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Abstract

Thirty-nine bifaces found in the collections of the Museum of the Red River were recently analyzed. Mr. Donald Stewart recovered these bifaces from the vicinity of Lake Wright Patman during lake construction. Analysis of the biface cache was undertaken to gain some understanding of these specimens, despite the absence of provenience information and other details pertaining to their collection. Basic metric data and non-metric observations were taken. I also detail the collection of the biface cache, the history and archaeological background of Lake Wright Patman, results of the analysis, and some thoughts on the function of the bifaces.

Introduction

In 1980 a collection of large bifaces was donated to the Museum of the Red River in Idabel, Oklahoma. Donald E. Stewart donated the material, noting that it was found during construction of Lake Wright Patman (then Texarkana Reservoir). Little is known about the history of the cache other than it came from somewhere within the general area of the lake when construction was taking place (Figure 1). This brief study describes the background of Lake Wright Patman, previous archaeology at the lake, the content of the biface cache, and some limited interpretations.

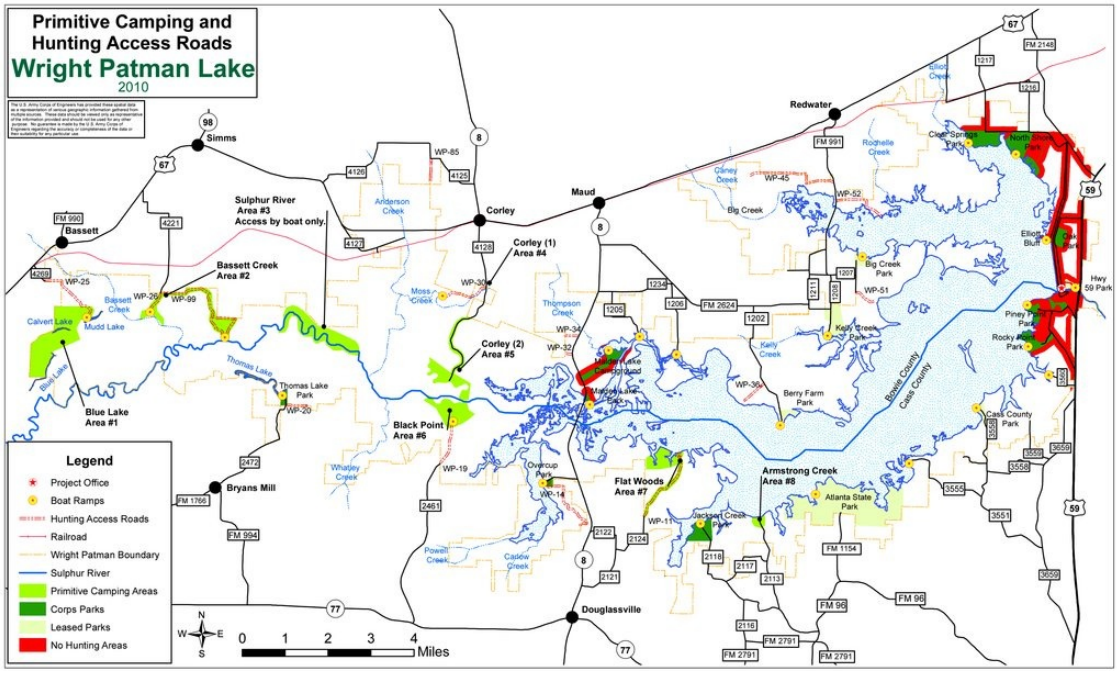

Figure 1. Lake Wright Patman locale.

History of Lake Wright Patman

Lake Wright Patman was initially authorized under the Flood Control Act of 1946. At the time of construction, it was called Texarkana Reservoir. However, this name was subsequently changed to Texarkana Lake (probably in the late 1960s or early 1970s). The name was changed again in 1973 to Lake Wright Patman in honor of the career of the illustrious House of Representative from Texas. Lake Wright Patman was designed to impound waters of the Sulphur River for downstream flood protection. Construction of the lake began in August 1948 and was completed in June 1957 (Breeting 2010). The dam is a concrete structure with an impoundment area of some 20,300 acres.

Previous Archaeological Research

Initial archaeological investigations in the Sulphur River basin were by amateur archaeologist M. P. Miroir and his associates from the Texarkana area. They collected from a number of sites as well as digging a number of Caddo cemeteries (Guy 1990). Unfortunately, little has been published on these activities because the provenience of these collections is mostly unknown; a few ancestral Caddo ceramic vessels from this work are in the collections of the University of Arkansas. Miroir later aided Robert Stephenson in the first professional investigations at Lake Wight Patman in 1949. This work was one of a number of studies conducted by the River Basin Survey in Northeast Texas. Stephenson's survey of the portion of the Sulphur River basin to be flooded by lake construction resulted in the documentation of 50 sites. He identified Archaic and Caddo occupations in this initial work (Stephenson 1950).

In 1952, Edward B. Jelks supervised testing at three of these sites: Knights Bluff (41CS14), Snipes (41CS8), and Sherwin (41CS26). Jelks (1961) thought that the Knights Bluff and Sherwin sites were Late Caddo period in age (now known to date after ca. A.D. 1400), whereas the Snipes sites had been occupied during the Baytown period (Lower Mississippi Valley). Recent reanalysis of Snipes indicates occupation of the site during the Late Archaic, with a substantial Late Woodland (late Fourche Maline) use, and a less intensive ancestral Early Caddo occupation (Sitters and Perttula 2017)

More recent work at Lake Wright Patman was undertaken by the Texas Historical Survey Committee in 1970 due to a proposed enlargement of the lake. This work was limited to the east side of the lake as a rapid increase in lake elevations from abnormal precipitation levels prevented further investigations. They managed to reexamine or newly document 140 sites with occupations dating from Paleoindian to Late Caddo period times (Briggs and Malone 1970).

Prewitt and Associates, Inc. conducted cultural resource management work at Lake Wright Patman in 2006. These investigations were also associated with the proposed increase in the lake pool elevation. Some 24 previously recorded sites were reinvestigated to determine their National Register eligibility (Dockall and Field 2006). Thirteen sites were found to merit further evaluation, whereas 11 were found to have been too badly damaged by shoreline erosion and wave action to require further study.

Since 2006, there have been more than 20 archaeological surveys conducted at Lake Wright Patman for the U.S. Army Corps of Engineers or for Texas Parks and Wildlife, and several sites of prehistoric age have been tested for their National Register of Historic Places significance. Details of these investigations are provided in Harrell et al. (2015) and Harrell et al. (2016).

The Biface Cache

There is no information concerning the context of the cache. Mr. Stewart no longer resides in the Idabel area and considering his likely age (late 80s?), may be deceased. Apparently, Mr. Stewart collected the bifaces as they were exposed during lake clearing activities or related construction work. The specific location of this work and how the cache was exposed are unknown. Additionally, there is no information on whether the cache was found within a site area, in association with other goods, or with a

grave. The cache consisted of 40 fairly uniform bifaces. This analysis only describes 39 specimens as Mr. Stewart retained one of the pieces.

Biface Manufacture and Morphology

The bifaces are large, ovate in outline, with a prepared haft area (Figures 2-5). The prepared haft has a slightly expanding stem. All of the bifaces are manufactured from gray to dark gray novaculite. This variety of novaculite is thought to outcrop near Lake Catherine in the Hot Springs, Arkansas, vicinity (Meeks Etchieson, personal communication, 2016). Gray novaculite from this source varies from coarse to fine-grained in texture and ranges from dull to somewhat lustrous in appearance. Although heat treatment of the dark gray novaculite from the cache was difficult to readily define, many of the pieces had a waxy texture consistent with heat-treating.

Figure 2. Bifaces: Row 1, Specimen #1-5; Row 2, Specimen # 6-10.

Figure 3. Bifaces: Row 1, Specimen #11-15; Row 2, Specimen # 16-20.

Figure 4. Bifaces: Row 1, Specimen #21-25; Row 2, Specimen #26-30.

Figure 5. Bifaces: Row 1, Specimen # 31-35; Row 2, Specimen #36-39.

Measurements were taken on length, maximum width, thickness, stem length, stem width, and weight. Qualitative measures such as flake scar attributes, presence of final trimming, lateral edge rounding and crushing, and haft preparation were also recorded. Observations for conditions such as lateral edge crushing or rounding were taken with a 10x hand lens. Table 1 presents means and ranges for the various measurement categories. Table 2 contains the metric data for the 39 bifaces while Table 3 lists discrete data such as edge crushing, notch removal, and surface attributes. Distribution of length, width, thickness, and weight values from their mean values are graphically shown in Figures 6-9.

Table 1. Mean and range descriptive data for the Lake Wright Patman bifaces. (Numbers are in millimeters except for weight, which is in grams.)

Attribute	Mean	Maximum	Minimum
Length	144.71	179.8	115.53
Width	68.34	91.43	51.5
Thickness	15.33	19.82	12.41
Stem Length	28.08	36.16	21.63
Stem Width	38.62	58.18	22.7
Weight	158.96	260.2	109.2

Table 2. Metric measurements for Lake Wright Patman bifaces.

Specimen Number	Accession Number	Length	Width	Thickness	Stem Length	Stem Width	Weight
1	81.416	148.69	64.09	13.76	29.3	37.72	163.4
2	81.434	150.66	63.01	13.94	33.16	37.12	152.1
3	81.435	148.78	63.71	12.41	28.42	36.02	144.8
4	81.419	139.08	57.77	14.57	28.29	40.35	123.6
5	81.438	138.99	91.43	16.3	23.19	22.7	161.3
6	81.433	142.23	52.5	14.52	22.32	28.45	136.9
7	81.412	168.6	62.8	14.29	31.14	40.05	193.9
8	81.414	146.05	51.5	16.53	31.23	36.62	138.6
9	81.43	145.32	66.46	15.46	25.34	36.66	148.3
10	81.48	161.91	71.75	17.31	32.91	40.61	214.8
11	81.411	164.53	84.16	17.51	35.29	52.01	234
12	81.41	172.06	80.63	17.27	36.16	58.18	260.2
13	81.425	140.3	61.6	14.19	26.78	31.99	128.7
14	81.45	144.41	62.33	14.16	25.79	32.88	128.6
15	81.439	126.41	77.65	16.2	21.63	37.62	135.1
16	81.427	164.18	77.14	16.14	26.61	42.22	175.5
17	81.428	150.64	77.61	15.35	30.57	46.52	202.2
18	81.426	164.33	55.93	14.6	29.52	35.08	153.4
19	81.431	138.35	73.81	19.82	23.76	33.99	142.3
20	81.432	179.48	54.64	14.71	35.74	40.65	180.9
21	81.42	149.06	69.69	17.57	30.78	39.69	184.7
22	81.421	129.98	74.09	16.18	22.04	37.45	141.5
23	81.46	120.74	66.37	13.95	26.61	35.77	116.6
24	81.429	115.53	63.86	13.43	24.61	33.71	115.3
25	81.43	161.35	72.16	15.02	31.01	38.62	199.1
26	81.44	133.71	68.21	14.77	27.76	39.38	150.9
27	81.437	143.97	66.25	14.85	23.84	38.26	142.5
28	81.42	150.02	78.75	16.42	27.5	38.84	192.4
29	81.413	128.74	60.13	13.79	25.6	33.26	111.6
30	81.436	125.76	63.6	14.22	23.26	38.94	128.1
31	81.47	160.01	87.23	17.16	31.58	51.37	237.1
32	81.422	132.65	59.49	13.14	32.54	40.82	115.1
33	81.424	126.86	69.9	15.1	30.04	50.7	142.7
34	81.417	132.03	69.44	16.28	26.32	29.92	141
35	81.49	148.05	69.92	16.33	27.95	35.86	159.8
36	81.415	148.07	80.99	16.19	29.66	47.96	198.4
37	81.41	129.31	59.23	14.93	23.32	32.65	111.3
38	81.423	126.57	60.91	14.35	25.18	35.61	109.2
39	81.413	146.24	74.73	15.28	28.23	40.14	183.6

Table 3. Non-Metric observations for Lake Wright Patman bifaces.

Specimen Number	Accession Number	Shape	Final Trimming	Crushing	Lateral Edge Nibbling	Rounding	Notch Trimming	Stem Trimming	Notch Production
1	81.416	Left excurvate, right incurvate	Yes	No	Yes	Yes, distal	No	No	Dorsal surface
2	81.434	Right excurvate	Yes	Yes, right	Yes, left	Yes, right	Some	Yes	Produced from both surfaces
3	81.435	Right excurvate	Yes	Yes		Yes	Little	Little	Alternate surfaces
4	81.419	Symmetrical	Yes	Yes		Yes	No	Yes, some crushing	Alternate surfaces
5	81.438	Left incurvate, right excurvate	Yes, left minimal	Yes, right		Yes, right near proximal	Some	Some	Ventral surface
6	81.433	Symmetrical	Yes	No	Yes	Yes, left near proximal	No	Yes	Produced from both faces
7	81.412	Right excurvate	Yes	No	Yes, right	Yes, right	No	Yes	Dorsal surface
8	81.414	Left excurvate	Yes	Y		Y, proximal to mid-point	No	No	Dorsal surface
9	81.43	Right slightly excurvate	Yes	Yes, right greater		Yes, right at blade mid-point	No	No	Alternate faces
10	81.48	Symmetrical	Yes	Yes		No	No	Yes	Dorsal surface
11	81.411	Right excurvate	Yes	Yes, blade mid-point		Yes, blade mid-point	No	Some	Alternate surfaces
13	81.425	right excurvate	Yes	Yes		Yes, right near distal	No	No	Alternate surfaces
14	81.45	Symmetrical	Yes	Yes		No	No	No	Alternate surfaces
15	81.439	Symmetrical	Yes	Yes		Yes	No	Some	Alternate surfaces
16	81.427	Right excurvate	Little, left unfinished	No		No	No	No	Alternate surfaces
17	81.428	left excurvate	Yes	Yes, near proximal		Yes, near proximal	No	No	Alternate surface
18	81.426	Left excurvate	Yes	Yes, blade mid-point		Yes, blade mid-point	Yes	Some	Produced from both surfaces
19	81.431	Symmetrical	Yes	Yes		Yes.left	Yes	Yes	Alternate surfaces
20	81.432	Symmetrical	Yes	Yes	Yes	Yes	No	Yes	Alternate surfaces
21	81.42	Symmetrical	Yes	Yes		Yes, right at blade mid-ploint	Minimal	Minimal	Ventral surface
22	81.421	Symmetrical	Yes	Yes, right greater		Yes, right greater	No	No	Alternate surfaces
23	81.46	Symmetrical	Yes	Yes, left greater		Yes, left greater	No	Yes	Alternate surfaces
24	81.429	Symmetrical	Yes.left more pronounced	Yes		Some	No	No	Ventral surface
25	81.43	Symmetrical	Yes	Yes, left greater		Yes, left greater	No	No	Alternate surfaces
26	81.44	left excurvate	Yes	left		left	no	no	ventral surface
27	81.437	Left excurvate	Yes	No		No	No	No	Alternate surfaces
28	81.42	Symmetrical	Right	Some		Some	No	No	Alternate surfaces
29	81.413	right excurvate	Yes	Yes, right	No	Yes, right	No	No	Ventral surface
30	81.436	Symmetrical	Limited	Yes			No	No	Ventral surface
31	81.47	Left excurvate	Yes	Yes, left greater		No	No	Yes	Ventral surface
32	81.422	Symmetrical	Left, right minimal	Yes, left	Yes, right		Minimal	Minimal	Alternate surfaces
33	81.424	Left Excurvate	Left	Yes, left			No	No	Alternate surfaces
34	871.417	Symmetrical	Yes	Yes		Yes, left	No	Some	Alternate surfaces
34	81.401	Symmetrical	Yes, more on left	No	Yes	No	Yes	Yes	Produced from both surfaces
35	81.49	Left excurvate	Yes	Yes, left blade mid-point		Yes, left blade mid-point	No	No	Ventral surface
36	81.415	Left excurvate	Yes	Yes		Yes, left proximal, right distal	Yes	Yes	Alternate surfaces
37	81.41	Symmetrical	Yes	Yes		Yes, distal	No	Some	Alternate surfaces
38	81.423	Symmetrical	Yes, left more so	Yes, left		Some, left	Some	Some	Alternate surfaces
39	81.418	Right excurvate	Yes	Yes, right greater than left		Yes, right greater than left	No	Some	Ventral surface

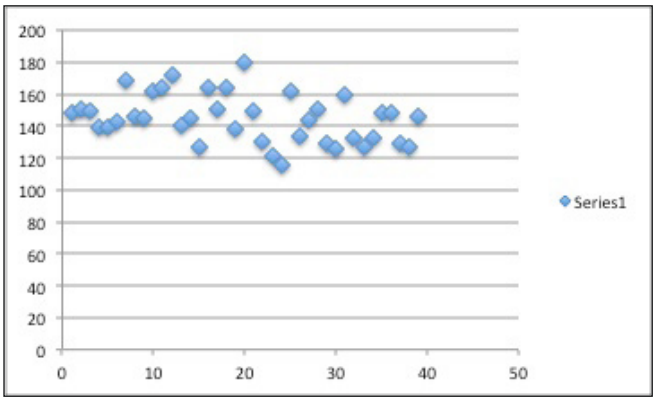

Figure 6. Biface Length (Specimen # is x axis and length is y axis; mean is 144.71 mm).

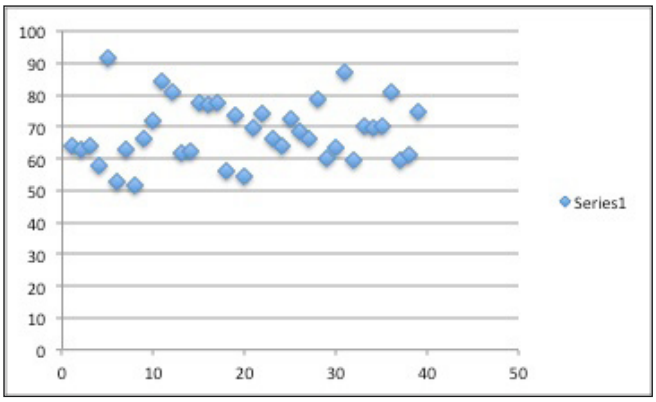

Figure 7. Biface Width (Specimen # is x axis and width is y axis; mean is 68.35 mm).

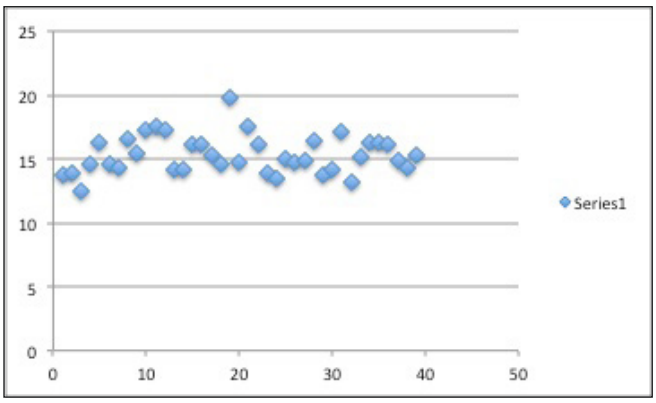

Figure 8. Biface Thickness (Specimen # is x axis and thickness is y axis; means is 15.33 mm).

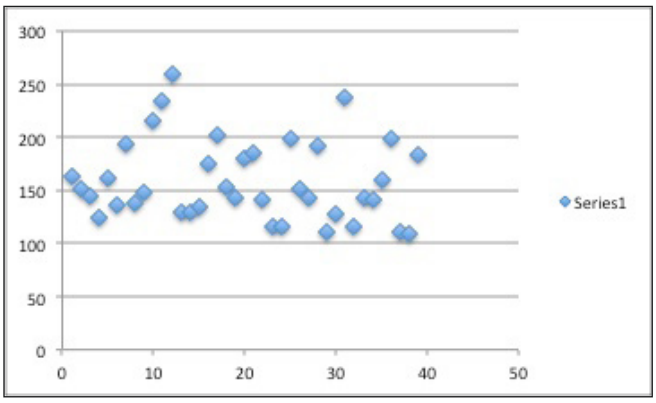

Figure 9. Biface Weight (Specimen # is x axis and weight is y axis; mean is 158.96 g).

Preparation of the bifaces can be addressed to some extent. The pieces appear to be derived from either lenticular, tabular, slabs or from lenses in novaculite outcrops. A few of the bifaces exhibit slight curvature to their dorsal/ventral symmetry. This curvature occurs most frequently with the removal of large flakes from outcrops. An example of this can be seen in the large flakes of Frisco chert found at the Primrose site, a Calf Creek camp and workshop in Murray County, Oklahoma (Wyckoff et al. 1994).

The Lake Wright Patman bifaces exhibit broad and shallow flake scars reflective of soft hammer percussion. Lateral edges have evidence of crushing and smoothing to facilitate further thinning. However, the bifaces also display evidence of final trimming, so edge crushing and smoothing may either reflect preparation for re-sharpening, or perhaps evidence of use-wear. Because no high magnification use-wear analysis was undertaken, these alternatives remain unresolved.

Biface blades vary from ovate to triangular, although most are ovate in shape. Blade lateral edges generally are excurvate, often with one edge more pronounced than the other. Some 54 percent of the bifaces have either the right or left lateral edge as more excurvate. A number of the bifaces also have spatulate distal terminations rather than a more pointed end. All of the bifaces also have completed haft elements. These characteristics point to the bifaces more likely functioning as knives rather than as projectile points. But it is also possible that the bifaces may have been intended for social/religious practices rather than a more strictly functional use such as the butchering of game.

Stem manufacture was accomplished through removal of notch flakes from the right and left lateral edges with subsequent straightening of the stem edges. However, stem production was not refined, with many specimens not receiving final trimming. Notch production was also intriguing. Many flake scars resulting from notch creation are fairly large and occasionally deep. It would appear that stem preparation was accomplished with soft hammer percussion rather than pressure flaking. The flake removal patterns in the notching were also interesting. On many bifaces, flake removal for the notches was conducted on alternate surfaces. For example, flake removal on the right lateral edge may have been from the ventral surface, whereas flake removal on the left lateral edge were from the dorsal surface. On a few pieces, the flakes were removed from one surface, either dorsal or ventral, or were removed from both surfaces, as would be normally found on most notched bifaces. This is an unusual stem preparation process and perhaps points to a lack of concern with the completeness of the haft area. It may also reflect multiple knappers being involved in their production.

To better characterize their shape, ratios of biface length to width, and width to thickness, were calculated for each biface. A biface length to width ratio presents some indication as to whether the biface is relatively elongated or more "stubby." For example, a ratio of 2.0 or greater represents a biface that is twice as long as it is wide. The mean length/width ratio for the Lake Wright Patman bifaces was 2.45 with a standard deviation of 0.36, suggesting that there was minimal variation from this average value. Thus, bifaces from the cache are fairly streamlined/elongated. A width /thickness ratio provides a perspective on the cross-section. The higher the score, the thinner the biface, and the farther in the reduction sequence it likely has traveled. The width to thickness ratio mean was 4.36 with a standard deviation of 0.48. A mean value in this range indicates that the biface is relatively thin and has experienced numerous reduction efforts. The standard deviation demonstrates that there is relatively little variation from the central value. Overall, the two ratios attest to bifaces in the cache being elongated with relatively thin, lenticular, cross-sections. As some final trimming has taken place on the pieces, this is what would normally be expected in terms of overall shape.

Statistical Analysis

Despite the bifaces exhibiting what appear to be fairly uniform characteristics, this was not borne out by statistical analysis. Simple correlation coefficients were calculated for length and width, width and thickness, and length and thickness. A plotting of these variables exhibited no linearity. Length

and width yielded a coefficient of 0.17, showing little relationship. The relationship between width and thickness was somewhat higher (0.59). However, this is not strong enough to be viewed as significant. The coefficient between length and thickness was 0.28, again, a very weak relationship. This lack of uniformity is probably a consequence of the initial flake blank from which the biface was made. Stem shape exhibited somewhat greater uniformity. In general, the stem width was 1.37 greater than stem length, confirming the visual appearance of a somewhat short and stubby stem. The correlation coefficient between stem length and stem width was 0.66, which is weakly significant. In the manufacture of the haft/stem area, there were probably fewer margins for variation in how to prepare the stem, and it was also more independent of the initial flake blank's characteristics.

Prehistoric or Contemporary Manufacture?

One initial impression I had of the biface cache pertains to the condition of the pieces. Virtually all of the bifaces are complete with no evidence of damage. There are no chipped edges and no scarring by metal construction equipment. In fact, it is difficult to conceive of this collection of bifaces being recovered from an area of heavy equipment construction, unless they came from a pit feature.

Considering the absence of breakage and the large size of the pieces, an obvious concern is that they were of modern manufacture. The cache bifaces were examined for this possibility. Attributes that might reveal modern manufacture were sharply defined flake scar ridges, frosting of flake scar removals, and any evidence of metal tool use. Flake scar ridges on the bifaces exhibited varying degrees of smoothing, but are consistent with that of prehistoric origin. There was little evidence for frosting at flake removal locations. There were also no signs of metal tool use. It was also unlikely that a modern manufactured cache would be donated to a museum in the early 1980s. Thus, the cache appears to be of prehistoric origin.

Discussion and Concluding Comments

The cache of bifaces found at Lake Wright Patman presents numerous questions. Many of those concern the context, which will remain unresolved. What was the purpose of the biface cache? The cache was initially interpreted as a cluster of preforms that awaited further trimming and completion. But reexamination of the cache does not suggest that it was a collection of performs intended for further refinement. As noted above, the lateral edges exhibit some degree of final trimming and the haft elements have been completed, although stem preparation is not refined.

What was the function of the cache? The morphological characteristics of the bifaces are consistent with items used in a knife-like fashion. Examination of biface lateral edges was not revealing. All of the bifaces exhibited edge crushing and some smoothing. Most of this was attributed to preparation of the edge for further thinning and sharpening. However, this could be masking use wear and may reflect re-sharpening. A few bifaces display small flake scar removals (nibbling) that may be from use. Some of the edge smoothing may also reflect use-wear; but the edge crushing tends to overshadow these areas. The cache may have been for social or religious practices rather than economic/domestic use, but limitations in exploring this possibility are again tied to the absence of knowledge concerning the context of the cache. Did any other artifacts accompany the cache or was it found in a site context rather than being an isolated occurrence? There are numerous instances of biface caches accompanying burials or being associated with social/religious paraphernalia. This seems a possibility although we will likely never know with certainty.

Another question concerns the age of the biface cache. Because of the absence of context, the true age of the cache will never be known. It appears that the major use of the Sulphur River valley within the lake watershed occurred from Late Archaic through ancestral Caddo periods. Caddo sites appear to be relatively widespread throughout Lake Wright Patman. Novaculite biface caches are not well documented in the published archaeological literature within the four state region (Southeastern

Oklahoma, Southwestern Arkansas, Northeast Texas, and Northwestern Louisiana), There are no novaculite biface caches of Caddo affiliation identified that resemble these specimens. If I had to venture a guess (and guess it is), I would suggest that the Lake Wright Patman cache is Woodland period (ca. 2500-1150 years B.P.) in age rather than Caddo. This is obviously very subjective and is based primarily on the size and shape of the bifaces.

In conclusion, a cache of 39 bifaces from Lake Wright Patman found in the Museum of the Red River collections was analyzed, with the expectation that some additional details could be added to our knowledge. This undertaking was somewhat successful. The manufacture of the bifaces has been documented, as well as their metric and non-metric attributes. The functional use of the cache may be as tools or perhaps more related to group social/religious practices. However, information on the age and context of the Lake Wright Patman cache remains elusive.

Acknowledgments

This study represents an on-going effort to examine archaeological collections housed at the Museum of the Red River. I am extremely grateful to Henry Moy, Quintus H. Herron, Director of the Museum, and Daniel Vick, the Mary H. Herron Keeper of Collections, for their assistance in access to the collections and study of the Lake Wright Patman biface cache.

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