site, and the Gray site were initially misidentified as Daltons. Also, a few points likely of the Carson Lanceolate type have been included by others as fluted points over the years in the McCary fluted point survey. Examples of Carson Lanceolate-like points in the McCary survey are numbers 59, 60, 127, 129, 690, and 894. This is not a criticism of the survey as NRS also previously misidentified a point (#15 of Figure 2.18) as Clovis, but it is a demonstration of how similar in general outline some of the Carson Lanceolate points are to some Clovis points.

An adequate assemblage of tools in direct association with Carson Lanceolate points was recovered by NRS only on the Gray site (Chapter 8). At the Gray site, the tool assemblage except for the preferred lithic materials was almost identical to assemblages recovered on local Clovis sites as well as local Palmer sites. Common tool forms are end scrapers of various sizes,

side scrapers, edge-worked and edge-used flakes, gravers, and snapped-flake tools. Most of the tools are made of metavolcanic or metasedimentary stone and most are unifacial. Based upon shape and tool assemblage, it is thought that the Carson Lanceolate is a local age-equivalent of Quad or Dalton in the Southeast.

A Postulated Pre-Clovis Tradition in Southeastern Virginia

At four locations within the Nottoway River drainage, the Cactus Hill site, the Stith site, the Rack Creek site, and the Stony Creek #3 site, similar unusual assemblages of artifacts dominated by blade flakes have been recovered. These assemblages are represented primarily by large and small core blades or blade-like flakes, large and small polyhedral blade cores, edge-used and edge-worked blade flakes and irregular flakes, scrapers, abrading stones, and an occasional thin bifacial projectile point or knife, and rarely chopper-like bifacial cores. Collectively, these assemblages are described by NRS as the Nottoway Blade Complex.

However, only one of these sites, Cactus Hill, has produced the artifacts in a buried and stratigraphically interpretable context. Given the stratigraphic position of these artifacts at the Cactus Hill site, they are postulated by NRS to be of pre-Clovis age. Most of the excavations on the Cactus Hill site producing these artifacts are described in some detail along with the artifacts in Chapter 5. The Stith site artifacts are shown in Chapter 7, but the other two surface collections, Rack Creek and Stony Creek #3, representing postulated pre-Clovis-age assemblages are described only in this chapter. The following paragraphs briefly describe the pre-Clovis assemblage excavated at Cactus Hill and the similar surface assemblages from Rack Creek, Stith, and Stony Creek #3.

The Cactus Hill Site Pre-Clovis Artifact Clusters

For a distance of approximately 500 feet across the ridge centerline in areas described as B, A-B, and A at Cactus Hill, five general cluster areas, most containing multiple artifact clusters (Figure 2.19), have been identified in the area of and stratigraphically below artifacts of the fluted point traditions (Chapter 5, Figures 5.96 through 5.99). These five cluster areas or locations are thought to represent as many as 14 discrete clusters of core blades indicating activity or work areas. The individual artifact clusters in the general cluster locations are quite different in size ranging in area from less than 25 square feet to 100 square feet or more. In total, 110 artifacts (Table 2.4) mostly cores, core blades, and tools, have been recovered in the clusters by NRS. If small artifacts (about 0.25-inch maximum dimension and less) such as trim flakes and small shatter fragments were added to the totals from the Cactus Hill pre-Clovis levels, the artifacts would number in the thousands. As an example, in one A-B/west group of excavation units, the ratio of these small artifacts to core blades was 17.7:1, Table 5.4. However, because of the sandy soil at Cactus Hill, small artifacts are known to downdrift through bioturbation, and not all of the small artifacts can be reliably added to the pre-Clovis total.

Most (101) of the larger artifacts in these clusters are made of locally available quartzite river cobbles and can be characterized as repetitive sets or types of tools (Figure 2.19). The tool types include modified and unmodified core blades or elongated and blade-like flakes, a few irregular flakes, small and large polyhedral blade cores often with little platform preparation, a few abraders, which are usually of soft quartzite or hard sandstone, side scrapers, end scraper/side scraper combination tools, small fragments of red ochre paint stone, very rare bifacial projectile points or hafted knives, and possibly chopper-like bifacial cores.

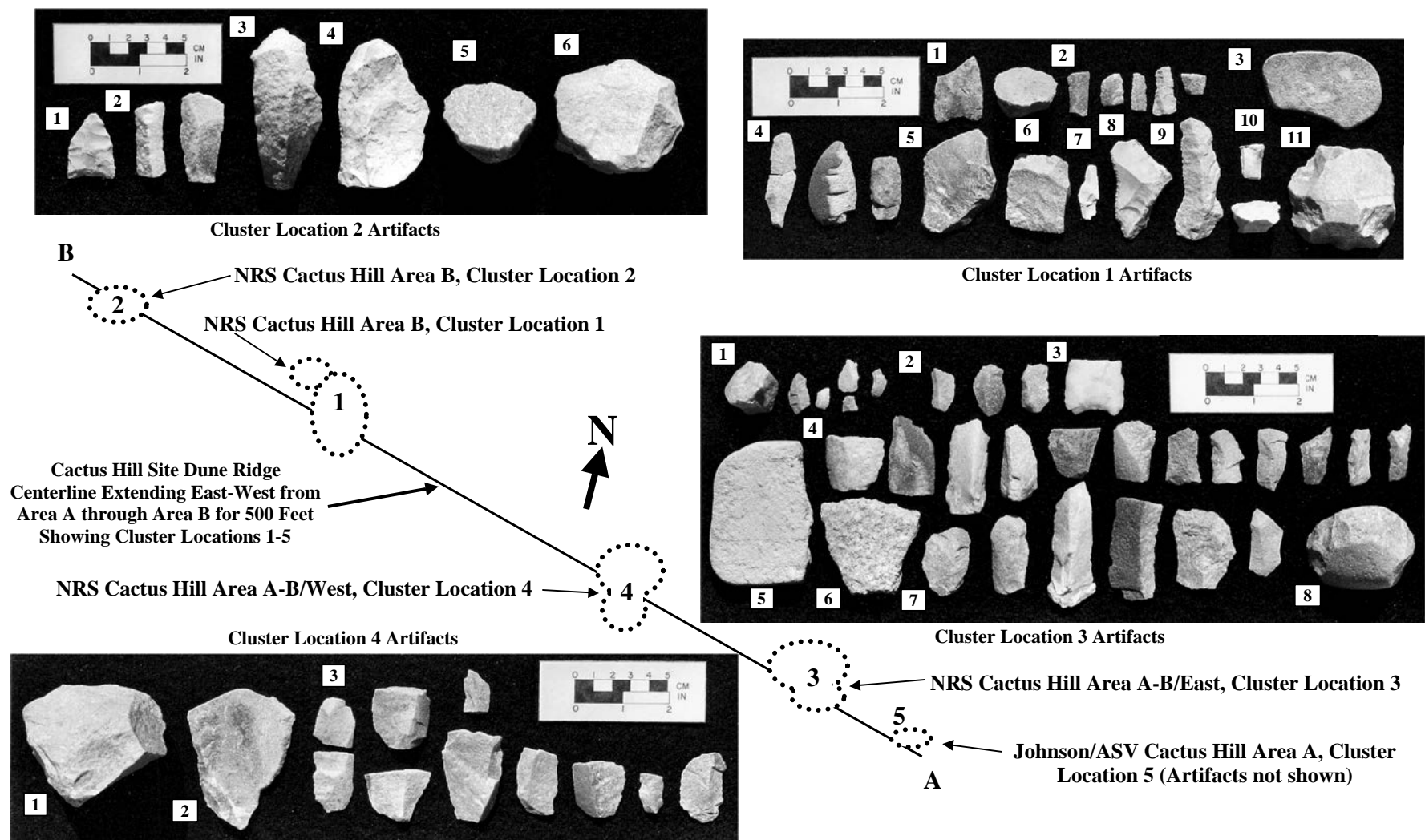


Figure 2.19. Pre-Clovis artifact clusters at Cactus Hill. **Drawing:** Pre-Clovis artifact cluster locations 1 through 5 shown on the Cactus Hill site dune-ridge centerline extending east-west for 500 feet from area A through area B. **Upper left,** location 2 representative artifacts: 1, projectile point; 2, two core blades, one end-worked into an end scraper; 3, large edge-worked core blade; 4, large side scraper/end scraper; and 5 and 6, polyhedral cores viewed from the top. **Upper right,** location 1 representative artifacts: 1, projectile point and polyhedral core viewed from the top; 2, five small core blades and fragments; 3, slab abraders; 4, three blade flakes; 5, side scraper; 6, edge-used flake; 7, blade flake; 8, side scraper; 9, edge-used blade flake; 10, small chert core blade and small chert blade core; and 11, quartzite blade-flake core viewed from bottom (items numbered 1, 2, 3, and 11 were from same unit but three levels above the hearth dated 14,180±80 RCYBP; items numbered 4 were directly associated with the hearth dated 15,070±70 RCYBP). **Center right,** location 3 representative artifacts: 1, small quartzite blade core and five small blade flakes/fragments; 2, three small core blades; 3, quartz point preform; 4, twelve quartzite blade-flakes/fragments, one end-worked; 5, and 6, slab abraders; 7, six quartzite blade and blade-like flakes; and 8, quartzite circular core/scraper. **Lower left,** location 4 representative artifacts: 1, large blade-flake core of quartzite; 2, large quartzite edge-used flake; and 3, ten quartzite blade-flakes/fragments (one cross-mend), most edge used. (All are NRS photographs.)

Basal treatment of the two finished bifacial points was thinning, and these artifacts appear to have been flaked by a combination of pressure and indirect percussion resulting in thin (4.5-5.5 mm) cross sections. Microwear analysis (Figure 2.24) indicates they were hafted as projectile points, and fractures on the tips suggest they broke on impact as would be expected of projectile points. Some expended cores were observed with localized wear along platform edges, and this was interpreted through wear analysis to possibly be a result of a secondary use for hide scraping (Kimball 2000). Core blades of pre-Clovis age were observed through wear analysis to show hafting wear, and many appeared to have been anvil-broken into right-angled segments as new, sharp (burin-like) edges were required.

Not all artifacts are quartzite, and two projectile points, three of the scrapers, and one small core blade are of metavolcanic and metasedimentary stone, possibly from locally available river cobbles. Also, not all artifacts were of lithic materials as one fragment of a burned (calcined) bone awl or small projectile point tip was recovered in a hearth at the pre-Clovis level in area A-B/east at Cactus Hill; and, based upon the presence of the bone tool and the unusual flat-slab abraders of hard sandstone or soft quartzite, there may have been a significant bone tool industry.

Radiocarbon dates were obtained for only two of the four hearths excavated at Cactus Hill associated with pre-Clovis clusters, and they are $14,180 \pm 80$ and $15,070 \pm 70$ RCYBP, which represent an age range of about 18,500 to 16,500 calendar years BP. However, from the stratigraphic position of the upper level or latest of the pre-Clovis artifacts, a date range for these artifacts of 15,500 to 14,500 calendar years BP is postulated, but there are no ^{14}C dates from the upper level. Iron-cemented charcoal in A-horizon soil fragments presumed to represent natural fires, and recovered within to just below strata containing the older pre-Clovis artifact clusters, was dated to $16,670 \pm 730$ RCYBP or about 20,000 calendar years BP. This geological date is thought to be 1,500 to 2,000 years older than the earliest human presence on Cactus Hill.

The Stony Creek #3 Site Presumed Pre-Clovis Assemblage

From 1998 through 2006, an assemblage of Cactus Hill-like artifacts (Figure 2.20) presumed to be of pre-Clovis age was recovered by NRS through surface collecting on the Stony Creek #3 site. The site is an elevated sand and gravel terrace located along the creek in the Coastal Plain uplands a few channel miles from the confluence of the creek with the Nottoway River. Near the site, the creek has eroded through a large bed of quartzite and quartz cobbles, and this seems to have been the primary attraction of this locality.

The site is known to have been under cultivation for over 200 years, and local artifact collectors had heavily surface collected from the field removing many of the diagnostic artifacts by the time NRS discovered the site. Still, 76 artifacts (Table 2.4), mostly blade cores, core blades, and unifacial scrapers remained in the plow zone ignored by the collectors. The artifacts were found along an elevated sand ridge on the terrace over an area approximately 200 by 100 feet, but small individual clusters of artifacts as observed through excavation at Cactus Hill could not be isolated by surface collecting at Stony Creek #3.

NRS recovered a fairly complete inventory of typical Cactus Hill-like pre-Clovis artifacts, except for projectile points, as shown in Figure 2.20. The assemblage is interesting in that it contains the artifact types found at Cactus Hill including two artifact categories rare at Cactus Hill, larger end scraper/side scraper combination tools and small end scrapers. Some artifacts of

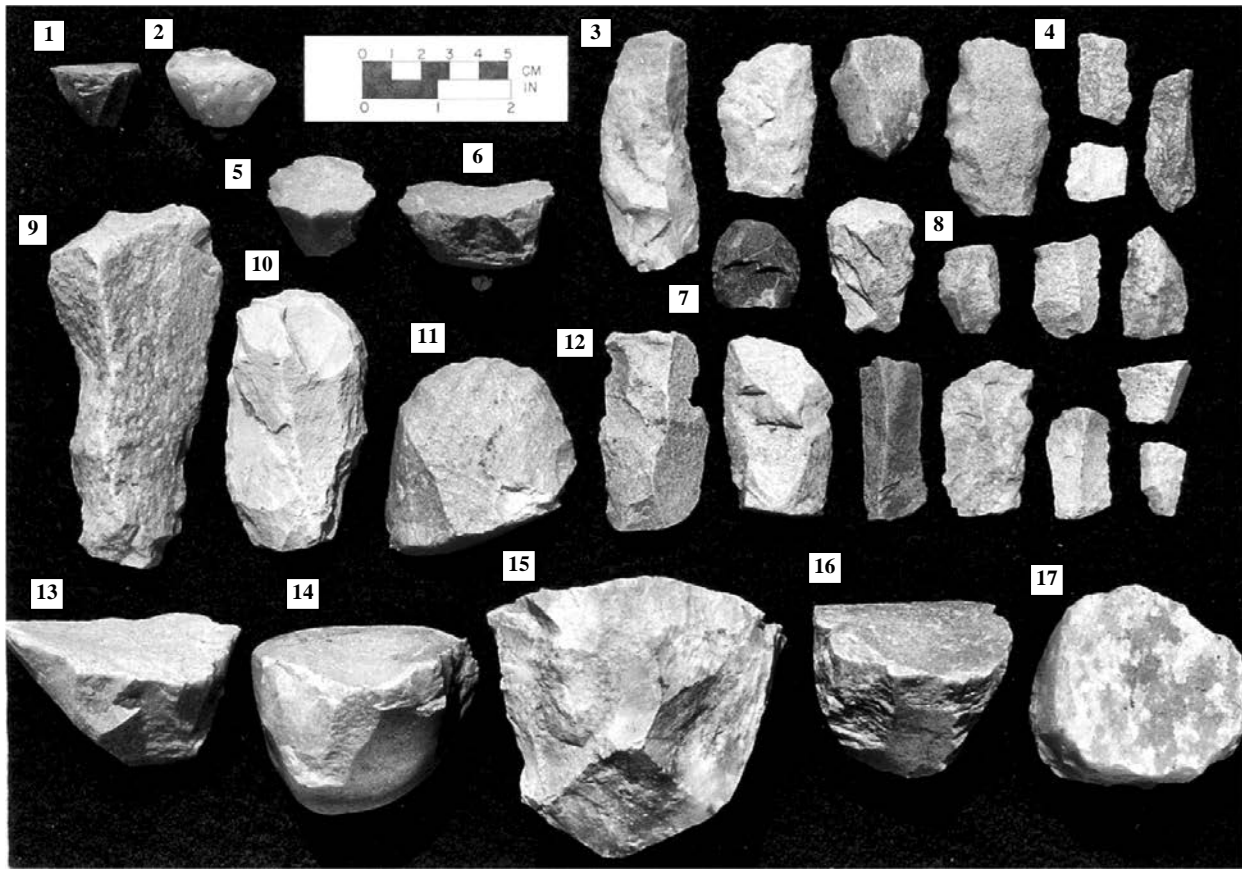


Figure 2.20. Stony Creek #3 site representative Cactus Hill-like artifacts presumed to be of pre-Clovis age recovered through surface collecting in the Nottoway River drainage, Sussex County, Virginia: **1, 2, 5, and 6**, small, very symmetrical polyhedral blade cores, shown from edge or top (1, 5, and 6 are quartzite and 2 is white quartz); **3**, four quartzite side scrapers, two made on core blades; **4**, three small quartzite core blades/blade fragments; **7**, two small end scrapers, one metarhyolite and one quartzite; **8**, three small blade flakes of quartzite; **9**, large chopper of quartzite; **10**, large end scraper/side scraper of greenstone; **11**, large end scraper/side scraper of quartzite; **12**, seven large and small core blades/blade fragments of quartzite; **13, 14, and 16**, side views of discard stage quartzite blade cores, some used as abrading surfaces; **15**, side view of a large Fall Zone chert core; and **17**, top view of a quartzite blade core. (NRS photograph)

quartzite from this site are the most heavily weathered of this material we have seen within the Nottoway River drainage. In addition, there is an indication on the Stony Creek #3 site of a Clovis assemblage of artifacts consisting of weathering amber chalcedony and Williamson chert end scrapers, side scrapers, biface reduction flakes, and trim flakes. No finished Clovis points have been found, and only one early stage Clovis preform was recovered. The area of the site producing the presumed pre-Clovis artifact assemblage was shovel tested by NRS in 2005, but no artifacts were found below the plow zone. A wooded area closer to the creek and just to the north of the cultivated field remains to be tested, and it may contain some undisturbed areas of cultural material.

The Rack Creek Site Presumed Pre-Clovis Assemblage

The Rack Creek site (Figure 2.21), once defined as the western end of the Baskerville site, 44SX137, is situated upon a sandy loam terrace a few hundred feet north of the Nottoway River in southern Sussex County, Virginia in the Coastal Plain uplands several miles north of the town of Jarrett. Adjacent to this site, the creek has eroded through a large bed of quartzite and quartz cobbles as well as some of micrograin quartzite and coarse-grain chert. The outcrop seems to have been the primary attraction at this locality. Like the Stony Creek #3 site, this location has



Figure 2.21. Looking east to the Rack Creek presumed pre-Clovis site on a sandy loam terrace near the Nottoway River in Sussex County, Virginia. The Creek is beyond the tree line in the foreground to the far right, and the river is beyond the tree line in the far background at center. (NRS photograph)

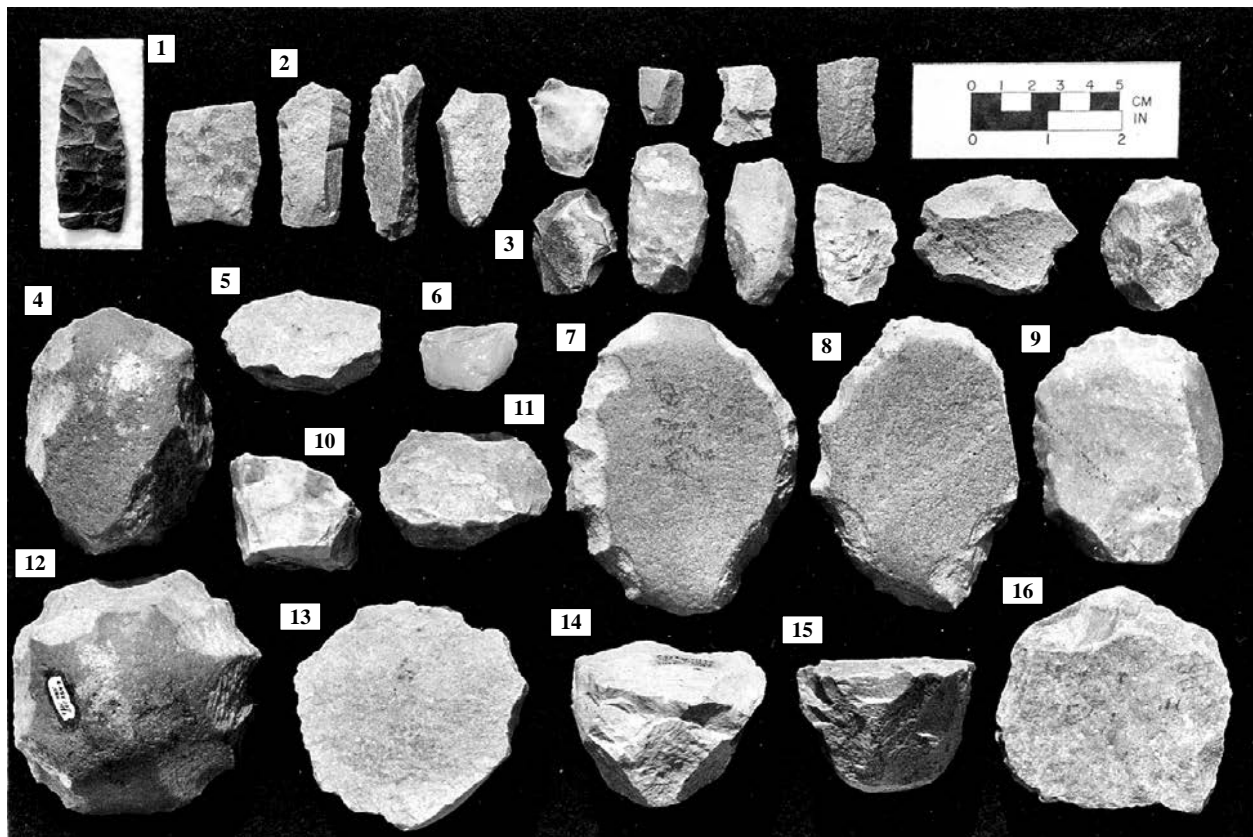


Figure 2.22. Representative Rack Creek site artifacts recovered by surface collecting near the junction of the creek with the Nottoway River, Sussex County, Virginia, which are similar to Cactus Hill pre-Clovis artifacts: **1**, two points, one of dark black metarhyolite and one of quartzite (note that the quartzite point is slightly shouldered); **2**, four blade flakes and two snapped blades (burins?) of quartzite and one blade flake of quartz; **3**, four side scrapers, one flake knife, and one small end scraper-like tool, one is metarhyolite, one is chert, and four are quartzite; **4**, and **12**, hammer-anvil tools made on blade cores, both quartzite; **5**, **6**, **10**, **11**, **13**, **14**, **15**, and **16**, polyhedral blade cores of various sizes and in various stages of reduction, **5** is quartzite (shown from top), **6** is quartz (shown from side), **10** is chert (shown from top), **11** is quartzite (shown from top), **13** is quartzite (shown from top), **14** is quartzite (shown from side), **15** is quartzite (shown from side), and **16** is quartzite (shown from top); and **7**, **8**, and **9**, large side scraper/end scraper combination tools, two (**7** and **8**) also used as abraders, and **9** possibly used as an adz blade, all three are of quartzite. (NRS photograph)

been under cultivation for at least 200 years, and local farmers and artifact collectors are known to have picked up artifacts on the site from at least the early 1930s. From 1980 through 1992, a surface collection of artifacts was made on the site by NRS. The artifacts (Table 2.4), which had been marked and archived as being recovered at one fairly isolated location on the Rack Creek site over an area approximately 250 by 75 feet on the terrace, were removed from NRS storage in 2006 and then studied in some detail.

Although many of the easily recognizable tools and points from this location had been removed by collectors, the NRS collection still contained a substantial inventory of artifacts. The assemblage of cores, core blades, unifacial scrapers, and two bifacial points was recognized as very similar in type to the tools identified as of pre-Clovis age from the Cactus Hill site. Representative examples of the Rack Creek pre-Clovis-like artifacts are shown in Figure 2.22. The Rack Creek assemblage is interesting in that it contains small and large end scraper/side scraper combination tools and narrow side scrapers that are very similar to those recovered on the Stony Creek #3 site. There are a number of rejected blade cores or core preforms that seem to have been recycled into other artifact categories such as hammerstones, anvils, and abraders, a practice also observed at Cactus Hill.

The terrace producing the artifact assemblage at Rack Creek was deeply trenched by the property owner in the early 1990s for placement of an irrigation system, and NRS inspected all of the trench walls for signs of artifacts below the plow zone. However, no artifacts of any type were observed at Rack Creek below the plow zone, and the deposit producing the presumed pre-Clovis assemblage on this site has been completely disturbed by agricultural activity.

The Stith Site Presumed Pre-Clovis Assemblage

In the 1980s and 1990s, a small cluster of 21 pre-Clovis-like artifacts was recovered by NRS through surface collecting on the Stith site in southwestern Sussex County near the Nottoway River. As shown in Chapter 7, Figure 7.1, this site is just across the river from the Rack Creek site. The Stith site is discussed in detail in Chapter 7, and Figure 7.3 shows representative examples of the Cactus Hill-like presumed pre-Clovis-age artifacts from the site. The collection (Table 2.4) contains one bifacial knife or projectile point, one apparently unfinished point, three blade cores, 11 core blades, two edge-worked blades, two scrapers not on blades, and an abrading stone. All of these artifacts were recovered at one location on a terrace at the north end of the site in an oval area approximately 50 by 30 feet that produced few other artifacts. The presumed pre-Clovis artifacts were recovered from a heavily eroding yellowish-red sandy loam. Shovel testing in this area of the site in 1991 revealed no artifacts below the plow zone.

The pre-Clovis-like artifacts were removed from NRS storage and studied in some detail in late 2006 before preparing the Stith site chapter. These artifacts were recognized as essentially identical in shape and lithic material to the artifacts from the Cactus Hill site, the Stony Creek #3 site, and the Rack Creek site. The Stith site artifact cluster may represent a small single-episode hunting or maintenance camp associated with the larger Rack Creek cobble quarry and hunting camp across the Nottoway River to the north.

Attributes of Presumed Pre-Clovis Projectile Points and Bifacial Knives

Figure 2.23 shows detailed drawings of six projectile points and/or bifacial knives presumed to be of pre-Clovis age, which have been recovered by NRS in the survey. All six of the artifacts

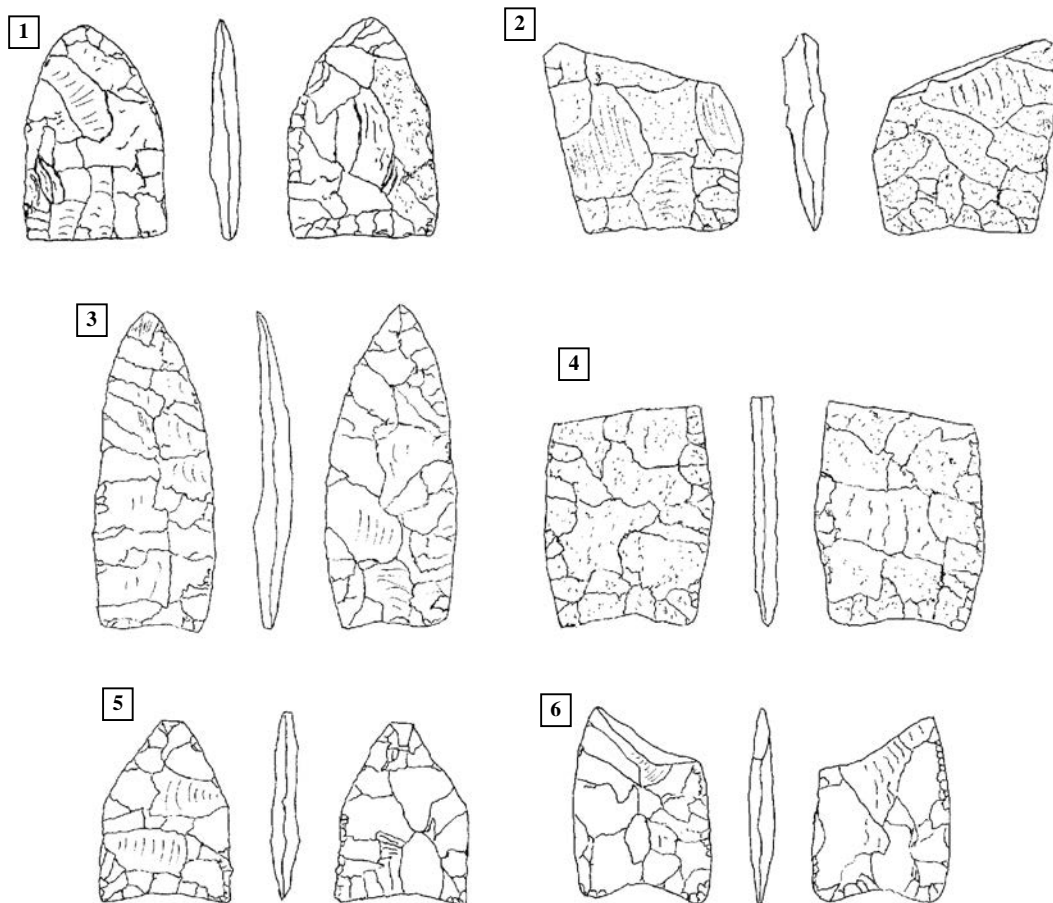


Figure 2.23. Drawings from thin sheet-paper rubbings of presumed pre-Clovis-age points recovered by NRS: **1** and **2**, surface finds, Stith site; **3** and **4**, surface finds, Rack Creek site; and **5** and **6**, excavated finds, Cactus Hill site; see Figure 2.25 and Tables 2.5 and 2.6. (Scale: 68 percent natural size; drawings by J. M. McAvoy)

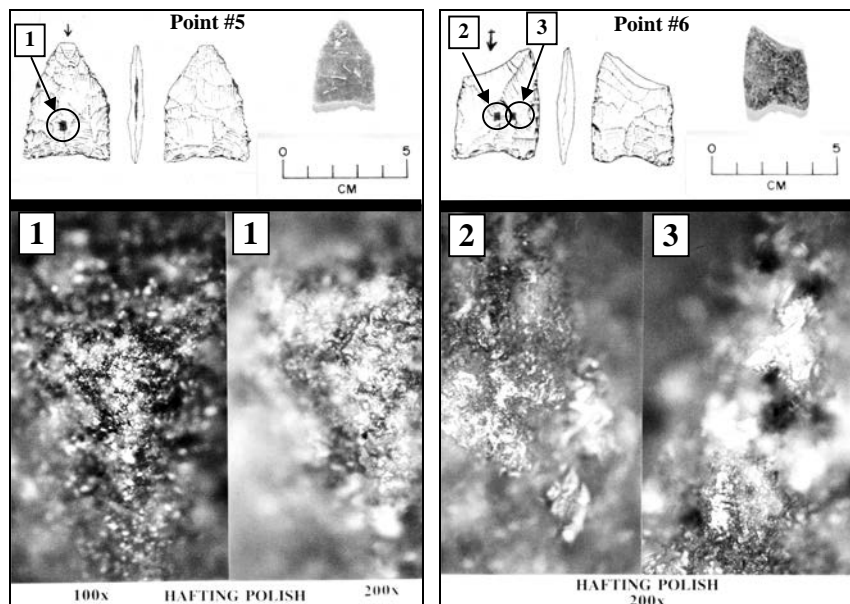


Figure 2.24. Wear analysis location 1 on point #5 (as shown in Figure 2.23), and wear analysis locations 2 and 3 on point #6 (also shown in Figure 2.23). Contact, or shaft wear locations, indicated by circles in drawings as areas 1, 2, and 3 are shown in the photomicrographs as small areas of wear polish at hafting contact spots. This is typical of the wear type associated with projectile points. (Location 1 shown at 100x and 200x; locations 2 and 3 are both shown at 200x.) (Figures prepared by Dr. Larry R. Kimball of ASU with figure drawings by Dr. Thomas R. Whyte of ASU. Wear Analysis presented by Dr. Kimball at the year 2000 Annual Meeting of the SAA in Philadelphia, Pennsylvania.)

were found in clusters of pre-Clovis-like tools, but only two of the six were excavated finds. The other four were plowed-field surface finds. Five are considered finished, and one from the Stith site (Figure 2.23, #2) is probably a manufacturing failure near completion.

The presumed pre-Clovis points are thin, usually 4.5-5.5 mm thick (Table 2.5), flat in cross section, typically the same width as most Clovis points, and of trianguloid-to-lanceolate or sub-pentagonal shape. Some exhibit basal thinning, but there is little fine pressure retouch on most of the points. Some edge-thinning flakes go across two-thirds or more of the width of some points. Only one of the points (Figure 2.23, #3) has heavy basal edge grinding, and most have little or no grinding. All of the points appear to have been made by a combination of pressure and soft percussion flaking.

The lithic materials of most of these points appear to have been selected because of good flaking properties. The material of four of the points is metavolcanic or metasedimentary stone, probably metarhyolite or tuff, and could have been obtained locally in the form of river cobbles. The other two points are made of local fine-grain quartzite. A narrow, dark black rhyolite-like example (Figure 2.23, #3) from the Rack Creek site shows extensive surface wear and appears to have been used as a knife. This point was tentatively identified earlier as either an aberrant Clovis point or some type of a Clovis bifacial knife in the McCary fluted point survey as it was found in the same general area (about 700 feet south) of a small concentration of Clovis artifacts on the adjacent Baskerville, or Baskerville East site (44SX137) along the Nottoway River.

The two excavated examples from Cactus Hill (Figure 2.23, #5 and #6) show impact damage and appear to have been discarded at the end of their useful life. Wear analysis of these two points by Larry R. Kimball of Appalachian State University resulted in the photomicrographs in Figure 2.24, which show very limited wear at contact locations on flake ridges. Dr Kimball (2000) described the wear patterns as typical of projectile point hafting wear. The only point that shows no surface wear is the unfinished point from the Stith site, Figure 2.23, #2, of fine-grain quartzite. The best flaked but least symmetrical (slightly shouldered) of the six points is #4 of Figure 2.23 from the Rack Creek site, which is the basal section of a thin projectile point made of fine-grain gray river cobble quartzite. All of the points are shown as items 31-36 in Figure 2.25.

Nottoway Blade Complex Summary

From the approximately 14 clusters of artifacts recovered below Clovis on the Cactus Hill site, one similar cluster of surface-collected artifacts from the Stith site, and two larger surface collections of similar but more diversified artifacts from the Stony Creek #3 site and the Rack Creek site, NRS has defined the Nottoway Blade Complex. From the Cactus Hill dates and relative stratigraphic position of artifacts, the Nottoway Blade Complex is estimated to date in the range of 18,500 calendar years BP to 14,500 calendar years BP.

As defined, the pre-Clovis-age Nottoway Blade Complex is represented by assemblages containing the following types of artifacts: numerous large and small core blades and blade-like flakes, some snapped into other tool forms; small bladelets; large and small polyhedral blade cores, most of fine-grain cobble quartzite; a few bifacial platform chopper-like cores; thick chopper-like tools; small flat-slab grinding stones of hard sandstone or quartzite; irregular quartzite abrading stones; core preparation flakes; trim flakes; red ochre paint stone; side scrapers; end scraper/side scraper combination tools; edge-worked and edge-used blade flakes and irregular flakes; small end scrapers; adz blade-like tools; and thin, unfluted, trianguloid-to-

lanceolate or sub-pentagonal projectile points/hafted bifacial knives. The projectile points/hafted bifacial knives were first recognized in the upper levels of pre-Clovis strata on Cactus Hill. There also may have been a diverse bone tool industry based upon the slab abraders and the finding of a fragmentary and burned (calcined) bone projectile point or awl tip at Cactus Hill.

From Table 2.4, of the 251 lithic artifacts from the four sites approximately 73 percent are blade-core or blade-flake related. Approximately 11 percent of the artifacts are unifacial tools worked upon irregular (non-blade) flakes, which include side scrapers, end scrapers, end scraper/side scraper combination tools, and flake knives. Only about four percent of the artifacts are bifaces, and of the remaining 13 percent of artifacts, only the edge-used irregular flakes, the chopper-like tools, and the flat-slab abraders represent two percent or more.

Table 2.4. Numbers of NRS Artifacts in Selected Categories by Stone Material⁽¹⁾ from Postulated Nottoway Blade Complex (Pre-Clovis) Artifact Clusters at Four Sites in the Nottoway River Drainage, Sussex County, Virginia.

Artifact Category ⁽²⁾	Cactus Hill Site Hunting Camp (Excavations)				Stith Site Hunting Camp (Surface collection ⁽³⁾)				Stony Creek #3 Site Quarry and Hunting Camp (Surface collection)				Rack Creek Site Quarry and Hunting Camp (Surface collection ⁽³⁾)				Total #
	Qe	Qu	MV MS	C	Qe	Qu	MV MS	C	Qe	Qu	MV MS	C	Qe	Qu	MV MS	C	
Large ⁽⁴⁾ Polyhedral Blade Cores (most exhausted or discarded?)	1	0	0	0	1	0	0	0	4	0	0	1	2	0	0	0	9
Large ⁽⁴⁾ Polyhedral Blade Cores Recycled into Anvils, Hammers, and/or Abraders	3	0	0	0	1	0	0	0	2	0	0	1	4	0	0	0	11
Small ⁽⁵⁾ Polyhedral Blade Cores (most exhausted or discarded?)	3	0	0	1	1	0	0	0	4	1	0	0	2	1	0	1	14
Blocky Irregular Cores for producing Blade Flakes	?	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Bifacial Chopper Cores for producing Blade Flakes	?	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	2
Large ⁽⁶⁾ Blades or Blade Fragments (some snapped into smaller sections)	16	0	0	0	6	0	0	0	16	0	0	0	1	0	0	0	39
Large ⁽⁶⁾ Edge-Used Blades and Blade Fragments	18	0	0	0	2	0	0	0	9	0	0	0	2	1	0	1	33
Large ⁽⁶⁾ Blades Edge-Worked as Knives	1	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	5
Small ⁽⁷⁾ Blades, Small Blade Spalls (Bladelets), and Blade Fragments (some snapped into smaller sections)	28	0	0	0	3	0	0	0	5	0	0	0	3	0	0	0	39
Small ⁽⁷⁾ Edge-Used Blades and Blade Fragments	17	0	1	1	0	0	0	0	3	0	0	0	1	0	0	0	23
Small ⁽⁷⁾ Blades Edge-Worked as Knives	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
End Scrapers Worked on end of Blade	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
End Scraper-like Scraping Planes on end of Snapped Blade	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Side Scrapers on Blades	1	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	4
Finished Bifacial Projectile Points or Knives	0	0	2	0	0	0	1	0	0	0	0	0	1	0	1	0	5
Preforms for Bifacial Projectile Points or Knives	0	1	0	0	1	0	0	0	0	0	0	0	1	1	0	0	4
End Scrapers not on Blades	0	0	0	0	1	0	0	0	2	0	1	0	2	0	1	0	7
Side Scrapers not on Blades	0	0	2	0	0	0	0	0	2	0	0	0	5	0	0	2	11
End Scraper/Side Scraper	0	0	1	0	0	0	0	0	3	0	1	0	3	0	0	0	8

Artifact Category ⁽²⁾	Cactus Hill Site Hunting Camp (Excavations)				Stith Site Hunting Camp (Surface collection ⁽³⁾)				Stony Creek #3 Site Quarry and Hunting Camp (Surface collection)				Rack Creek Site Quarry and Hunting Camp (Surface collection ⁽³⁾)				Total #
	Qe	Qu	MV MS	C	Qe	Qu	MV MS	C	Qe	Qu	MV MS	C	Qe	Qu	MV MS	C	
Combination Tools not on Blades																	
Circular Scrapers on Flakes or Expended Blade Cores	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
Adz Blade-like Tools not on Blades	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
Chopper-like Tools on Large Flakes or on Irregular Core Fragments	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	4
Snapped Flake Tools (uncharacterized)	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Wedge-like Tools	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Edge-Worked Irregular Flakes	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Edge-Used Irregular Flakes	3	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	9
Flat-Slab Abraders ⁽⁸⁾ for Soft Bone or Wood?	4	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	7
Hard Abraders for Core Platform Preparation (not made from blade cores)	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	3
Total	101	1	6	2	18	0	2	1	70	1	3	2	35	3	2	4	251

Notes: 1) Stone Material: Qe is quartzite, Qu is quartz, MV/MS is metavolcanic or metasedimentary stone, and C is Fall Zone chert. 2) Artifact Category does not include red ochre paint stone fragments or burned (calcined) bone tool fragments, and does not include debitage such as trim flakes, irregular non-blade flakes, or shatter flakes/fragments all of which are present on each of the sites but either have not been retained as part of surface collections (three sites), or, in the case of Cactus Hill, have been recovered but because of their small size (generally 0.25-inches or less) cannot be assigned with certainty to the pre-Clovis level and may represent "downdrift" in the sandy soil from Clovis or Archaic period levels above. 3) Artifacts from these two sites, particularly the core blades, were under-collected because the surface collections were made before the pre-Clovis artifact types were recognized at Cactus Hill; later, when the pre-Clovis assemblage artifact types were known, these sites were unavailable to NRS for surface collecting. 4) Large, as related to blade cores, is a width at the top of the core of 60 mm or greater. 5) Small as related to blade cores, is a width at the top of the core of less than 60 mm. 6) Large, as related to core blades is a maximum width of 20 mm and greater. 7) Small, as related to core blades and bladelets is a maximum width less than 20 mm. 8) Flat-Slab Abraders are mostly of soft quartzite and hard sandstone, which is usually referred to in this work simply as sandstone.

The artifact assemblages from the four known sites representing the complex suggest two types of sites, quarry related and non-quarry related. Rack Creek and Stony Creek #3 are examples of quarry-related hunting camps. On these sites are recovered early stage blade cores, and a large variety of tools including large choppers and scrapers. On the sites of this tradition defined as non-quarry, Cactus Hill and Stith, there is a smaller inventory of tools consisting primarily of expended cores, blade flakes, edge-used blades and irregular flakes, scrapers, and a few bifacial projectile points and/or hafted bifacial knives.

From the tool assemblages at the four sites, these people were hunters, but what they hunted is largely unknown. At Cactus Hill in area A-B/east, a hearth with small fragmentary calcined bones of deer and mud turtle (Chapter 5) was excavated in the pre-Clovis-stratum soil, which at this location consisted of layers of sand and iron-clay lamellae. There is no direct indication of large game hunting on this site, but the bones of any such animals probably would not have become calcined due to their large size, and thus they would not have been preserved.

The territory, range, or area of settlement of the pre-Clovis people in southeastern Virginia is unknown, which is largely a result of the difficulty in recognizing their tools, primarily the cores and blade flakes of quartzite. NRS did not recognize these artifacts as the primary elements of an assemblage until they were excavated in discrete clusters below the Clovis level on the Cactus Hill site. While the Stony Creek #3 site artifacts were recognized by NRS as being similar to the

Cactus Hill pre-Clovis assemblage when they were being recovered, the Stith site and Rack Creek site pre-Clovis-like artifacts were recognized only after they had been archived for several years and pulled from storage and reinspected after 2005. Since that time, all of the NRS study collections from sites within the Nottoway River drainage have been pulled from storage and reinspected, but no other Cactus Hill-like artifact assemblages have been identified.

It seems likely, based completely upon the ease of travel, that to arrive in this area the pre-Clovis people would have traveled up the Nottoway River from the Chowan River and Roanoke River to the south. Some part of their activity seems to have been related to lithic procurement since the two largest assemblages of artifacts were recovered near Coastal Plain upland streams at large quartzite cobble exposures.

Summary Analysis of Paleoindian and Pre-Clovis Point Types

NRS Point Categories

As shown in Figure 2.25, and from the data presented in related Tables 2.5 and 2.6, NRS divides the projectile point types of the early, middle, and late Paleoindian traditions, and of the pre-Clovis tradition(s), in Virginia into Category A through Category G as follows:

Category A, trianguloid-to-lanceolate or sub-pentagonal shaped pre-Clovis points (Table 2.5, points numbered 31-36, also see the previous section); NRS estimated age 15.5-14.5 ka BP.

Category B, a Clovis shaped point, unfluted and with large primary flake surfaces similar to the Page-Ladson point type of Florida, locally very rare and postulated to be of pre-Clovis age (Table 2.5, point number 30); NRS estimated age 14.5-13.1 ka BP.

Category C, Clovis fluted points defined as four shapes (Types 1-4) in a previous section of this chapter (Table 2.5, points numbered 23-29); NRS estimated age 13.1-12.8 ka BP.

Category D, post-Clovis-age fluted points of at least three distinct types or shapes defined as Types 5-7 in a previous section of this chapter (Table 2.5, points numbered 16-22, and 7-9); NRS estimated age 12.9-12.2 ka BP.

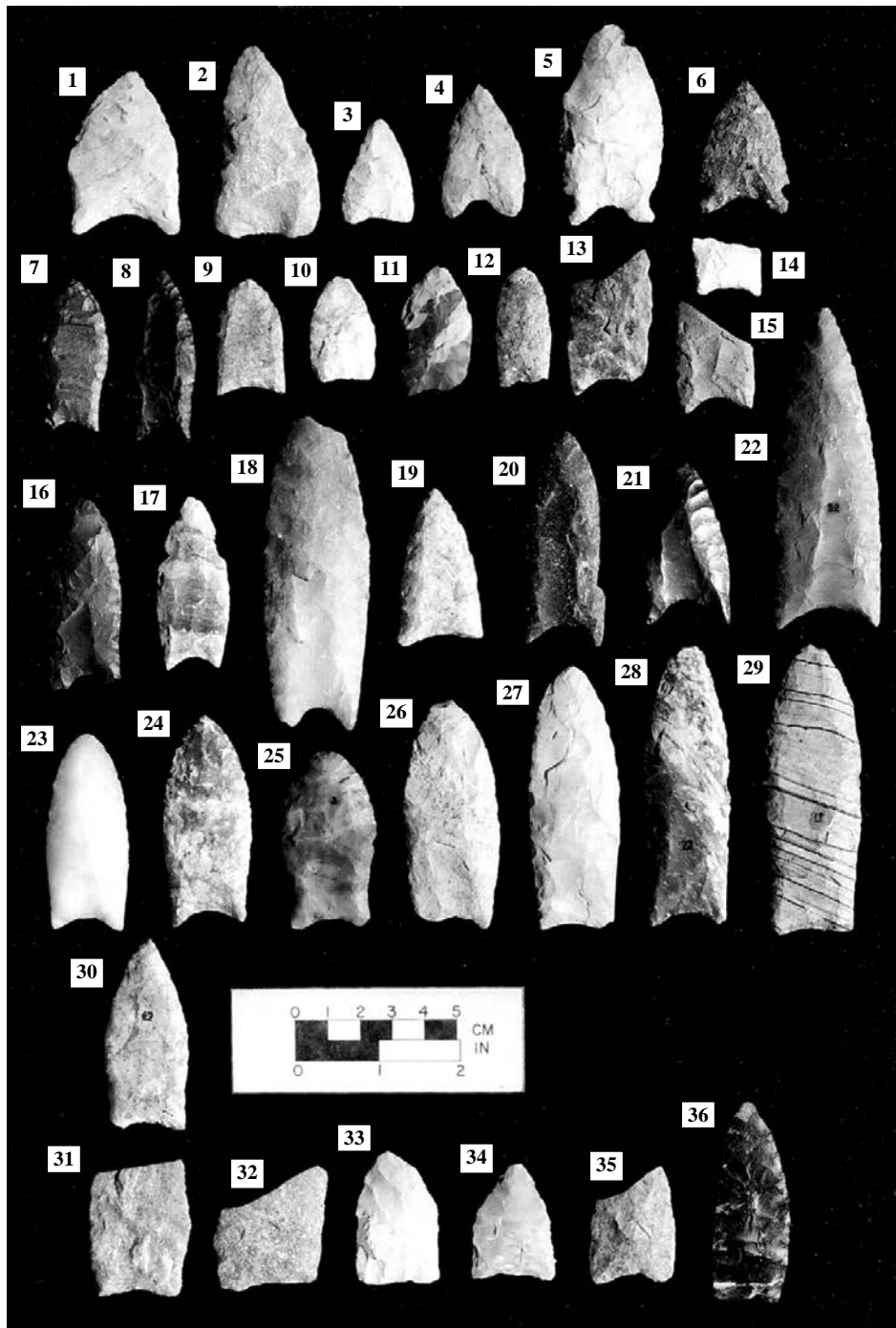
Category E, the Appomattox River basally-thinned or single-face-fluted point, defined in a previous section of this chapter as fluted point Type 8 (Table 2.5, points numbered 10-15); NRS estimated age 12.5-12.0 ka BP.

Category F, late Paleoindian Carson Lanceolate points as defined in a previous section of this chapter (Table 2.5, points numbered 1-4); NRS estimated age 12.2-11.9 ka BP.

Category G, the late Paleoindian/early Early Archaic Hardaway Side Notched type (Table 2.5, points numbered 5 and 6); NRS estimated age 12.1-11.7 ka BP.

Comparisons of Point Dimensions and Attributes

The Category A, pre-Clovis (Cactus Hill-like) points have the most shallow basal concavity (average 1.2 mm), usually exhibit no basal grinding or very light basal grinding, and usually show some basal thinning. Unlike the more narrow and very thin post-Clovis-age Appomattox River points, the pre-Clovis points are just as wide as fluted points. While a little thicker than the Appomattox River points, the pre-Clovis points are thinner than fluted points with a W/T ratio (Table 2.6) of 5.0 versus 3.6 or 4.6 for the respective Category C and D fluted points.



5, 6, Category G, Hardaway Side Notched Late Paleoindian/early Early Archaic.

1-4, Category F, Carson Lanceolate, Late Paleoindian.

10-15, Category E, Basally Thinned or Single-Face-Fluted Appomattox River, Post-Clovis Middle Paleoindian.

7-9, Category D, Barnes-like Full-Face-Fluted; Post-Clovis Middle Paleoindian (Fluted Point Type 5);

16-18, 20, 21, Category D, Deep- or Deeper-Concave-Base Fluted, Post-Clovis Middle Paleoindian (Fluted Point Type 6);

19, 22, Category D, Redstone Fluted, Post-Clovis Middle Paleoindian (Fluted Point Type 7).

23-29, Category C, Clovis (Fluted Point Types 1-4).

30, Category B, Unfluted Clovis Shaped Point, Postulated to be in the Time Gap between Pre-Clovis (as from Cactus Hill) and Clovis.

31-36, Category A, Trianguloid-to-Lanceolate or Sub-Pentagonal, Pre-Clovis (as from Cactus Hill).

Figure 2.25. NRS proposed local sequence, Category A through Category G, of pre-Clovis and Paleoindian projectile points as defined in Table 2.5 (two of the points shown in this figure, 22 and 28, are from North Carolina; one point, 16, is a resin cast of a point from the Cactus Hill site from the Tim Shelor collection). The Categories by preferred lithic material and estimated age are: **Category A**, pre-Clovis trianguloid-to-lanceolate or sub-pentagonal points (31-36), metavolcanic/metasedimentary (MV/MS) stone and fine-grain quartzite, estimated age 15.5-14.5 ka BP; **Category B**, postulated pre-Clovis, Page-Ladson-like point (30), chert, estimated age 14.5-13.1 ka BP; **Category C**, Clovis fluted points (23-29), quartz, chert, chalcedony, and MV/MS stone, estimated age 13.1-12.8 ka BP; **Category D**, post-Clovis-age middle Paleoindian fluted points (7-9, Barnes-like full face fluted points; 16-18, 20, and 21, Deep- or Deeper-Concave-Base fluted points; and 19 and 22, Redstone-like fluted points), MV/MS stone, chert, and jasper, estimated age of all 12.9-12.2 ka BP; **Category E**, post-Clovis-age middle Paleoindian Appomattox River single-face-fluted or basally-thinned points (10-15), MV/MS stone, chert, and orthoquartzite, estimated age 12.5-12.0 ka BP; **Category F**, post-Clovis-age late Paleoindian Carson Lanceolate basally thinned points (1-4), MV/MS stone, quartzite, and Bolsters Store chert, estimated age 12.2-11.9 ka BP; and **Category G**, post-Clovis-age late Paleoindian/early Early Archaic Hardaway Side Notched basally thinned points (5 and 6), MV/MS stone, estimated age 12.1-11.7 ka BP. (NRS photo)

From the attributes and dimensions in Table 2.5, the summary of Table 2.5 attributes and dimensions that is presented in Table 2.6, and other information presented in this chapter, NRS has concluded that Category A pre-Clovis points are more similar to the later Category E Appomattox River points and some of the Category F Carson Lanceolate points in thickness and shape than to the Category C or Category D fluted points. The fluted points appear to be robust derivations from the older, unfluted Category A pre-Clovis points or the postulated very rare local intermediate-age Category B points, which are similar to the Page-Ladson type in Florida. The fluted points may have been developed to satisfy a need for a stronger, better hafted, and more deeply penetrating projectile point likely associated with hunting very large game and/or to satisfy some duel purpose need such as a durable, strongly hafted knife.

Points of the fluted point tradition are varied and include: the thicker, robust Clovis points (Category C); the often thinner, Deep- or Deeper-Concave-Base fluted points (post-Clovis-age Category D); the full-face-fluted Barnes-like points or Redstone-like points (also post-Clovis-age Category D); and the very thin, usually unfluted or single-face-fluted Appomattox River points (Category E). After that, it is thought that the point styles varied from the unfluted Carson Lanceolate point (Category F) to Hardaway Side-Notched points (Category G). Dalton-like points in the Nottoway River area are very rare, but the Carson Lanceolate type is more common and may be an equivalent in age to Dalton, Hardaway Dalton, or Quad points.

In summary, it is concluded that the thin trianguloid-to-lanceolate or sub-pentagonal shaped points recovered with Cactus Hill-like artifact assemblages represent pre-Clovis-age projectile points and/or hafted knives. However, with only six examples from relatively good excavated or surface cluster contexts, it is the opinion of NRS that they cannot be defined well enough to be clearly recognized outside of such contexts. These points appear to occur in Virginia before fluted points. After the fluted points, even thinner Paleoindian points occur here with somewhat similar shapes, but the lithic assemblages of the various later point traditions easily can be separated from the earlier pre-Clovis assemblage(s) based upon differences in tools and debitage. The Appomattox River point is an example of the even thinner but similarly shaped later Paleoindian points that occur here associated with a lithic assemblage easily separated from the earlier pre-Clovis assemblage. The unifacial tools of the Appomattox River tradition are similar in type and shape to those of the Clovis tradition. However, unlike either the Clovis or pre-Clovis lithic assemblages, there are no blade cores or core blades, and there are very few blade-like flakes in the Appomattox River (point) type-site assemblage defined from the Point of Rocks site in Chesterfield County, Virginia (McAvoy 1979:105, 106).

In southeastern Virginia along rivers such as the Nottoway, Appomattox, and James, the thin lanceolate points occurring before Clovis appear similar in shape and size to some of the thin lanceolate points occurring after Clovis. In fact, there is no certainty that thin, unfluted points were truly absent at any time during the Paleoindian period, even during the time of Clovis.

Table 2.5. Dimensions and Attributes of Category A through G Paleoindian and Pre-Clovis Points (1-36) in Figure 2.25.

# / Cat.	Artifact Description, Material, and Location of Find	Length (mm)	Width Base (mm)	Max. Width (mm)	Max. Tks. (mm)	Flute Obv. (mm)	Flute Rev. (mm)	Basal Concavity (mm), and Nature of Basal Edge Grinding
1/ F	Carson Lanceolate point; Bolsters Store Green chert; China Doll north site (Nay Farm), Sussex Co., Va.	50	34	34	7	0	0	6.5; heavily ground along basal edges
2/ F	Carson Lanceolate point; gray quartzite; excavated on Slade Farm, Sussex Co., Va.	56	31	31	7.5	14 (T)	0	1.5; light grinding basal edges; none in concavity

#/ Cat.	Artifact Description, Material, and Location of Find	Length (mm)	Width Base (mm)	Max. Width (mm)	Max. Tks. (mm)	Flute Obv. (mm)	Flute Rev. (mm)	Basal Concavity (mm), and Nature of Basal Edge Grinding
3/ F	Carson Lanceolate point; yellow tuff; excavated on Slade Farm, Sussex Co., Va.	31	22	22	4.5	18(T)	0	1.5; no basal grinding
4/ F	Carson Lanceolate point; gray meta- rhyolite; Slade Farm, Sussex Co., Va.	41	25	25	4	0	0	5; light grinding basal edges
5/ G	Hardaway Side Notched; dark green tuff, weathered, old Norfolk Co., Va.	60.5	26	31.5	5.5-6	20(M)	16(T)	6.5; heavily ground in notches and concavity
6/ G	Hardaway Side Notched; dark gray coarse metarhyolite; Slade Farm, Sussex Co., Va.	41	25	26	4.5	8(T)	0	4.5; light or no basal grinding
7/ D	Fluted point, post-Clovis age, small, thin; full-face-fluted on both faces; burned jasper; Tazewell Co., Va.	47	17(B)	22	5	39	31	3(B); ground along basal edges
8/ D	Fluted point, post-Clovis age, small, thin; full-face-fluted on both faces; black non- local chert; Prince George Co., Va.	53	18	22	5.5	48	48	4.5; light or no basal grinding
9/ D	Fluted point, post-Clovis age, small, thin; full-face-fluted on both faces; Bolsters Store green chert; Dinwiddie Co., Va.	35	21.5	21.5	4.5	28	23(?)	2; heavily ground basal edges
10/ E	Appomattox River point; Williamson-like chert; Stith site, Sussex Co., Va.	33	19.5	20.5	4.5-5	14(M)	6(T)	1; light or no basal grinding
11/ E	Appomattox River point; metarhyolite; Virginia Beach, Va.	39	20(B)	21	4.5-5	12 (T)	5(T)	1-2(B); light basal edge grinding
12/ E	Appomattox River point; orthoquartzite, Nottoway R., Greensville Co., Va.	36.5	15.5	18	5	10(T)	5(T)	2(?);light basal edge grinding
13/ E	Appomattox River point; flow-banded rhyolite; Point of Rocks site (Appomattox River type site); Chesterfield Co., Va.	44(B)	23(B)	25.5(B)	4.5-5.5	8(T)	7(T)	4(B); heavy grinding on basal edges; light grinding in concavity
14/ E	Appomattox River point; yellow Fall Zone chert, Point of Rocks site (Appomattox River type site); Chesterfield Co., Va.	17(B)	19	20(B)	4	7 (T)	5(T)	2; light basal edge grinding
15/ E	Appomattox River point; gray rhyolite-like stone, Point of Rocks site (Appomattox River type site); Chesterfield Co., Va.	34(B)	23	24(B)	4.5	21(M)	4(T)	4; light basal edge grinding
16/ D	Fluted point, post-Clovis age (thin, deeper concave base); dark metarhyolite; excavated on Cactus Hill (area B), Sussex Co., Va. (Resin cast, Tim Shelor collection)	61	23.5	24	6-6.5	23	11	5-6(B); light basal edge grinding; one of the ears converted into a graver
17/ D	Fluted point, post-Clovis age (very thin with longer flutes); metarhyolite; Pamunkey R., Caroline Co., Va.	53	17	23	4.5-5	26	24	3.5; light basal edge grinding
18/ D	Fluted point, post-Clovis age (thinner with deeper concave base and longer flutes); orange chalcedony; Virginia Beach, Va.	95.5(B)	24	33	7.5	47	32(M)	7(B); heavily ground basal edges
19/ D	Fluted point, post-Clovis age (triangular shape, longer flutes); weathering amber chal.; near Cactus Hill, Sussex Co., Va.	47	27	27	6.5	27	26(M)	2.5; light to no grinding on basal edges
20/ D	Fluted point, post-Clovis age (thinner with deeper concave base and longer flutes); metarhyolite; Meherrin R., Greensville Co., Va.	65	24	27(B)	5.5	46	40	5.5-6; heavy grinding on basal edges; light grinding in concavity
21/ D	Fluted point, post-Clovis age (deeper concave base); burned yellow/red jasper; James R., Isle of Wight Co, Va.	50	27	28	7-8	30	15(M)	7.5-8; light basal edge grinding
22/ D	Fluted point, post-Clovis age (triangular shape, longer flutes - Redstone); green MV/MS stone (tuff?); Rowan Co., N.C.	96	32	32	7-8	53	22	6; ground along basal edges
23/ C	Fluted point, Clovis; vitreous white quartz; excavated by NRS on Cactus Hill (area B), Sussex Co., Va.	61	24	26	10	25	23	3; heavily ground basal edges
24/ C	Fluted point, Clovis; weathered yellow, red, and brown Fall Zone(?) yellow and red chalcedony; old Nansemond Co., Va.	66	23	28	7	26(M)	18(M)	4.5; ground along basal edges
25/ C	Fluted point, Clovis; blue chalcedony (thermally altered tip?); Roanoke R., Mecklenburg Co., Va.	55	25; 23.5 ⁽¹⁾	30	7-8	21	18(M)	2.5; heavy grinding on basal edges; light grinding in concavity
26/ C	Fluted point, Clovis; Bolsters Store green	70	24	29	9.5	23	11	3.5; ground along basal

#/ Cat.	Artifact Description, Material, and Location of Find	Length (mm)	Width Base (mm)	Max. Width (mm)	Max. Tks. (mm)	Flute Obv. (mm)	Flute Rev. (mm)	Basal Concavity (mm), and Nature of Basal Edge Grinding
C	chert or similar stone, heavily weathered; Nottoway R., Greensville Co., Va.							edges
27/ C	Fluted point, Clovis; dark tuff heavily weathered to a light green, Roanoke R., Mecklenburg Co., Va.	79.5-80	24	27.5	6.5	21(M)	20	1.5(B); heavily ground basal edges
28/ C	Fluted point, Clovis; green and yellow metarhyolite; Cape Fear R., Harnett Co., N.C. north of Lillington.	85	24	26.5	7	32	17(M)	3-3.5; ground along basal edges
29/ C	Fluted point, Clovis; brown banded tuff; James R., Chesterfield Co., Va.	88.5	26	30	7.5-8	28 (M)	18(M)	2(B); heavily ground basal edges
30/ B	Postulated pre-Clovis-age point (between the age of the Cactus Hill points and Clovis points); deeply weathered blue Williamson- like chert; Three Creek/Nottoway R., Southampton Co., Va.	59.5-60	25	27	6.5-7.5	17(T)	9(T)	2(B); ground along basal edges, no grinding in basal concavity
31/ A	Pre-Clovis; fine-grain gray quartzite; Rack Creek site in pre-Clovis cluster/area, Nottoway R., Sussex Co., Va.	42(B)	27	32	5.5	7 (T)	7(T)	1.5; light to no grinding along basal edges
32/ A	Unfinished pre-Clovis point; fine-grain dark gray quartzite; Stith site in pre-Clovis cluster/area, Nottoway R., Sussex Co., Va.	38(B)	30	34 ⁽²⁾	6.5	12(T)	11(T)	1-1.5; light to no grinding along basal edges
33/ A	Pre-Clovis, likely a bifacial knife; fine- grain metarhyolite heavily weathered yellow; Stith site in the pre-Clovis cluster/area, Nottoway R., Sussex Co., Va.	42	25.5	25.5	5.5	13(T)	0	0-0.5; light grinding along basal edges
34/ A	Pre-Clovis, fine-grain dark green MV/MS stone (metarhyolite or tuff?); Cactus Hill site, Nottoway R., Sussex Co., Va.	35	26	26	4.5-5	11(T)	0	1; very light to no grinding on basal edges
35/ A	Pre-Clovis, fine-grain light green MV/MS stone (metarhyolite or tuff?); Cactus Hill site, Nottoway R., Sussex Co., Va.	36(B)	25.5	26	5.5	14(T)	11(T)	2-2.5; very light grinding along basal edges
36/ A	Pre-Clovis, possibly a bifacial knife (heavily worn); fine-grain black rhyolite- like; Rack Creek site in the pre-Clovis cluster/area, Nottoway R., Sussex Co., Va.	61.5 (curved blade)	21	23.5	5-6.5 (one thick spot)	11	0	1; heavy grinding along one basal edge and in concavity, light grinding along other basal edge

Notes: 1) Width at basal constriction. 2) Width of unfinished point. Abbreviations: Cat. is category; (mm) is millimeters; (B) is broken length or width measurement; (M) is multiple flutes or long thinning flakes; (T) is thinning flakes.

Table 2.6. Summary of the Attributes and Dimensions of the Seven Categories of Pre-Clovis and Paleoindian Points in Table 2.5.

Paleoindian Point Category, Description, and Number Used in the Analysis	Relative Degree of Basal Edge Grinding	Average Basal Concavity (mm) ⁽¹⁾	Average of Longest Flute Length (mm)	Average of Maximum Thickness (mm)	Average Maximum Width (mm)	Average W/T ⁽²⁾ Ratio	Maximum Length ⁽³⁾ (mm)
Category A , Pre-Clovis-Age Points (as the late pre-Clovis-age points from Cactus Hill), 6 points	None to Light	1.2	None to Thinning	5.6	27.8	5.0	61.5
Category B , Postulated Pre- Clovis-Age Point, 1 point	Medium	2.0	Thinning	7.0	27	3.8	59.5
Category C , Clovis Fluted Points, 7 points	Medium to Heavy	2.9	25 mm	7.8	28.1	3.6	88.5
Category D , Post-Clovis-Age Fluted Points, 10 points	Light to Heavy	4.8	37 mm	6.1	26	4.6	95.5(B) ⁽⁴⁾
Category E , Post-Clovis-Age Appomattox River Basally Thinned or Single-Face-Fluted Points, 6 points	Usually Light	2.4	Usually Thinning; (single face flute average: 18 mm)	4.7	21.5	4.2	44(B) ⁽⁴⁾
Category F , Late Paleoindian Carson Lanceolate Points, 4 points	Usually Light	3.6	None to Thinning	5.8	28	4.9	56
Category G , Late Paleoindian/ early Early Archaic Hardaway Side Notched points, 2 points	Light to Heavy	5.1	None to Thinning	5.1	28.8	5.6	60.5

Notes: 1) mm is millimeters. 2) W/T is width to thickness ratio. 3) Maximum Length is only for the points in Table 2.5. 4) B is broken length.