A COMPARATIVE ANALYSIS OF LATE ARCHAIC AND WOODLAND PERIOD MOBILITY VIA LITHIC ASSEMBLAGES IN THE MONDAY CREEK WATERSHED, SOUTHEAST OHIO

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Abstract

Late Archaic and Woodland period archaeological sites are common in Southeast Ohio; however, little work has been done comparing their lithic assemblages. This paper presents a study of three mid-to-late Holocene sites found along Monday Creek, a tributary of the Hocking River, to serve as a baseline for future comparisons. The assemblages from Taber Well (33HO611), Greendale Ridgetop (33HO369), and Monday Creek Workshop (33HO413) were analyzed to compare tool type frequencies, production strategies, and tool curation to assess group mobility and variation in site type with others, thus providing a more holistic understanding of prehistoric lifeways during this temporal transition. Metric indices used to indicate tool form were consistent at all three sites; however, Monday Creek Workshop exhibited greater tool modification, while Taber Well and Greendale Ridgetop showed greater use of expedient tools. Alongside this shift in tool use, was the development of horticulture and increased sedentism.

Keywords: Late Archaic/Woodland, Hocking Valley, lithics, plant domestication

This study presents a comparative analysis of lithic assemblages at two Woodland period sites, Taber Well (33HO611) (Peoples et al. 2008), Greendale Ridgetop (33HO369) (Fahey and Tippie 2017), and one Late Archaic site, Monday Creek Workshop (33HO413) (Buchanan 2016) that are situated along Monday Creek, a tributary of the Hocking River in Southeast Ohio (Figure 1). People living in southeast Ohio throughout most of the Holocene are considered to have been hunter-gatherers. During the Archaic/Woodland transition, evidence for the independent development of horticulture (i.e., the small-scale cultivation of plants to produce food through the domestication of various crops) is evident in the archaeological record (Ford 1979; Patton and Fahey 2020). Residential mobility was reduced and set the stage for the increased land manipulation characteristic of larger base camps in later prehistory (Smith 1989, 2006).

Through an examination of the lithic assemblages, this study analyzes a shift from predominantly formal chipped stone tool use to more informal expedient tool use to identify changes in mobility and sedentism, coinciding with horticultural land use. The main goal is to establish this general trend towards greater logistical mobility practices over those of residential mobility, where base camps remain rather sedentary (at least seasonally) and only individuals or

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a small group exploit the surrounding area for needed resources instead of the movement of the entire group from one locale to another (Binford 1979, 1980). While this study represents a small sample, the results may prove useful when exploring other Late Archaic and Early/Middle Woodland occupations in the Appalachian Plateau region of Ohio.

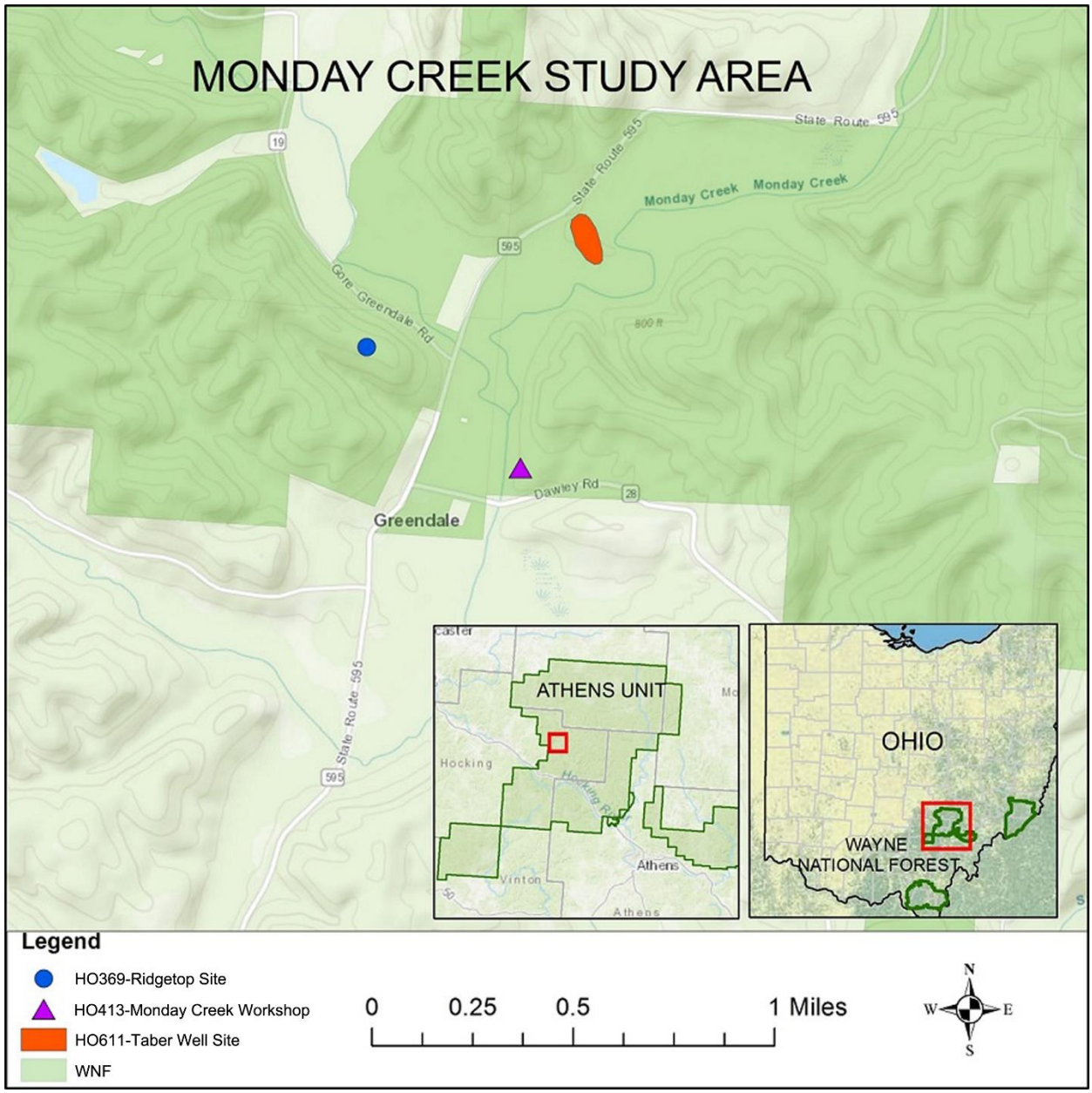

Figure 1. Map of site locations.

Background

Taber Well, Greendale Ridgetop, and Monday Creek Workshop are open air sites. They are within close proximity to each other and less than two km from a local Upper Mercer chert outcrop (Patton and Fahey 2020:262). Taber Well and Monday Creek Workshop are both at an

elevation between 210-220 m above sea level. Greendale Ridgetop, however, is located further upland at 380 m above sea level. Monday Creek Workshop is situated on a terrace just above Monday Creek, while Taber Well is on a small hilltop only 6 m above and 60 m to the north of the creek. Historic era farming and modern infrastructure have impacted both Monday Creek Workshop and Taber Well with roads, a railroad track, and oil extraction equipment, while Greendale Ridgetop is relatively undisturbed and outside areas of reforestation (Buchanan 2016; Fahey and Tippie 2017; Peoples 2004). The predominant pre-settlement vegetation in the area was oak and hickory forest. Various wild nuts like hickory and walnut were important food sources, but chenopods were also grown at Monday Creek Workshop and Greendale Ridgetop. This demonstrates early horticultural activity during the Archaic/Woodland transition.

Taber Well, Greendale Ridgetop, and Monday Creek Workshop were excavated during several Ohio University field schools. The partial lithic assemblages examined for this analysis were those available for study in the Anthropological Sciences Laboratory of Ohio University. Bifacial and unifacial implements are included in this study; however, only the typologies of stone projectile points were determined. The latter provided further insight into the relative age of the sites, while charcoal from the archaeological record established absolute dates. In total, 242 stone tools made up the lithic sample. One hundred and fifteen tools were examined from Monday Creek Workshop, 90 from Greendale Ridgetop, and 37 from Taber Well.

Taber Well is identified as a lithic reduction and habitation site with components ranging from the Early Archaic (8000-6000 BC) to Middle Woodland periods (100 BC-300 AD). However, site chronology shows the site to have been primarily occupied during the Early to Middle Woodland periods and is thus comparatively similar to Greendale Ridgetop. These age estimates were determined through the radiocarbon dating of charcoal from hearths, carbonized seeds and nuts from earthen ovens, post molds, storage pits, as well as identified projectile point types (Fahey and Tippie 2017; Peoples et al. 2008).

The Taber Well excavations were part of three of Ohio University's Field Schools in 2000, 2002, and 2019. Between the first two field schools, the site core and periphery were test excavated to help determine the site boundary. Taber Well's assemblage contains 11 scrapers, 3 partial bifaces, 1 complete biface, 2 spokeshaves, 15 utilized flake tools, and 5 minimally retouched flakes. In this paper, "minimally retouched flakes" are flake tools with only a minimal degree of retouch to the point where tool type cannot accurately be determined. A total of 20 features were revealed (Peoples et al. 2008). Fourteen of these features were post molds and six were hearths. A total of 95 potsherds were recovered (Peoples 2004:29-30). A radiocarbon age of 2000 +/- 80 BP was determined from charred wood adhering to plain ceramics (*see* Table 1 for all radiocarbon dates). Other radiometric dates on charred wood from a hearth and post mold indicate both Early and Middle Woodland occupations. During the 2019 field school, students reexamined the site through additional test excavations to better assess the extent of the site boundaries and look for more evidence of any Early Archaic occupations. Lithic debitage and a few Late Archaic projectile points were recovered.

The Monday Creek Workshop site was excavated during the 2014 and 2015 Ohio University Field Schools. Monday Creek Workshop was excavated on both the upper and lower terraces of the site with greater than half of the recovered assemblage coming from the upper terrace. A total of 230 features were uncovered in these excavations, 128 were from the low terrace and 102 were from the upper terrace. There were nine soil samples extracted from

Table 1: Radiocarbon dates from each site.

Site	Lab #	C14 Date BP	Error	Calibrated Age BP	Error	Material	Reference
Taber Well	Beta-169752	2000	80	1970	100	Charcoal	Peoples 2004
Taber Well	Beta-178278	1960	80	1910	100	Charcoal	Peoples 2004
Taber Well	Beta-178277	2130	40	2120	80	Charcoal	Peoples 2004
Taber Well	Beta-555345	2040	30	2000	50	Charcoal	Dr. Andrew Tremayne*
Greendale Ridgetop	Beta-445999	1810	30	1746	50	Goosefoot Fruits	Fahey & Tippie 2017
Greendale Ridgetop	Beta-437992	2860	30	2976	50	Hickory Hull	Patton & Fahey 2020
Monday Creek Workshop	Beta-386825	4330	30	4900	40	Walnut Hull	Buchanan 2016
Monday Creek Workshop	Beta-413009	4350	30	4920	40	Hickory Hull	Buchanan 2016
Monday Creek Workshop	Beta-383016	4360	30	4920	50	Walnut Hull	Buchanan 2016
Monday Creek Workshop	Beta-387165	4370	30	4930	40	Hickory Hull	Buchanan 2016
Monday Creek Workshop	Beta-415905	4370	30	4930	40	Charred Wood	Buchanan 2016
Monday Creek Workshop	Beta-413008	4390	30	4950	60	Hickory Hull	Buchanan 2016
Monday Creek Workshop	Beta-398203	4450	30	5110	110	Hickory Hull	Buchanan 2016
Monday Creek Workshop	Beta-385817	4480	30	5160	80	Walnut Hull	Buchanan 2016

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features; four from the low terrace and five from the upper terrace. The samples contained charred hulls of hickory, walnut, and charred wood corresponding to a heavily or repeatedly occupied site throughout the Late Archaic, from 5250 to 4800 BP (Buchanan 2016:8). Recovered artifacts included 24 scrapers, 47 partial bifaces, 6 spokeshaves (2 of which had additional retouch as a scraper), 5 drill tips, 1 drill base, 29 utilized flakes, and 3 minimally retouched flakes (Table 2). Large numbers of macrobotantical remains representing both wild and domesticated species are present suggesting increased reliance on horticulture and gathered plant species (Buchanan 2016). More than 70% of the seeds recovered can be connected with early horticulture in the Eastern Woodlands, most of which were chenopods. These, along with marsh elder fruits, are consistent with known domesticated varieties (Smith 2006). Testa measurements

indicate the levels of chenopod domestication as wild, intermediate, and domesticated throughout the site (Buchanan 2016:9-12). This could illustrate the process behind these early domesticates and their continued use at the site.

Greendale Ridgetop was discovered in 1986 but was only excavated by the Ohio University Field School in 2016. In total, 45 1 m x 1 m units were excavated. The recovered assemblage includes 22 partial bifaces (2 of which refit to form a complete biface), 18 scrapers, 1 graver, 1 preform, 36 utilized flakes, and 12 minimally retouched flakes. All features were bisected and sediment samples were extracted, processed, and examined for carbonized plant remains useful for dating. For example, carbonized goosefoot fruits from Feature 520 yielded a

Table 2: Frequency of formal tool types recovered.

Formal Tool Type	Taber Well	Monday Creek Workshop	Greendale Ridgetop
Scraper	11	24	18
Spokeshave	2	6	0
Partial Biface	3	47	22
Complete Biface	1	0	0
Graver	0	0	1
Drill Tip	0	5	0
Drill Base	0	1	0
Preform	0	0	1
Min. Retouched Flake Tools	5	3	12
Totals	**22**	**86**	**54**

radiocarbon age of 1810 ± 30 BP (Fahey and Tippie 2017). This result is consistent with the Middle Woodland period and the dating of the Taber Well site, despite the presence of a charred hickory hull dating to the terminal Late Archaic\Early Woodland periods (Peoples et al. 2008; Patton and Fahey 2020:268). Traditional thinking has been that upland hunter-gatherer sites were typically short-term hunting or foraging camps. The Greendale Ridgetop site, however, shows that horticulture was being practiced far above the prehistoric floodplain sites where it is conventionally thought to be focused (Crowell et al. 2005).

Local and non-local chert types were used by the sites' inhabitants, but assemblages were dominated by locally available Upper Mercer chert. Its convenient location along the nearby stream, known locally as Kitchen Run, is less than 2 km from these sites. All others cherts outcrop beyond 20 km of the study area (Buchanan 2016, Fahey and Tippie 2017). The exposed belt of Brush Creek in the region extends from Lawrence County to Muskingum County, Ohio and includes Gallia, Meigs, Athens, and Perry counties. Flint Ridge/Vanport chert is found primarily in the southern and central portions of the state with some of the highest quality material located along Flint Ridge in Licking and Muskingum counties (Stout and Schoenlaub 1945:71-104). Other chert types like Zaleski were collected, but they are few in this sample. Upper Mercer accounts for 88.3% of the total weight of the Taber Well assemblage (Peoples 2004). This pattern is consistent with the assemblages at Monday Creek Workshop and Greendale Ridgetop and indicates a strong reliance on this locally sourced chert (Buchanan 2016, Fahey and Tippie 2017).

Mobility and Tool Production

In this paper, hunter-gatherer mobility is assessed through an analysis of formal and informal expedient tools. Prehistoric groups, once highly mobile on the landscape, slowly become less so during the Late Archaic and Woodland periods in the Hocking River Valley implying greater sedentism. Evaluating this trend from residential to logistical mobility can be an arduous task due to its complex and dynamic nature (Abrams and Freter 2005; Andrefsky 2005:224-226, Crowell et al. 2005). However, the analysis of the archaeological stone tool assemblages, along with horticultural evidence from these sites, will assess their roles within this change in settlement structure.

Formal tools frequently exhibit extensive modification and evidence of exhaustion from extending the use-life of a tool. They are often made through standardized core reduction where desired blanks for tools can be produced. These formal tools include bifaces and prepared cores. They can often be reworked for additional tasks other than those they were first designed to perform. Formal tools have been associated with more mobile groups where their potential use for a variety of functions is desired in a portable tool kit (Andrefsky 1994). The partial bifaces found throughout these assemblages are fragmented in a way that is not functionally discernible nor temporally diagnostic. The majority were distal portions likely fragmented from use or after discard through natural processes or trampling (McBrearty et al. 1998). The partial bifaces are unfinished with wavy edges, whereas finished edges are formed during later stages of the reduction process. It is possible that most are aborted biface blanks intended for projectile point manufacture (Whittaker 1994). It is likely that those few remaining with finished edges functioned as knives or projectile points; however, they were too fragmentary to accurately identify a specific tool type.

Expedient tools take little or no effort to make and are meant for discard after short-term use. There is no formal design and they are not meant to be re-sharpened after becoming dull as formal tools would be (Andrefsky 1994). Generally, the role of expedient tool use is expected to increase with a decrease in residential mobility and greater sedentism (Parry and Kelly 1987). Choosing between expedient and formal core technology requires a compromise between the costs of transporting tools and access to raw material, as well as the costs of manufacturing and using tools. Such transportation costs are high for expedient core technology and low for formal tool forms, while manufacturing costs are relatively high for formal and lower for expedient tools (Parry and Kelly 1987:299). Expedient tools can sometimes be found with groups that are frequently mobile and may occur when a group encounters an abundant source of chert. In this case, much of the tool kit consists of formalized tools that are portable and used for specific tasks. However, the amount of raw material needed and tasks to be performed while being mobile on the landscape are not always anticipated. Expedient tools from these sources become "situational gear" and allow these short-term tasks to be performed without compromising the tool kit (Binford 1979:266; Parry and Kelly 1987:300-304). By understanding this, we can better examine the tool kits at these early sites in the Appalachian Plateau and offer insights into mobility and the use of lithic sources over time.

Methods

For this study, the following metrics were recorded and compared: tool type, length (mm), width (mm), thickness (mm), number of retouched edges, retouched edge length (mm),

and edge circumference (mm). For the comparative analysis, a number of statistical tests were performed. These included a coefficient of variation to evaluate any standardization for tool thickness, a T-test, and an Analysis of Variance (ANOVA) to evaluate differences in artifact metrics. The T-test and ANOVA statistics were used to determine if there are significant differences between tool assemblages when comparing length to thickness, retouched edge length to circumference, and the number of retouched edges to those available.

To measure the differences between formal and expedient tools, two methods were used. First, an edge unit counter (Figure 2) was used to record the number of edges out of 10 showing retouch. As illustrated, the distal end of the tool is oriented upwards, then the edges showing modification can be counted and delineated by a number on the diagram, thereby functioning as a systematic and easily replicable method. The statistical means collected from each site allow for a comparison on retouch intensity, or the amount of usable edge retouched for a desired function/tool. This system has been used by Boyd (2015), Gingerich (2007) and Surovell (2003) to characterize tools and was used here to summarize differences between site assemblages. Next, a quantitative strategy was developed to measure the use and manufacture of tools at the sites. The circumference of each tool or flake was measured as well as the length of the retouched edge. A ratio of retouched edge length to length of the available edges was then calculated. Higher ratios of retouched edge length constitute a more formal or used tool. Expedient tools are expected to be used on a short-term basis utilizing their best and sharpest edges. Extended use and/or greater modification of the tool would create a higher ratio with a greater amount of the edge length being used.

Finding the coefficient of variation for thickness can determine the level of standardization within a lithic assemblage. The coefficient is expressed as a percentage, where the lower end of the spectrum is low variability or more standardized, while the upper end is high variability or increasingly less standardized. This percentage represents the deviation from a standard form or size and can give insight into behaviors, replication of tools, and the toolmaker(s) skill and product quality (Eerkens and Bettinger 2001). Greater standardization is expected if cores are designed to extract flakes of a particular size or if certain blank forms are specifically selected to maintain consistency in tool form. Tools with less variability and greater standardization are associated with more mobile groups as formal tools may have certain design criteria and certain tool forms are easier to maintain (Goodyear 1979; Kuhn 1989, 1994).

Results

The first statistical test examined variation in tool thickness at the three sites. These coefficient of variation values show that tool thickness was nearly identical with 42% for Monday Creek Workshop, 49% for Taber Well, and 52% for Greendale Ridgetop. Ratios of length to thickness were also evaluated using an ANOVA test. The resulting p-value was 0.152, suggesting little difference in tool form among sites. For the second ANOVA, the ratios between utilized edge length and circumference were used (Figure 3). The results showed a significant difference ($F = 54.36$, $df = 2$, $p < 0.001$).

The statistically significant results were driven by the Monday Creek Workshop assemblage that showed greater tool modification through recycling and the number of edges utilized. Due to differences in sample size, a slightly skewed statistical distribution was noted. Because a major goal of this paper was to examine differences over time, and Taber Well and

Greendale Ridgetop are both Early to Middle Woodland in age, the length of utilized edge at both Taber Well and Greendale Ridgetop was directly compared with those of Monday Creek workshop using a T-test. This test examines differences between two Woodland sites and one Late Archaic site. The results suggest much greater tool modification at the Late Archaic Monday Creek Workshop site ($T = 7.302$; $df = 164$; $p < 0.001$) (Figure 4). When comparing the number of retouched tools by retouched edges to those available, Monday Creek Workshop averaged 5.115, Taber Well 2.904, and Greendale Ridgetop showed 2.540 retouched edges out of 10. Other metric means concerning retouched edge length and the number of retouched edges present were collected (Table 3). Furthermore, 75% of tools at Monday Creek Workshop show more utilized edges compared to 60% at Greendale Ridgetop, and 59% curation at Taber Well (Figure 5).

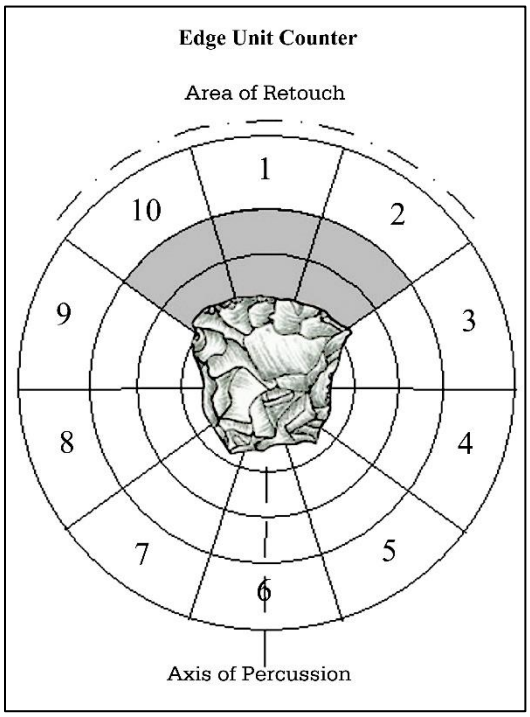

Figure 2. Diagram used in characterizing tools and delineating areas of modification (Gingerich 2007, used with permission).

Discussion

The Taber Well, Monday Creek Workshop, and Greendale Ridgetop sites show evidence of lithic reduction over multiple occupations. The large amounts of lithic debitage and various tool types at each site suggest that a number of activities took place. Raw material use is very similar and is almost exclusively from the nearby outcropping of Upper Mercer chert, with only minor percentages of Flint Ridge/Vanport and Brush Creek cherts present. It is possible these came to the area late in their reduction process. Although low in frequency, differences in tool types occur such as drill tips and a drill base only at Monday Creek Workshop, a graver only at Greendale Ridgetop, and spokeshaves only at Taber Well and Monday Creek Workshop. These differences could suggest some variation in activities performed at these sites. Despite these differences, judged by only a few tools, common tools like scrapers, bifaces, and utilized flakes offer more similarities.

Activities performed seem similar between the time periods based on tool types and raw material use. However, greater tool modification, judged by an increase in the number of edges utilized, suggests differences in tool reduction or maintenance strategies that may be linked to greater group mobility. The coefficient of variation results of thickness indicates a similar lack of concern for tool thickness, as well as for usage of raw material, given the toolmaker typically has a desired blank size for many formal tools in order to achieve a certain function(s) and reduction efficiency from the outset (Henry 1989). The reason for this is because of the available waste associated with local availability. Greater modification of edges, judged by both number of edges modified and the amount of usable edge length utilized, suggests a tendency towards greater tool use and curation over expediently produced and utilized tools. It is suggested that the occupations at Taber Well and Greendale Ridgetop used tools more expediently.

Parry and Kelly (1987), Andrefsky (1994) and Odell (1996) assert that there is a strong correlation between sedentism and greater expedient tool use among hunter-gatherer groups of North America. With regard to Monday Creek Workshop in the Late Archaic, and Taber Well and Greendale Ridgetop in the Early/Middle Woodland, we see evidence of early horticulture in

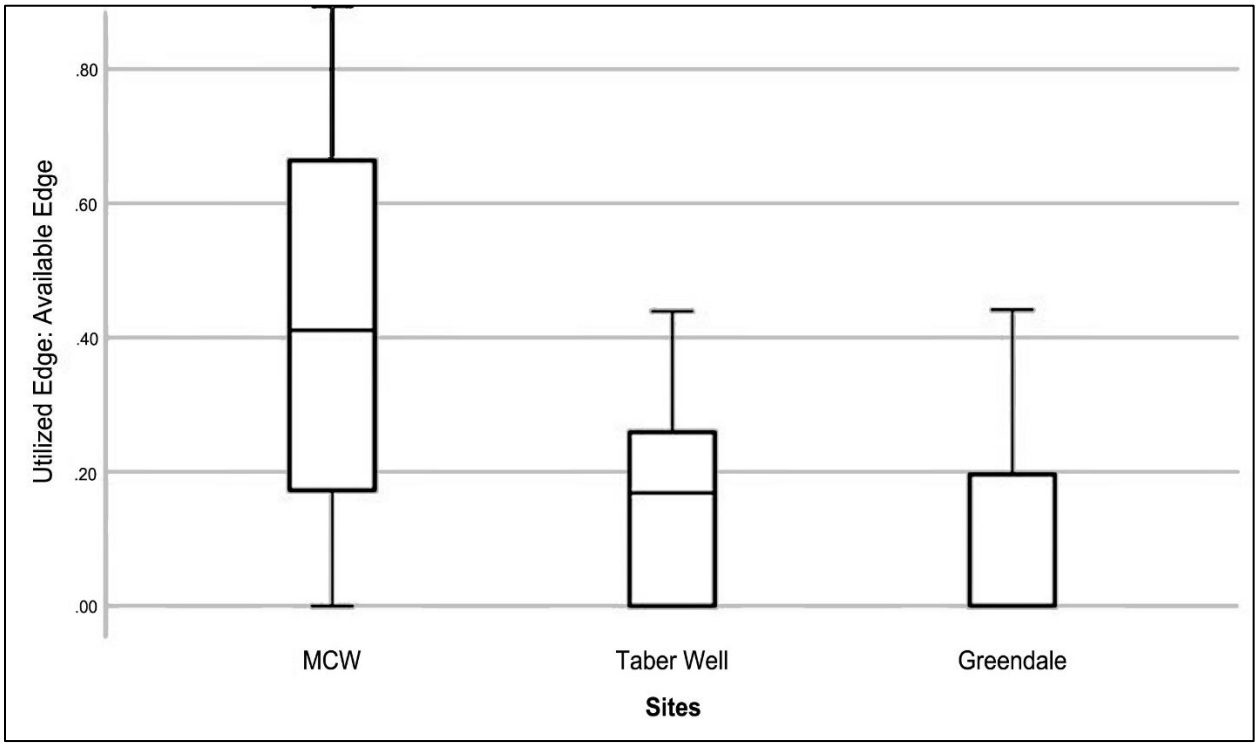

Figure 3. Box plot of edges modified between sites.

Table 3: Summary of additional metric data.

Site	No. of Retouched Edges	Means - Retouched Edge Length (mm)	Means - Retouched Edges Present out of 10
Monday Creek Workshop	mostly > 3	46.729	5.115
Taber Well	≤ 5	16.432	2.904
Greendale Ridgetop	≤ 4	8.577	2.54

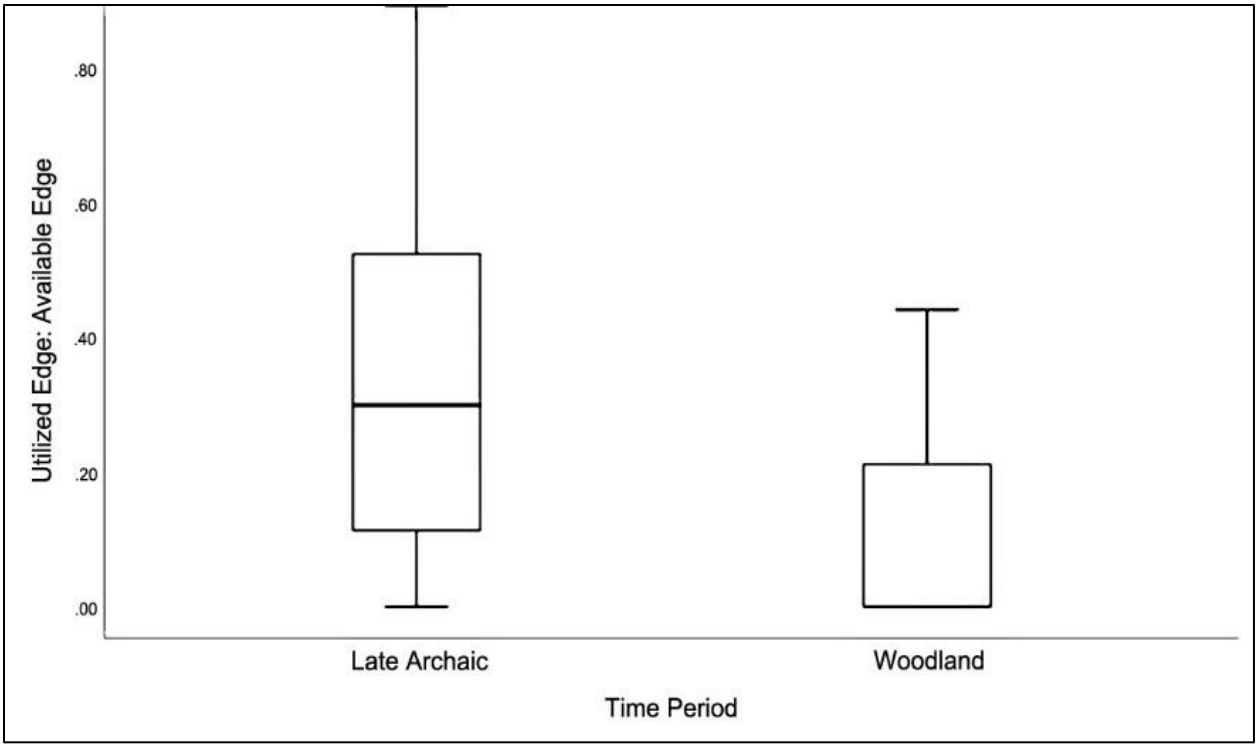

Figure 4. Box plot of T-test results based on time period illustrating Monday Creek (Late Archaic) mean .362 vs .1069 of Taber Well and Greendale (Woodland).

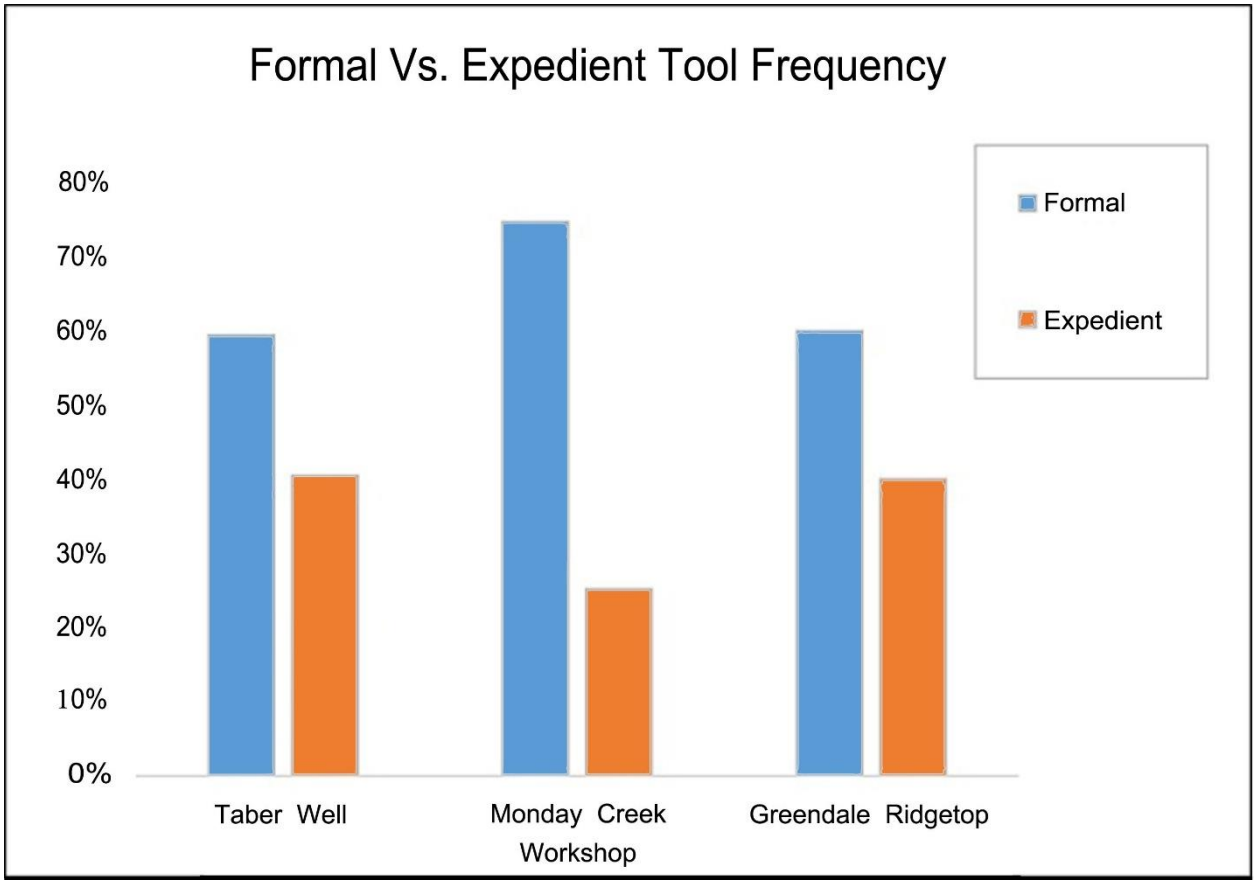

Figure 5. Illustrates the presence of formal and expedient tools.

the Hocking River Valley spanning across time. This investment in food production, has been frequented with decreased mobility and sedentary hamlets in the region (Weaver et al. 2011). Although simplified, we can then argue a general trend of increased sedentism due to horticultural evidence and the tools recovered from these sites (Abrams and Freter 2005; Parry and Kelly 1987).

While hunting and gathering was still a major part of lifeways within this temporal range, the independent regional development of horticulture likely reduced the number of moves annually or lengthened site occupation at individual locales. Prehistoric inhabitants of these sites, as well as those throughout the Eastern Woodlands, were likely "collectors" that performed logistical mobility practices (Binford 1980). As prehistoric groups become more sedentary, they may have been more inclined to settle in areas where valuable subsistence resources and lithic raw material were accessible. The need for portable formalized tools became less of a necessity, and expedient tool use was increasingly adopted so more time and effort could be devoted to other daily tasks such as architectural and horticultural maintenance (Abbott et al. 1996). Specific tasks often demand specific tools regardless of a group's mobility. Drawing from Bamforth (1990) and Andrefsky's (1994:30) contingency table, the relationship between the abundance and quality of lithic raw material to tools produced can be better understood. The higher quality of Upper Mercer and its over-abundance from the nearby outcrops, provides insight into the notion that both formal and expedient tools would be produced. As this helps explain the assemblages represented, either are not exclusive to a particular assemblage, but rather a shift in reliance from formal to more expedient tool use and production.

Binford (1977:35) affirms that aspects of prehistoric technology, including curation, can be predicted and explained only from analyzing subsistence and settlement organization. Bamforth (1986:48-49) identifies two characteristics of curation behaviour, tool maintenance and tool recycling, as well as lithic resource distribution being recognized as a relevant variable. The degree to which these are carried out depends on how lithic material is distributed on the landscape and procured for use that can result in different compositions of assemblages. Although these three sites are located in close proximity to one other, it is likely that these groups remained mobile even as horticulture increased. Taber Well and Greendale Ridgetop have temporally over-lapping occupations and show similar lifeways. Based on these data, prehistoric people occupying these two sites practiced similar subsistence strategies and camped near abundant chert outcrops. At Monday Creek Workshop, there is a higher frequency of formal tools with many more sides being retouched when compared to Taber Well and Greendale Ridgetop. At these latter sites, the tools recovered show less retouch and utilization. This supports Bamforth's idea that neighboring sites close to a raw material source can have a slightly different assemblage composition when they are otherwise very similar. Perhaps this idea, in conjunction with variation in subsistence and settlement organization, could help explain the results from the statistical tests and the differences in the make-up of stone tools recovered from the Taber Well, Monday Creek Workshop, and Greendale Ridgetop sites.

Conclusion

The primary evaluation of this comparative analysis was that of how retouch intensity and mobility may have differed between the three sites that were occupied during the Late Archaic and Woodland periods. As discussed by other researchers in the region, hunting and

gathering still played a large role in these early horticultural societies, but the treatment of stone tools seems to vary over time, despite being in close proximity to a local outcrop. While this study cannot directly evaluate the contribution of domesticated crops to the diet, some evidence of increased sedentism may be inferred by this treatment of stone tools. The later sites in this study, Taber Well and Greendale Ridgetop, show more expedient tool use which is argued to be more common among more sedentary societies (*sensu* Parry and Kelly 1987). The greater or lesser intensity of retouch found in this study can suggest greater or lesser mobility (Blades 2003). While this sample is *too small* to argue that this pattern is present everywhere in the Hocking Valley and Southeastern Ohio, these results provide a baseline hypothesis with replicable metric measures to be examined elsewhere.

Early use of domesticates like marsh elder, maygrass, and goosefoot in the Hocking Valley signifies that some aspects of lifeways were changing. Although prehistoric upland sites in the Appalachian Plateau are more conventionally thought of as hunting camps, Greendale Ridgetop, sitting high above the Monday Creek floodplain, shows differences in site occupation with the presence of domesticates. Based on the location of these sites, domesticated plants may have been supplemental to the diet, and foraging and hunting parties were still needed. Longer-term or possibly extended habitations are also visible at all sites based on the presence of storage pits, pottery, and architecture.

All of the archaeological evidence within the study area presents a more comprehensive view of the landscape where seasonal occupations and varying degrees of mobility continued to persist as essential strategies for survival. Other sites, especially those in other environments should be compared to better establish differences concerning the organization of chipped stone tool manufacture and use and how the organization of technologies correlate, if at all, with settlement strategies and land use. Additional radiometric dates from these sites, particularly Greendale Ridgetop, are needed for better chronological control of prehistoric hunter-gatherers in the Hocking River Valley due to the reoccupation of these sites.

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Data Availability Statement. Raw data were generated at Ohio University's Anthropological Sciences Laboratory. Collection access is allowed with permission of Ohio University and the National Forest Service.

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