LATE WOODLAND HUNTING PATTERNS:
EVIDENCE FROM FACING MONDAY CREEK ROCKSHELTER (33HO414),
SOUTHEASTERN OHIO

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EVIDENCE FROM FACING MONDAY CREEK ROCKSHELTER (33HO414),
SOUTHEASTERN OHIO

by

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Intensified use of southeastern Ohio rockshelter environments during the Late Woodland period is significant to upland resource procurement strategies. Facing Monday Creek Rockshelter (33HO414) of Hocking County serves as one illustration of faunal exploitation and lithic procurement patterns associated with Late Woodland logistical organization. The cultural materials recovered during excavation are analyzed with a purpose of understanding the use of rockshelters as specialized task localities. Results of analyses are synthesized with comparative research to delineate broad cultural patterns associated with rockshelter utilization. A pattern includes intermittent seasonal exploitation by small hunting parties or task groups in search of target resources at a known location. It is hypothesized that during the Late Woodland period, aggregation to larger residential settlements within the broad alluvial valleys would have resulted in an increase in those distances traveled to upland settings initiating a functional attribute for rockshelters as temporary hunting stations.

Approved: Elliot Abrams

Professor of Sociology and Anthropology
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CHAPTER I. INTRODUCTION

The heavily dissected and unglaciated portion of the Hocking River Watershed possesses innumerable natural sandstone shelters and recesses that have been slowly eroded by groundwater, wind, and weather. Such overhangs provided a natural, sheltered environment from the physical elements, which humans have utilized successively. Unfortunately, due to the common visitation of relic collectors to rockshelter sites, the majority of well-developed deposits have been disturbed, looted, and decimated beyond useful study or data collection by professional archaeologists. These sensitive cultural resources offer microenvironments where deterioration is minimized enhancing preservation of cultural material. The systematic excavation of an undisturbed shelter that had been repeatedly occupied has the potential to serve as an excellent base for archaeological studies regarding hunting and subsistence patterns of the Hocking River Valley. The Facing Monday Creek Rockshelter has provided a unique opportunity to empirically answer questions regarding the exact function and chronology of some rockshelter environments as used by prehistoric Native American societies throughout the Ohio River Valley.

The Monday Creek valley is rich in cultural resources. Archaeological sites in the area vary greatly in type, to include mounds, shelter occupations, workshop sites, quarry locations, and open occupations such as villages and seasonal campsites. The exact relationship of rockshelter environments to regional settlement and subsistence patterns, however, remains speculative. Currently, available data on the prehistoric use of rockshelters in the Hocking River Valley remains limited despite the region’s abundance of such overhangs and recesses. Hunting and collecting of wild resources was essential
to the survival of pre-conquest populations of the Hocking Valley. The patterns of changing subsistence strategies during the Late Woodland included the use of these rockshelter environments. Evidence from Facing Monday Creek Rockshelter is pertinent regarding the regional culture history of people who efficiently maintained their life ways based on the abundant resources of the local surroundings.

The primary role of an archaeological investigation is to reconstruct a network of functionally significant locations, which together make up a much broader dynamic cultural system. Binford (1982) has suggested that if archaeologists are to be successful in understanding the organization of past cultural systems, they must understand the organizational relationships among places, which were differentially used during the operation of past systems. He referred to such a study as an “archaeology of place”. It is first necessary to identify which activities were performed at specific locations in order to reconstruct the diverse interrelationships, which integrated sites together into functioning cultural systems. Therefore, the primary goal of this thesis focused on Facing Monday Creek Rockshelter, is to ultimately measure how rockshelters were utilized as part of the logistical system involving hunting and collection of obtainable resources.

A. The Site

The Monday Creek Rockshelter, site number 33-HO-414, is situated within the Wayne National Forest, of Ward Township, Hocking County, Ohio. The site is within the lower reaches of the Monday Creek watershed northeast of the confluence of the Little Monday Creek and the Monday Creek proper. The Monday Creek is a second order stream tributary to the main river channel of the Hocking River, which then drains
into the Ohio River 72 km (45 miles) to the southeast (Figure 1). Preliminary analysis placed the human occupation of the shelter within that of the Late Woodland period (ca. A.D. 400-A.D. 1000) based on relative chronology. A natural Upper Mercer chert outcrop is located within 1.6 km (1 mile) along the Kitchen Run tributary. The location of this chert source was most likely well known to the local inhabitants. The Facing Monday Creek Rockshelter is positioned on an upland westward slope 120 m to the east and 30 m in elevation above the present Monday Creek. The sandstone outcrop consists of three overhangs termed the north, central, and south chambers (Figures 3 and 4). The total surface area of the shelter is over 72 m². The north chamber is 3 m in length by 2 m in depth by less than 1 m in recess height. The central chamber is 3 m in length by 4 m in depth by 1.4 m to 1.9 m in recess height. The south chamber is 7 m in length by 2 m to 3 m in depth by 2.5 m in height. Dimensions for the entire rockshelter total over 20 m in length north to south. A major roof fall episode has resulted in large boulders on the shelter floor, which separate the central and south chambers leaving the central chamber exposed to the open air. The shelter offers excellent views of the Monday Creek and floodplain valley below.
Figure 1. Hocking River watershed with major tributaries illustrating site location.

Figure 2. Facing Monday Creek Rockshelter (33HO414) looking east.
Figure 3. Facing Monday Creek Rockshelter (33HO414) looking north. Note: South chamber is in foreground.

B. Environmental Setting

Cultures live within environmental landscapes, therefore to fully appreciate the cultural use of an area, its ecological setting must also be considered. Modern vegetation is a mixed mesophytic oak-hickory forest unique for its species diversity. The environment of the Late Woodland period was transformed by the prehistoric inhabitants who created local clearings for villages, cultivated plots, and extracted fuel resources. Practices including controlled burning of the forest understory and girdling the bark of trees opened gaps in the forest canopy that supported patchwork succession. Human set fires periodically burned the upper slopes near rockshelter sites transforming the ecological gradient between moist lower slopes and dry ridge tops in order to favor fire
adapted plant species (Delcourt 2002). Everyday activities unintentionally transformed the ecological setting by disturbing and enriching the soil along paths, domestic localities, and refuse areas which encouraged riparian weeds to survive. The activities of Woodland Period Native Americans were intermediate levels of disturbance that enabled a wider variety of plant communities to coexist (Delcourt 2002).

Paleoecological data from Cliff Palace Pond, Kentucky (Delcourt et al. 1998; Delcourt 2002) and Stages Pond, Ohio (Shane et al. 2001) indicates forest populations of oak (*Quercus*), hickory (*Carya*), chestnut (*Castanea*), walnut (*Juglans*), maple (*Acer*), elm (*Ulmus*), ash (*Fraxinus*), poplar (*Populus*), cherry (*Prunus*), beech (*Fagus*), basswood (*Tilia*), buckeye (*Aesculus*), sycamore (*Platanus*), and hackberry (*Celtis*) within the Late Woodland period. Small trees such as dogwood (*Cornus*), hornbeam (*Carpinus*), paw-paw (*Asimina*), redbud (*Cercis*), witch-hazel (*Hamamelis*), and sumac (*Rhus*) were included in the dense understory. Herbaceous shrubs range from mayapple (*Podophyllum*) to wild leeks (*Allium*). Seed bearing plants such as marsh elder (*Iva annua*), goosefoot (*Chenopodium berlandieri*), maygrass (*Phalanx caroliniana*), and knotweed (*Polygonum erectum*) were present, along with many other edible plants in the alluvial floodplain of Monday Creek. Fauna of the upland forest and riverine area included abundant fresh water mussel, fish, beaver, otter, waterfowl, turtle, rabbit, raccoon, turkey, white-tail deer, elk, and black bear. The ecological setting of Facing Monday Creek Rockshelter provided an ideal opportunity for indigenous populations to utilize virtually all of these resources.

Regional climatic parameters are relevant to understanding human adaptations to local ecosystems by changing subsistence patterns or modifying of the environment. The
climate at the time of the Late Woodland period is inferred from sediment core data collected from Stages Pond in south-central Ohio (Shane et al. 2001). The data from two cores estimate mean precipitation at 93 cm (37 in) annually with mean temperature ranges from 24.5 °C (76° F) in July to 1.5 °C (35° F) in January. During the time of the Early to Middle Woodland periods a dramatic increase in temperature may have resulted in drought conditions. Although climatic estimates in precipitation and temperature are subject to fluctuations, the study by Shane et al. (2001) indicates cooling in summer temperatures during the following Late Woodland period and a return to moderate conditions. This may have allowed populations to expand settlements to include the upland environments. In comparison, estimates of modern mean climate are slightly higher in precipitation and cooler in temperature.

Widespread deforestation occurred during historical times. In the region of Facing Monday Creek Rockshelter, the degrees of forest cover are minimally second or third growth stands of variable species dominance similar to the original oak-hickory forest environment. The absence of the American chestnut since its local extinction (1928-1936) is the most readily observable change in dominant species composition. The prevailing locality of chestnut distribution is recorded to have been over massive sandstone bedrock slopes of the greatest relief (Beatley 1959). An abundance of white oak (*Quercus alba*), shagbark hickory (*Carya ovata*), poplar (*Populus*), beech (*Fagus*), and maple (*Acer*) occurs presently on the surrounding slopes above the Monday Creek. Although the upland ridge top has experienced some strip mining, the Facing Monday Creek Rockshelter and immediate topographic surroundings are under a forested and relatively undisturbed regime.
C. Data Collection

The site was discovered, tested, and recorded by Art Martin in 1986 as part of the U.S.D.A. Forest Service Cultural Resource Inventory (Cramer 1989; Martin 1986). An intact prehistoric cultural deposit was identified with the excavation of a 10 x 12 inch test pit to a depth of 22 inches below the surface. Although no diagnostics were identified for chronological placement, lithic and faunal remains recovered from the single shovel test established that a prehistoric cultural component was present. The materials collected include: (1) utilized flint flake, (1) utilized flint fragment, (18) flint flakes, (5) flint fragments, (7+) animal bone fragments, (7) sandstone fragments, (2) unidentifiable stones, and (3) shell fragments. Further data collection of the Facing Monday Creek Rockshelter was proposed based on these findings and the relative geographic association of other significant sites in the area (Peoples 2004).

During the summer of 2004, the Ohio University Field School conducted investigations of the Facing Monday Creek Rockshelter under the supervision of Elliot Abrams. The excavation consisted of 24 field days between June 22 and August 5. A datum was established at 242 meters above sea level based on estimation from the USGS Gore Quad and confirmed with a GPS unit in the field. A north to south baseline was shot in with a transit parallel to the drip line of the shelter’s overhang. Systematic excavations employed a grid of 1 m x 1 m units in order to obtain a high level of control. Twenty-eight 1 m x 1 m units plus an additional 50 cm x 25 cm unit (U. 29) were excavated. Three units were placed in the north chamber; seven units in the central chamber; 11 units in the south chamber; seven units downslope; and one unit was placed above the overhang (Figure 5). Total excavation equals 28 m² of surface area and 11 m³
in volume. Test units were excavated with the objective of obtaining two working profiles from which to correlate vertical and horizontal stratigraphic relationships. Excavations followed natural levels of defined strata as determined by the vertical and horizontal profiles with the exception of the midden deposit excavated in arbitrary 10 cm levels. Within the shelter area, excavation ceased upon reaching bedrock. Flotation samples were collected from all identified features including each arbitrary 10 cm level of each test unit containing the midden deposit. A soil/sediment sample was collected from each stratigraphic level of test units 19, 22, 16, and 17 for chemical and grain size analysis. The remaining fill from all strata were processed through ¼ inch mesh screens. All artifacts were collected to the best of our ability, with their vertical (level) and horizontal (test unit or feature) provenience recorded. A surface collection of the hill slope was conducted following the established grid. All features and pertinent phenomena were 3-dimensionally mapped and photographed. Field descriptions were recorded by the excavators for each level and feature including cultural interpretations, artifact inventory, natural disturbances, sediment/soil descriptions, and all other relevant information.
Figure 4. Planview of site excavation (33HO414).
Note: Unit 20 N2 W23 down slope and Unit 24 N4 E3 above the shelter are not shown.
D. The Late Woodland

In southeastern Ohio, the Late Woodland period (ca. A.D. 400-A.D. 1000) represents a transitional phase between the Hopewell of the Middle Woodland and the Fort Ancient agriculturalists of the Late Prehistoric. The end of the Middle Woodland and beginning of the Late Woodland is defined by a sharp decline in the construction of earthworks, elaborate mortuary practices, and regional trade networks (Seeman and Dancey 2000). The period is minimally defined by the presence of thin grit or chert tempered cordmarked pottery and expanding stem projectile points (Chesser Notched). The populations stabilized and shifted settlement patterns on the landscape. In the Woodland cultural period, Native Americans cultivated food plants along fertile river valleys. Aggregation of populations to more sedentary agricultural villages along the broad alluvial floodplains occurred by the later part of the Late Woodland period. A recent study of settlement patterns of the Hocking River Valley indicates Late Woodland tribal communities also utilized varied aspects of the landscape for resource procurement rather than focusing on one specific setting (Wakeman 2003). The distribution includes an increase in the use of temporary sites along the bluffs and ridgetops combined with the use of terrace and floodplain settings as more permanent habitation sites. They actively occupied rockshelters within the upland setting using these sites as temporary dwellings, hunting camps, and/or lithic workshops.

It is during the Late Woodland that two major cultural and technological changes occurred. Maize became part of the economy and diet of indigenous horticultural systems within the Mid-Ohio Valley between A.D 700-A.D. 1000 (Wymer 1992; 2004). Maize from the Allen site (33AT653), a habitation site along Margaret Creek, was AMS
dated to A.D. 689 (Abrams et al. 2005; Wymer 2004). This new crop ultimately replaces the starchy members of the EAC. About this same time, A.D. 700-A.D. 900, projectile point types indicate the Late Woodland cultural systems of the mid-Ohio valley adopted the use of the bow and arrow (Seeman 1992). Though still utilizing the spear, the bow and arrow served to expand the forest-hunting economy of the Late Woodland incipient farmers. These two introductions to the cultural system of the Late Woodland led to the intensive agricultural economies of the Late Prehistoric following A.D. 1000. Hall (1980) and Muller (1986) both relate the adoption of the bow and arrow to Late Woodland dispersal patterns from valley bottoms to upland forest in the major valleys of eastern North America (Shott 1993).

E. Theoretical Perspectives and Hypotheses

Although Late Woodland populations practiced horticulture and lived in semi-sedentary residences, subsistence patterns indicate an importance of hunter-gatherer food procurement strategies across the landscape. The role of hunting in agricultural societies can be quite complex, continued even when resources are assured, hunting may maintain traditional prestige and value. Within the larger population, hunting as a specialized task may provide a role for a few people, but not all. The cultural ecological approach proposed by Julian Steward suggests a greater relationship between environmental resources, subsistence technology, and the behavior required to obtain those resources (Moran 2000). Based on Binford’s (1980) study of hunter-gatherer settlement systems, collectors are apt to utilize localities for short periods of time where extractive tasks are exclusively carried out (Figure 6). A small specialized work party leaves the residential
base in search of game or other resources. An overnight camp may be utilized, for example a rockshelter, as part of this logistical system. Resources are prepared for transport back to sedentary residence camps. The logistical mobility of collectors is distinct from the residential mobility of foragers by the cyclic return of small task groups to the larger residential location or base camp whereas foragers move their residence and relocate collectively and frequently. The hypothesized subsistence behaviors of those who utilized Facing Monday Creek Rockshelter are tested through the analysis of the artifact inventory.
Figure 5. Schematic illustrating a logistical collector mobility strategy (From Binford 1980: 11).
The primary hypotheses to be tested in this thesis are:

1. If the Late Woodland period regional culture history includes an increased use of rockshelter environments then analysis of regional site data would indicate a predominant Late Woodland component for rockshelter type sites.

2. If the Facing Monday Creek Rockshelter was utilized during the Late Woodland period as a collecting/hunting station then we would expect the artifact inventory to include: Lithic debitage indicative of the reduction sequence in tool manufacture and resharpening; tools indicative of hunting and game processing such as projectile points, knives, scrapers, and/or drills; flora and fauna assemblage including a diversity of local upland and/or riverine species; cut or butcher marks at the joints of large game as evidence of dismemberment (O’Conner 2000); abundance of head and limb parts of large game within the faunal assemblage (O’Conner 2000); and/or ephemeral cooking features containing burned bone.

3. If the Facing Monday Creek Rockshelter was utilized as a locale for the entire lithic reduction sequence then we would expect to find evidence of each manufacturing stage. Early reduction includes evidence of raw materials, core preparation, and primary decortication flakes. Intermediate reduction includes evidence of secondary flakes and bifacial reduction or thinning flakes. Late or final stage reduction includes evidence of tertiary and resharpening flakes produced by pressure flaking techniques.

4. If the Facing Monday Creek Rockshelter was utilized as a lithic reduction juncture (Pecora 2001) then we would expect to find only partial evidence of the reduction sequence. It is assumed the portion of the sequence not present in the data is evidence of transport to or from another locale as part of the logistical system.
If the Facing Monday Creek Rockshelter was utilized by small parties which left their village for brief periods of time then we would expect evidence for the function of the site to be that of a specialized task locality. Use by a short term hunting party would be evidenced by the low density of residential materials and high density of lithic and faunal assemblages. Local populations would be evidenced by the use of local raw chert and lack of exotic materials.

If the Facing Monday Creek Rockshelter was utilized seasonally then we would expect to find evidence limited to a particular time of the year such as the presence of hickory, walnut, and/or acorn fragments. Charred materials are believed to have greater empirical value than those uncharred.

If the Facing Monday Creek Rockshelter was repeatedly abandoned after short term use then we would expect to find evidence of small fragmented rodent bones consistent with the diet of nocturnal birds. Deductions may be drawn about the intensity of human activity at the site indicative of abandonment where the presence of small rodent bones are located (O’Conner 2000).
CHAPTER II. ROCKSHELTER FORMATION PROCESSES

A. Macroscale: Pleistocene Glaciation

In Hocking County, Ohio, rockshelter formation processes correlate with the development of the current drainage pattern of the Ohio River and its tributaries. Successive Pleistocene glaciations, beginning about 2 million years ago, marked a time of erosion still visible on the southeastern Ohio landscape. Sometime during the Nebraskan glaciation, a large ice sheet moved south from the northeast disrupting drainage both to the north and to the west. Glacial ice dammed the flow as water levels increased in the drainage basins forming proglacial finger lakes. Water rose to overtop and breach a divide at New Martinsville, WV which separated the north flowing Lake Erie-St. Lawrence drainage from the northwest flowing Teays-Mahomet drainage. As a result, the northward flowing streams above the divide were reversed to the south with the formation of the Ohio River basin of today (Ray, 1974; Tight, 1903).

Hanson (1975) describes related drainage changes occurring in the Hocking River watershed. Prior to Pleistocene glaciation, the northern reach of the Hocking River was a northwest flowing stream known as the Logan-Lancaster River. This tributary of the ancient Teays River has its headwaters in the present day location of Haydenville in southeast Hocking County, Ohio. The Haydenville drainage divide separated the Logan-Lancaster River from the southeast flowing Luhrig-Stewart River. Monday Creek followed the same basic drainage as it does today although at that time it served as a tributary to the much different Luhrig-Stewart River. During the Kansan Glaciation, advance of the ice into the present day Hocking River drainage blocked the northwest flowing Logan-Lancaster River which created a large lake to the drainage divide near
Haydenville. After recession, the normal northwestward drainage flow resumed. The following Illinoian Glaciation created an ice dam across the valley just north of Sugar Grove in Fairfield County. Sediment laden melt waters were discharged in a southeasterly direction bridging the Haydenville divide. This established the Hocking River’s present day southeast flowing drainage to the Ohio River.

The present southern flowing Ohio River and its tributaries are a result of Pleistocene stream capture. This important stream reversal and shifts in river channel base level forced tributaries like the Monday Creek to incise downward and laterally through thick Mississippian and Pennsylvanian sandstones. Exposed sandstone cliffs and underlying shales have since been slowly eroded by ground water, wind, and weather forming overhanging ledges and recesses. The effect of this base level change to meet that of the Ohio River have resulted in highly dissected basin morphology. This is most pronounced in the low order tributaries of southeastern Ohio. Topographically, the region within the Monday Creek drainage is a maturely dissected plateau down cut in steep V-shaped ravines. Maximum elevations reach 305 m (1000 ft) while elevations at stream level are in the range of 195-210 m (650-700 ft).

B. Mesoscale: Rockshelter Configuration

Geologic maps of northern Hocking County describe the Facing Monday Creek Rockshelter bedrock as belonging to the Homewood Sandstone Member of the Brookeville Formation in the Allegheny Series within the greater Pennsylvanian System (Figure 7) (Merrill 1950). Homewood Sandstone is a medium to course grained, thin-bedded, white to gray, micaceous material becoming very thin-bedded and fine grained
upward. The Homewood Sandstone member consists of a natural Pennsylvanian sandstone rock outcrop in which a recess has been eroded by natural conditions. Rockshelters in particular experience a rapid and constant changing configuration by the evolving nature of the undercut cavity and overhanging brow (Waters 1992). As time proceeds, the cavity grows larger and deeper while the overhang provides increasing protection from the weather. A threshold is ultimately reached where the brow becomes structurally unstable and begins to collapse, thus, reducing the size of the shelter. This process of undercutting the natural bedrock results in the expansion and contraction of the total shelter area. This also means the drip line was at one time well out in front of the shelter area on what is now an open air talus slope.

<table>
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<th>System</th>
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<tr>
<td></td>
<td></td>
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<td>Sandstone/Shale</td>
</tr>
</tbody>
</table>

Figure 6. Geologic bedrock profile illustrating the Homewood Sandstone Member (Follows Merril 1950).
There are three broad categories of sediment that may occur in a rockshelter environment—geogenic, biogenic, or anthropogenic (Farrand 2001). Geogenic sediments may originate from either inside (endogenic) or outside (exogenic) the rockshelter itself. Mechanisms recognized in the natural geogenic sedimentation of rockshelter environments include rock fall, attrition, chemical deposition, sheet wash, windblown materials, and stream deposition (Donahue and Adovasio 1990; Farrand 2001; Waters 1992). Several large sandstone blocks resting on the floor of Facing Monday Creek Rockshelter are indicative of major roof fall episodes, a relatively common phenomenon associated with the evolution of the overhanging brow. Freeze and thaw activities result in natural fallen rock debris of all sizes collecting within and down slope of the shelter. Attrition or the dissolution of grains derived from the exposed ceiling and wall bedrock result in generally homogenous sand sized deposits on the floor of the shelter (Donahue and Adovasio, 1990). Sheet wash materials are transported down slope from upland areas during rainstorm accumulations then washed into the shelter, along the drip line, and on the colluvial foot slope below the shelter. Sheet wash mechanisms are recognized by poorly sorted particles ranging from gravel to clay. Flooding is not a significant factor at the Facing Monday Creek Rockshelter due to its relatively high position above the flood levels of the Monday Creek.

Humans and animals introduce organic matter intentionally and unintentionally through the addition of flora and fauna refuse. In an archaeological site, it is important to distinguish between those depositional processes that are cultural and those that are natural. The co-occurrence is most likely due to trampling and mixing or bioturbation (Schiffer 1987) as logic applies that animals and humans utilized the rockshelter during
alternate periods of time. Many birds and small mammals stash food resources in a burrow, den, or nest for consumption over the winter months. The environs of rockshelters are ideal localities for larder hoarding where seeds and nuts are sheltered protecting the cache (Gremillion 2004). Birds of prey and other predators are also known to utilize sheltered environments, leaving behind pellets of hair, bones, and teeth. These natural agents represent biogenic factors which may contribute to the addition of organic materials within a rockshelter environment.

Debris accumulation resulting from human disposal often produces thick middens developed through reoccurring deposition of organic and cultural materials. Fires are built which add ash to the sediments. People also bring in foodstuffs including animal remains and vegetation whose waste accumulates in discreet piles. Considerable organic matter and sediments can also be introduced by the unintentional mud brought in on people’s feet and clothing. Anthropogenic components found in similar situations account for substantial increases in sedimentation accumulation rates (Farrand 2001). In addition to contributing sediments to the shelter floor, human inhabitants commonly modify the sediments by “house cleaning” or digging pits for refuse, storage, or prepared hearths.

C. Microscale: Sediment Analysis

Rockshelters serve as efficient sediment traps filling a geologically specialized niche (Farrand 2001). Detailed study and interpretation of rockshelter sediments in the United States is a relatively new and developing method of analysis that follows in the footsteps of advanced rockshelter and cave studies developed in Western Europe. In the
U.S., sediment analyses within sandstone rockshelters of humid, temperate climatic regimes include studies of Meadowcroft Rockshelter (Donahue and Adovasio 1990) of western Pennsylvania, Dameron Rockshelter (Vento et al. 1980), and Sparks Rockshelter (Fitzgibbons et al. 1977) of eastern Kentucky. These invaluable studies provide useful resources for interpretation of the Facing Monday Creek Rockshelter data. Granulometry or grain size analysis focuses on the frequency distribution of particle size within the site matrix. Grain size distribution is obtained by sieve analysis which separates particles on a Wentworth scale of size categories. The goals of a sedimentological analysis are: (1) to produce a detailed description of the strata in the archaeological site; (2) to create a framework for comparison and correlation of other stratigraphies; (3) to determine the mechanisms of sedimentation; and, (4) for reconstruction of the local physical environment during and between occupations of the site.

1. **Methodology of Sediment Analysis**

A total of eighteen samples from Facing Monday Creek Rockshelter were selected from midden units 19 and 22 within the shelter area and down slope units 16 and 17 from outside the shelter. Samples were oven dried at 104° C (220° F) for twenty-four hours in order to remove moisture. After drying, the sample sizes ranged between 275 and 990 grams. The sieving process utilized a mechanical shaker to separate the particles of each size through a series of nested screens. Nominal opening sizes of U.S. standard testing sieves used in this study include 16.0 mm (-4 phi), 4.0 mm (-2 phi), 1.0 mm (0 phi), 0.25 mm (2 phi), and 0.063 mm (4 phi). This scale divides clastic particles into six major size categories: (1) cobbles, particles > 16.0 mm in size, (2) pebbles, particles
between 4.0 mm and 16.0 mm, (3) very course sand and granules, particles between 1.0 mm and 4.0 mm, (4) medium to course sand, particles between 0.25 mm and 1.0 mm, (5) very fine to fine sand, particles between 0.063 mm to 0.25 mm, and (6) silt and clays, particles < 0.063 mm. The percentage of each particle size class is determined by comparing the weight of each sieve fraction to that of the initial dry sample weight. A sediment histogram for each unit level is produced for quantitative comparisons of similar geologic settings.

2. Results of Sediment Analysis

The results of the sieve analysis at Facing Monday Creek Rockshelter show an overall dominance of medium to course sand particles within the 0.25 mm particle size class. The percentage distributions of total course sand particles range from 27% to 42% with a nearly symmetrical decrease in abundance for both smaller and larger size classes (Figures 7-10). The unimodal sieve data are evidence of granular disintegration or an attrition source. Shelter sediments grain size distributions produced by attrition are typically unimodal with the mean between 0.125 mm (3 phi) and 0.25 mm (2 phi) (Donahue et al. 1990). Weathering sandstone surfaces often produce a continuous rain of quartz sand on the rockshelter floor. Physical and chemical weathering involving freeze-thaw and rainfall were undoubtedly involved, but their relative importance is unknown. Sediment grain size distributions of sediments produced by attrition are strictly controlled by the size range of sand grains within the source sandstone. Attrition is also recognized as the key factor of sedimentation at Meadowcroft (Donahue and Adovasio 1990),
Dameron (Vento et al. 1980), and Sparks (Fitzgibbons et al. 1977) rockshelters of western Pennsylvania and eastern Kentucky.

Although attrition appears to dominate the sediments at Facing Monday Creek Rockshelter, evidence of rock fall is a significant secondary mode included among the sediment types. The large boulders resting on the shelter floor between the central and south chambers indicate several episodes of major roof collapse. These episodes appear to have occurred at an earlier time relative to the shelters’ occupation. Sandstone fragments derived from shelter roof spalling are attributed to water movement through joints and bedding planes, freeze-thaw conditions, and plant root growth. Although less profound in size, sandstone fragments continued to accumulate in the sediment deposit during the occupational history of the shelter. The soil samples collected for grain size analysis do not accurately reflect rock fall fragments observed during excavation.

Although little effort was made to record the frequency of rock fragments in the field, the stratigraphic profiles and excavation notes infer an average of 80 rock fragments greater than 40 mm in size per unit level. The 4.0 and 16.0 mm grain size represents the finer grained fractions of rock fall. This sediment size of pebbles and cobbles consistently comprises 10-20% of the total weight volume (Figures 7-10). Higher percentages within level 3 of unit 19 may represent increased rock fall within that level (Figure 9). It is also believed that the disaggregation of rock fall fragments lying on the shelter floor is another source for the accumulation of sand size particles.

The third sediment source consists of silt and clay sized grains finer than 0.063 mm (< 4 phi). The grain size results show a minor contribution of silts and clays comprising of less than 10% of the total sediment deposits both inside and outside of the
drip line (see Figures 7-10). During rainstorms, fine grained sediments from above the shelter are transported down slope accumulating over the shelters drip line edge and down slope on the colluvial surface. The development of a sheet wash cone was observed in the central chamber area where major roof collapse exposed the surface to greater runoff. Although sediments from the central chamber were not analyzed by grain size, the field records indicate relatively higher clay content in comparison to other areas of the site. These results suggest that sediment transport by sheet wash is an overall insignificant contributing factor to the natural sedimentation of the Facing Monday Creek Rockshelter with the greatest accumulation occurring in the central chamber area.

Figure 7. Grain size distribution of down slope unit 16 levels 2-7.
Figure 8. Grain size distribution of down slope unit 17 levels 1-4.

Figure 9. Grain size distribution of midden unit 19 levels 3-6.
Chemical analysis or pH of the soils can determine the preservation parameters within the site. It also appears to fluctuate largely as an inverse function of intensity of human habitation, that is, more activity lowers the pH due to the organic wastes associated with human activities (Farrand 2001). The analysis utilized a soil test kit to determine the pH of selected soil samples. In general, the sediments from within the midden were all neutral to alkaline with a pH level of 7.0 to 8.0. An exception was found within level 6 of unit 19 which had a pH of 6.5 or slightly acidic. Carbonates within the sediments have four potential sources: carbonate leached from the overlying limestone of the geologic strata and precipitated within the sediments; shells from snails that inhabit the shelter; shell fragments of freshwater bivalves brought into the shelter by its aboriginal occupants; faunal remains of both naturally occurring rodents and human discard of game animals. Exterior shelter soils are all acidic with pH’s of 4.0 to 4.5. Feature 8 of unit 23 was also found to be acidic with a pH of 4.0. The acidic soils are all
exposed to the open air and consequently greater surface runoff. Sheet wash is responsible for the transport of clays from the ridge top to these areas around the shelter. The resulting acidic soils are due to the addition of clay materials and further soil development of the open air environment.

In summary, the sediment size distribution at Facing Monday Creek Rockshelter is relatively uniform. There are no marked changes in the rate of supply from three sediment sources including large rockfall debris, sand sized quartz grains, and silt and clay size materials. This in turn indicates that climatic conditions appear to have been relatively stable during the time that site sediments accumulated. The estimated sedimentation rate is inferred from site chronology data. The earliest site occupation is radiocarbon dated at 1450 B.C. ± 80 at the interface of midden deposit and bedrock level. Based on the average depth of sediment deposit inside the shelter at 40 cm, an accumulation rate is estimated at 15 cm per 1,000 years of time. This estimate does not take into consideration the inconsistent addition of organic and cultural materials to the natural sediment deposit. The average thickness of the open air colluvial slope is 60 cm to the base of the earliest cultural strata associated with the midden chronologically. Accumulation rates are comparably greater outside of the shelter at 23.5 cm per 1,000 years of time. These results are comparable to those strata dominated by attrition and rockfall sediment sources recorded at Meadowcroft Rockshelter (Donahue and Adovasio 1990).
CHAPTER III: SITE MATRIX

A. Chronology

Two samples of charred wood were submitted to Beta Analytic, Inc. for radiocarbon dating (Table 1). The samples were selected from the lowest cultural depths in order to frame the earliest occupation of the site. The first sample was taken from level 6 of unit 22 at the base of the midden deposit. This sample records a calibrated date of 1450 B.C. as the earliest evidence of human occupation of Facing Monday Creek Rockshelter. It is important to note that the base of the midden was directly overlying bedrock. The second sample was taken from feature 8, an ephemeral fire pit in level 2 of unit 23. This sample resulted in a calibrated date of 380 B.C. for the hearth feature. Although earlier in time than expected, the results provide ample evidence for the initial occupation of the site and continuing use during the Early Woodland period.

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<th>Analysis</th>
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<th>Intercept Cal. Curve</th>
<th>2 Sigma Calibration</th>
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<td>Charred Wood</td>
<td>Radiometric</td>
<td>3200 +/-80 B.P.</td>
<td>1450 B.C.</td>
<td>1650-1300 B.C.</td>
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<tr>
<td>Feature 8</td>
<td>Beta-198639</td>
<td>Charred Wood</td>
<td>AMS</td>
<td>2270 +/-40 B.P.</td>
<td>380 B.C.</td>
<td>400-340 B.C. and 320-210 B.C.</td>
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</tbody>
</table>

Table 1: Radiocarbon dates from Facing Monday Creek Rockshelter. Source: Beta Analytic Radiocarbon Dating Laboratory. Note: Calibration follows Stuiver et al. 1998
Relative dating supports the radiocarbon dates which places the sites initial occupation as during the Early Woodland period. A Riverton projectile point, recovered from level 3 of the midden, is the earliest type found at Facing Monday Creek Rockshelter. This projectile dates from the Late Archaic to approximately 800 B.C. (DeRegnaucourt 1992), coinciding with the early radiocarbon date from midden level 6. This earlier point is followed in time by the presence of an Early to Middle Woodland stemmed point which dates from 500 B.C. to as late as 200 A.D. (DeRegnaucourt 1992; Justice 1987). This stemmed type was recovered from midden level 5 and correlates with the AMS date from feature 8. Late Woodland projectile points include two Chesser Notched and a single Raccoon Notched variety. Justice (1987) places the Chesser point typology as initially appearing at the terminal Middle Woodland and gaining use throughout the Late Woodland. Originally typed by Olaf Prufer (1967) during his excavations of Chesser Cave, the latest date of cultural affinity is 1070 +/- 140 A.D. Both Chesser specimens were recovered from midden levels 4 and 2. The Raccoon Notched variety, which dates from between 700 and 1200 A.D. (DeRegnaucourt 1992; Justice 1987), was recovered from down slope unit 17 level 5. The latest point typology includes two Late Prehistoric triangular varieties recovered from midden level 3. Dates range from 700-1500 A.D. for these specimens (Justice 1987).

Although sufficient evidence exists for initial use of the Facing Monday Creek Rockshelter during the terminal Late Archaic and beginning of the Early Woodland, the evidence suggests an increase of site use intensity during the Late Woodland period. This is based on the presence of Chesser and Raccoon Notched projectile points along with grit and chert tempered pottery. All pottery was recovered from midden and down
slope levels 3-5. The plain ceramic styles all fit within the Late Woodland Peters Plain
typology (Prufer and McKenzie 1966). The two triangular projectile points are also
representative of the transitional Late Woodland/Late Prehistoric period. The chronology
of the midden is vertically mixed. The recovery of the Early Woodland Riverton point in
level 3 appears to be out of contextual sequence. Further evidence of disturbance within
the midden will be discussed in the analysis chapter.

B. Stratigraphy

The excavations at Facing Monday Creek Rockshelter included investigations of
the north, central, and south chambers of the shelter. In addition, units were placed in the
area down slope of the central and south chambers. The stratigraphies of the three shelter
areas are horizontally discontinuous due to the spatial separation, and are therefore
analyzed individually. Stratigraphic profiles recorded in the field describe the soil
texture, color (Munsell), and structure of each stratum. Correlations between
stratigraphic profiles, chemical analysis, and grain size provide reconstruction of
rockshelter formation processes, rates of deposition, and anthropogenic factors.

The north chamber area is the smallest in size of the three chamber areas with
approximately enough room for two people to sit comfortably. The stratigraphy consists
of a single stratum 1-8 cm in depth from the surface to the underlying bedrock. It is
described as a light olive brown (2.5Y5/4) loose sandy matrix containing numerous
sandstone fragments. Very few cultural materials were collected from this area. The
north chamber appears to have been filled by way of natural sedimentation with very
minor anthropic influence.
Due to several large roof fall episodes, the central chamber is partially exposed to the open-air environment. The 36 cm profile includes three observed strata directly overlying sandstone bedrock (Figure 15). Stratum 1 is the uppermost stratigraphic unit of recent origin. From the surface, the thickness of stratum 1 is no more than 8 cm in depth. Stratum 2 originates at 8 cm below surface and is approximately 20-28 cm in thickness. Stratum 3 originates at 28-36 cm below the surface and terminates at the contact with the underlying bedrock. Total thickness is approximately 8-25 cm, increasing to the south. The profile of the central chamber was naturally formed by the long term active agents of hill slope wash coupled with the disaggregating sandstone regolith. In addition, several ephemeral fire hearths were identified within the natural matrix of the central chamber area. These features are discussed separately.

The south chamber was the most intensively occupied area of the site resulting in a thick midden accumulation. Horizontally, the midden is 5 m in length on a north to south axis by 2.5 m in maximum width. The vertical profile (Figure 12) includes two strata overlying the midden. Originating at the surface, stratum 1 thickness is 8 cm. Stratum 2 average thickness is 10 cm. The surface of the midden underlies stratum 2 at 241.87 masl along the N0 grid line and rises to 242.18 masl along the N5 grid line. The midden is essentially unstratified although pockets of discard are vaguely discernable. It is believed that the midden accumulated vertically over time with distinct sediment layers; however bioturbation and the effects of freeze and thaw activities have resulted in homogenization of the site matrix. The unfortunate consequence is the mixing of temporally discrete occupation episodes and spatial relationships. Evidence of rock fall was found near the base of the midden, particularly within unit 19 level 5. The midden
lies directly over sandstone bedrock with a maximum thickness of 43 cm at a base elevation of 241.65 masl along the N3 grid line. Sandstone fragments greater than 10 cm in diameter are common throughout the base of the midden.

The down slope area includes an east to west profile alternately exposed during excavation from the drip line at E0 of the central chamber to W5 down slope along the N2 grid line (Figure 13). The surface of the slope was measured as a 32% gradient. Thickness of each soil horizon varies from thicker upslope to thinning down slope due to the natural gradient. The south profiles of unit 16 and unit 17 have correlating stratigraphic horizons associated with the colluvial movement of materials from above the shelter, the midden area, and in situ soil forming processes. The surface of the midden deposit was identified at 50-65 cm below the present surface in both units 16 and 17. It is considered a buried A horizon in this situation and represents a past surface at the time of the prehistoric occupation of the rockshelter. All soil above is believed to have formed during the period of time since occupation. The buried midden was also identified in unit 5 to the north. Excavation ceased at a bedrock or sterile C horizon depth at the base of the midden.
Figure 11. East profile view of south chamber midden.
Figure 12. South profile view of south chamber midden and down slope area.
C. Cultural Features

The excavations at Facing Monday Creek Rockshelter distinguished seven cultural features all within the central chamber area (Figures 14 and 15). The small basin shaped fire pits appear to have been ephemeral in nature; simply, a series of quick surface fires that were minimally prepared and of short-term use. In general, the features were identified by the presence of charcoal within a burned soil matrix. The presence of associated cultural materials was very minimal. The central chamber appears to have been utilized as a location for small fires that would have provided the occupants with a source for light, heat, and cooking. The open roof of the central chamber would have acted as a chimney allowing for the dissipation of smoke from under the shelter.

Feature I (field designation F-3) was identified as a vague firing area within the east wall of unit 3 at grid coordinates N 7.5 E 1. The feature is described as 10YR4/6 dark yellowish brown soil with charcoal flecking 60-65 cmbs and directly overlying the bedrock. Dimensions are 43 cm in length by 5 cm in thickness.

Feature II (field designation F-5) was identified during excavation of the SW section of unit 23 along the N 7.5 E 1.5 profile. The unit was excavated in 50 x 50 cm quarter sections in order to have better control during feature identification. This feature was described as vague burnt soil containing small pebbles and charcoal flecking between 20 to 28 cmbs. The dimensions are approximately 25 cm in length by 8 cm in thickness. A very thin sandy layer separates this feature from the underlying F-8 reflecting stratified firing surfaces.

Feature III (field designation F-6) was identified in the NW section of unit 23 at the base of level 2 at 243.00 masl. F-6 is at approximately the same elevation as F-5
although separated spatially. The center provenience of F-6 is N 7.85 E 1. The feature matrix is described as 10YR4/6 dark yellowish brown with charcoal flecking surrounded by 10YR6/6 brownish yellow soil. Total dimensions are 20 cm in width by 10 cm in depth overlying bedrock at 242.90 masl.

   Feature IV (field designation F-7) was identified in the east wall of the NW section of unit 23 at the base of level 2. The center provenience point is N 7.60 E 1.5. Dimensions are 30 cm in length by 10 cm in depth directly overlying bedrock at 242.83 masl. The feature matrix is described as 7.5 YR3/2 dark brown surrounded by 10YR5/8 yellowish brown.

   Feature V (field designation F-8) is described as an oval cooking pit situated along the west half of unit 23. The previously mentioned features (F-3, F-5, F-6, and F-7) were all overlying or intrusive upon that of F-8. Dimensions are 1 m on a north to south grid axis by 55 cm in width by 20 cm in maximum depth. The feature matrix was vaguely identified at 243.0 masl within stratum III and described as 5YR4/4 reddish brown burned sandy clay loam. The stratified feature was most notable by the presence of burnt soil and charcoal flecks at the base described as 7.5YR3/2 dark brown sandy clay loam situated directly upon the bedrock surface. As previously mentioned, charcoal taken from the base of F-8 was AMS dated to ca. 380 B.C. ±40.

   Feature VI (field designation F-9) was identified at 35 cm below the surface (243.11 masl) within the southwest corner of unit 28 and the southeast corner of unit 25 along the E2 gridline. It is described as an oval cooking feature approximately 72 cm in length grid east to west by 52 cm in width by 16 cm in depth. All of soil within F-9 appeared to be burned as opposed to only the base of F-8. The matrix is described as
10YR5/8 yellowish brown mottled with charcoal surrounded by sterile 10YR6/6 brownish yellow sandy clay sediment 10 cm in thickness. The base of the features southern extent was intrusive upon the underlying F-10.

Feature VII (field designation F-10) is another oval cooking pit identified at 44 cm below the surface at 242.95 masl. It is essentially under the southern half of F-9 resulting in only a 10 cm remnant of F-10 undisturbed within unit 29. The elevation of F-10 is coeval in time with that of F-8. The feature is described as 10YR5/8 yellowish brown mottled with charcoal and surrounded by 10YR6/6 brownish yellow.

Figure 13. Plan view of central chamber features.
Figure 14. East profiles of central chamber features.
CHAPTER IV: ARTIFACT ANALYSES

A. Lithic Analysis

The lithic analysis is meant to delineate the theoretical and methodological stages of reduction, tool manufacture, tool type, density, and use of raw materials. The qualitative and quantitative results are then used to infer functional and behavioral characteristics associated with the use of Facing Monday Creek Rockshelter. Diagnostic indicators within the lithic collection are utilized to support temporal and chronological placement of the site and individual components. Direct comparison of the Facing Monday Creek Rockshelter lithic assemblage to that of other sites is used to suggest a pattern of rockshelter use across southeastern Ohio.

A total of 3,909 lithic artifacts were first placed into raw material classes based solely upon a macroscopic perspective. Those culturally modified materials were then classified into three main lithic artifact classifications: (1) Cores; (2) Debitage; and (3) Tools. The quarried raw material and exhausted cores were analyzed to infer primary stages of raw material preparation and core reduction sequence. Methods of debitage analysis included typological and aggregate classification schemes. The flaked reduction sequence is presented by way of the two methods of debitage analysis. Tools were classified within groups of typological and morphologic properties. The lithic tool assemblage is utilized to support functional and chronologic hypotheses for Facing Monday Creek Rockshelter.

The vast majority (99%) of lithic artifacts were recovered from the midden area (64% from units 1, 2, 8, 10, 12, 13, 18, 19, 22, and 27) and directly down slope (35% from units 5, 6, 16, 17, and 26) of the midden. The remaining 1% of lithic materials was
recovered from the north and central chamber areas. It is thus necessary to exclude the minor quantities from the north and central chambers in order to accurately reflect artifact density within the midden and associated down slope areas. Data are further presented by excavated levels in order to find correlations and dissimilarities of lithic intensity, tool manufacture, or reduction trajectories.

1. Lithic Raw Material

Chert varieties of the Facing Monday Creek Rockshelter lithic assemblage were identified following DeRegnaucourt and Georgiady (1998) in direct comparison with known local geologic samples and general categories of color and texture. Upper Mercer chert overwhelmingly dominates at 97% of the total lithic assemblage (Figure 16). Vanport makes up nearly 2% of the total chert by count while less than 1% of Brushcreek, Zaleski, and unknown varieties were present. Two abrading tools and a single hammerstone were made of local Pennsylvanian sandstone while a second hammerstone was made of limestone material. It is clear that Upper Mercer chert was the raw material preferred by the occupants of the site.

Lithic materials from Facing Monday Creek Rockshelter contained a surface coating of calcium carbonate. Chemical precipitates are often associated with rockshelter and cave environments. These crusts are created as chemically charged water trickles from the walls and ceiling to the shelter floor (Waters 1992). As lithic material was exposed, calcium carbonate cemented to the external surface. It was often difficult to differentiate between this coating and cortex features.
Throughout Hocking County the Upper Mercer Limestone member of the Pottsville Formation of the Pennsylvanian System is commonly found as black chert of excellent quality. The thickness varies from a few inches to over 3 feet. A local outcrop of the higher Upper Mercer geologic strata is recorded by Stout and Schoenlaub (1945) in a “hollow just west of Monday Creek” near Greendale of northeastern Green Township. This chert is described as high quality, being massive, dense, and vitreous found within discontinuous local deposits of blocky, irregular iron ore. The Ohio University Field School observed and collected field samples along the streambed of the Kitchen Run tributary where a seam of Upper Mercer chert was cut by the natural flow of this stream (33H0611 Field Notes of Elliot Abrams 2000). The Upper Mercer debitage of Facing Monday Creek Rockshelter can be described as varying between high quality “black” and lesser qualities of “grey” and “brown”.

The Vanport Limestone Member of the Allegheny Group of the Pennsylvanian System outcrops along an east to west ridge within Licking and Coshocton Counties.
km to the north of Monday Creek. Small bodies of a local Vanport member are also reported within Washington, Green, and Ward Townships of Hocking County (Stout and Schoenlaub 1945; Murphy 1989) although very minor use of these local outcrops is suspected. This flint is vitreous, smooth, and porcelaneous. Its homogenous composition allows for precision flint knapping. Consequently, it was highly prized, utilized, and traded throughout all prehistoric periods of the eastern U.S. (Deregnaucourt and Georgiady 1998). Several varieties of the Vanport Member were identified in the Facing Monday Creek Rockshelter assemblage including Flint Ridge Chalcedony, Moss-Agate Variety, and Nethers Variety.

Brushcreek, Zaleski, and unknown chert types combined make up less than 1% of the assemblage (see Figure 16). The nearest Brushcreek chert outcrops 10 to 15 km in a northeast direction within the Sunday Creek watershed of Perry County (Stout and Schoenlaub 1945). The deposit is also readily available to the east and south within Athens, Meigs, and Vinton counties. The Zaleski member, a characteristic black, hard, and lustrous chert, is only found in southern Vinton and northern Jackson counties. Although similar to Upper Mercer, Zaleski clearly differentiates by its more resinous luster and lack of inclusions, lines, and fossils. It appears these cherts were little utilized by the stone workers of Facing Monday Creek Rockshelter, opting rather to use the immediately available local raw materials of Upper Mercer and the highly prized Vanport for stone tool manufacture.
2. Lithic Quarried Raw Material and Exhausted Cores

A core is defined as any large piece of lithic material from which flakes have been removed (Andrefsky 1998). The presence of cores within a lithic assemblage typically represents early or primary stages of a reduction trajectory. The assemblage of Facing Monday Creek Rockshelter contained six exhausted cores which appear to have been discarded after use. Exhausted is defined as the point at which the reductive process of removing flakes from a core is restricted from further reduction due to a lack of material or platform angle, the core is either discarded or utilized for a separate purpose (Andrefsky 1998). Flakes were removed in a multidirectional informal freehand manner with feathered flake scar terminations. The mean recorded weight and maximum linear dimensions of the six specimens is 37.1 grams and 46.92 mm. All exhausted cores were made of the locally available Upper Mercer chert.

A single large piece of raw Upper Mercer material (1509 grams) was recovered from level 1 of unit 20. The unit was located on a level terrace at the bottom of the slope from the shelter. It is believed the few artifacts recovered in this unit represent dislocation of materials transported naturally down slope from the shelter. The raw material contains brown cortex on the exterior surface with a fractured exposure of the black higher quality interior. This piece was useful for comparative analysis of the significant quantities of lesser quality brown chert recovered from the site and certain classification of the brown as belonging to the Upper Mercer Member. The raw material has evidence of reddening, pot lidding, and crazing, thus was probably heat treated.
3. Lithic Debitage

Debitage includes all waste products of stone tool production sorted into either flakes or shatter. Flakes display a recognizable platform and bulb of percussion while shatter consists of angular residual material lacking a platform or bulb of percussion (Crabtree 1982). A total of 3,796 pieces of debitage were recovered from Facing Monday Creek Rockshelter. Densities of lithic debitage are 338 flakes per m³ or 345.5 grams per m³ for the entire excavated site area (Table 2). When considering the midden units only, density increases to 513 flakes or 498 grams per m³ with the greatest density found in level 3.

Debitage are analyzed according to specific morphological attributes that result from core reduction patterns during stone tool manufacture. The debitage are first typed according to categories outlined by Andrefsky (1998), Crabtree (1982), and Kooyman (2000) as either primary, secondary, or tertiary decortication flakes. A second examination by way of aggregate size class analysis follows methods outlined by Ahler (1989) and Andrefsky (1998). The use of two methodologies is employed to delineate possible site function hypotheses based on comparative site and experimental debitage assemblages.

a. Typological Analysis

Cortex typology of lithic analysis uses the amount of cortex found on debitage as a proxy for sequences of reduction stages. A total of 145 pieces of shatter and 3,557 flakes were sorted by this “triple cortex approach” utilizing relative amounts of cortex found on the dorsal surface of debitage flakes and shatter for classification as primary,
secondary, or tertiary. For comparative purposes, debitage classifications are defined as follows (Andrefsky 1998): *primary flakes* display 50-100% dorsal cortex with 0 to 1 dorsal flake scars; *secondary flakes* have 0-50% dorsal cortex and/or significant inclusive fossiliferous impurities with more than 2 dorsal flake scars; and, *tertiary flakes* have 0% cortex with few inclusions and includes attributes of complex dorsal scarring typically less than 20 mm in size. Bifacial reduction and thinning flakes result when thick areas of a preform are reduced during production of a uniface or bifacial tool. In certain reduction sequences, these types are treated separately. For the present study, these types were included within the tertiary category to represent late and final stages of tool manufacture.

Debitage of Facing Monday Creek Rockshelter includes 5% primary flakes, 67% secondary flakes, and 28% tertiary flakes (Figure 17). Table 2 presents the results of the debitage typological analysis by count and weight proportions. When comparing the debitage for each of the six excavated levels of the midden deposit (Figure 18), secondary flakes dominate each level by weight and count analyses. Level 3 contains significantly greater quantities. Level 2 follows second in overall quantity and first in the number of primary flakes. Levels 4, 5, and 6 appear to drop off in total numbers and at equal proportions of debitage classifications.
<table>
<thead>
<tr>
<th>Debitage Classification</th>
<th>Count</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Shatter</td>
<td>38</td>
<td>151.8</td>
</tr>
<tr>
<td>Secondary Shatter</td>
<td>92</td>
<td>210.8</td>
</tr>
<tr>
<td>Tertiary Shatter</td>
<td>15</td>
<td>13.1</td>
</tr>
<tr>
<td>Primary Flake</td>
<td>169</td>
<td>589.7</td>
</tr>
<tr>
<td>Secondary Flake</td>
<td>2548</td>
<td>2395.6</td>
</tr>
<tr>
<td>Tertiary Flake</td>
<td>840</td>
<td>381.7</td>
</tr>
<tr>
<td>Bifacial Reduction Flake</td>
<td>50</td>
<td>105.8</td>
</tr>
<tr>
<td>Thinning Flake</td>
<td>44</td>
<td>33.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3796</strong></td>
<td><strong>3882.0</strong></td>
</tr>
</tbody>
</table>

| Density per m³          | 338   | 345.5      |

Table 2. Summary of debitage classifications.

![Percentage of Debitage Reduction Sequence](image)

Figure 16. Percentage of debitage reduction sequence by counts.
Figure 17. Debitage reduction sequence by count per level of midden.

Figure 18. Debitage reduction sequence by weight (g) per level of midden.
Under the assumption that quantities of debitage reflect intensity of site use, utilization of Facing Monday Creek Rockshelter was initially minimal during the Early Woodland, gained use through time, peaked during the Late Woodland, and then abandoned during the Late Prehistoric. Although debitage represents discard patterns rather than actual tool production, the reduction trajectory of lithic raw materials was similar, although not uniform, through time. Emphasis was placed on the manufacture of secondary flakes and fragments of the locally available Upper Mercer chert. Reduction was most likely intended for the manufacture of tools associated with hunting as a function of this locale. Biface manufacture would have been necessary for the killing of prey as well as expedient tools for the processing of game. Lithic reduction would have also enabled manufacture of raw material into a usable form for transport back to a base camp or residential village.

b. Aggregate Analysis

Since stone tool production is a reductive or subtractive process, it is generally believed that the size of debitage is directly related to the size of the objective tool or stage of manufacture. Although the finished tool cannot be readily determined using aggregate analysis, it has been shown that stages of reduction are achievable (Andrefsky 2004). The debitage will follow a general pattern of decreasing in size during the course from early core preparation to bifacial preform preparation and final stages of finished tool production. Variations in the application of flint knapping procedures (e.g. percussion versus pressure flaking) corresponds with variations in both flake size and shape. Aggregate size class analyses has certain advantages over individual flake
analysis, these advantages include a higher level of objectivity, replicability, and efficiency. The greatest problems regarding data analysis exist when attempting to link the data sets to behavioral variations in the archaeological record (Ahler 1989). This is especially true for aggregate size class analysis although it appears application of the method with controlled experimental studies brings us closer to interpreting the data with greater meaning. An unresolved problem involves the analysis of mixed samples with multiple technologically or functionally discrete episodes which, by using this method, cannot be discriminated into individual components.

A total of 3,796 pieces of debitage were sorted into 6 size class categories: 0-6 mm (0.00-0.236 inches), 6-12 mm (0.236-0.472 inches), 12-18 mm (0.472-0.709 inches), 18-24 mm (0.709-0.945 inches), 24-30 mm (0.945-1.181 inches), and greater than 30 mm (1.181 inch). This was accomplished utilizing circles of each size class diameter; each flake was assigned a size class based upon placement in the smallest diameter without touching the edge. This is ultimately a measure of flake length rather than width. Total debitage per size class were compared across the site by weight and count. Comparisons between midden levels were also analyzed in an attempt to discriminate changes in lithic reduction trajectory during the occupational use of the shelter. Interpretations of lithic reduction and site function are inferred through direct comparison lithic assemblages of similar site types and experimental data.

The results of weight and count distributions (Figures 20 and 21) include 67% by weight in the greater than 24 mm size class and 42% by count in the 12-18 mm size class. The weight proportion of debitage declines readily from sizes largest to smallest. In contrast, the count proportions are evenly distributed between the largest and smallest
size classes with a peak in the mid 12-18 mm and 18-24 mm classes. Debitage within midden units were analyzed by weights and counts for each size class per level (Figures 22 and 23). Levels 1 and 6 contained comparatively lower percentages of overall debitage while level 3 consistently contains the greatest debitage by count and weight. By counts, level 1 has a greater representation of size class 18-24 mm while levels 2-6 are dominated by size class 12-18 mm. Consistency of size class proportions are apparent between levels 2-4 although total debitage density fluctuates. Levels 1 and 5 contain greater amounts of debitage within the size class greater than 30 mm than 24-30 mm. The inconsistencies found in levels 1 and 5 may reflect analysis of low debitage densities within those levels. Overall, size class distributions by count and weight comparisons between midden levels appear to follow the general pattern observed on average across the site.

A summary of size grade distributions recovered during experimental load application replications was compiled by Ahler (1989) for comparisons in aggregate size class analysis. It is widely accepted that percussion flaking produces flakes generally much larger in size than any produced by pressure flaking. Through experimental replications, Ahler (1989) has shown percentage distributions of size classes resulting from the production of various lithic tools. The pattern shows a weight percentage of 40% or greater of those flakes greater than 24 mm in size as the result of cobble testing, core reduction, flake production, and the primary stage of the biface reduction sequence. The Facing Monday Creek Rockshelter debitage assemblage contains nearly 70% of flakes by weight at 24 mm or greater in size. The data indicate a lithic industry which utilized primary reduction techniques for the manufacture of large flakes. The
dominance of relatively larger size flakes is representative of early reduction methods which include coble testing, flake production, and core reduction techniques. The hypothesis of Facing Monday Creek Rockshelter as a locale for the early reduction of lithic materials is supported by the data.

Figure 19. Debitage size class distribution by count.

Figure 20. Debitage size class distribution by weight (g).
Figure 21. Debitage size class distribution by counts per level.

Figure 22. Debitage size class distribution by weight (g) level.
c. Microdebitage

Flakes produced by pressure flaking, also referred to as microdebitage, are almost all small enough to pass through a standard ¼ inch mesh screen. This is significant considering experimental replications have shown flakes less than ¼ inch in size comprise between 59% and 98% of the total assemblage by weight (Ahler 1989). The 0-6 mm size class is completely absent from the previously described debitage assemblage collected during standard excavation. The 6-12 mm size class is otherwise the most impoverished by weight and count. Under the typological classification scheme, these size classes are tertiary flakes or microdebitage thought to represent pressure flaking techniques. In order to address this sampling bias, soil samples were processed by flotation methods. The results of microdebitage recovered by flotation are thus extrapolated to infer densities across the site.

Thirty flotation samples of approximately 1 to 4 liters each were processed from levels 3-6 of the midden units, feature 3, and 5-10. Total sample volume processed by flotation was 94.75 liters, including 80 liters of the midden deposit and 14.75 liters of feature matrix. The total midden volume excavated includes 4.6 m³ or 46,000 liters. Debitage recovered from flotation analysis of the midden thus represents only 0.17% of the total excavated midden volume. Sediment less than 1 mm in size was removed through water sieving resulting in a mix of cultural materials with course sand and gravel making up the heavy fraction. Lithic materials were hand sorted from the heavy flotation fraction for all 30 samples.

The distribution of microdebitage per size class recovered through flotation water sieving is quite different than the results found through standard excavation procedures.
A total of 447 flakes weighing 156.8 grams were identified and sorted into size classes. Flakes less than 12 mm in size dominate 73% of the flotation assemblage. An almost equal proportion of the 0-6 mm (37%) and 6-12 mm (36%) are represented (Figure 24). The results of debitage greater than 12 mm in size decline in proportion to their increasing size. Otherwise, the size class distributions greater than 12 mm are the same as the results found by standard recovery techniques. Based on this accuracy, distribution rates found through flotation procedures are assumed to represent actual site densities. It is postulated that the total lithic debitage assemblage included over 10,000 pieces of microdebitage or 1,282 pieces per m³ for the midden and down slope site area. Total loss through the use of standard ¼ inch screens of debitage less than 12 mm in size is significant.

<table>
<thead>
<tr>
<th>Size Class</th>
<th>Count</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-6 mm</td>
<td>164</td>
<td>2.7</td>
</tr>
<tr>
<td>6-12 mm</td>
<td>162</td>
<td>10.9</td>
</tr>
<tr>
<td>12-18 mm</td>
<td>73</td>
<td>17.4</td>
</tr>
<tr>
<td>18-24 mm</td>
<td>29</td>
<td>23.5</td>
</tr>
<tr>
<td>24-30 mm</td>
<td>10</td>
<td>17.2</td>
</tr>
<tr>
<td>&gt; 30 mm</td>
<td>9</td>
<td>85.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>447</strong></td>
<td><strong>156.8</strong></td>
</tr>
</tbody>
</table>

Table 3. Lithic debitage recovered from flotation samples.
A study by Brush (1990) attempted to use size class analysis of debitage to identify site function at various rockshelter locations. He chose ten rockshelter sites within the Killbuck Creek Valley, a tributary of the Muskingum River, within south central Holmes and north central Coshocton counties. Based on the premise that lithic reduction stages may infer the generalized site function, Brush has suggested special purpose sites such as hunting camps to have disproportionate amounts of relatively small flakes associated with final tool manufacturing, resharpening, or repairing. In contrast, quarry reduction sites contain high percentages of large flakes associated with core and preform production where raw chert is reduced to a more portable form. Brush ranked 56 site levels according to the percentage of ¼ inch debitage and tool to debitage ratios resulting in the identification of 12 debitage assemblages. These 12 assemblages were assigned occupational histories based on the percentage of ¼ inch debitage: Quarry Reduction (63-70%), Logistical Camps (75-79%), Base Camps (83-87%), and Hunting Camps (89-93%). Using Brush’s classification system, the function of Facing Monday
Creek Rockshelter would be intermediate between a quarry reduction site and logistical camp based on a total microdebitage recovery rate at 73%.

4. Lithic Tools

The Facing Monday Creek Rockshelter lithic assemblage contains 106 tools. This category includes 67 utilized flakes, 6 bladelets, 4 groundstones, and 29 formally manufactured bifacial or unifacial specimens. Formal tools consist of specimens which have been intentionally modified to a desired shape by percussion, retouching, thinning, or a combination of all three techniques. Informal or expedient tools are those which were not intentionally modified yet contain evidence of utilization. Each tool classification is described based on observable and metric attributes, raw material, and potential function.

Sixty-seven utilized flakes were identified in the assemblage. These were distributed by source as follows: 87% Upper Mercer, 10% Vanport, and 1.5% each of Brushcreek and Zaleski raw materials. Those flakes bearing evidence of wear patterns along the marginal edges under 10 x magnifications were classified as utilized. These tools are considered informal and expedient meaning that no further preparation beyond flake production was necessary for use. Each may have only served a single purpose as a cutting edge before final discard.

Two formal unifacial tools were identified. These include one each of Upper Mercer and Vanport materials. Those classified as unifacial tools contained formal flake scars on one surface only. The Upper Mercer unifacial tool bears large positive flake scars on one side with sharpening along a single edge only. This tool was most likely
utilized as an expedient knife. The Vanport unifacial tool (Figure 25 Specimen N) is a small flat ovate piece sharpened on all edges of a single side. It is unusual in that it contains no other positive or negative flake scars on the surface of either side. Sharpening was accomplished by pressure flaking along the symmetrical edges. This tool of non-local material appears to have had a specialized yet unknown function.

Two bifacial preforms (Figure 25 Specimens M and O) were identified in the assemblage. These were identified as bearing large flake scars on both sides of an unfinished/unused form. The two specimens were made of Vanport and Brushcreek raw materials. Due to the non-local use of raw materials, it is believed these prepared preforms were transported to the site as such with the intent of manufacturing formal biface tools as needed. It is unknown whether the preforms were accidentally or intentionally discarded.

Nineteen partial and whole bifacial projectile point specimens were identified. A projectile point refers specifically to hafted spear, dart, or arrow points. The assemblage includes 4 whole projectiles, 5 tips, 8 bases, and 2 midsections. All together, 15 were made of the Upper Mercer chert and 2 of the Vanport chert. Seven specimens contain typological attributes diagnostic to specific cultural traditions. These are used to further support temporal and chronological utilization of the site (see Lithic Diagnostic Projectile Points). Manufacture and use of projectile points is associated with hunting techniques involving the killing of wild game in order to obtain food and faunal resources.

Two bifacial knives (Figure 25 Specimens K and L) are included in the tool assemblage. The first, made of fine quality Vanport material, was recovered from unit 27 level 3 of the midden area. The bifacial surface bears large flake scars with one finished
edge. The narrowed base appears minimally side-notched and hafted. Total length for this specimen is 80 mm. The second knife, made of Upper Mercer chert, is less formal and unhafted. Total length for this tool is 70 mm.

A single large bifacial *chopper* made of Upper Mercer chert was identified. This tool bears large flake scars with a wide cutting edge. The ovate shape, relatively large size (> 90 mm length), and weight (73.6 grams) would have provided an efficient tool for the dismemberment of joints during the processing of large game such as white-tail deer.

Two *drills* are included in the tool assemblage. The first is a fractured mid-section of an expanding base made of Vanport material (Figure 25 Specimen I). The shape is biconvex in cross-section and is worked on both marginal edges narrowing towards a tip. The second is an Upper Mercer fractured tip that has been bifacially thinned. It is unknown if this drill once had a base before fracturing. Drills would have been useful tools for puncturing or boring activities.

Six *bladelet* tools were identified within the assemblage. A bladelet is defined as a specialized flake with parallel edges and trapezoidal or rectangular cross section. A single specimen of Vanport material was recovered from unit 19 in two matching halves from both level 4 and 6. The separation of more than 10 cm vertically serves as direct evidence of disturbance within the midden deposit. The dimensions of the whole specimen are 25.0 mm in width by 50.0 mm in length by 6.2 mm in thickness. The cross-section is trapezoidal in shape and appears to have been highly formalized. The remaining 5 bladelets are all manufactured of Upper Mercer raw material. The second group appears as a whole to have been crudely made containing rectangular cross-sections. Classification was determined based on linear shape and parallel edges.
Bladelet tools in Ohio are generally associated temporally with the Middle Woodland period.

*Groundstone* tools include two abraders and three hammerstones. The abraders are both made of sandstone materials that contain grooves worn linearly through repeated use. Abraders are generally associated with lithic reduction and tool production. The abrasive stone serves to grind the flake platform, core top, or margins of a bifacial tool. The hammerstones are rounded to oblong in shape and made of sandstone and limestone raw materials. All specimens were identified by the appearance of pecking or abrasion on one or both ends of the exterior surface. Hammerstones may be associated with any number of activities including bipolar reduction techniques or fracturing nutshells. It is important to note that no pitted stones were recovered from Facing Monday Creek Rockshelter.
<table>
<thead>
<tr>
<th>Tool</th>
<th>Countr</th>
<th>Weight (g)</th>
<th>UM</th>
<th>VP</th>
<th>BC</th>
<th>ZL</th>
<th>SS</th>
<th>LS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projectiles</td>
<td>4</td>
<td>20.20</td>
<td>3</td>
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<tr>
<td>Biface Tips</td>
<td>5</td>
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<tr>
<td>Utilized Flakes</td>
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<td>2</td>
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<tr>
<td>Hammerstones</td>
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<td>597.80</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>106.00</td>
<td>1454.80</td>
<td>84.00(79%)</td>
<td>15.00(14%)</td>
<td>2.00</td>
<td>1.00</td>
<td>4.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Table 4. Lithic tool assemblage. Includes count, weight (g), and raw material (Upper Mercer=UM, Vanport=VP, Brushcreek=BC, Zaleski=ZL, Sandstone=SS, Limestone=LS) distributions.
Figure 24. Lithic Tools: (A and B) Upper Mercer Triangles; (C) Upper Mercer Raccoon Side-Notched; (D) Upper Mercer Riverton Side-Notched; (E) Vanport Unknown Projectile; (F and G) Upper Mercer Chesser Side-Notched; (H) Upper Mercer Resharpened Early Woodland Stem; (I) Vanport Flared Base Drill; (J) Vanport Biface Tip; (K) Upper Mercer Unhafted Knife; (L) Vanport Hafted Knife; (M) Brushcreek Preform; (N) Vanport Ovate Uniface; (O) Vanport Fractured Preform. Note: Scale is in 2 cm bar increments.
5. Lithic Diagnostic Projectile Points

a. Riverton Point

A single Riverton point (Figure 25) was recovered from level 3 of test unit 8 within the midden area. This is a side notched base of a very small projectile point with heavy basal grinding. Metric attributes include a thickness of 5.31 mm, basal width of 17.10 mm, notch width of 11.85 mm, and a shoulder width of 15.0 mm. Although fractured, a total length could not have exceeded 30 mm. This type is most readily identified by its small size. Cultural affiliation is of the Late Archaic Riverton Tradition from about 1600-800 B.C. (DeRegnaucourt 1992). Although true Riverton Cultures are centered on the lower reaches of the Wabash River in Indiana, there are many sites that have produced this point type along the Ohio River. The chronology of this type matches closely with the earliest radiocarbon date from the base of the midden.

![Figure 25. Riverton projectile point base.](image)

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Measurement</th>
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<tbody>
<tr>
<td>Thickness</td>
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<tr>
<td>Shoulder Width</td>
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<tr>
<td>Neck Width</td>
<td>11.85 mm</td>
</tr>
<tr>
<td>Basal Width</td>
<td>17.10 mm</td>
</tr>
</tbody>
</table>

Figure 25. Riverton projectile point base.
b. Early Woodland Stemmed Cluster

A single straight stemmed Early Woodland point (Figure 26) was recovered from level 5 of test unit 22 of the midden. Although complete, the blade has been extensively resharpened resulting in a much smaller form. Metric attributes include a total length of 39.86 mm, thickness of 7.98 mm, shoulder width of 28.93 mm, stem length of 20 mm, and a stem basal width of 13.37 mm. Many variations of Early Woodland stemmed varieties are included within the Dickson Cluster (Justice 1987). The exact type is uncertain, although the stems shape and length suggests a Cypress Straight Stemmed type from 1000-300 B.C. The majority of this type are commonly resharpened and often to an unrecognizable condition. Common distribution is along the Ohio River of Indiana and Kentucky.

![Figure 26. Resharpened Early Woodland stemmed projectile point.](image)
c. Raccoon Notched Point

The base of a single Raccoon Notched specimen (Figure 27) was recovered down slope of the midden area in level 5 of test unit 17. A measured thickness of 6.66 mm is within the 4 to 7 mm (DeRegnaucourt 1992) range of this type. Other morphological attributes include a shoulder width of 20.88 mm, neck width of 12.62 mm, and a basal width of 20.91 mm. The notch is placed at a right angle with a round form that meets a straight base. The resulting appearance does not have the typical square basal ears but matches several styles of those reported by DeRegnaucourt (1992) to classify as a Raccoon Notched.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness</td>
<td>6.66 mm</td>
</tr>
<tr>
<td>Shoulder Width</td>
<td>20.88 mm</td>
</tr>
<tr>
<td>Neck Width</td>
<td>12.62 mm</td>
</tr>
<tr>
<td>Basal Width</td>
<td>20.91 mm</td>
</tr>
</tbody>
</table>

Figure 27. Raccoon Notched projectile point base.

The Raccoon Notched type is a thin side notched pentagonal form with square ears and a straight basal edge. DeRegnaucourt (1992) reports this type as a Logan side notched point originally described by Mayer-Oakes (1955) in The Prehistory of the Upper Ohio Valley. Raccoon Notched points are characteristic of the Late Woodland Albee phase of 700-1200 A.D.. Their chronology correlates with the Jack’s Reef Corner
Notched. Seeman (1992) associates this style as part of the Intrusive Mound Complex of the Mid-Ohio valley. The changing size reduction of the Jack’s Reef Cluster correlates with the introduction of the bow and arrow during the Late Woodland period ca. A.D. 700.

d. Chesser Notched Points

A total of two Chesser Notched points (Figure 28) were recovered from the Facing Monday Creek Rockshelter assemblage. Both specimens are made of local Upper Mercer chert. One is nearly complete and appears to have been resharpened. The second includes a base fractured above the shoulders. Metric attributes include a maximum thickness of 7.88 and 7.02 mm, notch width of 16.82 and 19.15 mm, basal width of 19.52 and 25.80 mm, and a single available length of 45 mm. The Chesser Notched type of the Lowe Cluster is a side notched to expanding stem form with wide notch openings (Justice 1987). The type was originally typed in Ohio by Prufer (1967) from excavations at Chesser Cave. The Chesser Notched type first appears in terminal Middle Woodland contexts and attained popularity throughout the Late Woodland period of southeastern Ohio. The latest date of cultural affinity, 1070 ±140 A.D., is from Chesser Cave. It does not occur in Fort Ancient/Late Prehistoric contexts. Other Late Woodland sites producing this style include Blain Village (Prufer and Shane 1969), Peters Cave (Prufer and Mackenzie ), The Childers Site (Shott and Jefferies 1992), McGraw (Prufer 1964) and Raven Rocks (Prufer 1981).
Two triangular points (Figure 29) were recovered from level 3 of both test unit 12 and 10 of the midden area. One is a straight base while the other is nearly complete in form with rounded basal edges. Metric attributes include a thickness of 6.49 and 4.3 mm, a basal width of 19.97 and 18.74 mm, and a single available length of 30 mm. Both specimens are made of the locally available Upper Mercer chert. These two triangular points fit within the physical description of the Late Woodland/Late Prehistoric Madison type (DeRegnaucourt 1992; Justice 1987). This true arrowhead is common in all regions of the eastern North America. Dates range from about 700-1500 A.D. Other relevant sites containing this point type are Chesser Cave (Prufer 1967), Graham Village.

**Figure 29. Madison triangle projectile points.**

<table>
<thead>
<tr>
<th>Thickness</th>
<th>Basal Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.30 mm</td>
<td>18.74 mm</td>
</tr>
<tr>
<td>6.49 mm</td>
<td>19.97 mm</td>
</tr>
</tbody>
</table>

**B. Ceramic Analysis**

The ceramic assemblage of Facing Monday Creek Rockshelter included ten sherds and nine fragments recovered from levels 3-6 of the south chamber midden units and level 5 of down slope units 16 and 17. The temper, thickness, and decorative finishing techniques are diagnostic attributes which were analyzed. All sherds were similar in the use of chert and grit tempering with the exception of one limestone tempered rim sherd (Figure 31 Specimen A). The grit material can be described as reddened sandstone particles not exceeding 3 mm in size. Chert tempering is a crushed black siliceous material most likely of the local Upper Mercer raw material. All were undecorated with smoothed plain oxidized exteriors. One body sherd had minor evidence of smoothed over cordmarking. The coiling technique of manufacturing is suspected based on a coil break observed along the profile of a single rim sherd (Figure 31 Specimen B). The rims were folded over and smoothed resulting in a straight flattened
lip with no decorations. Blackened interiors were fired in a reduced environment, a firing technique obtained by turning the pot upside down which restricts the air flow to the interior. Nine fragments were collected with charcoal samples and consequently are heavily burned. The two rim sherd thickness measurements are 8.4 mm and 6.92 mm. A single neck sherd is 6.58 mm thick. Five body sherds ranged in thickness between 5.46 mm and 7.92 mm. Two basal sherds are each 10.14 mm and 10.82 mm thick. Mean thickness is 6.51 mm for the body sherds; 7.5 mm for the rim sherds; and 10.5 mm for the basal sherds. Overall mean thickness for the assemblage is 7.54 mm.

Based on metric and descriptive data, the ceramic assemblage of Facing Monday Creek Rockshelter fits within the classification of the Scioto Series-Peters Plain as defined by Prufer and McKenzie (1966). The type series is based on excavations in from Peters Cave B in Ross County, Ohio and chronologically places the site within that of the Late Woodland in association with the Peters cultural phase. The original type sherds have a range from 4-8 mm with a mean of 6.1 mm. The ceramic assemblage minimally represents 2 vessels based on two rim styles and tempering agents. Taking into consideration the small sample from Facing Monday Creek Rockshelter, the low density of ceramics supports a hypothesis of non-residential short term occupation of the site.
Figure 30. Ceramic Assemblage: (A and B) Undecorated Rims; (C) Neck Sherd; (D-G) Body Sherds; (H) Basal Sherd. All ceramics contain chert and grit temper with the exception of one limestone tempered rim sherd (A). Note: Scale is in 2 cm bar increments.
C. Flora Analysis

Unlike open air sites, the natural shelter environment has preserved materials that would have otherwise deteriorated. The flora specimens hold information about the plant foods harvested, processed, and consumed by the inhabitants of Facing Monday Creek Rockshelter. The flora collection is comprised of materials collected both during excavations in the field and from flotation samples. A great deal of the burned nut was incidentally collected with wood charcoal samples. The presence of remains in an archaeological site does not, however, automatically indicate those materials were cultural in origin. As described above, depositional patterns also include the many animals that inhabited the site. For this reason, it is important to distinguish between those materials that are charred or burned from those that are not. Nevertheless, even noncultural remains can be informative.

The cultural flora remains are primarily charred nut shell and wood charcoal. Remnants of burned nut shell were separated from the charcoal samples. The charred nut sample includes 124 fragments weighing a total of 8.65 grams. The significance of hickory, walnut, and acorn nuts has been well established in the archaeological record as an important dietary component. Those materials which are not burned are assumed to have noncultural origins such as rodent caches. Seventy-two unburned nut shells, whole and fragmentary, were collected weighing 48 grams collectively. Seventy-five percent of the unburned nut shells were collected from level 4 of unit 12 and level 2 of unit 22. The abundance is believed to have been the result of buried rodent caches.

Collection of floral remains through flotation techniques enhances recovery rates to include those small botanical materials nearly impossible to see during excavation.
Thirty samples were collected together from the midden units 2, 8, 10, 12, 19, 22, and 27 levels 3-6 and features F-3, F-5, F-6, F-7, F-8, F-9, and F-10. The sample size varied between 1.0 and 4.0 liters each. Total sample volume processed by flotation methods includes 94.75 liters, including 80 liters of the midden deposit and 14.75 liters of feature matrix. Water flotation recovery techniques utilize differences in density of organic and inorganic material to achieve separation of organic materials from the soil matrix (Pearsall 1989). Samples were processed using a machine assisted Flote-Tech water separating system. The fine fraction screen mesh recovered all lower density organic remains greater than 0.285 mm in size. The heavy fraction screen mesh recovered all higher density materials greater than 1.0 mm in size. Preliminary sorting of botanical materials from the heavy and light fractions revealed a further assortment of charcoal and burned nut fragments although final analysis has not been completed at this time.

Prehistoric plant utilization at Facing Monday Creek Rockshelter included the nut bearing tree species. Seasonality of site occupation is inferred to have been primarily during the fall based on the presence of charred nut materials. Specifically, these nut species are available during late September through early November each year with maximum fall one to two weeks after the first killing frost near the end of October (Talalay et al. 1984). Production rates are dependent upon species, canopy, climatic variations, and the local squirrel competition. A nine year study in a mature mesic forest of southeastern Ohio showed an average annual production of hickory nuts at 21.2 kg per hectare or 1.0 kg per tree (Talalay et al. 1984). Comparatively, the walnut produces about 7.6 kg per hectare within a closed canopy upland environment (Talalay et al. 1984). The nutritional value of nutmeats, primarily hickory, is one of the highest caloric foods
available gram for gram compared to other available food resources (Table 5). Comparison of nutshell percentages recovered from Middle and Late Woodland sites of central Ohio are dominated by hickory at 78-94%. An increased diversification in the exploitation of gathered resources and increased utilization of forest products (e.g. nuts) is recorded during the early Late Woodland period of the Mid-Ohio Valley (Wymer 1992).

<table>
<thead>
<tr>
<th>Food Source</th>
<th>Kcal</th>
<th>Protein (g)</th>
<th>Fat (g)</th>
<th>Carbo (g)</th>
</tr>
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<tbody>
<tr>
<td>Freshwater Molluscs¹</td>
<td>68.0²</td>
<td>9.5</td>
<td>0.9</td>
<td>13.8</td>
</tr>
<tr>
<td>White-tailed Deer¹</td>
<td>198.0</td>
<td>35.0</td>
<td>6.4</td>
<td>0.0</td>
</tr>
<tr>
<td>Turkey¹</td>
<td>218.0</td>
<td>20.1</td>
<td>14.7</td>
<td>0.0</td>
</tr>
<tr>
<td>Quail¹</td>
<td>168.0</td>
<td>25.0</td>
<td>6.8</td>
<td>0.0</td>
</tr>
<tr>
<td>Rabbit¹</td>
<td>73.0</td>
<td>21.0</td>
<td>5.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Corn¹</td>
<td>348.0</td>
<td>8.9</td>
<td>3.9</td>
<td>72.2</td>
</tr>
<tr>
<td>Walnut¹</td>
<td>525.0</td>
<td>10.6</td>
<td>51.5</td>
<td>5.0</td>
</tr>
<tr>
<td>Acorns¹</td>
<td>254.0</td>
<td>4.6</td>
<td>9.8</td>
<td>36.8</td>
</tr>
<tr>
<td>Hickory Nut³</td>
<td>704.0</td>
<td>13.5</td>
<td>73.5</td>
<td>9.3</td>
</tr>
</tbody>
</table>

² Parmalee and Bogan (1998) 35.
³ Talalay et al. (1984) 344.

Table 5. Nutritional data for selected food resources.

D. Faunal Analysis

1. Faunal Vertebrates

The faunal analysis follows the taxonomic classification (e.g. Kingdom, Phylum, Class, Order, Family, Genus, Species) developed by Linnaeus in the 18th century (Sutton et al. 2002). The first step in the analysis was to identify the elements and orientation where possible. Taxonomic identification is limited to Class in many cases due to few recognizable elements within the collection. The expertise of Dr. Scott Moody and the Ohio University Zoology Museum’s comparative collection were very helpful in the
analysis. Mammalian references used during analysis and brief summaries of the physical descriptions, seasonal activities, distributions, and habitat include Gilbert (1990) and Gottschang (1981). Vertebrates (Phylum Chordata) include birds, mammals, and reptiles. The terrestrial mammals are classified into six major orders present in the ecological context under study. Marsupialia consists solely of opossums. Insectivora includes moles and shrews. Lagomorpha includes rabbits and hares. Rodentia includes chipmunks, woodchucks, squirrels, mice, wood rats, beaver, and porcupines. Carnivora includes dogs, coyotes, wolves, foxes, bears, raccoons, weasels, skunks, mountain lions, lynx, and bobcats. Artiodactyla includes white-tail deer, elk, and bison. Age determinations may provide insight into the seasonality of site use. Quantification of faunal specimens are presented bearing the results of the number of identified specimens (NISP), minimum number of individuals (MNI), weight, and density within the site volume.

Ten vertebrate species are identified from the Facing Monday Creek Rockshelter faunal assemblage (Table 6). The reptilian class includes one unidentified turtle carapace fragment. The avian class includes twenty-nine fragments, none of which were identified to a species level. The assemblage is predominantly of the mammal class totaling four hundred and fifty-two specimens. Of the total assemblage, 45% by count and 49% by weight contains evidence of burning. In contrast, only 3% of the rodent assemblage was burned. If the rodent class is statistically removed, the percentage of burned specimens increases to 54%.
Table 6. Vertebrate faunal assemblage.

**a. Class Mammalia**

**Order Artiodactyla**

Twenty-five specimens of *Odocoileus virginianus* weighing a total of 48.5 grams were identified within the assemblage. The white-tail deer osseous material was primarily recovered from within the midden area including levels 2, 3, 4, and 5 of unit 2 and 12; level 1 of unit 1, level 1 of unit 8, level 3 of unit 10; and level 2 of unit 19. A single tooth was recovered from level 1 of unit 11 in the north chamber area. Elements represented include two cranial fragments, two antler fragment, one phalange, one tarsal, one proximal femur epiphysis, two long bone fragments, two rib fragments, ten teeth, and four vertebrae. The proximal femur epiphysis contains a definitive butcher mark occurring along the femoral-acetabular joint. The epiphyseal portion of the bone adjacent to the joint is a typical location to find butchery cut marks associated with disarticulation of the hind leg from the axial skeleton (Capellini 1998). Epiphyseal fusion had not yet
occurred for this juvenile deer. The epiphyses of white-tail deer begin to fuse at 27-32 months, with complete closure reached by 48-63 months of age (Gilbert 1980). The MNI includes two individuals based on age discrimination. Anatomical parts represented include cranial, axial, and appendicular elements. The burned fraction makes up 49% of the white-tail deer assemblage. A single burned long bone fragment recovered from level 2 of unit 8 appears to have been modified for utilization as a possible bone awl.

White-tail deer (*Odocoileus virginianus*) is the most abundant of all animal remains and probably represents the largest single meat source utilized by the prehistoric inhabitants of the site. The species is available year round, although hunting would have been most profitable during the rutting season (September to November) when male deer are less cautious. Deer are very selective in the types of food they consume during various seasons of the year. The warmer months are spent grazing in open fields while in the winter, twigs, buds, and leaves of trees are utilized as food resources (Gottschang 1981). White-tail deer coalesce and travel in small bands or family units with seasonal movement between low open valleys in the summer and upland ridge valleys during the winter months (Gottschang 1981). The prehistoric hunter’s observations of white-tail deer territoriality and seasonal predictability would have facilitated hunting parties to follow the animals preferred environment. The upland location of Facing Monday Creek Rockshelter would have provided an ideal setting for the hunting of white-tail deer, particularly during the fall and winter months of the year.
Order Carnivora

The carnivore order includes medium to large size mammals which have evolved to pursue, kill, and eat their prey. Five families of carnivores were present in Ohio prior to the year 1850 A.D. of which three are represented in the faunal assemblage from Facing Monday Creek Rockshelter. The Procyonidae Family is represented by two teeth of the Procyon lotor more commonly known as the raccoon. Raccoons are medium sized solitary nocturnal mammals weighing 4.5-16.0 kg. Although active through most of the year, extensive feeding in the fall results in a thick subcutaneous layer of fat making up one-sixth of the total body weight. Raccoons make use of a great variety of foods with great preference for acorns in the fall. Over the winter, raccoons spend most of the time sleeping in dens, using the excess fat deposits as a fuel supply. Common den sites are found in natural crevices of logs, rockshelters, and holes in the ground within 0.4 km of a body of water. Mating season occurs in February and March with a single litter born in April and May. Normal activity and feeding is resumed in the spring.

In Ohio, members of the Canidae Family included the domestic dog (canis familiaris), coyote (Canis latrans), red fox (Vulpes vulpes), gray fox (Urocyon cinereorargenteus), and the timber wolf (Canus lupus). One upper canine tooth was identified from level 2 of unit 2. Based on size, the specimen would have belonged to either a large domestic dog or timber wolf. The prehistoric range distribution of the coyote was limited to generally west of the Mississippi and north of the Great Lakes region (Gilbert 1990). The domestic dog is a long established human companion that was most likely not utilized as a food resource but rather as protection, hunting partner, and friend. Wolf remains recovered from ceremonial mound context of the Plains
earthworks are thought to have been regarded as an ideological or ancestral relationship to the animal world (Blazier et al. 2005). The canine tooth from Facing Monday Creek Rockshelter was unmodified and is unknown whether it was transported to the site, held special meaning, or was simply discarded.

A single distal end of a burned humerus belonging to either a red or gray fox was identified. It is reported that the red fox most likely migrated into Ohio from the northeast and Canada after 1750 A.D. The gray fox was well established in the forests of Ohio prehistorically and most likely is represented by the specimen. Habitat of the gray fox includes dense wooded areas, particularly for their dens. The two most important categories of food include small mammals and plant material. Mating occurs January through April with litters born in the early spring.

Mustelids are medium to small sized carnivores including the Long-tailed Weasel (*Mustela frenata*), Striped Skunk (*Mephitis mephitis*), Mink (*Mustela vison*), River Otter (*Lutra canadensis*), Marten (*Martes americana*), Fisher (*Martes pennanti*), and Badger (*Taxidea taxus*). A single right mandible belonging to this family was identified. It is unknown to which species the specimen belongs. Weasels are strictly carnivorous feeding on small rodents, shrews, and rabbits. Large hawks and owls often feed on weasels as well. The Striped Skunk is a nocturnal omnivorous animal with a wide range of habitats although preferring to den on slopes around marshes or streams. Minks are semi-aquatic animals who feed on muskrats, molluscs, frogs, mice, and fish. River Otters are primarily aquatic animals preferring cold, clear streams and lakes. Though once common, the otter is now very rare and has been designated an endangered species in Ohio since 1976. Martens and fishers also include two presently extirpated species that
require a broad home range around a selected territory. The badger distribution is believed to have been limited to the north and western glaciated region excluding southeastern Ohio from its range.

*Order Insectivore*

The Insectivore order is represented by one skull and one mandible identified to the species level as an Eastern Mole (*Scalopus aquaticus*). The mole is a solitary small mammal that burrows beneath the surface of the ground, only surfacing on rare occasions. The principal foods eaten are earthworms, insects, grubs, snails, crustaceans, and spiders with minor amounts of plant matter. Although this animal is found in a wide variety of habitats, it is thought to be an animal of the flatlands and plains not common to southeastern Ohio. Guilday (1961) reported finding the species in a burial mound located on a bluff on the Allegheny Plateau of western Pennsylvania. Further research may reveal a more expansive eastern distribution prior to present day and historic times.

*Order Lagomorpha*

The Lagomorpha is represented in the faunal assemblage by one right mandible of an eastern cottontail (*Sylvilagus floridanus*). The cottontail is a small strictly herbivorous rabbit weighing more than 1.6 kg. Very abundant in Ohio, the preferred habitat is near open fields and brushy areas. Population densities average about one rabbit per 1 to 1.5 hectare (Gottschang 1981). Predator animals such as hawks, owls, foxes, and weasels feed commonly on rabbits. The flesh is tender and good tasting making the eastern cottontail a favored species by hunters.
Order Rodentia

This order of small to medium sized gnawing mammals includes the greatest diversity of species. The family Sciuridae includes woodchucks, squirrels, and chipmunks. The family Cricetidae includes native rats, mice, voles, and lemmings.

The Woodchuck or Groundhog (*Marmota monax*) is represented in the faunal assemblage by one skull fragment and one tooth. Before the arrival of Europeans, woodchucks were scarce in Ohio living primarily in forests. The woodchuck is the largest member of the Sciuridae Family weighing 4-4.5 kg. Primarily solitary vegetarians, a woodchuck increases its weight throughout the summer and fall by 25% preparing for winter hibernation. The winter burrow is typically located in a forested area. The woodchuck emerges from hibernation in February or March to begin the breeding season. Although rarely used as a food resource by humans today, the woodchuck would have been a profitable and good tasting species available during the occupation of Facing Monday Creek Rockshelter.

Two individuals of the Eastern Chipmunk (*Tamias striatus*) are represented by two left mandibles and one claw in the faunal assemblage. Deciduous forests are a favored habitat, living in tunneled burrows that extend nearly 1 m below the surface including a nest, food caches, middens, and several entrances. Where there is abundant food, as many as 12 to 14 chipmunks may live within a 0.1 hectare area. Chipmunks are primarily vegetarians preferring seeds, nuts, and fruit. October is an especially busy time when the nut bearing trees are maturing. Individual chipmunks are known to store about a hectoliter of acorns and seeds for use as food reserves during the winter. Although
available throughout the year, chipmunks diminish activity during the cold winter months and when caring for spring and summer litters.

Twelve specimens including 6 teeth, 1 humerus, 1 left mandible, 1 right mandible, and 3 long bone fragments of unknown squirrel species are included in the faunal assemblage. One species of ground and three tree species of squirrels are present in Ohio including the Thirteen-lined Ground Squirrel (*Spermophilus tridecemlineatus*), Gray Squirrel (*Sciurus carolinensis*), Fox Squirrel (*Sciurus niger*), and Red Squirrel (*Tamiasciurus hudsonicus*). The Thirteen-lined Ground Squirrel is believed to not be present within the unglaciated Allegheny Plateau of southeastern Ohio. The three tree species are common and naturally inhabit the oak-hickory forests. Average weight is between 680 grams for the Fox Squirrel and 523 grams for the Gray Squirrel. The Red Squirrel is smaller in size than the other species. Beechnuts, acorns, walnuts, pignuts, and hickory nuts are favored foods in the fall and winter. Leaf nests are built in hollow trees or branches although the tree squirrel does not hibernate during the winter.

Two individuals of the Meadow Vole (*Microtus pennsylvanicus*) are represented in the faunal assemblage by one skull and two left mandibles. Meadow Voles are the most abundant mammals inhabiting open grassy fields in Ohio with 125-500 or more found within a single hectare. They occasionally inhabit forested environments but not usually rocky areas. The species is a major food source of most predators. The presence at Facing Monday Creek Rockshelter is most likely the remains of an owl or hawk’s meal.

The Muskrat (*Ondatra zibethicus*) is by far the largest member of the family Cricetidae. It is represented in the faunal assemblage by two teeth. The muskrat is
nocturnal and semiaquatic, digging burrows into banks below the water level. Rivers, lakes, streams, ponds, and marshes serve as home sites for these rodents throughout Ohio. A muskrat is rarely found further than 50-60 m from its burrow. The main foods include freshwater mussels and plant material. Natural predators include minks, owls, snakes, snapping turtles, and foxes.

The Eastern Woodrat (*Neotoma floridana*) is represented by a single left mandible in the faunal assemblage. Suitable habitat includes limestone and sandstone cliffs, rockshelters, and rocky outcrops of the unglaciated Allegheny Plateau of southeastern Ohio. Above ground nests made of twigs and grasses are found on ledges or among boulders in the deep recesses of caves and crevices. Known also as packrats, the woodrat is notorious for collecting cultural material and storing the loose items in the back of a nest. Although primarily a vegetarian, the animals frequently chew on bones. The woodrat may be responsible for the numerous gnaw marks observed in the faunal assemblage. The locale of Facing Monday Creek Rockshelter would have served as ideal habitat for the woodrat, particularly after and between episodes of human occupation and faunal discard. The Ohio Division of Wildlife has listed the Eastern Woodrat as an endangered species since 1976.
2. Faunal Invertebrates

The faunal invertebrates include a large and diversified group of animals classified by biologists as Phylum Mollusca or mollusks. Both terrestrial gastropods (land snails) and aquatic pelecypods (freshwater mussels or bivalves) remains were found at Facing Monday Creek Rockshelter. The presence of mussel shell is reasonable given the close proximity to Monday Creek. The inclusion of a riverine resource substantiates a diversified diet. Although land snails are presumed incidental to the site, analysis is useful for environmental reconstruction purposes.

a. Freshwater Mussels

Mussel shell (121.2 g) remains were exclusive to the midden area of the rockshelter. Unfortunately, none of the specimens were identifiable to a species level. A density of 26.4 g/m³ was recovered within the excavated 4.6 m³ of the midden deposit. An even density of shell was found between levels 2-5. Although not a complete representation of the original deposit, the recovered mussel shell appears to have been a significant component of the inhabitants’ of Facing Monday Creek Rockshelters diet.

Adult freshwater mussels live their entire lives partly embedded on the bottom of some body of permanent water. They are most active during the warm summer months as the increased water temperatures initiates the annual breeding season for most species (Parmalee and Bogan 1998; Watters 1995). Thought to be the longest lived freshwater invertebrates, many species live for 20-30 years, and some up to 140 years. An individual will rarely move more than a radial distance of a few hundred yards during its lifetime. The ideal habitat for most species consists of sand and gravel river beds in a
stretch of shallow water with a good current. The right conditions result in the
development of dense mussel beds. The most common mammal predator is the muskrat
although raccoons, mink, otters, and some waterfowl also utilize mussels for food. The
Monday Creek can be described today as a tranquil meandering fluvial river with
hydraulically smooth laminar flow of low velocity. However, no known species of
freshwater mussels currently inhabit the reaches of the Monday Creek (Per. Com. with
Mike Steinmaus, Coordinator of the Monday Creek Restoration Project; Mitch Farley,
ODNR Representative). The present status of the once rich and diverse mollusk
populations is largely attributed to the addition of silts and sediments consequential of
agriculture, logging, and mining. Prehistoric human predation of a mollusk community
would not have over depleted the availability of that resource (Claasen 1998).

Native populations the world over have been observed collecting shellfish. With
the possible exception of short periods of cold and ice during the winter months, mussels
would have provided an abundant food resource available throughout most of the year.
There is some ethnohistoric evidence that the Native North Americans used a technique
of dragging a branch across shoals to capture mussels known as brailing (Claasen 1998).
The natural closure response of the shellfish allowed the collector to lift the branch out of
the water with the mussels attached, eliminating the need for total immersion. Other
methods may include hand collecting or using rakes with baskets. The nutritional value
of freshwater mussels is an average of 68 calories per 100 grams of meat (Parmalee and
Bogan 1998). When compared to other available food resources (Table 5), freshwater
mollusks appear to have had a less significant nutritional status. It is highly likely that
collecting of mussels was a gender specific activity based on the ethnographic data
(Claasen 1998). The benefits of gathering a reliable and predictable resource have been well documented in early sedentary life.

b. Land Snails

Snails are small invertebrate animals whose soft parts are enclosed within a hard exoskeleton composed primarily of calcium carbonate. The allocation of species is governed by climatic and local habitat factors and therefore serve as a proxy to conditions of the past environment useful to archaeologists (Evans 1972). On a local scale, environmental factors which determine the distribution and abundance of certain species include the lime content of the soil, slope, vegetation, exposure, and shade. Most species feed and move around at night, while during the day confining themselves to cooler, moist, and sheltered places. During the winter months, many species hibernate by burrowing within the soil. Overall, snails are scavengers who commonly feed on dead and decaying plant and animal matter.

Twenty-two grams of snail shell were recovered during excavation from midden and down slope units. Excluding those units of overall low cultural density, a snail density of 2.82 g/m³ is found within the 7.8 m³ of midden and down slope units. The density reflects snail association with the intensely occupied midden area of the rockshelter. Snail shell is evenly distributed when comparing between levels. Dr. Thomas Watters, Curator of Molluscs at Ohio State University, identified three species of land snail and one aquatic within the assemblage. The land snail species include Triodopsis tridentata (Say), Triodopsis albolabris (Say), and Discus cronkhitei (Newcomb) (Taft 1961). The aquatic snail species is a Campeloma decisum (Say). All
of these snails are native to Ohio and the immediate study area. The Triodopsis are associated with a wooded habitat. The species of Discus occurs in wet lowlands. The single aquatic species may have been introduced incidentally during the collection of river mussels.

Whether or not prehistoric people utilized snails for food is still a matter of speculation. The presence of naturally occurring species and overall low densities does not readily support the possibility at this time. The occurrence of snails within the midden debris is most likely incidental to the human occupation of the rockshelter. The disposed animal bone and mussel shells provided a readily available supply of needed calcium carbonate within a mix of loose organic soils. The Facing Monday Creek Rockshelter provided ideal conditions for snail populations feeding on the dead and decaying matter within the organic midden left behind by the human inhabitants. The required habitat of the identified species supports a local environment during the Late Woodland similar to that of today, a dry wooded northwest facing slope at the edge of marshy riverine lowland.
CHAPTER V. REGIONAL PERSPECTIVE

A. Comparative Research

A synopsis of published rockshelter sites and their artifact assemblages within the region is necessary to contextualize the general site function, broad cultural patterns, and regional correlations of Facing Monday Creek Rockshelter. The dominant time span during which rockshelters of southeastern Ohio were occupied is the Late Woodland. These findings are based on reports of analyzed data from Ohio rockshelter sites including Wise Rockshelter (Oplinger 1981), Raven Rocks (Prufer 1981), Carpenter Shelter (Murphy 1989), Peters Cave (Prufer and McKenzie 1966), White Rocks Cave (Ormerond 1981; Capellini 1998), and Chesser Cave (Prufer 1967). Comparisons are made with rockshelter sites of eastern Kentucky including Sparks Rockshelter (Fitzgibbons et al. 1977) and Dameron Rockshelter (Vento et al. 1980). Results of this research on the occupation of Facing Monday Creek Rockshelter provide insight into the hunting and collecting patterns of the Late Woodland period when compared to the archaeological record of similar site types.

Olaf Prufer excavated Chesser Cave in 1965 (Prufer 1967). Located along a small tributary to Raccoon Creek just beyond the watershed of the Hocking River Valley, the Chesser Cave system serves as a useful comparative occupation. A thick midden deposit (76-92 cm) within the shelter area is thought to represent a repeated use discard pattern of a single Late Woodland cultural unit. A single radiocarbon date of A.D. 1070 ±140 places the deposit at the transitional phase between the end of the Late Woodland and the beginning of the Late Prehistoric. Total volume excavated was over 50 m³. The artifact inventory briefly includes 1,136 pottery sherds, 925 lithic tools, 80 cores, 32,930 pieces
of debitage, 62 bone tools, and 13,348 bone fragments. The faunal evidence indicates the shelter’s primary use was for specialized hunting activities during repeated short occupations. This is based, in part, on a very high frequency of white-tail deer (104 individuals). The stone tool assemblage includes predominantly Chesser Notched (29 specimens) and triangular (86 specimens) projectile points. Prufer (1967) assigned a Chesser Phase to the artifact assemblage distinguished from the closely related Peters Phase based upon the presence of Chesser Notched points, crude unifacial blades, and limestone tempering of the Peters Cordmarked pottery. It is hypothesized by Prufer (1967) that the use of the shelter for hunting was a specialized winter time activity with the occupants returning to a more permanent settlement along the alluvial valley to practice agriculture during other seasons.

Carpenter Shelter (Murphy 1989) is located 5 miles from Chesser Cave in the Leading Creek drainage. It too represents a single Late Woodland component, though smaller in size (53 m²). Total volume excavated is 2.8 m³. The midden depth is recorded as 3-6 inches (8-15 cm). The artifact assemblage of Carpenter Shelter includes 1,272 pieces of debitage, 19 triangular projectile points, 1 Chesser point, 18 limestone tempered pottery sherds, 12 white-tail deer bones, and 15 utilized flakes. One small feature of burned fire-cracked rock was encountered. The diagnostic traits of Prufer’s Chesser Phase are minimally present. Both Chesser Cave and Carpenter Shelter are also similarly located within a very short distance to natural outcrops of Brush Creek chert and limestone. It is of no surprise that these readily available resources dominate the lithic tool material and ceramic tempering. Murphy’s interpretation is that Carpenter Shelter served as a “sedentary” Late Woodland site followed by sporadic occupation by Late
Prehistoric hunting parties. Comparatively, the density of cultural material and features at Carpenter Shelter are substantially low to fit within this functional category. It is more likely the shelter was utilized intermittently as a resource procurement or hunting camp site based on the available data.

Wise Rockshelter (Oplinger 1981) of Jackson County was also determined to be a Late Woodland foraging station utilized by small groups who left their village for brief periods during the late summer or early fall. The shelter is small in size with 27 m² of surface area. An undifferentiated ashy midden 30-95 cm in depth had accumulated at Wise Rockshelter. Features include seven shallow pits of fire-cracked rock and charcoal interpreted as the remains of “numerous brief fires” and one large rock lined “permanent” fire feature. The entire site volume of approximately 18 m³ was excavated. The artifact inventory includes 77 projectile points, 118 pottery sherds, 3,613 bone fragments, and 1,764 pieces of lithic debitage. The large number of projectile points and faunal materials support hunting as the dominant activity. The faunal species are very similar to those from Facing Monday Creek Rockshelter.

Raven Rocks (Prufer 1981) of Belmont County is determined to be a repeatedly occupied specialized Late Woodland site utilized for the manufacture of bone tools. The artifact inventory and a radiocarbon date place the site at 860 A.D. Hunting is apparently the major activity that was performed at the site but decidedly not exclusive for food requirements. Faunal materials consist of primarily split appendicular long bone elements including 354 expedient bone tools. The lithic inventory includes a total of 44 lithic tools and 241 pieces of debitage. Lithic reduction was clearly not a function of site utilization at Raven Rocks.
White Rocks (Ormerond 1983; Cappellini 1998) of Monroe County was intensively utilized as a primary locale for the hunting and processing of white-tail deer. The hunting camp was occupied seasonally from the Early Woodland through the Late Prehistoric periods. A total of 47.25 m³ was excavated including a deep midden deposit of 61-71 cm. Features include various hearths, excavated pits, and post molds. A radiocarbon date from one of the carbonized wooden posts provided an age of 600-700 A.D. The faunal assemblage included 72,669 fragments of bone. Bone tool manufacturing was more important than lithic reduction at this site. A nearly identical cultural pattern is observed at Raven Rocks.

The Peters Cave (Prüfer and McKenzie 1966) site of Ross County, Ohio includes an Early Woodland occupation within Shelter A and a Late Woodland occupation within Shelter B. The Late Woodland occupation appears to be more intensive than that of the Early Woodland. The artifact inventory of Shelter B includes 34 lithic tools, 304 pieces of debitage, 393 bone fragments, 45 mollusc specimens, 13 bone tools, 109 Peters Cordmarked ceramic sherd, and 118 Peters Plain ceramic sherd. The Salt Creek Site (Prüfer and McKenzie 1966) is located 3 miles from Peters Cave at the confluence of the Sciota River and Salt Creek. This village site is contemporaneous with the occupation of Peters Cave Shelter B including nearly duplicate types of ceramic and triangular projectile specimens although in greater quantities. Shelter B is believed to represent repeated short occupations of hunters who left their nearby village between May and October during the Late Woodland Peters Phase at approximately 800 A.D.

The cultural patterns associated with rockshelter use of eastern Kentucky appear to be associated with the Late Archaic/Early Woodland period, earlier in time and most
likely different logistical patterns than that observed in southeastern Ohio. Gremillion (2004) associates evidence from rockshelters in the Red River drainage with the initial adoption, processing, and storage of small edible seeds at 1500 B.C. The artifactual materials examined were from seven rockshelter sites including Cold Oak, Red Eye Hollow, Courthouse Rock, Seldon Skidmore, Hooten Hollow, Cloudsplitter, and Newt Kash. Sparks Rockshelter (Fitzgibbons et al 1977) of the Paint Creek drainage of eastern Kentucky is a shallow stratified multicomponent site intermittently occupied during the Late Archaic through the Late Prehistoric periods. The rockshelter served as a locus for hunting, gathering, and food processing with an apparent shift at 1700 B.C. to more intensive utilization of plant resources and riverine fauna. The most intensive use of the shelter occurred during the transitional Late Archaic through the Early Woodland sequence. Dameron Rockshelter (Vento et al 1980) is a stratified multicomponent site along the Paint Creek drainage occupied from the Late Archaic through the Late Woodland period. Like Sparks Rockshelter, Dameron Rockshelter also served as a locus or way station for hunting, collecting, and food processing although for longer or more frequent periods of time. The Early Woodland through Late Woodland materials from Dameron are most closely related to contemporaneous assemblages in the Mid-Ohio Valley. While the basic function of rockshelters in eastern Kentucky remained unchanged in the Woodland period, the scarcity of Woodland materials suggests some sort of shift in upland exploitation or settlement patterns which clearly differs from that seen in southeastern Ohio.
<table>
<thead>
<tr>
<th>Rockshelter Sites</th>
<th>Area (m²)</th>
<th>Midden/Cultural Depth (cm)</th>
<th>Temporal Period</th>
<th>Site Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carpenter Shelter (Murphy 1989)</td>
<td>53</td>
<td>8-15</td>
<td>Late Woodland</td>
<td>Hunting Camp*</td>
</tr>
<tr>
<td>Chesser Cave (Prufer 1967)</td>
<td>330</td>
<td>76-92</td>
<td>Late Woodland</td>
<td>Hunting Camp</td>
</tr>
<tr>
<td>Dameron Rockshelter (Vento 1980)</td>
<td>15</td>
<td>40-80</td>
<td>L. Archaic to L. Woodland</td>
<td>Hunting Camp</td>
</tr>
<tr>
<td>Facing Monday Creek Rockshelter (Spertzel 2005)</td>
<td>72</td>
<td>20-40</td>
<td>Late Woodland</td>
<td>Hunting Camp</td>
</tr>
<tr>
<td>Owens Shelter 1 (Pitner 2000)</td>
<td>48</td>
<td>No midden</td>
<td>Late Prehistoric</td>
<td>Opportunistic Site*</td>
</tr>
<tr>
<td>Peters Cave A (Prufer and McKenzie 1966)</td>
<td>92</td>
<td>30</td>
<td>Early Woodland</td>
<td>Hunting Camp</td>
</tr>
<tr>
<td>Peters Cave B (Prufer and McKenzie 1966)</td>
<td>367</td>
<td>30-40</td>
<td>Late Woodland</td>
<td>Hunting Camp</td>
</tr>
<tr>
<td>Piney Run Cave (Ormerond 1983)</td>
<td>7</td>
<td>No Midden</td>
<td>Unknown</td>
<td>Opportunistic Site*</td>
</tr>
<tr>
<td>Raven Rocks (Prufer 1981)</td>
<td>273</td>
<td>30-46</td>
<td>Late Woodland</td>
<td>Hunting Camp</td>
</tr>
<tr>
<td>Sparks Rockshelter (Fitzgibbons et al. 1977)</td>
<td>145</td>
<td>10-30</td>
<td>L. Archaic to L. Prehistoric</td>
<td>Hunting camp</td>
</tr>
<tr>
<td>White Rocks (Ormerod 1983)</td>
<td>378</td>
<td>61-71</td>
<td>Early to Late Woodland</td>
<td>Hunting Camp</td>
</tr>
<tr>
<td>Wise Rockshelter (Oplinger 1981)</td>
<td>27</td>
<td>30-95</td>
<td>Late Woodland</td>
<td>Hunting Camp</td>
</tr>
</tbody>
</table>

Table 7. Comparison of rockshelter sites discussed in text by area, cultural depth, temporal period, and site function. Note: *As determined by authors data.
Figure 31. Ohio rockshelter sites discussed in text:
(1) Facing Monday Creek Rockshelter; (2) Raven Rocks and Piney Run Cave; (3) Carpenter Shelter; (4) Chesser Cave; (5) Wise Rockshelter; (6) Peters Cave; (7) White Rocks; (8) Owens Shelter 1; (9) Ash Cave; and (10) Kettle Hill Cave.
B. Potential Rockshelter Functions

Hypothetically, six functional categories of rockshelter utilization can include residential sites, hunting camp sites, logistical camps, quarry reduction sites, ritual/burial sites, and opportunistic sites. The categories are time dependent, with each site type utilized for successively shorter periods of time from months to weeks, days, or hours. The artifact inventory, density, and midden accumulation infer intensity or duration of use. This rockshelter typology is based on comparative research of assigned rockshelter site types previously discussed. Of course, the function of some shelters shifted during the span of their use. The size and location of rockshelters would have also influenced site function. Many smaller utilized shelters were not suited for long term habitation. Inadequate height or floor space would limit use to short term logistical purposes. The potential of a site to serve multiple purposes can not be neglected. Most of the Ohio rockshelters previously described have been categorized as short term hunting campsites. Insights into the cultural similarities and logistical patterns of those who utilized rockshelter environments are of vital importance, particularly by small hunting parties of the Late Woodland. The following is a summary of potential rockshelter functions based on the comparative research.

1. Base Camps/Residential Sites

Few rockshelters have been utilized as permanent sedentary residential locations. Murphy (1989) reports two sites as potentially fitting the criteria of a residential site including Ash Cave and Kettle Hill Cave of Hocking County. These shelters were occupied from the Archaic period through the Late Prehistoric although most intensively
during the Late Woodland. Unfortunately, less data exists of these large shelters since they were some of the first and most sought after by relic collectors. Deep midden deposits of nearly 1 m or more are expected with an abundance of lithic debitage, tools, pottery, bone, shell, botanicals and domestic features. These shelters tend to be large in area, over 300 m², providing ample domestic space with a reliable source of water nearby.

2. Hunting Camps

These sites have midden deposits averaging 50 cm in depth. Less artifact diversity characterizes the specialized function of the sites with assemblages limited to tools for hunting and butchering tasks associated with the faunal remains of butchered animals, particularly that of white-tailed deer. Brush (1990) states that debitage of hunting camp sites is expected to be limited to smaller size classes specifically to the final manufacture and resharpening of tools. If a lithic source is available nearby, I would also expect to find larger flake sizes and core reduction for the manufacture of butchering, chopping, and scraping tools associated with processing of large game animals.

3. Logistic Camps

These site types contain shallow midden deposits of 10 cm in average depth often consisting of a single fire hearth and a limited scatter of lithic debitage and animal bone. It is likely that logistic camps served as temporary shelters for individuals or small groups
seeking shelter between resource extraction sites and the base camp. These sites appear to have assemblages similar to hunting camp sites but on a lesser scale or intensity of use.

4. Quarry Reduction Sites

These sites are located near chert outcrops and used as temporary shelters while raw materials were reduced to more portable cores or preforms. Such sites contain large amounts of primary chert debitage, but little else. The association of a local chert source, primary reduction debitage, and faunal remains would suggest a potential duel function of quarry reduction and hunting camp sites within a single locale.

5. Ritual/Burial Sites

Rockshelters have occasionally been utilized as burial sites. Pedde and Prufer (2001) summarize Late and Transitional Archaic mortuary practices from five rockshelter sites in southern Ohio. In every instance, complete or partially disarticulated human skeletal remains were found randomly strewn through the archaeological or natural deposits. Burial goods were not associated with any of these remains. Although, a well preserved human burial wrapped in several layers of fiber cloth is reported from Kettle Hill Cave in association with a digging stick and feather object (Murphy 1989). The temporal context is unknown for this burial. The ritualistic use of rockshelters as burial sites appears to have temporal affiliations with the Late Archaic to Early Woodland transition although a definitive description for this potential site function would require more research.
6. Opportunistic Sites

These sites appear to have been utilized as emergency shelter or as temporary resting locales. These shelters are often small in size with no midden deposits or features. A limited amount of debitage may be the only sign of human utilization. I tested several of these small shelters during the summer of 2004 within the Monongahela National Forest in West Virginia, several of which I had utilized myself for quick shelter from an unexpected rain storm.

C. Synthesis of Cultural Evidence

Following the expectations outlined for each research hypothesis, results of the analyses of Facing Monday Creek Rockshelter are synthesized with comparative research in order to summarize the findings. The comparative research has indicated that rockshelter type sites of southeastern Ohio almost exclusively contain a predominant Late Woodland component. Multicomponent sites tend to show a general trend of initial occupation at the beginning of the Early Woodland period with continued minor use throughout the Middle Woodland period. The Late Woodland is marked by an increase in frequency, duration, and intensity of utilization continued into the Late Prehistoric. Late Woodland diagnostics of the Scioto Series-Peters Phase or Chesser Phase dominate the lithic and ceramic assemblages. Nearly all of the rockshelter sites discussed were determined to have been utilized by their prehistoric inhabitants as a temporary hunting camp. The artifact assemblages show some variances among the degrees of hunting specialization. For example, the occupants of White Rocks and Raven Rocks appear to have utilized hunting as a means to obtain bone for tool manufacturing. The degree of
lithic reduction is also not a constant among sites. Those rockshelters situated near available chert sources reflect greater abundance in their assemblages. Prufer (1967) reports a quarried Brushcreek outcrop less than one-half mile northeast of Chesser Cave whose large lithic assemblage was dominated by the locally available material. These similar cultural patterns of rockshelter utilization are equally evident at Facing Monday Creek Rockshelter.

Chronologically, Facing Monday Creek Rockshelter is a multicomponent site although it appears to have been most intensively utilized during the Late Woodland period. Human occupation began in the Early Woodland period, as determined by the radiocarbon dates from the base of both the midden and feature 8. The Riverton and Early Woodland Stemmed projectile points are also associated with this earlier occupation. A single true blade made of Vanport material also suggests Middle Woodland temporality. Subsequently, the site gained in importance during the Late Woodland period. Although the midden had considerable stratigraphic mixing, the artifact assemblages provide a temporal frame from which to infer intensity. The majority of typological referents associate Late Woodland affinity to the site. These include members of the Lowe Cluster projectiles along with triangular varieties. Ceramics are chert and limestone tempered plain ware of the Peters Plain variety diagnostic of the Late Woodland in southeastern Ohio. An absence of shell tempered ceramics suggests abandonment during the Late Prehistoric.

The lithic assemblage contains an abundance of primary and secondary reduction flakes and cores. The materials are also overwhelmingly dominated by the local use of Upper Mercer chert. The low diversity of tools to debitage ratio combined with the high
number of utilized flakes suggests large flake production was an important component of site utilization. The manufacturing of projectile points, choppers, and scraper tools are presumed to be associated with hunting and game processing. Whether Facing Monday Creek Rockshelter was used as a locale for the entire reduction sequence is uncertain. It appears that preforms of nonlocal materials were transported to the site for intended final reduction and use. The aggregate size class analysis confirms a low frequency of microdebitage which suggests late or final stage reduction was minimal. Although some tools may have been manufactured from raw material to a usable form on site, the general pattern shows an incomplete sequence diminishing after secondary stage reduction. At this point, preforms made of the local chert were probably transported to a sedentary location for final stage reduction. This pattern reflects a lithic transport juncture (Pecora 2001) or termination point of partially reduced lithic material which is transported to another locale. The length of a chipped stone manufacturing trajectory within a single location is thought to reflect the range of prehistoric activities carried out as well as the intensity of occupation.

The faunal assemblage includes a diversity of species dominated by white-tail deer. The evidence suggests Facing Monday Creek Rockshelter was utilized as a locale for the hunting and processing of medium to large size game. Dismemberment of white-tail deer is evidenced by a butcher cut found at the hind joint separating the femur from the pelvic area. The high frequency of burned white-tail deer remains infers that the animals were cooked and consumed on site. Cranial, axial, and appendicular elements were all present although frequency could not be determined due to the low number of identified materials. Whether processed game was transported from this site to a
A sedentary location is uncertain. The amount and diversity of foods consumed by hunter/collectors while away from residential sites is often underrepresented in dietary reconstructions. Nut and mussel shell support a greater variety of foods collected at the site. If hunting played a supplementary role to a primary food source, such as corn, then species selectivity would be greater. The presence of a young juvenile deer is typical of a predator-prey relationship where stalking is the primary hunting technique.

Seasonality of site use is minimally determined to have been during the fall months of late September through early November based on the abundant amounts of burned nut fragments. This is also the best seasonal opportunity to hunt animals preparing for the winter with excess fat reserves. The presence of white-tail deer antler also suggests a late summer to early winter occupation. The species of land snail indicate the environment would have been under a deciduous forest cover in the site vicinity. A uniform rate of sedimentation over time infers relatively stable climatic conditions during the Late Woodland period.

The duration of each stay at Facing Monday Creek Rockshelter was short. This is based on the negative evidence or lack of significant domestic related features and low density of cultural materials. The ceramic assemblage includes a minimum number of two Peters Plain Late Woodland vessels. Features include a series of small temporary fires sufficient for overnight to several day durations. The high frequency of unburned rodent remains, gnawed faunal material, and land snails found throughout the midden is indicative of repeated abandonment. The presence of a meadow vole species outside of its typical open grassy habitat also may infer the occurrence of predatory birds occupying
the site. A repeated abandonment and reoccupation cycle associated with seasonality appears to be the case.

In summary, the data suggest Facing Monday Creek Rockshelter served as a dual function locale for both lithic reduction and temporary hunting camp. The site was repeatedly occupied and abandoned by small groups who utilized the shelter as part of a greater logistical system during the Late Woodland period. Seasonality is during the late summer through early winter associated with the hunting of game animals, collection of nuts, freshwater mussels, and other upland forest and riverine resources. The close proximity of the shelter to an Upper Mercer outcrop no doubt influenced the selectivity of this hunting location. The extraction and reduction of lithic materials was important to the people who found the shelter useful. The interruption in the lithic reduction trajectory suggests transport from this site to another locale. It is hypothesized that this other locale is that of a main residential or village site along the lower reaches of the Monday Creek. Binford’s (1980) logistical system of collectors is defined by specialized task groups or food procurement parties who leave the residential base in search of target resources at a known location. Facing Monday Creek Rockshelter functioned as a temporary locale where task groups may have slept, ate, and/or procured and processed faunal and/or lithic materials for transport back to the residential base. These findings are within the general cultural pattern of rockshelter use seen throughout southeastern Ohio.

Ethnographic sources provide additional evidence of hunting practices among various historic tribes of eastern North America. The hunting of large game became a very temporary and specialized activity among native people as dependence upon crop plants for subsistence increased. The Miami (Kinietz 1965) lived in permanent villages
from which seasonal hunts took place. Late fall and winter hunts took place at a greater
distance from the village than summer hunts. The winter communal hunts involved the
men accompanied by women and children who smoked the meat and prepared the skins
before returning to the village. Following short summer hunts, small parties returned to
the village with whole or partially butchered fresh meat. The principal animals sought
were deer, bear, and beaver with minor amounts of muskrat, raccoon, river otter, turkey,
and fish. Similar practices have been described by the Natchez (Swanton 1911), Huron
(Kinietz 1965), Ottawa (Kinietz 1965) and Shawnee (Howard 1981). Faunal evidence
from the Graham Village Site near Logan, Ohio indicates that the people who occupied
the site participated in late summer and early fall specialized hunts within the nearby
upland forest (Mckenzie 1967).
CHAPTER VI. CONCLUSIONS

During the Late Woodland period in the Mid-Ohio Valley, populations that previously lived in dispersed household hamlets began to aggregate in larger settlements at fixed locations for part of the year. The populations of these larger village settlements still utilized a variety of landforms across the landscape (Wakeman 2003). Due to the concentration of populations within the new settlement type over extended time periods, increased environmental and social risks would have required changes in resource procurement. New tactics would need to implement a continuous supply of wild and cultivated resources. Environmental risks could be offset by intensifying cultivation and resource exploitation. The continued practice of hunting and collecting within the developing agricultural system may have been the key to Late Woodland economic organization and success, perhaps necessary for farming economies to succeed.

The increased use of rockshelter environments during the Late Woodland period is significant to changes in resource procurement strategies. The aggregation to larger village settlements within the broader floodplain/terrace environmental settings would have required an increase in distances traveled to those upland settings of minor tributaries. This suggests a functional attribute for rockshelters as temporary hunting stations or bivouac sites (Adovasio et al. 2001) when the distance traveled has increased from the main habitation settlement to those upland resources. The utilization of rockshelters is related to their close association with the resource availability of an upland setting coupled with an opportune space to accomplish specialized tasks. Rather than being a site specific isolate, Facing Monday Creek Rockshelter may represent a cultural pattern of rockshelter utilization associated with subsistence organization on a grander
scale. Through identifying rockshelters as functionally significant locations, nuanced perspectives of Late Woodland cultural systems emerge.

Facing Monday Creek Rockshelter thus represents one of many rockshelters in the unglaciated region of southeastern Ohio. These shelters were intermittently utilized for a span of 2,500 years, although most intensively by the Late Woodland people. Small hunting parties visited this and other local shelters during travels away from nucleated settlements. Their primary objectives included exploitation of fauna and collecting of food and material resources. The general scarcity of earlier Archaic and Woodland materials suggests some sort of shift in upland exploitation and settlement patterns following the end of the Middle Woodland period. As the information base derived from the systematic excavations of these subsistence stations matures, it will become possible to generate falsifiable propositions supported by greater empirical evidence about the logistical behaviors and cultural continuity associated with rockshelter use.
REFERENCES CITED

Abrams, Elliot M., Christopher Bergman, and Donald A. Miller

Adovasio, J.M., R. Fryman, A.G. Quinn, D.C. Dirkmaat, and D.R. Pedler

Andrefsky, Jr., William

Beatley, Janice C.

Bernhardt, Jack E.

Binford, Lewis R.


Blazier, Jeremy, AnnCorinne Freter, and Elliot M. Abrams

Brush, Nigel R.
1990 *Developing an Archaeology of Place: A Debitage Analysis of Rockshelter Utilization in the Lower Killbuck Valley of Holmes and Coshocton Counties, Ohio*. PhD Dissertation, Department of Anthropology, University of California, Los Angeles, California.
Capellini, Terence Dante  

Claassen, Cheryl  

Crabtree, Don E.  

Cramer, Ann C.  

Delcourt, Hazel R.  

Delcourt, Paul A., Hazel R. Delcourt, Cecil R. Ison, William E. Sharp, Kristen J. Gremillion  

DeRegnaucourt, Tony  

Donahue, Jack and Adovasio  

Evans, John G.  
Farrand, William R.


Gilbert, B. Miles

Gottschang, Jack L.

Gremillion, Kristen J.

Guilday, J. E.

Hansen, Michael C.

Howard, James H.

Justice, Noel D.

Kibbler, Karl W.

Kinietz, W. Vernon
Kooyman, Brian P.

Martin, Art

McKenzie, Douglas H.

Merrill, William M.
1950 *The Geology of Northern Hocking County, Ohio*. PhD Dissertation, Ohio State University, Columbus, Ohio.

Moran, Emilio F.

Murphy, James L.

O’Conner, Terry

Oplinger, Jon

Ormerond, Dana E.

Parmalee, Paul W. and Bogan, Arthur E.
Pedde, Sara E. and Olaf H. Prufer

Peoples, Nicole M.

Pearsall, Deborah M.

Pecora, Albert M.

Pitner, Gavine N.

Prufer, Olaf H.


Prufer, Olaf H., Dana A. Long, and Donald J. Metzger

Prufer, Olaf H. and Douglas H. McKenzie
Ray, Louis L.  
1974  *Geomorphology and Quaternary Geology of the Glaciated Ohio River Valley.*  

Reitz, Elizabeth J. and Elizabeth S. Wing  

Schiffer, M. B.  
1987  *Formation Processes of the Archaeological Record.*  University of New Mexico Press, Albuquerque, New Mexico.

Seeman, Mark F.  

Seeman, Mark F. and William S. Dancey  

Shane, Linda C.K., Gordon G. Snyder, and Katherine H. Anderson  

Shott, Michael J.  

Shott, Michael J., and Richard W. Jefferies  

Stout, Wilbur and R.A. Schoenlaub  
1945  *Occurrence of Flint in Ohio.*  Ohio Department of Natural Resources, 4th Series, Bulletin 46.  Blank Book Company, Columbus, Ohio.
Swanton, John R.

Taft, Celeste
1961  The Shell Bearing Land Snails of Ohio. Bulletin of the Ohio Biological Survey, V. 1, No. 3. Ohio State University, Columbus, Ohio.

Talalay, L., Donald R. Keller, and Patrick J. Munson

Tight, W.G.

Vento, F. J., J. M. Adovasio, and J. Donahue

Wakeman, Joseph E.
2003  *Archaeological Settlement of Late Woodland and Late Prehistoric Tribal Communities in the Hocking River Watershed, Ohio.* Unpublished M.S. Thesis, Environmental Studies and the College of Arts and Sciences, Ohio University, Athens, Ohio.

Waters, Michael R.

Watters, Thomas G.

Wymer, Dee Anne
Wymer, Dee Anne