

**Flake Tools or Fake Tools?**  
**Creek Glass Tools in Georgia and Adjacent  
States**

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## Contents

Flake Tools or Fake Tools? .....	1
Glass Tools Among Contemporary Ethnic Groups.....	11
Debitage and Bottle Reduction Strategies.....	12
References Cited.....	15

## *List of Figures*

Figure 1. Glass Tools, 9ME394. ....	5
Figure 2. Glass Tools, 9ME394.....	6
Figure 3. Glass Tools, 9ME472. ....	7
Figure 4. Glass Tools and Other Artifacts, Site 1RU63 (Weisman 2000:147). ....	8
Figure 5. Example of Informal Flake Tool Made from Olive Green Bottle from Upatoi Town. ....	13
Figure 6. Bottle Glass Tools from Mt. Pleasant, 9Ef169.....	14

## *List of Tables*

Table 1. Bottle Glass Tools, Upatoi Town.....	4
Table 2. Bottle Glass from Okfuskenena.....	9

# *Flake Tools or Fake Tools?*

Excavations at eighteenth and early nineteenth century Lower Creek and Yuchi sites in Georgia and Alabama have yielded substantial evidence of a chipped stone technology that relied heavily on European rum bottles. The low percentage of glass tools mentioned in archaeological literature is undoubtedly skewed by the fact that some researchers discount such artifacts as merely the result of natural breakage. Data on glass tools from several Lower Creek sites in the middle and lower Chattahoochee River watershed, including Okfuskenena, Ochillee Creek, Upatoi town and Uchee town, is presented in this publication.

Glass bottles were at a premium on the western frontier at the end of the eighteenth century and the beginning of the early nineteenth century. Prior to the early 1800s almost all glass bottles used in southeastern North America were manufactured in Europe and shipped to America. Once on the continent the bottles were transported on smaller watercraft, by pack animal, and on foot to the hinterlands that was the home of the Lower Creeks. The cost of transporting these bottles was outweighed by the profit made from the sale of their contents. At that level of consumption, the contents, rum, brandy, and wine, were the product and the bottles were merely a delivery device. Once the bottles were emptied and broken their use life was by no means ended, as many of the broken fragments metamorphosed into a variety of flaked tools. While some bottles may have been recycled for their original function as containers or liquids, others were broken. Many of the broken bottles were used by both Native Americans and others alike.

By the eighteenth century chipped stone technology among the Native Americans in Georgia had atrophied. The elaborate knapping skills that had served them well up to, and even after European contact, were largely neglected. The remnants of this chipped stone tradition was limited primarily to small triangular arrow points, and with the introduction of firearms, after 1670, even this tradition began to fade. Joffre Coe demonstrated a similar loss of knapping skills among the Siouan and Algonquin tribes of North Carolina (Coe 1964). In central Georgia among the Lamar culture chipped stone technology was nearly nonexistent. Apparently glass bottles were not part of the Spanish trade with the interior tribes and only after the advent of the British fur trade were significant quantities of glass bottles introduced. Sometime during the late seventeenth or early eighteenth century however, a new chipping technology, which utilized European bottle glass as a raw material, emerged among the Native peoples of Georgia. Not until after the Yamasee War in 1719 did the glass tool technology fluorescence.

The manufacturing technology of knapped glass tools is a major subject in its own right and I defer to the primitive technologists on this issue. Archaeologist Eric Poplin completed a dissertation on bottle glass tools, which combined information on Canadian and South Carolinian archaeological specimens with experimentally-generated tools, and used attribute analysis to classify the flaked edges (Poplin 1986). He also examined post-depositional effects on tool edges. Poplin reached two important conclusions:

1. intuitively recognized tools proved to be tools even after quantitative measurement of their attributes and;
2. trampling did not create new tools nor did it obscured the traits that made them recognizable as tools.

Admittedly post-depositional modification is an important consideration in a glass tool study, as is shovel and screen damage. The glass tools in the Fort Benning studies are not likely the result of trampling or clumsy excavation techniques. The humped back glass scraper, which was acknowledged in passing in the New Deal era, has finally come into its own.

A review of the Lower Creek archaeological literature demonstrates that the Upatoi Town's bottle glass industry was not unique. Creek bottle glass tool use was recognized at Kasita (9CE1) by New Deal archaeologists in the 1930s. Fairbanks noted that "small thumbnail scrapers, often of glass" were among the traits of the Ocmulgee Fields Focus (Fairbanks 1940:3). Willey and Sears reported two bottle glass scrapers found with Burial 1 in Unit 37 at Kasita (Willey and Sears 1952:9). These two tools are illustrated in an unpublished site report by Willey (1938: Figure 18c and 18d) The unpublished find notes from Kasita provide more details of one of these glass tools from

Burial 1: “convex turtle back scraper, made from bottle glass (whiskey, shows early technique)”(National Park Service n.d.). The other glass scraper from Kasita was described by Fairbanks as a: “scraper plain, convex, turtle-back type, apparently indicative of early technique, made from whiskey or bottle glass” (Fairbanks 1939:33). These two convex turtle back scrapers” may well represent bottle glass gunflints. The low frequency of bottle glass in the excavations is likely a reflection of poor artifact recovery techniques that were in vogue in the 1930s rather than the absence of other bottle glass at the site.

More recent survey and testing in the Kasita/Lawson Field area by O’Steen and others (1997) provides additional information on the use of bottle glass tools by the Lower Creeks that lived near the Chattahoochee River. Bottle glass tools were reported from 10 sites and nine of these were likely associated with Lower Creek occupations. Site 1RU360 yielded one “olive green bottle base [that] exhibits unifacial flaking, and has two spokeshave-like notches”. Site 1RU364 yielded one, “piece of olive green glass [that]exhibits flaking”; Site 1RU381 yielded three pieces of, “flaked and unworked olive green bottle glass”. Site 1RU389 yielded, “two pieces of olive green bottle glass [that]exhibit flaking”. Site 1RU415 yielded, “One fragment each of worked olive green and clear glass”. Site 1RU420 was a non-diagnostic aboriginal and nineteenth and early twentieth century site that yielded, “one fragment of unifacial worked glass”. Site 1RU423 yielded, “flaked bottle glass” (O’Steen et al. 1997:113, 131, 171, 189, 227,263, 269). Two of the sites that were investigated by New South Associates correspond to the areas previously studied by the New Deal archaeologists in their Kasita excavations. Site 1RU127 was a historic aboriginal eighteenth to nineteenth century site that yielded, “worked olive green glass”, which was also described as, “two fragments of late eighteenth-century olive green bottle glass” (O’Steen et al. 1997:291). Excavations at Site 9CE1 uncovered two pit features that yielded, “four pieces of unifacial flaked/ utilized olive green bottle glass, and a small glass triangular biface” (O’Steen et al. 1997:303). Feature 1 contained “a piece of olive green bottle glass”, and Feature 3 contained, “an olive green glass biface, 2 olive green bottle glass fragments” (O’Steen et al. 1997:305). None of the bottle glass tools recovered by New South Associates were illustrated in their report. In some instances the exact count of tools versus unmodified bottle glass, as well as the bottle glass color, were unspecified. Although glass tools were not abundant in New South Associates’ study of the Lawson Field vicinity, they were identified on 10 percent of the sites (approximately 12 percent of the historic Creek sites) that they surveyed (O’Steen et al. 1997:i). Since glass tools or debitage were not commonly recovered in surveys at Upatoi Creek, the Lawson Field data may indicate a higher incidence of glass tool manufacturing in that area compared to Upatoi Town.

The author studied more than a dozen Lower Creek sites in the Fort Benning Military Reservation in west-central Georgia and eastern Alabama, where all but one site yielded evidence of bottle glass tool manufacture and use (Elliott 1999; Elliott et al. 1996, 1999, 1999, 2001, 2001; Foster 2007; Cowie and Wood 1999; Weisman 2000). Bottle glass assemblages from Creek sites in the central Chattahoochee River region generally yield between one-third to two-thirds tools or tool manufacturing debris. The best evidence of bottle glass tool manufacture and use was recovered from recent excavations by Elliott and his colleagues at sites that were part of Upatoi Town in Chattahoochee County, Georgia. Bottle glass tool manufacture was evidenced from test excavations at Sites 9ME394,9ME395, and 9ME472, and in previous excavations at 9ME42 and 9ME469, which represents a majority of the Creek sites that have been test excavated in Fort Benning’s Compartment K-06. These sites are located on the upland farming of Upatoi Town, which was settled by Cusseta Lower Creeks in the years after the American Revolution. About half of the bottle glass from Upatoi Town was either tools or debitage from tool manufacture. Most were informal unifaces. Lesser amounts were informal bifacial tools and gunflints. No glass arrow points were found at Upatoi. More intensive study of the other Creek sites in this vicinity would likely strengthen the evidence that Cusseta Creeks made significant use of bottle glass for other purposes in the late eighteenth and early nineteenth centuries.

Just over two dozen olive green bottle glass tools were recovered from test excavations at 9ME394. Examples are shown in Figures 1 and 2. Glass debitage also was widely distributed across the site, which indicated multiple activity areas where bottle glass tools were manufactured or modified. At Site 9Me394 in Upatoi Town, over two dozen glass tools were recovered and tools and debitage comprised 45 percent of the total glass assemblage. Glass debitage was widely distributed in multiple activity areas. More than 75 percent of the tools were unifacial. Most (n=19) of the tools were unifacial but six exhibited bifacial flake removal. The tools were classified as informal flake tools because none of them appeared to have completely worked edges or formal hafting areas. Tool edges



were recognized on a variety of sherd surfaces. Most of the tools were small (generally <4cm) as were all of the bottle glass fragments that were recovered from the site. Some of the unifacial tools may represent fragments of glass gunflints or failed attempts to produce glass gunflints. No examples were recovered that clearly mimic the complete shape of a European gunflint, although several of the tools that were recovered could possibly have been used as gunflints in their existing form. At least a portion of the tools clearly do not represent gunflints but indicate other tool uses. Tool edges and shapes suggest that their use as spokeshaves, scrapers, and gravers (or perforators). None of the glass tools resemble arrowheads, or aborted attempts to manufacture arrowheads. Curiously, the bottle glass tools and manufacturing evidence at 9ME394 was not found in feature contexts. It also was not well represented from the shovel testing data. Minor concentrations of bottle glass debitage were observed in four test units. The greatest concentration of tools was identified in two test units. Approximately 45 percent of the olive green bottle glass that was recovered from 9ME394 was either tools or debitage.

Site 9ME395, the conjectured location of the Upatoi council house, produced nine glass tools, all were unifacially knapped. Far fewer bottle glass tools were recovered from 9ME395 (n=5). Previous testing at the site yielded four unifacial bottle glass tools and several glass flakes. One of the tools was recovered from the burial fill of Burial 1. The present study recovered 1 additional unifacial glass tool from Test Unit 19. Six of the test units that were excavated in the present study yielded bottle glass debitage. The frequency of debitage was significantly less than was recovered from 9ME394. The greatest concentration of bottle glass debitage was identified in Test Unit 18. Approximately 38 percent of the olive green bottle glass at 9ME395 was either tools or debitage. The previously excavated glass tools at 9ME395 were reexamined in the present study and two of these were possibly used as gunflints. One fits the width dimensions proscribed for trade guns and one corresponds to that for carbine flints. Just over one third of the glass from this site was either tools or debitage. Two tools were from feature contexts, including one from a high status child's burial. Researchers identified two possible glass gunflints at 9ME395. Debitage also was less common than at 9ME394.

Seven glass tools were recovered from 9ME42, only one was bifacial. More than half of the glass displayed tool characteristics. Site 9ME42 also yielded 19 bottle glass flakes. Worked bottle glass sherds outnumbered unmodified glass sherds at 9ME42. Six glass tools were recovered from 9ME472, and only one was bifacial. Examples are shown in Figure 3. Bottle glass tool manufacture was evidenced by a widespread distribution of bottle glass debitage. The relative frequency of glass tools and debitage at 9ME472 was less than 9ME394 but slightly more than was observed at 9ME395. Three features (Features 1, 11, and 18) at 9ME472 yielded artifacts associated with this tool industry. The greatest concentration of bottle glass debitage was observed in four test units. Approximately 45 percent of the olive green bottle glass at 9ME472 consisted of either tools or debitage. Tools and debitage accounted for slightly less than half of the bottle glass at this site. One unifacial glass tool and three debitage pieces were found at 9ME469 (Elliott et al. 1996:267).

It is clear from these data that tools were manufactured at each of these sites (9ME394, 9ME395, 9ME472, 9ME42, and 9ME469). Tool manufacture and discard was most notable at 9ME394 where a variety of informal tool forms was represented. The data from Upatoi indicates that olive green spirits bottles were a common source for the manufacture of knapped tools. All but one of the Lower Creek sites that were tested in Compartment K-06 yielded evidence of this industry and this exception, 9ME43, received only limited scrutiny. Bottle glass tool evidence was not commonly recognized from shovel testing data, which infers that many of the other Lower Creek sites in the Upatoi Creek region would likely yielded evidence of this industry under closer examination. The conservative behavior associated with the recycling of bottle glass for tool use by the Creeks has important implications. It indicates an element of frugality associated with the consumption of Euro-American material goods. It demonstrates that chipped stone technology knowledge had not been entirely lost by the Lower Creeks and that most households in the region had a member who was capable of making these tools. All of the tested sites in Upatoi Town produced bottle glass tools, which indicates their ubiquity in Upatoi assemblages. Interestingly, however, unlike the results of Cable and O'Steen's Kasita study, no glass tools or debitage were found in shovel test contexts at Upatoi Town. The bottle glass tools from Upatoi Town are summarized in Table 1.

**Table 1. Bottle Glass Tools, Upatoi Town.**

Site	Bifacial	Unifacial	Total
9ME394	6	19	25
9ME395	0	5	5
9ME472	1	5	6
9ME42	1	6	7
9ME469	0	1	1
<b>Total</b>	<b>8</b>	<b>36</b>	<b>44</b>

Other Creek sites in the Fort Benning area have produced glass tools. A single olive green glass flake was recovered from testing at 9CE1207 (Weisman 1998b:49). This site possibly also was part of Upatoi Town, although it is on its outer limits. Considerable evidence of bottle glass tool use was recovered from an excavated Lower Creek site (9CE379) on Ochiltee Creek in Chattahoochee County. Of 45 olive green bottle glass fragments excavated there, only one-third of the glass was either tools or debitage. All of the tools were unifacially worked and one was a possible gunflint (Cowie and Wood 1999).

Evidence of bottle glass tool use was recovered from several studies at Uchee Town in Russell County, Alabama (Braley and Barnes 1993; Hargrave et al. 1998; Weisman 2000). The Uchee, although culturally and linguistically unique, were allied with the Lower Creeks. In a controlled surface collection at Uchee Town, nearly half of the bottle glass from a sample of 40 sherds exhibited edge modification consistent with aboriginal use as tools, and that is a conservative estimate by Weisman. This author, who served as field director in that study, would place the percentage at 60 percent, or higher. Examples of glass tools from the surface collection are shown in Figure 4. Previous studies by Chad Braley, Michael Hargrave, and others yielded different results from Weisman's study. Of 18 glass artifacts described from the U.S. Army Construction Engineering Research Laboratories' excavations at Yuchi town (1RU63), only one was identified as possibly retouched (Hargrave et al. 1998). Tool shapes suggested scraper and spokeshave functions. Only two tools exhibited bifacial edges. Bottle glass debitage was not reported from any of these studies of Uchee Town.

One dark green bottle glass tool was recognized by Kurjack from the Jackson site (1BR35) in the Walter F. George Reservoir, which was described as exhibiting, "secondary chippage and other signs of use as a scraper" (Kurjack 1975:123). A glass scraper was reported from excavations at the Hitchiti site (9SW50), also in the Walter F. George Reservoir (Kelly et al. n.d.:34). Brother McPike, who reported on an extensive surface collection from 1RU70, which was considered to be another part of Hitchiti, located immediately south of Fort Benning, mentioned the presence of bottle glass scrapers at this site (McPike 1992:10). A large sample (n=1,414) of clay tobacco pipestems that were also collected by McPike and yielded a pipestem date of 1746.13. Other dateable artifacts in the collection bracketed the occupation of this site between 1650 and 1850.

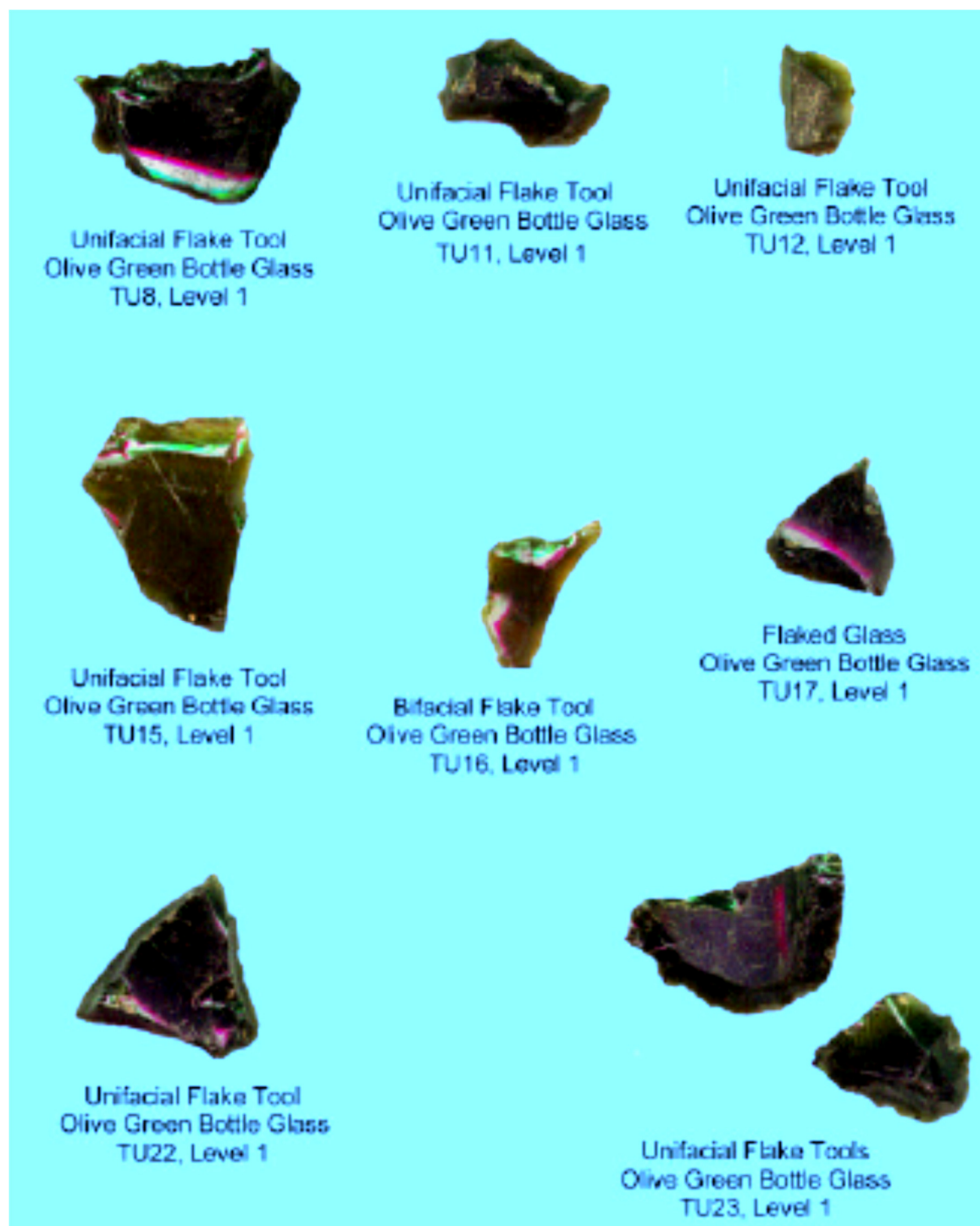


Figure 1. Glass Tools, 9ME394.

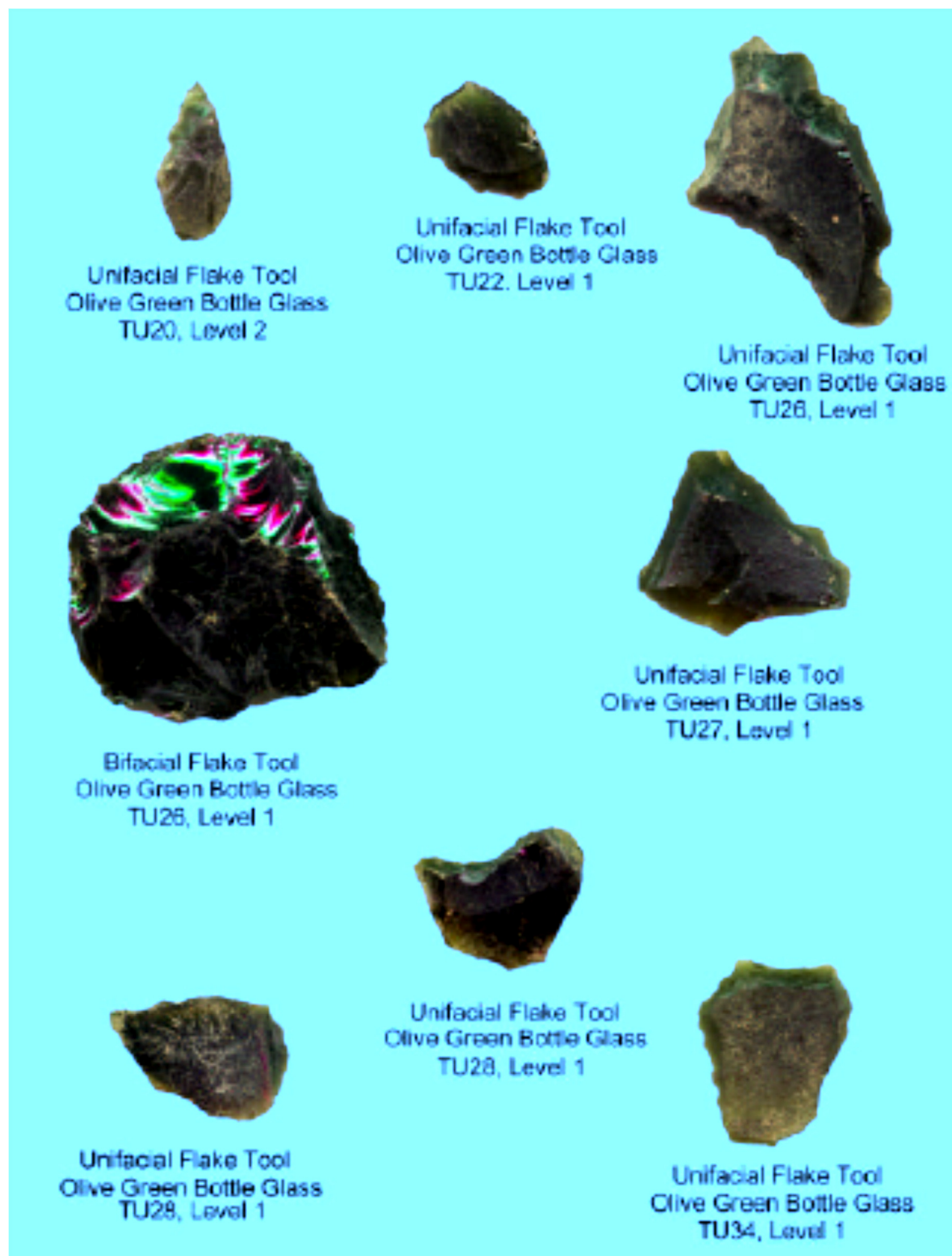


Figure 2. Glass Tools, 9ME394.



Figure 3. Glass Tools, 9ME472.

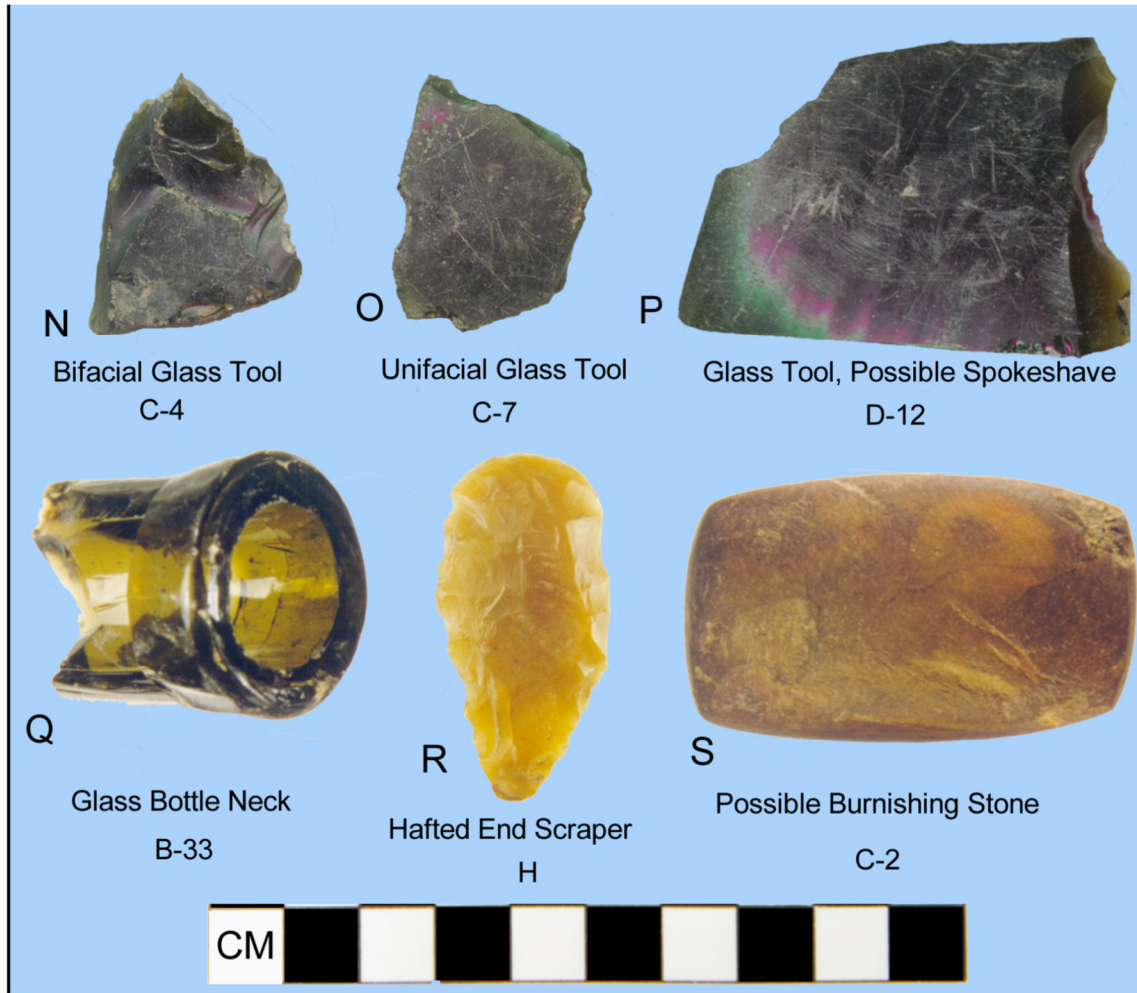


Figure 4. Glass Tools and Other Artifacts, Site 1RU63 (Weisman 2000:147).

Substantial evidence of bottle glass tools and tool manufacture was recovered in the 1960s from excavations by the University of Georgia in the middle Chattahoochee River valley at Okfuskenena (9TP9) in Troup County, Georgia. Okfuskenena, which was inundated by the West Point Reservoir, was burned by Georgia militia in 1793, which firmly established the date of abandonment for archaeological purposes as slightly earlier than the Upatoi Town sites. The results of the Okfuskenena excavations are unpublished but a draft manuscript of the work exists. The bottle glass artifacts were recognized and discussed by Harold Huscher and Mark Williams (Huscher and Williams 1969; Huscher 1972). All glass artifacts from the excavations curated at the University of Georgia were re-examined by the author for this study. The complete assemblage of bottle glass artifacts from Okfuskenena are presented in Table 2.

Unlike the contexts observed at the Upatoi Town sites, the Okfuskenena glass tools and debitage were mostly from two features. Okfuskenena yielded 66 bottle glass tools, and 138 pieces of debitage, out of a total bottle glass sample of 466 artifacts. Tools and debitage constitute 45 percent of the glass assemblage from Okfuskenena. The tools from Okfuskenena included only one bifacial flake tool, 21 bifacial knapped cores (made from the bottle kick-up), 34 informal unifacial flake tools, and 10 complete unifacial tools (9 of which were possibly gunflints). Many of the informal unifacial tools, which were not knapped completely around the edge of the artifact may represent incomplete or broken gunflints. More than half were informal unifacial tools, followed by bifacial kickup cores.



Some of the tools may have served as scrapers. The flake tools were grouped into three gross size categories (> 5 cm; 2.5-5 cm; or <2.5 cm in maximum dimension). Only one complete unifacial tool was slightly larger than 5 cm in size. Nevertheless, this tool was within the compatible size range for use as a musket flint. The informal flake tools were equally split between these two lower size categories, 17 were less than 2.5 cm and 17 were 2.5-5 cm. Three of the complete unifaces (suspected gunflints) were less than 2.5 cm in size, while six were in the 2.5-5cm range. The glass tools from Okfuskenena presented the best case for their function as gunflints.

**Table 2. Bottle Glass from Okfuskenena.**

<b>Artifact Description</b>	<b>Color</b>	<b>Count</b>
Bifacial tool fragment	Dark olive	1
Complete unifacial tool (>5 cm)	Dark olive	1
Complete unifacial tool, possible gunflint (2.5-5 cm)	Dark olive	6
Complete unifacial tool, possible gunflint (<2.5 cm)	Dark olive	3
Case bottle base bifacial core	Dark olive	1
Spirit bottle base bifacial core	Dark olive	20
Unifacial informal flake tool (<2.5 cm)	Aqua	1
Unifacial informal flake tool (<2.5 cm)	Dark olive	16
Unifacial informal flake tool (>2.5 cm)	Dark olive	17
<b>Total Tools</b>		<b>66</b>
Tertiary flakes (<2.5 cm)	Dark olive	105
Tertiary flakes (>2.5 cm)	Dark olive	33
<b>Total Debitage</b>		<b>138</b>
Unmodified bottle glass	Clear	2
Unmodified bottle glass	Dark olive	246
Unmodified bottle glass	Olive	3
Unmodified bottle glass	Aqua	1
<b>Total Unmodified</b>		<b>252</b>
<b>TOTAL BOTTLE GLASS</b>		<b>456</b>

**Glass Tools from Areas East of the Chattahoochee River Valley**

Glass tools also have been reported from Creek sites east of the Chattahoochee River valley in the Flint River watershed. John Worth reported finding an olive green glass small, crude bifacial scraper tool from surface collections at the site of Padgeeligau, which was occupied by Yuchis from the 1770s to about 1821 (John Worth personal communication, June 19, 1998). Test excavation at two eighteenth century Creek farmstead sites on the Flint River in Taylor County yielded olive green glass but no tools or debitage were reported (King 1994). Data recovery field work at these sites was recently completed and no analysis data\*\* on bottle glass is presently available (Jerald Ledbetter personal communication, June, 1998).

Further east at the Tarver site in the Ocmulgee River watershed, which yielded large amounts of European trade material, excavations did not demonstrate evidence of a bottle glass tool technology (Pluckhahn 1997). Similarly, Mason’s (2005) report on the extensive WPA-era excavations at the Macon Trading Post vicinity did not include any discussion of bottle glass tools. The absence of bottle glass tools and debitage at these two site, which date before 1716, may indicate that the use of bottle glass as tools was a later adaptation.

Evidence of Lower Creek and Yuchi use of dark olive green bottle fragments as tools is evidenced along the Savannah River. Wilfred Neill reported finding, “a scraper of dark green glass, made from a bottle fragment” at the suspected Galphin trading post site at Silver Bluff, South Carolina (Neill 1968:49). Elliott (1990) reported finding

several dark olive green bottle glass tools and associated debitage (including olive green and clear glass) at the Yuchi town at Mount Pleasant, Georgia (9EF169). Lewis (2011) examines additional specimens of glass tools from 9EF169, as well as an assemblage from the neighboring town of Palachacolas in Hampton County, South Carolina. Eighteenth century bottle glass tools are not restricted to aboriginal sites; a dark olive green bottle glass gunflint was reported by Elliott (1997:162, Figure 54m, 164) from excavations at the Fort Argyle site (9BN28) on the lower Ogeechee River, a Euro-American military garrison (occupied circa 1734-1767) and not a Creek habitation site, that yielded several unifacial dark olive green glass unifacial tools and one piece of glass debitage.

Use of olive green spirit bottle glass as tools also has been documented sporadically for the Upper Creeks. Roy Dickens and Linda Carnes discussed bottle glass tools and debitage that were recovered from Upper Creek excavations at Horseshoe Bend, in north-central Alabama (Dickens 1979). Their analysis of the materials included a discussion of possible use of bottle glass for gunflints and this was supplemented by experimental replication. Carnes noted the similarity between some of the tools and European gunflints, but concluded that these were more likely scrapers. Carnes (Dickens 1979:162-163) described three bottle glass scrapers and two caches of bottle glass debitage from the Upper Creek towns of Nuyaka and Tohopeka. Carnes initially recognized the possibility that these scrapers were actually used as gunflints and her efforts to replicate their use as gun strikes were described. Although sparks were produced in a flintlock using replicated tools, Carnes concluded that the tools were not reliable and opted for their function as scrapers rather than gun strikes. Creek bottle glass tools are not widely reported from other Upper Creek excavations in Alabama. Waselkov reported a small quantity of worked glass from the Taskigi village midden overlying Fort Toulouse and at Hoithlwaulee. Excavations at Fusihatchee also yielded some bottle glass tools (Gregory Waselkov personal communication, July, 1998).

Creek use of bottle glass is an interesting subject that deserves additional study. Although discarded tools and knapping workshops have been identified at numerous sites, the question of tool function has not been satisfactorily resolved. The easy out is to lump them all as scrapers. Clearly, this approach masks other possible functions, particularly their use as gunflints. The bottle glass tool industry seems to possibly be a later, rather than an earlier, phenomena. The use of bottle glass for tools is not reported on earlier Lamar sites that have been excavated in Georgia, and is not commonly reported from Spanish mission period sites in Florida (Williams and Shapiro 1990; John Worth personal communication June, 1998). The use of bottle glass is evidenced from a Lower Creek site on the Savannah River from the period 1720-1750. It is found on Lower Creek sites in the Fort Benning vicinity from the mid-1700s (and possibly earlier) to the 1830s. Upatoi Town demonstrates significant amounts of bottle glass tools and debris that are well suited for a detailed study of this technology. Previous work on the subject of glass bottle tool use among the early historic inhabitants of western Canada by Eric Poplin provided one model for this research (Poplin 1986).



# *Glass Tools Among Contemporary Ethnic Groups*

Glass gunflints are not confined to aboriginal sites of the period, however, and similar specimens have been recognized from: recent excavations at Fort Argyle, a middle eighteenth century Ranger fort on the lower Ogeechee River in Georgia; from late eighteenth century contexts at New Ebenezer on the lower Savannah River in Georgia; and from early nineteenth century contexts at Columbus, Georgia (Elliott et al 1996; Elliott 1990; Rita Folse Elliott 2005). Two of these Euro-American sites, Fort Argyle and New Ebenezer, have also yielded evidence of gunflint manufacture from ship's ballast flint, which demonstrates that the Native Americans had no monopoly on chipping technology. Glass gunflints are comparable in size to flints used with Indian trade guns and carbines, which were the most common weapon types in interior Georgia and Alabama.

Indeed, glass tool use among early Euro-American settlers in Georgia is becoming increasingly evident in the archaeological record. Recent excavations in Savannah and New Ebenezer both yielded glass tools. Many bottle glass artifacts from non-Native American sites may have been overlooked by myself and others. The use of bottle glass as a knapping medium is most likely a function of economic necessity rather than ethnic affiliation.

Excavations at the Wellborn site, an early nineteenth century Euro-American homestead on Upatoi Creek, yielded several examples of glass tools. This domestic occupation, which dates about a decade after the Cusseta Creek Upatoi farmsteads, contained only a small assemblage of glass. One example is a unifacial flake tool made from a section of a clear glass, panel bottle. This tool is unifacially worked on two edges. Another a unifacial flake tool was made from a sherd of clear glass decorative tableware tumbler or cruet. This tool is unifacially worked on two edges.

Other house sites on Fort Benning dating to the early-mid nineteenth century have yielded isolated examples of bottle glass tools. These include Sites 9ME1055 and 9CE1611 (Elliott et al. 1999:90; Elliott et al. 2001:105). Glass bottles sherds continued to be used as tools into the late nineteenth and early twentieth century in the Fort Benning vicinity. An example from Site 9CE35 is a unifacial scraper made from an amber glass bottle (Elliott et al. 2001:88). One glass tool from 1RU88, which was made from post-1880 manganese glass, clearly postdates the period of Creek occupation (O'Steen et al. 1997).

The use of bottle glass tools by later cultures is not unexpected. Research on African American use of bottle glass in Mississippi demonstrated that the use of bottle glass tools declined after steel razor blades were introduced (Wilkie 1996). Window glass scrapers were used by Euro-Americans in northeastern Georgia in woodworking and furniture refinishing in the early twentieth century (Henry G. Elliott, personal communication, June, 1997).

# *Debitage and Bottle Reduction Strategies*

Bottle glass flakes are not difficult to recognize. They share identical characteristics with flakes of other raw material types, the only difference being the package shape of the source material. Olive green cylindrical wine or rum bottles predominated, but this probably reflected their greater availability rather than consumer choice. Test excavations at Upatoi Town yielded one scraper tool made from an olive green, rectangular case bottle. A similar example was observed by the author in the Okfuskenena collection, as was a tool made from aqua bottle glass. Uchee Town yielded one scraper tool made from an amber bottle. The Uchee Town at Mount Pleasant, on the Savannah River, also yieldeddebitage removed from a clear wine goblet stem.

One of the more enigmatic glass tools that the author has observed was recovered came from the surface of a heavily disturbed Lower Creek limited activity site in the uplands of Russell County, Alabama. This site contained a light surface scatter of Creek pottery but no other evidence of historic era occupation. The glass tool was made from a piece of flat, light green window glass about the size of a contact lens. It possessed more than 100 microscopic unifacial flakes around its perimeter, which resulted in a circular shaped micro-uniface. The function of this tool was not determined. It was probably too small to serve effectively as a scraper. It may have served some sort of optic function, or possibly an ornament (Elliott and Holland 1992).

If systematic shovel test data is any indication, the area surrounding the Lower Creek capital of Kasita has a higher frequency of glass tools than the outlying settlements. Ten sites in New South Associates' study of Kasita contained bottle glass tool evidence and the majority of these findings were from shovel tests (O'Steen et al. 1997). Conversely, systematic survey of more than 30,000 acres of Fort Benning under my direction has yielded few, if any glass tools ordebitage from shovel tests. Future testing of sites near Kasita will no doubt furnish substantial data on the Lower Creek glass tool industry.

Tools made from bottle glass are common on Lower Creek sites and are a subject worthy of more sophisticated study. Once the hardened skeptic overcomes the hurdle of accepting these objects as intentionally produced tools, then analysis and classification will be merely an analytical exercise. Archaeologists must learn to look beyond the gestalt of the glass bottle and see the imbedded cultural information that lies within it.

Although bottle glass is mineralogically identical to flint (both are Silica Dioxide) and both exhibit conchoidal fracture characteristics, glass has different physical properties from flint. After heated debate with two of my colleagues over the feasibility of glass as a source of sparks, we conducted a brief experiment. Several gunflints were knapped by archaeologist and primitive technologist George Price from large sherds nineteenth century olive green glass. One of these glass "flints" was tested by archaeologist Brant Loflin in a replica flintlock weapon. After cleaning the frizzen with alcohol and testing the powder beforehand, Loflin test fired the weapon 25 times, making adjustments or modification to the flint at intervals of five firings, and reported several instances of sparks being produced but no ignition of the 4F black powder. This experiment began with three questions:

1. Does bottle glass make a spark when struck with a flintlock hammer? Yes.
2. If so, is the spark sufficient to ignite the black powder? No, not in the present test.
3. And if so, would a glass gunflint be a reliable tool? Maybe.

If no real stone gunflints were available however, necessity would have no doubt given birth to invention. A large portion of the Lower Creek homeland is a stone-poor environment with no naturally occurring stone that can substitute for chert or flint. In these areas, bottle glass may have been their salvation.

Glass gunflints are not confined to aboriginal sites of the period, however, and similar specimens have been recognized from: recent excavations at Fort Argyle, a middle eighteenth century Ranger fort on the lower Ogeechee River in Georgia; from late eighteenth century contexts at New Ebenezer on the lower Savannah River in Georgia; and from early nineteenth century contexts at Columbus, Georgia. Interestingly, two of these Euro-American sites, Fort Argyle and New Ebenezer, also yielded evidence of gunflint manufacture from ship's ballast flint, which demonstrates that the Native Americans had no monopoly on chipping technology. Glass gunflints are comparable

in size to flints used with Indian trade guns and carbines, which were the most common weapon types in interior Georgia and Alabama.

Informal glass tools worked on one side only are, by far, the most common type represented in Lower Creek assemblages (Figure 5). The vast majority of informal tools are less than 50 mm in size. Macroscopic examination of tool edges suggest use as scrapers, spokeshaves, and graters. Some of the unifacial tools may be fragments of gunflints judging from their small size and shape.



**Figure 5. Example of Informal Flake Tool Made from Olive Green Bottle from Upatoi Town.**

Informal tools with bifacial edges were far less common than unifacial ones. Nearly all of the bifacial tool edges suggest no association with a triangular arrowpoint industry. These tools may have been used for cutting or as wedges.

A distinctive bifacial tool type was produced from the kick-up section of wine bottles. Mike Harmon illustrates an example of one of these tools from a Lower Cherokee site and he hypothesizes that it was held in the hand for scraping (Harmon 1986). Many examples of this type were excavated at Okfuskenena and a few were excavated at the Yuchi town at Mount Pleasant, Georgia (Figures 6a and 6b).

Although triangular bottle glass arrowheads have been reported among the Upper Creeks, they are uncommon at Lower Creek sites. One green glass small triangular point was recently reported by Lisa O'Steen and John Cable in their Lawson Field study and others have been cited anecdotally. Arrow points made from scrap brass and stone points, which have been identified on several Creek sites, may have filled this niche.

Excavations at the Yuchi village at Mount Pleasant, Georgia on the Savannah River in 1989 yielded evidence of distinctive tool type made from cylindrical olive green wine bottles, which harkens back to their original function as containers. Two drinking cups fashioned from wine bottle kick-ups, were found at a freshwater spring near the village. One of these is illustrated in Figure 6c. The exterior of the bottle, rather than the interior, was cleverly used to hold liquids. The broken edges of these bottles were finely chipped to remove the sharp surfaces so that the cup would not cut the drinker's lips. This type of tool has not been reported elsewhere and their low frequency of occurrence may indicate that the bottle bases were valued more as cores in the manufacture of small tools.

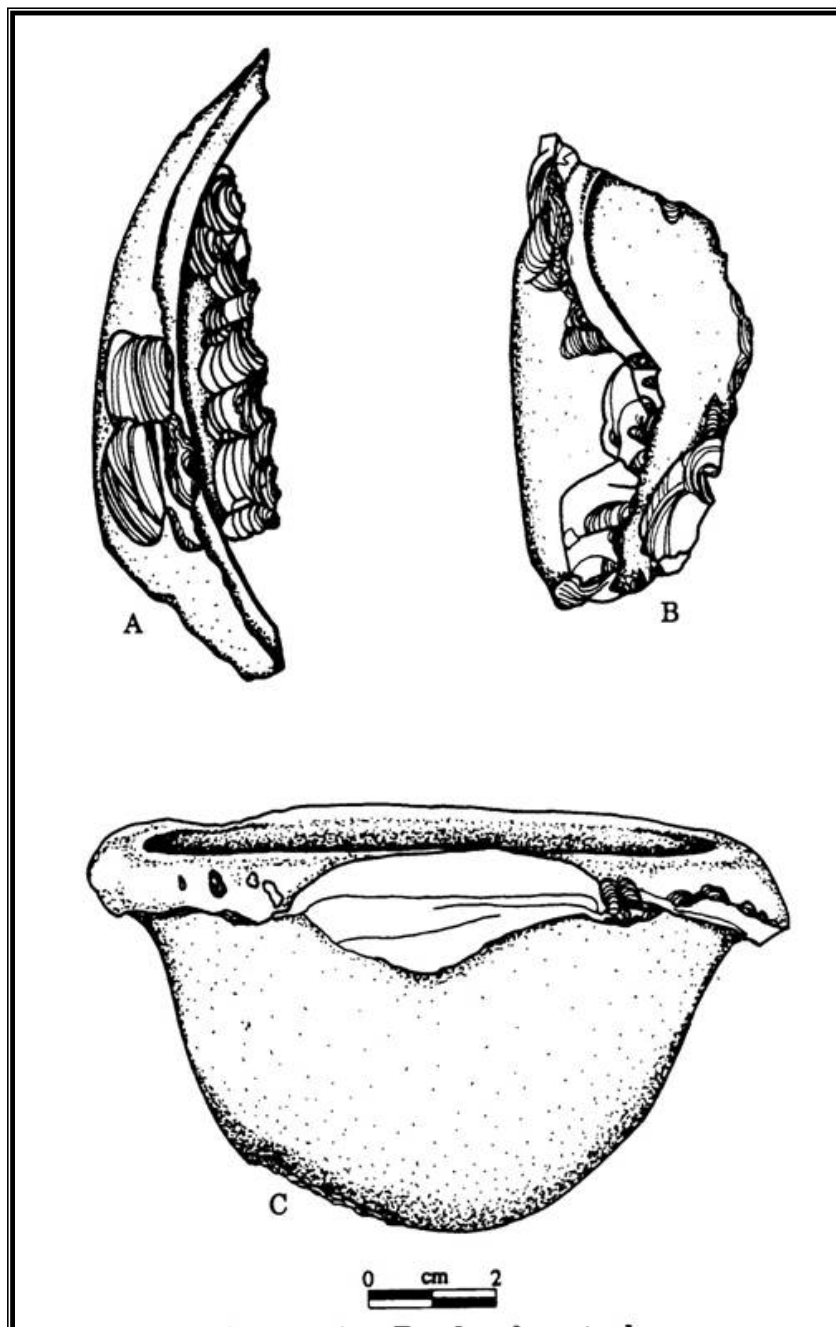


Figure 6. Bottle Glass Tools from Mt. Pleasant, 9Ef169.

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