

The Williams Biface Cache, Christian County, Kentucky

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Abstract

A cache of wide, bipointed bifaces is reported here from Christian County, Kentucky. The bifaces made of blue-gray chert, are a type, along with turkey tail, of narrow bipointed, ovate and disk-shaped ones which are often found in caches in the Midwest and sometimes at great distances from the raw material source. Caches of these artifacts document long distance interaction from the Late Archaic to the Middle Woodland time periods.

Introduction

By the end of the Late Archaic, among other artifact forms and materials, distinctive bifaces made of blue-gray chert were transported widely in the Midwest (Didier 1967; Ford 1974:393-394; Krakker 1997). Bifaces of various forms were deposited in caches from the Late Archaic to Middle Woodland times. To more fully understand how long distance interactions operated and may have changed through time, it is essential to document the distribution and contents of these biface caches. The fortuitous find described here provides an opportunity to examine the bifaces composing a cache.

Bifaces from the Williams Cache, Christian County, Kentucky are part of the National Museum of Natural History (NMNH) accession 2019510, and have anthropology catalog number 559484. The accession consists of the collection made by Dr. Joseph K. Long largely from sites in western Kentucky, mainly Muhlenberg County and those bordering it. The cache was apparently discovered shortly before 1998. Unfortunately the exact date and circumstances of the cache discovery are not evident among Long's records, which usually provide adequate documentation.

The find spot is in southeast Christian County, about 18 km southeast of Hopkinsville (Figure 1). The location is next to Montgomery Creek, a tributary of the West Fork of the Red River. Montgomery Creek joins the West Fork River about 3 km downstream to the south of the find spot. In turn, the West Fork River joins the Red River about 2 km above its junction with the Cumberland River. At Clarksville, Tennessee, the

Red River enters the Cumberland River at river mile 125, about 22 km to the south of the find spot. The location if not within, is near the Mississippian Williams site reported by Webb and Funkhouser (1929). Another notable site nearby is Glover's Cave and quarry just south of the Montgomery Creek junction along the West Fork River (Vietzen 1956; Webb and Funkhouser 1929:24-29).

Topography in the find spot vicinity consists of gently rolling karst upland extensively pitted by sinkholes and incised by stream valleys (Beck et al. 2005). Here Montgomery Creek is incised about 25 m (75 ft) below the general upland surface. This is within the physiographic region called the Pennyroyal, also Pennyrile, or more prosaically the Mississippian Plateau. The Pennyroyal essentially coincides historically and botanically with the Barrens or Big Barrens. The region is bounded to the north by the Western Coal Fields, to the west by the Mississippi Embayment (Jackson Purchase), and extends south slightly into Tennessee north of the Cumberland River. Although generally a distinctive region, the terrain and modern land use are not completely homogeneous (Gibson 1934; Sauer 1927). Before modern settlement the region was characterized by grassland dominated upland tracts where trees were few and scrubby (Baskin and others 1994; DeSelm 1994). Studies of the regional vegetation are reviewed by Baskin et al. (1997). Based on sediment core data from a pond in northern Kentucky, Wilkins and others (1991) concluded that the grassland expansion forming the Barrens occurred about 3900 BP (uncorrected radiocarbon

years).

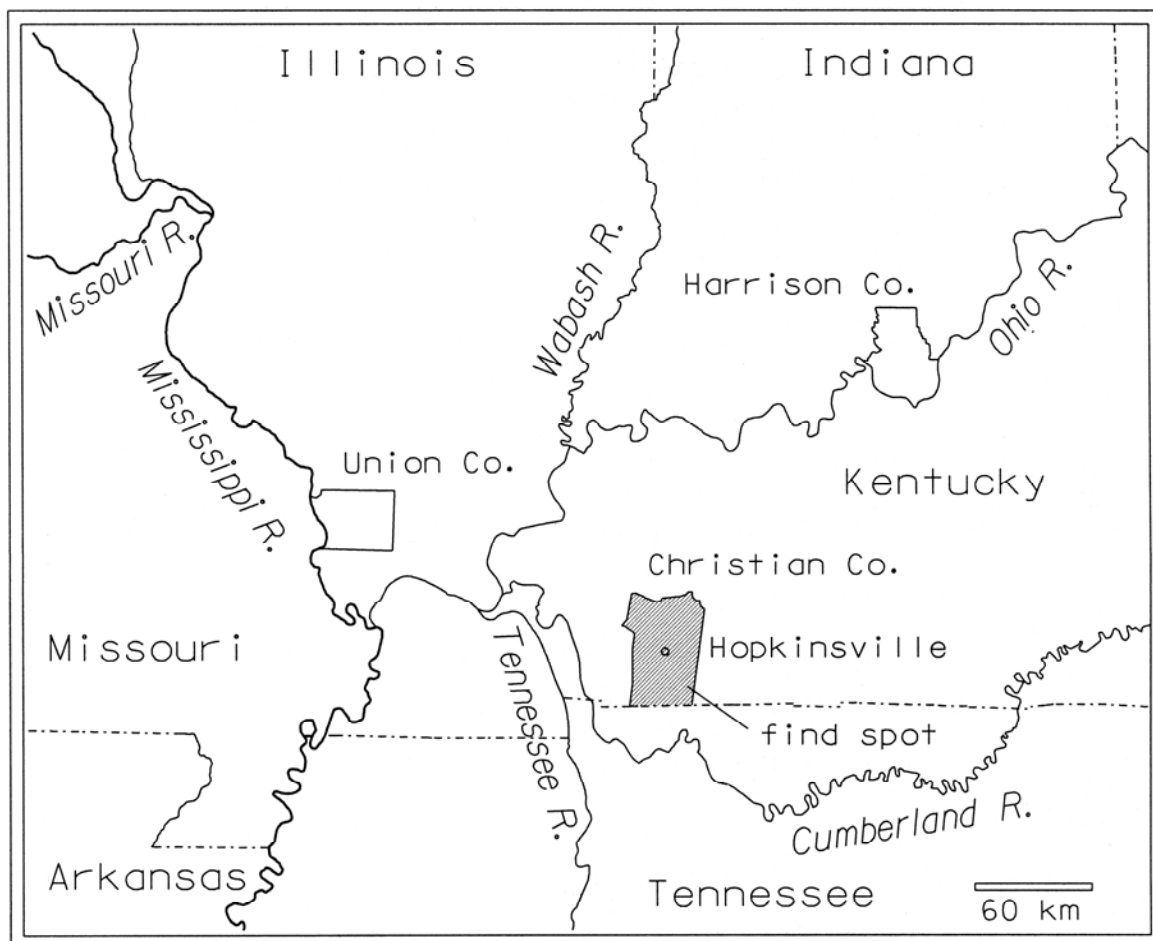


Fig. 1. Location of Christian County.

Description

The collection from the cache consists of 33 bifaces complete or nearly so, two badly damaged, and one end fragment. There is no way to know if all the bifaces originally contained in the cache were recovered. Some of the bifaces have edge damage as a result of being turned up by farm equipment during field cultivation. As Long left no notes stating how carefully the find spot was

searched, it is possible that additional bifaces remain below the plow zone, or were removed previously from the surface. The complete bifaces and fragments collected indicate that at least 36 bifaces were originally in the cache. Figure 2 shows 32 complete bifaces and Figure 3 shows one much smaller than the rest, two incomplete and an end fragment.

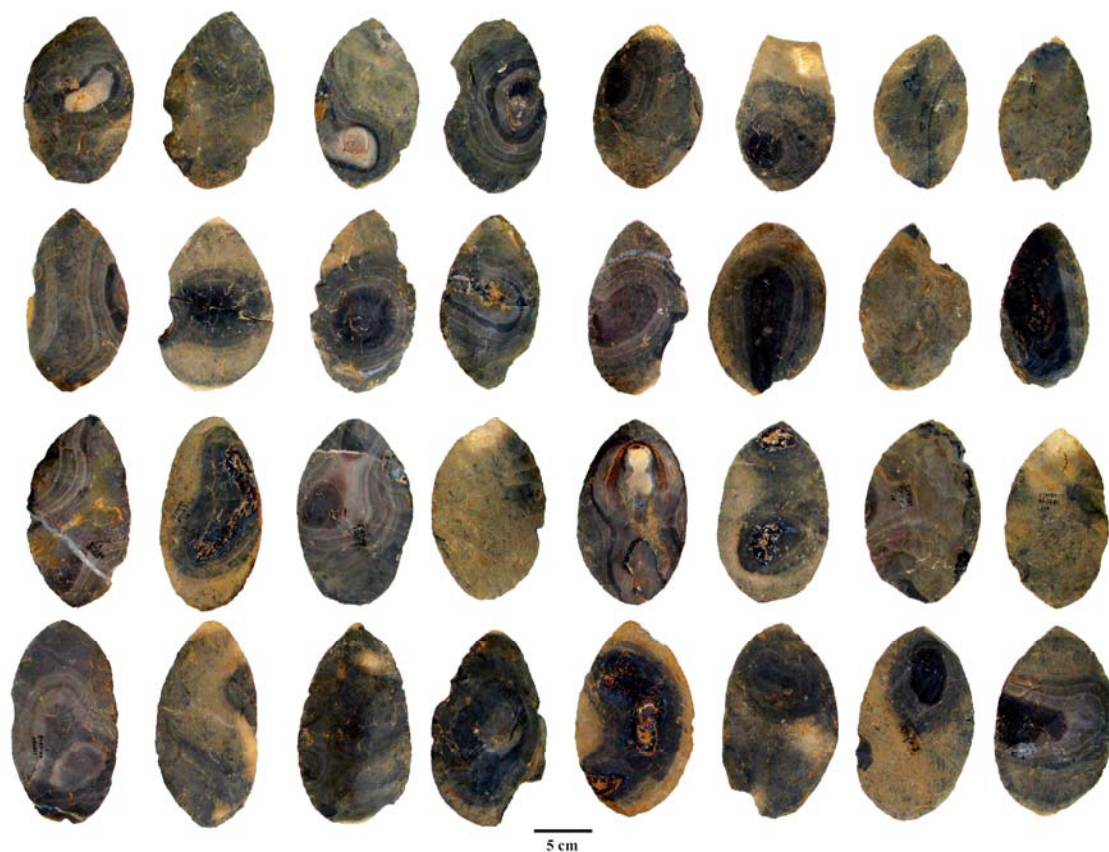


Fig. 2. Bifaces from the Williams Cache.



Fig. 3. Small Biface and Fragments.

Long's surface collection from the site contains projectile points representing various time periods. Also, nodule fragments and early stage biface fragments indicate chipped stone manufacturing activity at the site. While the manufacturing debris is not necessarily contemporary with the biface cache, as the site is

multicomponent, clearly the raw material used is the same, and it must have been in plentiful supply nearby. In addition, the raw material may have been obtained and the bifaces made at a quarry and workshop site noted by Long on the east side of Montgomery Creek.

The bifaces are made of a blue-gray chert widely recognized in the Midwest in the form of turkey tail, bipointed and disk-shaped bifaces often occurring in caches. Similar material outcrops widely in a crescent through western Kentucky outlining the Western Coal Fields. At the east end the chert outcrops in Harrison County, Indiana, and is variously called Wyandotte chert, Harrison County chert or Indiana hornstone. At the western end, in Union County in southern Illinois, the chert is called Cobden-Dongola (Morrow et al. 1992:167; Ray 2007:257-259).

The find spot is within the 7.5' Hammacksville geologic quadrangle much of which is underlain by the Ste. Genevieve formation (Klemic 1966a). The St. Louis formation outcrops in river valleys in the southern part of Christian County (Klemic 1966a, 1966b). Spherical nodules are described for the St. Louis formation (Klemic 1966a). Nodules of similar shape occur in the Ste. Genevieve formation in some locations, although the tabular chert described for most of the Ste. Genevieve formation seems to be of very poor quality for chipped stone tool manufacture (Ulrich 1966).

Along the Big West Fork River valley the St. Louis formation outcrops to about 5 km north of the Kentucky-Tennessee boundary. This is about 7 km south of the Williams site, just downstream from Glover's Cave. Vietzen (1956:158) described plentiful chert nodules eroding out near and within Glover's Cave. The cave is within the Ste. Genevieve formation, but the St. Louis formation may outcrop in the valley bottom. Apparently the chert nodules are common at the top of the St. Louis formation just below the St. Louis-Ste. Genevieve boundary (Klemic 1966a). Definition of the St. Louis-Ste. Genevieve boundary seems at times indistinct (Klemic 1966b). Spherical chert nodules are reported to be abundant in the lower Ste. Genevieve in the Church Hill quadrangle (Ulrich 1966). Fowke (1928:520, 530) noted that the chert found in the southwest corner of Todd County two or three miles from Trenton and near Elkton was similar to that of Harrison County, Indiana. This location appears to be within the Ste. Genevieve formation (Klemic 1966c).

Both the St. Louis and Ste. Genevieve formations are exposed in a band on the margin of the Western Coal Fields (Noger 1988). Adjoining the Western Coal Fields to the east, in north central Kentucky, the Bluegrass Region essentially corresponds to the Cincinnati Arch. In a narrow band, Mississippian rocks also outcrop on the east margin of the Cincinnati Arch including the St. Louis and Ste. Genevieve formations which attenuate to the northeast. Both formations contain chert east of the Cincinnati Arch (Sable and Dever 1990:58-66).

The blue-gray chert is widely available in western Kentucky and along the lower Cumberland River (Conaty 1987; Gatus 1983, 2005; Nance 1984, 2000). However, Fowke (1928:524) long ago noted that the large spherical nodules are not found throughout the region where the St. Louis and Ste. Genevieve formations are exposed. For manufacture of large bifaces the most suitable and largest nodules are available in rather restricted localities where first eroded from decomposed limestone (Seeman 1975). Nodules exposed to weathering and stream rolling deteriorate.

The blue-gray raw material as described in the literature and observed in Long's collection generally occurs in the form of spherical nodules, but also as lens and more irregularly shaped nodules. Larger spherical nodules tend to be slightly flattened. The nodules often exhibit concentric bands, some centering on quartz crystals. The quartz crystal centers seem not to have been much of an impediment to flaking. White or light blue chalcedony rings or filaments are visible in some cases.

Most of the bifaces can be described as wide, bipointed, but some are ovate. They certainly would not be called disk-shaped. While most have extensive bifacial flaking, four are, in fact, essentially unifacial, and the ventral surface of the original flake preform is largely unmodified.

Notably cortex occurs at the end of 14 bifaces, or 37% of the bifaces, and of these, at both ends in three cases. In fact, this is a minimal count as the ends of some were damaged. As these usually small bits of cortex could have been easily

removed, although with a very slight reduction of length, it must be concluded that the small vestige of cortex was left on purpose at the ends. The cortex itself may not have been esteemed, but rather the aim was to maximize total length.

Cortex on the biface ends indicates that a large flake struck across a nodule provided the initial biface preform. Flakes were struck from the edges of the preform flake to shape and thin the biface. When only a few or no flakes were removed from the ventral flake surface, the cross-section is lenticular whereas biconvex is usual.

Some abrasion is common on tips and medial edges and seems present at least to a slight extent in nearly all cases. During manufacture abrasion is

a platform preparation commonly used in the process of bifacial thinning (Whittaker 1994:185-189, 194). While the implication is that the bifaces were being prepared for further thinning, it is possible that the edge abrasion was a preparation for transport. Dulling of sharp edges might reduce the potential of the bifaces to cut through a bag or wrapping used to contain the lot during transport.

Table 1 summarizes basic measurements. One biface much smaller than the others measures 99 mm in length, 65 mm in width, and 14 mm in thickness, with a weight of 83.8 g. This small biface is left out of Table 1 and the following plots in Figures 4 to 6. The total weight of the bifaces including the two fragments is 10.9 kg. Evidently the original cache weighed more than 11 kg.

Table 1. Summary statistics for biface measurements.

	Length (mm)	Width h (mm)	Thickness (mm)	Weight (g)	L/W ratio
Count	29	34	34	34	28
Minimum	135	77	14	188.2	1.46
Maximum	180	104	25	447.3	2.07
Median	160.0	94.0	19.0	307.7	1.69
Mean	159.6	92.6	19.0	313.2	1.72
S.D.	11.5	7.0	2.3	64.4	0.14

Figure 4 plots length, width, thickness and weight distributions. While the frequency distributions are irregular they suggest symmetrical distributions, as means and medians shown in Table 1 are close. From an expected 68% of the observations within one standard deviation of the mean, only thickness departs notably by having too many cases within one standard deviation. The observed distributions of length, width, thickness and weight compared with expected values for a normal distribution calculated from the observed mean and standard deviation do not differ

significantly using a Kolmogorov-Smirnov test for goodness of fit (Sokal and Rohlf 1969:571-575), summarized in Table 2.

Table 3 shows correlations for length, width, thickness and weight. The correlations of length, width and thickness are higher with weight than with each other. Weight is an overall size measure. As the lowest correlation is between thickness and width, apparently wider bifaces are not necessarily thicker. One might expect wider bifaces to be more difficult to thin.

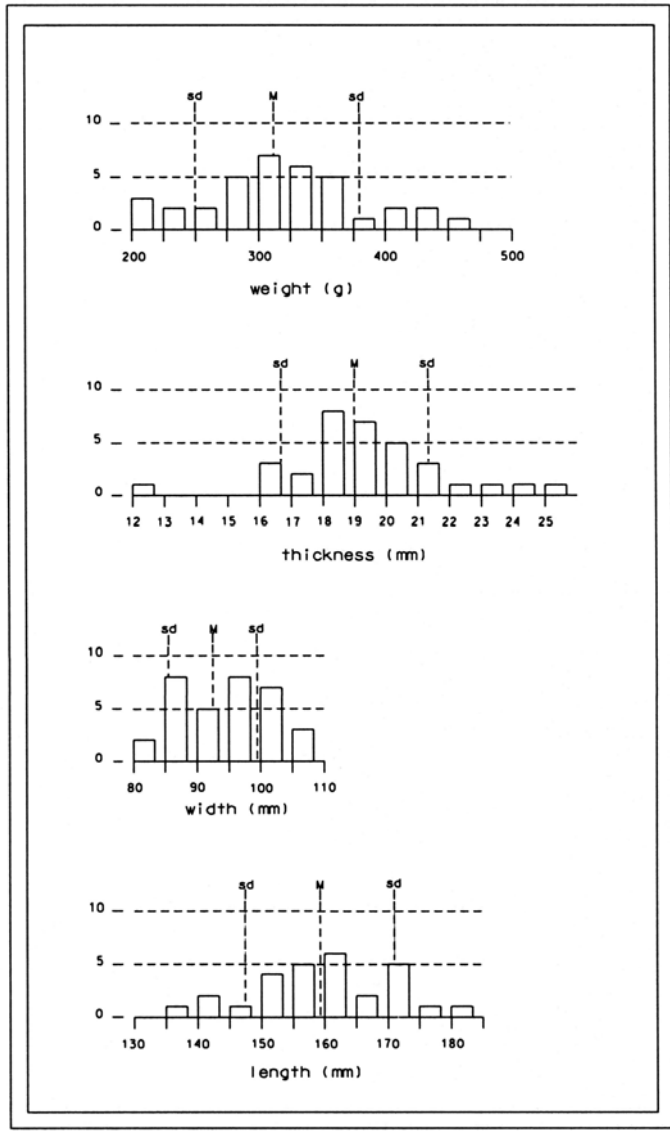


Fig. 4. Frequency Distributions of Length, Width, Thickness and Weight.

Table 2. Kolmogorov-Smirnov goodness of fit test, observed and normal distribution.

Measurement	Maximum Difference	2-Tail Probability
Length	0.103	0.918
Width	0.129	0.647
Thickness	0.147	0.454

Weight	0.081	0.980
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Table 3. Correlation of measurements for 28 cases.

	Length	Widt h	Thickness	Weight
Length	1.000			
Width	0.363	1.000		
Thickness	0.465	0.209	1.000	
Weight	0.809	0.669	0.662	1.000

Figure 5 plots biface length and width. As can be seen length and width show no clear linear relationship consistent with the low correlation coefficient in Table 3. Although two bifaces fall slightly short and narrow, no obvious sub-clusters are evident in the distribution. As the original nodules of raw material vary considerably in size, to maintain any consistency of biface size and shape would require conscious selection of nodules at the source as well as the flakes used as initial preforms for the bifaces.

The length to width ratio, (length divided by width) indicates that the bifaces are relatively wide. The mean length to width ratio is 1.72 with a range from about 1.5 to 2.1 (Table 1). As Figure 6 shows, with one exception, the bifaces have lengths less than twice the width. Also evident in Figure 6, is that the distribution of the length to width ratio may have a slight skew toward the lower values.

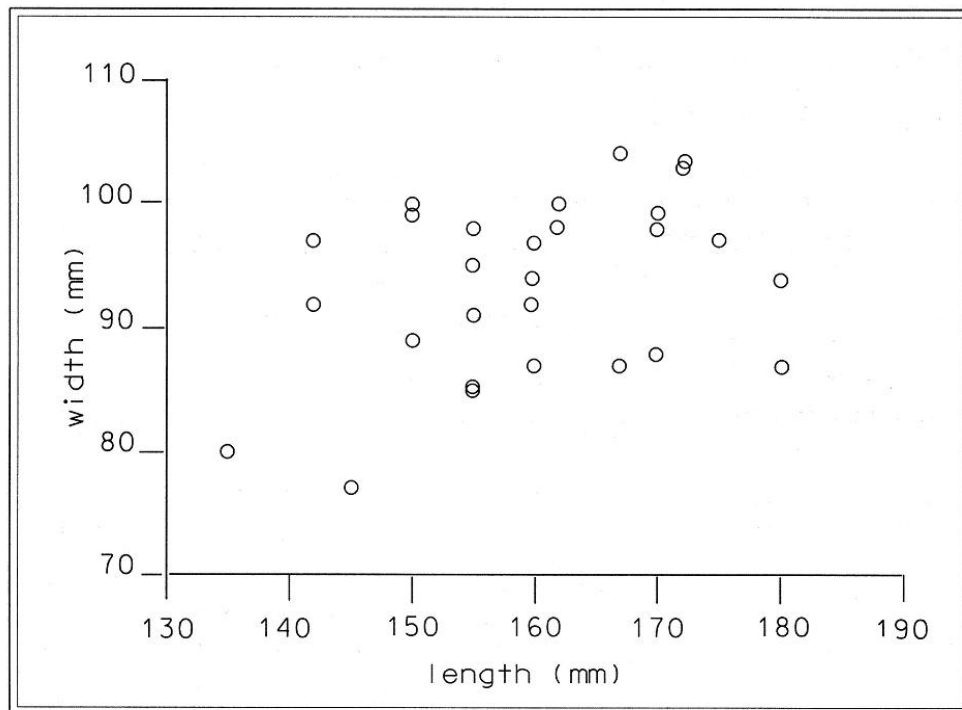


Fig. 5. Plot of Length and Width.

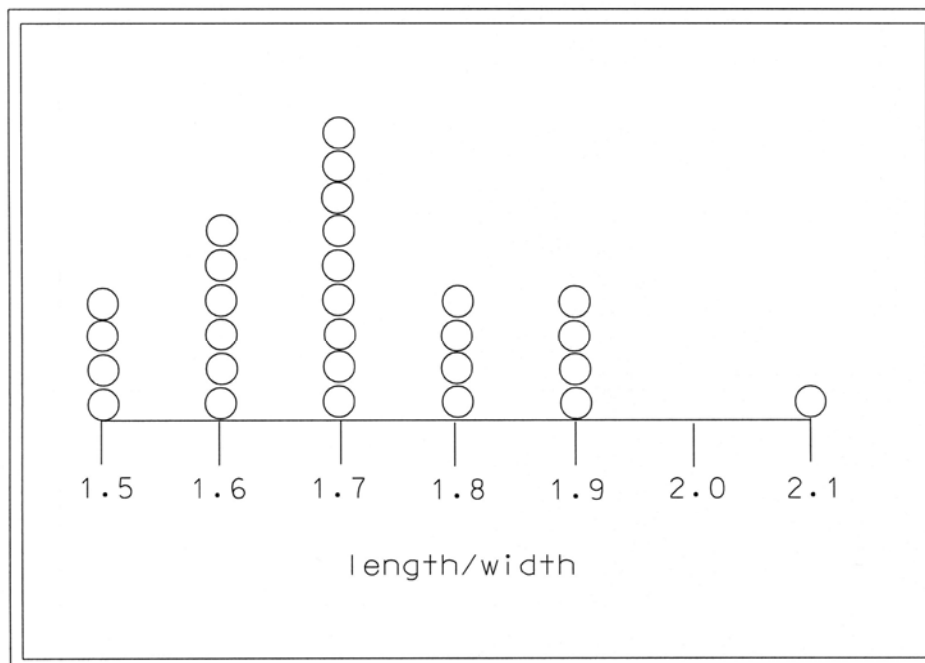


Fig. 6. Frequency Distribution of Length to Width Ratio.

Discussion

There is nothing associated with the cache to indicate a date. However, a typological comparison suggests a possible date. The shape of Williams Cache bifaces is intermediate between narrow, bipoined bifaces and more clearly ovate or disk-shaped bifaces.

Narrow, bipoined bifaces are associated with the terminal Late Archaic and Early Woodland. In Fayette County, Kentucky narrow, bipoined biface caches in Tarleton and Fisher mounds are reasonably attributed to Early Woodland Adena (Webb 1943; Webb and Haag 1947).

Features contain narrow, bipoined bifaces at the Riverside site in the Michigan upper peninsula bordering on Wisconsin (Hruska 1967). Recent radiocarbon analysis indicates a date no later than about 400 B.C. (uncalibrated) (Pleger 2000). Parenthetically, previously run radiocarbon dates for features containing narrow, bipoined bifaces at the site are consistently too recent. For example, the most recent date of A.D. 1 ± 130 (M-1715) (Crane and Griffin 1968) is about 400 years too recent compared to the rerun date of 430 ± 50 B.C. (AA19681/WG2407) (Pleger 2000).

Ovate to disk-shaped forms occur in Middle Woodland contexts (Ellis 1940). The Middle Woodland bifaces clearly have convex bases and would not be called bipoined. Ovate or disk-shaped bifaces occur at Middle Woodland Hopewell sites in Illinois. In clear context are bifaces from Havana Mound 6 (Baker et al. 1941:9-10; Montet-White 1968:130-131). A total of 137 in six groups were recovered from the mound. Those illustrated are broadly ovate to nearly round (Baker et al. 1941:Plate 3). Another outstanding example is the deposit of chipped disks recovered from mound 2 of the Hopewell site clearly dating to Middle Woodland times (Shetrone 1926:30).

It is tempting to suggest that the wide, bipoined bifaces are intermediate in date as well as form. If so, in order to date later than Riverside, but earlier than Ohio or Illinois Hopewell, the wide, bipoined bifaces would date to the Early Woodland, perhaps as late as early Middle Woodland.

The Williams Cache composed of wide, bipoined bifaces is not unique in western

Kentucky. A cache of similar wide, bipointed bifaces was found in Livingston County (CSAJ 1994). Vietzen (1956:165, 183, Figure 191) reported a cache of 20 wide bipointed bifaces, nearly disk-shaped found near Glover's Cave. Apparently similar is a cache of 50 he mentioned from Caldwell County. Other caches in Todd, Christian, and Trigg Counties may be of similar form (Vietzen 1956:165). Large, nearly disk-shaped bifaces have been reported from Lyon County (Smith 2011).

A single bipointed biface in the NMNH collection (132325A) is shown in Figure 7. It is said to be from a cache in Todd County (Thomas 1891:99). Although Vietzen was probably aware of this reference, there is no easy way to determine if this is the one he (Vietzen 1956:165) noted from that county. With a length of 132 mm and width of 79 mm the biface falls at the lower end of the length and width ranges for Williams Cache bifaces.

Likewise, other biface forms made of blue-gray chert occur as caches in Kentucky. Didier (1967) reported several turkey tail biface caches in Kentucky. In the Williams Cache vicinity, Vietzen (1956: Figure 304) noted a cache of 12 turkey tail bifaces from Dry Cave near Glover's Cave. In addition, he mentioned (Vietzen 1956:188, Figure 206) a cache of 31 also from Christian County. To these may be added more recently reported finds from Nelson (Stoke and Boone 2000), Barren (CSAJ 1996), Calloway (Morrow et al. 1992; Schenian 1987), and Clinton Counties (CSAJ 2011). In addition to the narrow bipointed bifaces in Fayette County cited above, an immense cache of at least 371 bifaces was found in Livingston County (Beckman 2003). Bipointed bifaces reported from Cumberland County show the form to be present in the Middle Cumberland valley (CSAJ 2004).



Fig. 7. Bipointed Biface from a Cache, NMNH 132325A, Todd County, Kentucky.

Vietzen (1956:165) said biface caches occurred in Tennessee, but he did not elaborate as to specific finds. Turkey tail bifaces are found in Tennessee. Long ago Thruston (1890:Plate 11) illustrated a turkey tail biface from Tennessee. It was also shown by Moorehead in his compendium (Moorehead 1900:Figure 218). Morse (1967:43-45) reported turkey tail bifaces from the Robinson site upriver from Nashville along the Cumberland

River. In the NMNH collection a single bipointed biface (388050) is attributed to Overton County, Tennessee (Figure 8). It is remarkably long, 238 mm, and very thin. Small notches are placed 75 mm from one end. A bit of cortex is visible on one end. Unfortunately the provenance is vague, but the bipointed bifaces mentioned above in Clinton and Cumberland Counties, Kentucky suggest that there is no reason to discount it.



Fig. 8. Bipointed Biface, NMNH 388050, Overton County, Tennessee.

A final biface (248959) worth mention is one reported to be from a cache of 108 bifaces, found in Cheatham County, Tennessee (Figure 9). Unfortunately, a glued end fragment has been lost, but the biface is complete enough to suggest a

bipointed form. It is apparently smaller than those of the Williams Cache and looks comparable to the single very small biface from the Williams cache shown in Figure 3.



Fig. 9. Biface from a Cache, NMNH 248959, Cheatham County, Tennessee.

Wide, bipointed bifaces similar to those in the Williams Cache are found far beyond western Kentucky north of the Ohio River. A large cache of very similar wide, bipointed bifaces is reported from Putman County, Ohio (Siebeneck 2008). Another is reported in Waupaca County, Wisconsin (Buckstaff 1937). These two examples show that the wide, bipointed bifaces were dispersed 200 km or more from the nearest quarry locality.

Caches of turkey tail bifaces (Didier 1967), bipointed and disk-shaped bifaces are distributed widely in the Midwest and many of these are far from the nearest possible sources in southern Indiana and Illinois (Ellis 1940; Halsey 1970). The Williams Cache bifaces were likely made nearby. It is evident that manufacture of the broad bipointed, and probably the other types of bifaces, was not limited to the well-known workshops associated with outcrops of the St. Louis and Ste.

Genevieve formations in southern Illinois and southern Indiana. Previously, Morrow and others (1992:172) cited evidence that turkey tail points from a cache in Calloway County were made of blue-gray chert obtained near that find.

With a total weight of at least 11 kg the Williams Cache bifaces may represent a convenient back-pack load, or perhaps the output of a single work session. Open to conjecture is the reason the bifaces were deposited at this find spot apparently in close proximity to the quarry and manufacture location. It is possible that they were a mortuary offering, but evidence of that is completely lacking. Why would they be stored? Some future need may have been foreseen, perhaps for later use or awaiting an opportunity for exchange. The implication is that bifaces even if intended for local use were made in fairly large lots, not individually or a few at a time to meet immediate needs. If they were intended for

exchange, then the exchange was not forthcoming right away.

Long distance transport of such bifaces required exchanges across community territory boundaries. Occasions for face to face meetings of individuals belonging to different communities and when exchanges could be made, may have been provided by ritual events. The biface exchanges in

part may have maintained, or at least occurred within, a regional social network that allowed access to resources beyond those immediately available to local communities. The regional social network may have been essential for long term survival of individual participating communities (Ford 1972a, 1972b, 1974:393-394, 1977:176-178; Rappaport 1968:105-109).

Conclusion

In a variety of forms blue-gray chert bifaces occur in caches in the Pennyroyal and surrounding regions. The same forms are widely distributed north of the Ohio River. A sequence of forms circulated from the end of the Late Archaic, through the Early Woodland and into the Middle Woodland. The Williams Cache of wide, bipointed bifaces may be a relatively late form, but not as late as the ovate or disk-shaped bifaces of the Middle Woodland. It seems likely that the various biface forms found in Kentucky were made at multiple locations in western Kentucky where suitable raw material occurred.

At this point no conjecture will be offered about the nature of long distance exchange and related social organization in Early Woodland times in the Midwest. Let it suffice to note that for

verification of any hypothesis proposed to account for wide spread connections, essential data are cache locations and the characteristics of the bifaces composing them. Similar to the Williams Cache, most biface caches found in the past have been accidentally exposed by farm operations or construction related earth moving. As a result, even if basic cache information has been recorded, too often the contents have been dispersed, and are now unavailable for detailed study, thus hindering comparative analysis. In this situation research depends on existing collections. A further implication is that museum collections have obvious value to address new questions about prehistory. Implicitly, museum-based research requires long-term stewardship of both artifacts and associated documentation (Krakker and others 1999).

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