A Comparative Analysis of the Archaic through Woodland Period Landscape Usage and
Occupation History of the Nazarene Rockshelter (33HO701), Hocking County, Ohio

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Master of Science

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This thesis titled
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Occupation History of the Nazarene Rockshelter (33HO701), Hocking
County, Ohio.

by

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ABSTRACT

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In the Hocking Valley, southeastern Ohio, rockshelter occupations date primarily to the Late Archaic Period and Late Woodland Period. The transition from the Archaic Period to the Woodland Period represents a shift in the usage of the landscape by prehistoric peoples and a change in occupational patterns. This transitional period is marked by a shift from mobile hunter-gatherers to more sedentary horticulturists who are associated with the advent of ceramics and burial mounds. The changes in occupational and settlement patterns are correlated with climatic shifts in the valley that resulted in altered resource availability and, as a result, prehistoric peoples altered their usage of certain landforms. These shifts in landscape and resource usage along with fluctuations in mobility and settlement patterns are reflected at Nazarene Rockshelter. These shifts correspond with changes in site density and usage at Nazarene Rockshelter. At the completion of the analysis of the Woodland component at this site and incorporation of these data with the previously studied Archaic component, these changes are now better defined.

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CHAPTER I: INTRODUCTION

Rockshelters have provided abundant data from which to reconstruct past human activities. These site types are often dry, as a result, they are optimal for preserving perishable materials. These sites often have deep stratigraphic records that can aid in reconstructing prehistory. Rockshelters are a part of the overall prehistoric settlement pattern and are crucial to reconstructing how landscapes were utilized in the past.

The subject of this thesis, the Nazarene Rockshelter site (33HO701), is located in Hocking County, Ohio (Figure 1). This area is on the edge of the unglaciated section of the Allegheny Plateau in the Hocking River Valley. The plateau is heavily dissected by narrow valleys separated by low, rolling hills (Murphy 1989). Hillside cliffs and ravines contain numerous sandstone rockshelters and caves. Larger valleys have well-developed floodplains and low Wisconsinian terraces, the latter formed during the most recent Ice Age (Maslowski et al. 1992).

The site itself is located in a floodplain bordering the Hocking River, within a Black Hand Sandstone cliff wall (Merrill 1950). Above this cliff wall is an Illinoisan terrace that has evidence of cultural occupation in both the Archaic and Woodland periods (Merrill 1950; Nelson 2008). Surrounding the shelter are rolling forested hills that contain many small river drainages. The site has evidence of cultural occupation dating from the Early Archaic into the Late Prehistoric (Nelson 2008).

The Hocking Valley has a diverse prehistory that has its own unique cultural patterns. In examination of the cultural history of this region, it is apparent that the landscape played a crucial role in how it was settled. Archaeological research of
Figure 1. Site location indicated by star. Picture taken facing north showing Nazarene Rockshelter (Division of Geologic Survey 1992).
rockshelters in the Hocking Valley is highly fragmented. Much of the research has studied each cultural period as a separate entity without examination of how they are connected and what changes occur between them. This is largely due to most shelters not offering a complete archaeological record from the Early Archaic into Late Woodland periods.

A rockshelters’ role in settlement varies based on their proximity to resources and location relative to other landforms. In addition, their uses change based on current subsistence patterns. The study of rockshelters helps determine how these site types are utilized. Understanding the use of these site types also helps elucidate the settlement and utilization of prehistoric sites on other parts of the landscape.

This study of Nazarene Rockshelter will answer two questions: 1) Is there a change in how rockshelters were utilized between the Archaic and Woodland periods. 2) If change took place, how is it related to subsistence and settlement pattern changes? Addressing these questions will further our understanding of how changes in settlement and subsistence influenced changes in behaviors, both within and outside of shelter sites in the Hocking Valley. While the cultural record has been examined in rockshelters in this region, little has been done to compare the different temporal periods.

Environmental Setting

The natural environment was in a state of transition during the Early Archaic Period (8000-5500 B.C.). The recent end of the Wisconsinian Glacial Period at approximately 8000 B.C. and beginning of the Holocene epoch led to profound changes in the flora and fauna of the Hocking River Valley. The glacial-age steppe environment gave way to a more mixed mesophytic forest. Plants that could be exploited for food
resources were still not very abundant during the Early Archaic but the climate was becoming less severe (Shane et al. 2001).

The Hypsithermal Period (6,000-2,000 B.C.) covers the end of the Early Archaic Period and lasts through part of the Late Archaic period (3000-1500 B.C.). The climate at this time was warmer and drier than the present, resulting in a reduction of vegetation and fauna (Shane et al. 2001). In the Hocking Valley, populations responded to this by moving out of the valley into areas where climate was more favorable (Stump et al. 2005). The Archaic is interspaced with periods of cooling and warming. Generally, the Late Archaic period climate continued this warming trend but with an increase in rainfall (Mayeski et al. 2004; Wanner et al. 2008). There is also an increase in mast species during this period (Shane et al. 2001). Late Archaic populations then began to move back into the valley and populations dramatically multiplied (Stump et al. 2005).

During the Woodland period there were periodic episodes of warming and drying (Mayeski et al. 2004; Wanner et al. 2008). Mast species declined during this period. The start of agriculture is sometimes correlated with the decline in mast species (Shane et al. 2001). These environmental shifts are often correlated with changes in settlement throughout prehistory. Rockshelters are part of these settlement patterns as a result their usage will vary.

Climate

The modern day climate of Hocking County has well defined seasons, marked by cold and snowy winters and warm, humid summers. The temperatures in Hocking County vary widely from year to year. Summer temperatures average between seventy-one and eighty-five degrees. Winter temperatures average approximately thirty-two degrees. The
average annual precipitation is 990 millimeters, most occurring April through September (Lemaster and Gilmore 1989). Winds are typically low, and their highest average is eight miles per an hour in the spring (Lemaster and Gilmore 1989).

Resources

Resources available to prehistoric inhabitants of the Hocking Valley have varied based on changes in the environment and climate within the valley. These have included resources that are foraged: nuts, grasses and other plants. Faunal resources exploited through hunting are also utilized throughout prehistory. In addition to food resources, materials like clay for ceramics and chert for the production of stone tools also play an important role (Murphy 1989).

The Hocking River Valley is a mixed mesophytic forest region (Braun 1950). The nut mast resources present include black walnut, hickories, acorns, and chestnuts. In the floodplains chenopods, marsh elder, erect knotweed, and maygrass are available. The Hocking Valley’s available game includes deer, elk, black bear and turkey, as well as aquatic turtles and varieties of fish and mussels (Murphy 1989; Abrams and Freter 2005).

Soils

Hocking County has six groups of parent material. Alluvial material is comprised mostly of glacial outwash. The colluvial parent material was eroded from bedrock at higher elevations and transported by water and gravity to lower elevations. One group originates from cultural origins and consists of mine spoil piles that resulted from strip mining. The last three parent materials include loess (wind transported sediment,), glacial till resulting from deposition from glaciers and residual sediments that result from bedrock weathering (Lemaster and Gilmore 1989).
The soils discussed in this section include soils in the immediate vicinity of the rockshelter, as well as a sampling of what types of soils are present in the surrounding landforms. The Otwell Silt Loam (OtD2) soil borders the cliff face on the northern side of the outcrop where the rockshelter is located. This soil is on 12 to 80% slopes and is well to moderately drained. It occurs on hillsides and areas where drainages have incised portions of terraces. The surface horizon is a friable, brown silt loam approximately 13 cm thick. The subsoil’s upper horizon is composed of silt loam and silty clay loam while the lower horizon is silty clay loam that is highly mottled with silty clay loam that is yellowish brown. The subsoil is a total of 129 cm thick. The substratum is at a depth of approximately two meters and is a mottled silty clay loam. This soil has low permeability (Lemaster and Gilmore 1989).

The soil that makes up the rockshelter site and the area directly in front of it is Chagrin Silt Loam (Cg). The slopes of these soils vary from zero to two percent and they are typically located on higher floodplains that are deep and well drained. The surface soil is a silt loam typically 40 cm thick. The subsoil is a loam or silt loam, approximately 68 cm thick. This soil has a substratum made up of a loosely compacted loam, loamy fine sand, or fine sandy loam at a depth of about two meters (Lemaster and Gilmore 1989).

The final soil type, Otwell (OtB) silt loam, is present on the terrace above the rockshelter site. This soil is deep, and can be well to moderately well drained with low permeability, and often contain glacial outwash that formed the terraces. The upper soil is a brown, friable, silt loam that is about 18 cm thick. The upper portion of the subsoil is a silt loam, 165 cm thick. The lower portion is a brittle silty clay loam. The substratum is
the same as the lower portion of the subsoil and is at a depth of 90 cm (Lemaster and Gilmore 1989).

Cultural Background

The Archaic period dates from 8000 to 1500 B.C. and is subdivided into Early (8000-5500 B.C.), Middle (5500-3000 B.C.) and Late (3000-1500 B.C.). The beginning of the Early Archaic period is traditionally defined as the shift from hunters of big game to hunting of smaller game and increased gathering of floral resources (Murphy 1989). Populations were nomadic and moved seasonally to exploit available resources. Archaic period populations occupied high ridgetops and terraces as well as floodplains (Stump et al. 2005). It is likely that Middle Archaic populations moved outside of the Hocking Valley in order to exploit more abundant resources (Stump et al. 2005).

The Late Archaic period in the Hocking Valley is marked by an increase in population size and changes in the degree of sedentism. In particular, floodplain and terrace areas were preferentially occupied (Stump et al. 2005). In the winter these communities would disperse to warmer locations or rockshelters in order to escape the harsher weather (Abrams and Freter 2005; Spurlock et al. 2006). Populations aggregated in communities seasonally, in close proximity to areas of rich food resources. This aggregation of communities into settlements is a significant step toward the restriction of population mobility (Stump et al. 2005). These same areas would be returned to year after year and as population size increased the distance traveled to new winter camps decreased. This trend continued into the Woodland period and coincided with the beginning of territorialism (Abrams and Freter 2005). These changes in settlement would
reflect a change in rockshelter usage as populations became more restricted, availability of these sites would become crucial.

The transition between the Late Archaic period and Early Woodland period is marked by the introduction of gardening. This corresponds with an increased settlement preference for floodplains and low terraces starting in the Late Archaic period. These landforms were used seasonally based on the available resources. Rockshelters continued to serve as an important part of prehistoric settlement patterns into the Early Woodland period (Abrams 1992; Crowell et al. 2005).

The end of the Archaic period and beginning of the Woodland period (1500 B.C.-700 A.D.) is identified as the point when ceramics, horticulture, and burial mounds were culturally developed. Some hallmarks of sedentism did appear in the Late Archaic period, but they did not become fully established until the Early Woodland period (1500 B.C.-A.D. 1; Murphy 1989). The Early Woodland period saw a continuation of the shift away from upland zones onto floodplains and terraces (Abrams 1992; Stump et al. 2005). This trend increased the need for rockshelters, because as distance to upland areas increased, there was a greater need for upland camp areas. In the Woodland period populations became more focused on seasonally resource rich areas that could provide the most benefit. Populations would radiate from a central village in order to procure these resources (Stump et al. 2005).

Plants cultivated during the Early Woodland period are collectively known as the “Eastern Agricultural Complex” (EAC). The species within this complex include chenopod, goosefoot, squash, knotweed, sumpweed, maygrass, amaranth, and sunflowers, all indigenous to Eastern North America. The domestication of these plants
began as horticulture, which subsequently developed into agriculture (Wymer et al. 2003; Delcourt and Delcourt 2004).

The Middle Woodland period (A.D. 1 - A.D. 400) is poorly defined in the Hocking Valley due to the limited number of sites. It is divided from the Early Woodland “Adena” by the introduction of the “Hopewell” in the northern reaches of the valley (Murphy 1989) and abandonment in the southern portion of the valley (Abrams and Freter 2005). Nonetheless, Middle Woodland populations became increasingly reliant upon agricultural crops and became less mobile (Abrams and Freter 2005).

Late Woodland period (A.D. 400-700) populations were relatively sedentary, fully integrating agriculture and food storage into their subsistence strategies. This period is known for two major technological advances: the bow and arrow and the introduction of maize (Murphy 1989; Seeman 1992). Late Woodland crops included maygrass, chenopod, knotweed, sumpweed, sunflower, little barley, tobacco, squash/gourd, bottle gourd, grasses and maize (Johannessen 1993). This diet would have been supplemented with deer meat and other small game (Murphy 1989).

The Late Woodland period is often seen as an intermediate period between the large-scale construction efforts and trade networks of the Early and Middle Woodland periods and the agriculturalists of the Late Prehistoric period. Mound building and elaborate ceremonial activities decreased and settlement pattern changed (Abrams and Freter 2005). Populations aggregated into larger villages in the floodplains and also utilized large ridge top regions (Wakeman 2005).
CHAPTER II: METHODS

N. Nelson and C. Nelson excavated the Nazarene Rockshelter site in 2006 in partial fulfillment of the University of Rio Grande and Hocking College’s undergraduate thesis requirement (Nelson 2008). This site is located on private property and permission to excavate was granted by the caretaker of the property.

Nazarene Rockshelter is a cliff recess cut into Black Hand sandstone by wind and water (Nelson 2008). An Illinoisan terrace is located directly above the rockshelter at 243 meters in elevation. The rockshelter site, the floodplain in front of it and the bank of the Hocking River are at 220-225 meters in elevation. The site is located in a 50-year recurrence interval floodplain and the Hocking River is located less than 500 meters from the rockshelter. A small tributary named Hunter’s Run runs along the valley behind the rockshelter and drains into the Hocking River (Nelson 2008).

The shelter measures approximately five meters from the drip line to the back wall, and is currently approximately 16 meters wide, however it may have once measured 20 meters from drip line to the back wall. This conclusion was drawn from statements by the caretaker of the property who stated that several large pieces of sandstone were removed in 2002 in order to make the property more aesthetically pleasing. In addition, there are several large pieces of sandstone partially buried approximately 15 meters south of the shelter’s current drip line, indicating a major collapse of the brow. The rockshelter’s current brow varies in height from less than one meter to five meters (Nelson 2008).

The site was first shovel tested both within and in front of the shelter based on the current drip line in order to establish the integrity of the site and to test for evidences of
occupation. The external shovel tests did not yield any significant material. The shovel tests placed at 15 and 25 meters south of the shelter had clayey sand with relatively few artifacts. It was concluded that, because the area outside the shelter is a floodplain, much of the cultural material might be buried too deeply to locate by shovel testing. The owner of the property restricted a deep testing strategy using a backhoe. The shovel tests five meters south of the existing shelter indicated that a small stream once drained down from the Illinoisan terrace and traversed the rockshelter from west to east (Nelson 2008).

The shovel tests within the shelter yielded evidence of Early Archaic, and Woodland occupation, as well as relatively intact stratigraphy. The shovel tests also indicated that there was at least one midden-like feature in the site (Nelson 2008).

The excavations included one 4x4m unit in the western half the shelter and one 2x2m unit in the eastern portion (Figure 2). These units covered the greatest concentrations of artifacts found in the shovel tests and the potential midden. A later 1x3m unit was added connecting the two previous units to expose more of the inferred midden. These units were excavated in 10 cm arbitrary levels until bedrock or sterile soil was reached, with the exception of the 2x2m unit where excavation was ceased due to location of a burial. All of the excavated sediment was screened using ¼” mesh except for features. Features were screened using 1/8” mesh in order to collect micro artifacts. In hearth features, half of the sediment was collected for floatation and in middens sediment samples were collected based on size of the feature (Nelson 2008). All sediment profiles are presented in Appendix A and were previously presented in Nelson (2008).
Figure 2. Site Layout (From Nelson 2008)
The full-scale excavations yielded Early and Late Archaic materials and Early through Late Woodland materials. Additionally, there were Late Prehistoric materials that are not included in this study. These materials included lithics, faunal remains, botanicals, and ceramics. In addition, many hearths and midden features were located. All of this material was located in relatively intact stratigraphy (Nelson 2008). Through the study of these materials a history of occupation at Nazarene Rockshelter can be established and used to determine how and if site usage changed.
CHAPTER III: ROCKSHELTER FORMATION PROCESSES

Rockshelters are defined as recesses in a cliff face (Schiffer 1987; Farrand 2001a). Sandstone rockshelters typically form as a result of rivers down cutting through the valley walls combined with wind erosion. Once the cliff faces are exposed, weaker bedrock is eroded away creating recesses in the rock walls (Donahue and Adovasio 1990; Farrand 2001a). In Donahue’s and Adovasio’s study on sandstone rockshelters they evaluated twenty-five sandstone rockshelters in Eastern North America. They found that the key factor in formation of sandstone rockshelters is a layer of less resistant shale underlying the sandstone bedrock. This enables rapid erosion (Donahue and Adovasio 1990). Rockshelter development is highly variable and can depend upon bedrock type, elevation, distance/elevation from drainages, and human and animal activity (Goldberg and Sherwood 2006; Goldberg and Macphail 2006).

Rockshelters form through physical and chemical processes. Rockshelters as a geological feature do not typically exist for long periods of times (Collins 1991; Farrand 2001a). Rockshelter studies conducted by Collins (1991) suggest that they commonly exist for 25,000 years or less before they collapse and/or are infilled. Rockshelters go through episodes of sediment accumulation; as the sediment accumulates it covers up the back wall of the shelter, the exposed sandstone continues eroding back while the sediment covered portion of the back wall no longer erodes. This process repeats over and over again, creating steps in the rockshelter back wall (Farrand 2001). In addition to this process, the brow of the rockshelter collapses over time onto the rockshelter floor. This is important to recognize, since it can indicate that the rockshelter was once much larger than what is seen today. As a result of these geologic processes earlier
archaeological remains are often located in the front of the rockshelter, under the once existing brow. The process of roof collapses and sediment infilling leads to the eventual removal of the rockshelter from the landscape (Waters 1992; Farrand 2001; Goldberg and Macphail 2006). These changes in the level of sediment fill and the location and height of the brow also effect the preservation of material within the rockshelter by controlling levels of dampness and exposure to sunlight (Farrand 2001).

Geogenic Sediments

Sandstone rockshelters’ size and shape varies according to bedrock type and climate (Farrand 2001a). Sandstone rockshelters are formed through the following geogenic processes, rock fall, attrition, sheetwash, flooding, and windblown sediments (Donahue and Adovasio 1990; Farrand 2001b). Additionally, rockshelters sometimes form through erosion by groundwater (Ellis 2000). The sedimentation from these processes can originate endogenically (inside) or exogenically (outside) rockshelters (Waters 1992; Farrand 2001b; Goldberg and Sherwood 2006).

Rockfall and attrition are defined as sediments that have detached from the rockshelter’s roof or walls as a result of tectonic movement, freeze-thaw and human activity (Goldberg Macphail 2006; Goldberg and Sherwood 2006). The composition of these sediments depends on climate and bedrock type (Goldberg Macphail 2006; Goldberg and Sherwood 2006).

Rockfall can be caused by freeze-thaw or hydration. Rockfall or *éboulis* is typically identified as angular sandstone debris found on a rockshelter floor. Freeze-thaw rockfall debris occurs in the form of small or large clast sizes, depending on the length, regularity and duration of the freeze-thaw activity. Hydration weathering is water seepage
in the rock that over time weakens the rock, commonly resulting in angular rockfall debris. Rockfall also occurs as a result of plant growth on rocks that weakens and separates slabs of rock from the wall or roof of a shelter (Farrand 2001a; Farrand 2001b).

Attrition is rockfall but on a much smaller scale. Attrition is defined by small sand sized particles that fall from the shelter roof through various weathering processes. This process is more constant than rockfall activity, typically accounting for most of the sediment within rockshelters. During episodes of increased attrition it can form its own thin sand layer (Donahue and Adovasio 1990).

Sediments deposited by wind or water include sheet wash, flood deposits, and wind (aeolian) blown deposits (Donahue and Adovasio 1990; Goldberg and Macphail 2006; Goldberg and Sherwood 2006). Aeolian deposits are typically fine-grained sand and silt. These can be deposited in small thin layers or massive deposits depending on the climate and surrounding topography (Goldberg and Macphail 2006; Goldberg and Sherwood 2006).

Sheet wash occurs when rain transports sediments from nearby hills or terraces into a shelter. The clast sizes vary from small to large, and are typically poorly sorted. In Donahue’s and Adovasio’s (1990) study of sandstone rockshelters they found that sheet wash occurs frequently and makes up a large portion of the sediment found on talus slopes and under the drip line of a shelter.

Flooding events occur based on a rockshelter’s proximity and height above a nearby steam or river. Flood deposits are characterized by fine silt, sand or clay deposited within the shelter. Thickness of deposits varies based on the amount of sediment transported from the water source and the severity of the flood. The size of the clast also
varies according to the shelter’s distance from the water source. Larger clasts are deposited closer to the river and smaller clasts are deposited further away (Donahue and Adovasio 1990).

Biogenic Sediments

Biogenic sediments are made up of organic debris that originated from plants and animals. Bones from dead rodents and other animals are often found in rockshelters, along with small bones (mostly rodent) that are regurgitated by owls and other birds of prey (Farrand 2001b). Plants usually do not grow directly in rockshelters, but are sometimes brought in by animals, wind, and flooding (Farrand 2001b; Goldberg and Macphail 2006). Plants sometimes grow along the roof of the shelter or at the dripline (Goldberg and Macphail 2006). These organic remains sometimes decay and mix in with the sediments in the rockshelter (Farrand 2001b).

Anthropogenic Sediments

Anthropogenic sediments result from human activity within the rockshelter that lead to the intentional or unintentional deposition of materials (Farrand 2001; Goldberg and Macphail 2006; Goldberg and Sherwood 2006). These sediments are typically mixed with biogenic and geogenic sediments and can be difficult to distinguish. The materials intentionally brought in, include animal carcasses from hunting, lithics, shells and plants (Farrand 2001b; Goldberg and Macphail 2006). The repeated habitation of rockshelters often results in a dense midden-like deposit made up of the remains from hunting, cooking, and lithic processing (Farrand 2001b). In addition, humans also bury their dead, create hearths, storage pits, and other features that leave behind ash, charcoal and burnt earth. Sediment is sometimes removed from the shelter or moved to another area in order
to create storage pits or clean out their living space (Straus 1979; Straus 1987; Farrand 2001b; Goldberg and Macphail 2006; Goldberg and Sherwood 2006). As a result of these activities, the normal rate of sedimentation is often accelerated (Farrand 2001b).

Sediments within rockshelters are deposited at varying rates. Hiatuses in sedimentation do not occur frequently, and are usually recognized by weathered sediment, pedogenesis (the formation of soil), or the build up of calcium carbonate (Waters 1992; Farrand 2001b). Erosion of sediments is less frequent. Episodes of erosion that result in gaps in the archaeological record can be identified by radiocarbon dating and thorough excavation and documentation of stratigraphic horizons (Waters 1992; Farrand 2001b). The constant rate of deposition results in artifacts being mixed and compacted. This makes identification of temporal occupational periods difficult. Compounding this difficulty, rockshelters are closed habitation spaces with limited space. This causes the occupational debris to be tightly stacked and mixed (Straus 1979; Straus 1987; Farrand 2001a; Farrand 2001b).

Rockshelters are also known for their better preservation in comparison to open-air sites, and their function as “pollen traps”. Wind often blows pollen and other organic debris into a rockshelter, making these sites a valuable tool for analyzing past environments. The preservation of organic remains such as pollen, animal bone, seeds, and other vegetation is dependent on the rockshelters size, location, bedrock type, sediment types, exposure to sunlight, and direction it is facing. All of these factors must be identified and analyzed in order to fully understand the past occupational patterns and environmental history (Straus 1979; Waters 1992; Straus 1987; Farrand 2001a; Farrand 2001b; Goldberg and Macphail 2006).
The above combination of factors makes rockshelters excellent locations for the study of long periods of the archaeological record and enables archaeologists to relate these occupations to past environmental conditions. However, due to the high potential for mixing and sediment displacement archaeological excavations at rockshelters must be conducted with careful regard for the complex stratigraphy within rockshelters and the formation processes of each site (Donahue and Adovasio 1990; Collins 1991; Farrand 2001a; Farrand 2001b).

Nazarene Rockshelter Sediments

The analysis of the sediments at this site was previously conducted by N. Nelson as part of the study of the Archaic occupation of the site. The results of this study are summarized here. The analysis of sediments was conducted by collecting core and auger samples from the site and the surrounding area. These samples were then processed using grain size analysis (Nelson 2008: 139-162).

The results of the analysis indicate that attrition and flood deposition are the primary sedimentary depositional processes that have taken place within the rockshelter. Attrition accounts for over half the sediments within the rockshelter. Flood deposits are well represented by the presence of clay and silt. The stratigraphy within the rockshelter indicates that Nazarene Rockshelter sediment depositional processes were largely alternating episodes of attrition and flooding. Sheetwash is a less significant sediment deposition mechanism in Nazarene Rockshelter. It plays a greater role in the western portion of the shelter, while it is less evident in the eastern portion. It has been established that rock fall is present within the rockshelter but is not concentrated in the units. In the eastern edge of the 2x2m unit there were large rock fragments in varying sizes that
extended to a depth of 20 to 40 cm below surface depending on location. Soil probes on the eastern side of the rockshelter indicate that the rock fall extends at least another three meters beyond the eastern most units and are at least 20 cm thick. It has also been recorded that most of the brow of the rockshelter fell as several large pieces in a single event, although the exact date of this event has not been determined.
CHAPTER IV: FEATURES

Archaic Occupation Features

The Archaic features have been previously described in Nelson (2008) and are summarized here. There were a total of 17 features excavated in Nazarene Rockshelter, of which 13 were dated to the Archaic period. These 13 features were concentrated in the 2x2m unit starting at approximately 20 cm below the large Woodland midden. All of these features were placed in the Late Archaic period due to their association with diagnostic Late Archaic projectile points. Feature 7 was a rodent burrow that intersected Feature six and is not discussed.

Within the 2x2m unit, six definite and one possible hearth were identified. The six hearths were from 30x30 cm to 50x50 cm in diameter, ranging from 15 cm to 5 cm in thickness. The interior context of the features consisted of burnt earth and charcoal flecks with very few artifacts. There were limited amounts of fire cracked rock (FCR). None of the FCR were in a formalized pattern for hearth linings. The hearths were concentrated at 120 cm to 150 cm below unit datum (BUD) except for Features 17 and 14. Feature 17 was located at a depth of 159 cm BUD and was the oldest Archaic feature recovered. The possible hearth feature was located directly below the skull of Feature 13 at 155 cm BUD. It was not excavated. A 10x10cm hole was excavated to a depth of 15 cm beside the top of the skull to determine the nature of the feature. The presence of burnt earth and charcoal in a thin layer indicated that it was most likely a hearth. The localized concentration of these features and their overlapping stratigraphy indicates repeated, short-term occupations. Features 10 and 4 were burnt earth patches (Figure 3). There were two smaller hearth features, 11 and 12, that intruded into Feature 10. Feature 10
shared the same characteristics as the other hearth features: burnt earth, charcoal flecks and low artifact concentrations. Feature 10 was most likely a hearth that was disturbed as a result of these intrusions. Feature 4 was a burnt earth anomaly located at 110 cm BUD. It contained very few artifacts and some FCR. Feature 4 may represent a hearth clean out episode or the remnants of a hearth.

Three middens -Feature 6, Feature 8, and Feature 16-were identified. All were located within 115 cm to 153 cm BUD in close association with the hearths. Feature 16 was located approximately 15 cm below Feature 6. Each of these middens extended out of the boundaries of the excavated 2x2m unit. The average thickness for the middens was 10-15 cm and covered a maximum of two square meters within the 2x2m unit. It is estimated, based on shape and depths, that none of them extended more than a meter outside of the units, or a maximum of 3-4 square meters for each midden.

All middens had organic-rich, black soil with some burnt earth and charcoal. Artifacts densities were relatively high, consisting of bone, shell, and lithics. The Late Archaic Feature 13 intruded upon Feature 8, making it slightly older than Feature 13, with Feature 16, below, slightly older. Several of the hearths intruded upon these middens creating a great deal of mixing. However, Feature 8’s southern half was remarkably intact. In this half of the feature there were in situ tightly stacked piles of shells. Approximately 60% of the shell from the Archaic horizon came from Feature 8. The nature of these middens suggests short-term repeated occupations based on their small size and artifact concentrations when compared to the site’s large Woodland midden.

Feature 13 was a flexed human burial located at approximately 134 cm BUD. This burial was not fully excavated or removed. Small amounts of sediment were
removed from around the bones in order to document skeletal features. The burial was the only dated feature, ca. 3200 B.P., at the end of the Late Archaic period. The burial was located in close proximity to the other features as well as Late Archaic projectile points.

This burial was expedient based on the small size of the pit and the tightly flexed nature of the burial. Dr. Chris Barret, a human osteologist, estimated her to be a highly physically active middle-aged female who had given birth at least once. The teeth were well worn, a characteristic of Late Archaic dietary patterns.

Woodland Occupation Features

Only one feature was identified within the Woodland occupation horizon. The large midden feature covered approximately 16 square meters within the excavated units (Figure 3). Coring of the area outside of the excavated units indicates that the feature extends another two to three meters to the south of the 1x3m and 2x2m units. It is estimated that it extends no more than a half-meter south of the 4x4m unit. Extension to the east is uncertain due to rockfall that prevented coring. Areas north of the 1x3m unit were not tested due to it being disturbed. Coring north of the 2x2m was restricted due the roofs low height. It is estimated from these coring results that the midden covers an additional 10-15 square meters outside of the excavated units. This indicates that minimally 50% of the feature was excavated.

The feature started at 68 cm to 82 cm BUD and varied in thickness from 15-25 cm. In the 4x4m unit the shape of the feature and its thickness followed the bedrock steps. It terminated in the 4x4m unit at 66-100 cm BUD. The shallowest point of the
Figure 3. Planview of features. Woodland midden represented by light gray. Archaic features located at 110-120 cm BUD represented by dark grey. (Features not represented: Feature 9 located in northeast corner of 2x2m unit at 125 cm BUD. Features 13 and 8 located below Feature 6 at 130-135 cm BUD.) Note: One block equals one square meter.

The shallowest point of the feature was located in the northern portion of the unit where the bedrock was closest to the surface. In the 1x3m and 2x2m units it terminated within four levels (20 cm).

The sediment of the midden feature was consistently organic-rich. It was a 10 YR 4/2 to a 10 YR 5/3 on the Munsell chart with a clayey sand matrix that admixed with loam at certain points. Artifact distribution was relatively constant throughout and consistently dropped off in the last level. This, combined with a change in sediment color, served as an indicator of the midden’s end.
The midden contained 89% of the recovered Woodland artifacts. The artifacts included bone, shell, ceramics and lithics. The material was highly degraded and fragmented. The high density of materials suggests repeated use of the site during this period. This repeated use most likely resulted in great amounts of trampling causing breakage of the artifacts. This, combined with bioturbation and poor sediment preservation conditions, would explain the condition of the artifacts. The lithic material from the midden consisted primarily of lithic debris and a few bifacial tools, most of which were fragmented. However, the ceramics indicate that most of the disturbances within the midden were relatively minor and that most of the artifacts are close to their original depositional positions. The ceramic distribution within the midden had sherds from the same vessel in close spatial proximity indicating a relatively undisturbed secondary placement. In addition, the ceramics types gradually grew older toward the bottom of the midden for all of the units as evidenced by analysis of their typologies. Unfortunately, there were not very many diagnostics. Many diagnostics were not found in their expected contextual locations. This could suggest that some of the tools were reused and redeposited. Overall, the nature of artifacts indicate that they were highly prone to fragmentation and chemical break down, but for the most part were not moved significantly far from their original context. A modern pit that was dug to burn wood and construction debris is the only significant evidence of disturbance. This pit intrudes on the first level of the midden in the central 1x3m unit’s northeastern section.

The lack of other features at the site makes it difficult to ascertain the exact nature of this midden. The size and thickness of the midden suggests that there was continual use of this site during the Woodland period. The lack of hearths indicate that they may
not have actually been occupying the rockshelter but were using it as some sort of
activity area, possibly for processing game as indicated by the large number of faunal
remains. A possibility is that hearths were located outside of the excavated areas. It has
been evidenced that Woodland hearth features in the Hocking Valley are very thin with
very few artifacts associated with them (Spertzel 2005). As a result, their presence may
have been missed in the shovel tests outside of the excavated units at the site. The
presence or absence of hearths still indicates that the site most likely served as a logistical
area for specialized activities.
CHAPTER V: ARTIFACT ANALYSIS

The same methodologies were used for both the Archaic and Woodland assemblages. The materials were similar in nature and, as a result, the methodology could be consistently applied between the two. This provides for an easily comparable data set. The Archaic artifacts were previously analyzed in 2008 by Nelson as part of an undergraduate thesis on the Archaic occupation at the site (Nelson 2008: 171-221) and are summarized here as a means to compare the Woodland and Archaic occupation at this site. All Woodland data presented here is new and does not appear in Nelson (2008).

Lithic Analysis

The production of lithic stone tools is a reductive process. A tool is manufactured from a raw piece of chert through percussion or pressure flaking. Each successive stage of production produces a distinctive type of lithic debris. These lithics debris are divided onto three stages of production: primary, secondary and tertiary. In these analyses primary stage production is defined as lithic debitage that are a result of the initial reduction of the raw material into a lithic core. Secondary production is lithic debris resulting from the reduction of the core into the basic shape of the tool. Tertiary reduction is the final stage of tool production. This is the finishing of a tool often as a result of percussion flaking that results in what is know as microdebitage. Tertiary debris also results from resharpening or modifying of an existing tool. Cortex is typically present in large amounts in primary stage production and becomes successively less with each production phase. In these analyses an intermediate flake type called a bifacial thinning flake is also recognized. These are a result of trimming or thinning of a biface during the
final production phase or while repairing a tool. These are often thin with multifaceted platforms and rarely have any cortex (Andrefsky 1998).

**Mass Analysis Lithic Debris**

Mass analysis was conducted by sifting the lithic debris through 1” (Grade one), ½” (Grade two), ¼” (Grade three) and 1/8” (Grade four) mesh. The material for each size grade was then counted and weighed. The methodology outlined by Ahler (1989) and Andrefsky (1998) was used for the mass analysis. This process sorts the lithic debris into the different stages of production. The size grade representations are as follows: grade one representing primary stage manufacture, grade two and three representing secondary manufacture, and grade four representing tertiary stage manufacture.

**Mass Analysis of Archaic Lithic Debris**

The Archaic lithic debris subjected to mass analysis was divided into two groups: those that came from features and those that came from unit levels that were determined to be within the Archaic occupation. This distinction was made since the features were screened with 1/8” mesh while the unit levels were screened with ¼” mesh. The ¼” mesh is sampled biased against grade four lithic debitage.

The lithic debitage outside of the Archaic features consisted of 434 flakes and 433 shatter for a total of 867 lithic debitage. Of the 434 flakes there were four bifacial thinning flakes. Artifact density for the total Archaic lithic debitage was 22 per m³ by count and 31.2 grams per m³ by weight.

Outside of the Archaic features grade three represented 67% of the total lithic debitage (Table 1). This is followed by grade two with 26%, grade four with 7% and
Table 1. Size grade analysis of Archaic lithic debris.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Archaic Features</th>
<th>Percent Archaic Features</th>
<th>Archaic Unit Levels</th>
<th>Percent Archaic Unit Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1</td>
<td>0 (0.0 g)</td>
<td>0% (0%)</td>
<td>24 (446.8 g)</td>
<td>3% (31%)</td>
</tr>
<tr>
<td>Grade 2</td>
<td>13 (33.3 g)</td>
<td>6% (56%)</td>
<td>218 (746.9 g)</td>
<td>25% (52%)</td>
</tr>
<tr>
<td>Grade 3</td>
<td>76 (21.6 g)</td>
<td>35% (36%)</td>
<td>568 (239.9 g)</td>
<td>66% (16%)</td>
</tr>
<tr>
<td>Grade 4</td>
<td>127 (4.4 g)</td>
<td>59% (8%)</td>
<td>57 (5.6 g)</td>
<td>6% (1%)</td>
</tr>
</tbody>
</table>

grade one with less than 1%. By weight, grade two constitutes 52% of the lithic debitage (Table 1). The average lithic debitage weight outside of the features is 1.7 grams.

The Archaic features contained 110 flakes and 106 debitage for a total of 216 lithic debitage. Of the 110 flakes there were 12 bifacial thinning flakes. Within the features grade three constitutes 35% of the lithic debitage and grade four constitutes 59% by count (Table 1). The size grade distribution by weight results indicates that grade two accounts for 56% of the lithic debris within the Archaic features (Table 1). The average lithic debitage weight within features is 0.3 grams.

Grade three represents 60% of the lithic debitage by count and 17% of the debris by weight when the Archaic lithic debris data are combined (Table 3). Grade two represents 21% of the debris by count and 52% by weight. These two categories combined constitute 82% of the lithic debris by count and 70% of the lithic debris by weight. These data indicate that tool manufacture was not taking place at the site. The lithic debitage represents resharpening of tools and late stage tool manufacture.

**Mass Analysis of Woodland Lithic Debris**

The Woodland midden (Feature 3) was analyzed separately from the Woodland materials located within the unit levels due to the midden being screened with the smaller
The Woodland midden contained 1,520 debitage and 533 flakes. The artifact densities of the Woodland lithic debitage were 61 per m³ in the midden and 22 per m³ outside of the midden by count. By weight there were 51.5 grams per m³ within the midden and 10.2 grams per m³ outside of the midden.

There were 12 bifacial thinning flakes within the midden and six outside of the midden. The lithic distribution within the midden was predominantly grade three, accounting for 61% of the 2,053 lithic fragments (Table 2). When separated by weight, grade three accounted for only 34% and grade two for 52% of the weight (Table 2). The average weight of a lithic fragment within the midden was 1.1 grams. The lithic debris outside of the midden totaled 349 shatter and 160 flakes. Grade three, outside of the midden, accounted for 72% of the 506 lithic fragments and 23% by weight (Table 2). The average lithic fragment weight outside of the midden was 1.5 grams.

These combined data from the midden and unit levels indicate that grades two and three accounted for 77% of the lithic debris by count and 83% of the lithic debris by weight (Table 3). Primary production accounted for less than 1% of the material at the site. This indicates that final stage tool manufacture was taking place as well as some tool resharpening. The midden feature contained more grade four (36%) tertiary debris than the unit levels (6%). This is attributed to sampling bias as a result of the screening method used for the midden. If a smaller mesh size was used outside of the midden, it is likely that more microdebitage would have been recovered.

**Triple Cortex Analysis Lithic Debris**

The percentage of cortex on lithic debris is indicative of the stage of manufacture. One method of analyzing cortex on lithic debitage is the triple cortex approach.
Table 2. Size grade analysis of Woodland lithic debris.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Woodland Midden</th>
<th>Percent Woodland Midden</th>
<th>Woodland Unit Levels</th>
<th>Percent Woodland Unit Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1</td>
<td>9 (188.4 g)</td>
<td>1% (11%)</td>
<td>9 (191.0 g)</td>
<td>2% (25%)</td>
</tr>
<tr>
<td>Grade 2</td>
<td>242 (881.5 g)</td>
<td>12% (51%)</td>
<td>102 (398.7 g)</td>
<td>20% (51%)</td>
</tr>
<tr>
<td>Grade 3</td>
<td>1259 (594.7 g)</td>
<td>61% (35%)</td>
<td>363 (177.4 g)</td>
<td>72% (23%)</td>
</tr>
<tr>
<td>Grade 4</td>
<td>543 (47.9 g)</td>
<td>26% (3%)</td>
<td>32 (4.3 g)</td>
<td>6% (1%)</td>
</tr>
</tbody>
</table>

Table 3. Size grade analysis totals.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Archaic Totals</th>
<th>Percent Archaic</th>
<th>Woodland Totals</th>
<th>Percent Woodland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1</td>
<td>24 (446.8 g)</td>
<td>2% (30%)</td>
<td>18 (379.4 g)</td>
<td>1% (15%)</td>
</tr>
<tr>
<td>Grade 2</td>
<td>231 (780.2 g)</td>
<td>21% (52%)</td>
<td>344 (1280.2 g)</td>
<td>13% (52%)</td>
</tr>
<tr>
<td>Grade 3</td>
<td>644 (261.5 g)</td>
<td>60% (17%)</td>
<td>1622 (772.1 g)</td>
<td>63% (31%)</td>
</tr>
<tr>
<td>Grade 4</td>
<td>184 (10.0 g)</td>
<td>17% (1%)</td>
<td>575 (52.2 g)</td>
<td>23% (2%)</td>
</tr>
</tbody>
</table>

Using this methodology, the amount of cortex is estimated by examining the dorsal face of flakes for the presence of cortex and flake scars. The relative amount of cortex is ranked on an ordinal scale of 0-3. In this method, 0 indicates no cortex is present and there are multiple flaking scars, 1 indicates that 50 percent or less of the surface has cortex and/or fossil inclusions and has more than 2 dorsal flake scars, 2 indicates that 50 percent or more of the surface has cortex and up to one flake scar, and 3 means the entire dorsal surface has cortex with up to 1 flake scars (Andrefsky 1998). In this method, the ordinal number 0 represents tertiary debitage, 1 and 2 represents secondary, and 3 represents primary debitage.

**Triple Cortex Analysis of Archaic Lithic Debris**

Analysis for the lithic debris outside of the Archaic features indicate that tertiary stage manufacture represents 80% of the lithic debitage by count. Within the features
tertiary stage manufacture represents 88% of the lithic debitage by count (Table 4).
Tertiary stage manufacture represents 50% by weight within the features and 70% by
weight outside of the features (Table 4). These two data sets combined indicate that
tertiary stage manufacture makes up 86% of the lithic debris by count and 69% by
weight. These data strongly indicates that primary stage manufacture was not taking
place at this site during the Archaic period.

*Triple Cortex Analysis of Woodland Lithic Debris*

In the Woodland midden, 83% of the lithic debitage were secondary manufacture
by count and 69% were secondary manufacture by weight (Table 5). Secondary
manufacture accounted for 82% of the lithic debitage by count and 60% by weight
outside of the midden (Table 5). Tertiary manufacture totals by count accounted for 11%
within the midden and 14% outside of the midden. These combined data totals were 66%
secondary manufacture by weight and 83% by count (Table 6). By count tertiary
manufacture accounted for 13% of the lithic debris and 1% by weight.

These data indicate that that the production sequence secondary manufacture was
taking place during the Woodland period. The greater presence of cortex indicates that
some manufacturing may have taken place at the site but was most likely secondary stage
tool production after most of the decortication flakes had been removed. Tertiary
debitage is present as well, indicating some tool retouch was being conducted.

*Analysis of Chert Types*

The analysis of lithic debris for chert type indicates where the chert was procured.
This serves as an indicator of mobility and site function (Magne 1989). Vanport chert is
procured by occupants of the Hocking Valley from Flint Ridge or local smaller
Table 4. Triple cortex analysis of Archaic lithic debris.

<table>
<thead>
<tr>
<th>Archaic Features</th>
<th>Percent Archaic Features</th>
<th>Archaic Unit Levels</th>
<th>Percent Archaic Unit Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>6 (29.7 g)</td>
<td>3% (50%)</td>
<td>29 (282.2 g)</td>
</tr>
<tr>
<td>Secondary</td>
<td>39 (16.2 g)</td>
<td>18% (27%)</td>
<td>77 (152.4 g)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>171 (13.4 g)</td>
<td>79% (23%)</td>
<td>761 (1004.6 g)</td>
</tr>
</tbody>
</table>

Table 5. Triple cortex analysis of Woodland lithic debris.

<table>
<thead>
<tr>
<th>Woodland Midden</th>
<th>Percent Woodland Midden</th>
<th>Woodland Unit Levels</th>
<th>Percent Woodland Unit Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>34 (511.7 g)</td>
<td>7% (30%)</td>
<td>80 (303.3 g)</td>
</tr>
<tr>
<td>Secondary</td>
<td>416 (1178.7 g)</td>
<td>82% (69%)</td>
<td>1694 (458.4 g)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>56 (22.1 g)</td>
<td>11% (1%)</td>
<td>279 (9.7 g)</td>
</tr>
</tbody>
</table>

Table 6. Triple cortex analysis of total lithic debris.

<table>
<thead>
<tr>
<th>Archaic</th>
<th>Percent Archaic</th>
<th>Woodland</th>
<th>Percent Woodland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>35 (295.6 g)</td>
<td>3% (20%)</td>
<td>114 (815.0 g)</td>
</tr>
<tr>
<td>Secondary</td>
<td>116 (168.6 g)</td>
<td>11% (11%)</td>
<td>2110 (1637.1 g)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>932 (1034.3 g)</td>
<td>86% (69%)</td>
<td>335 (31.8 g)</td>
</tr>
</tbody>
</table>

outcroppings in southeastern Ohio (Stout and Schoenlaub 1945). In Ohio rockshelters, Vanport chert is most commonly utilized in the Archaic and Middle Woodland Periods. Brush Creek, Upper Mercer, and Zaleski are all local cherts that have been utilized throughout all temporal periods (Spurlock and Prufer 2006). All three of these chert types can easily be obtained in Southeast Ohio but have uneven distributions and, as a result, some are easier to procure than others (Stout and Schoenlaub 1945). Chert types also serve as an indicator of mobility based on the relative distribution of the types. The
greater variety of chert types represented the greater the mobility of the group (Magne 1989).

*Analysis of Archaic Chert Types*

The chert from the Archaic occupation was sorted by chert type and then counted for both the features and units. The results of the analysis of chert type totals are as follows: 24% Upper Mercer, 25% Zaleski, 16% Brush Creek, 21% Vanport and 14% unidentified chert types (Table 9). Within the Archaic features Vanport accounted for 76% of the chert types (Table 7). Outside of the features Upper Mercer and Zaleski represent the majority with 28% and 30%, respectively (Table 7). These data indicate that usage of Vanport at this site during the Archaic period may have been more significant than is represented. The features contain more Vanport due to the sediments being screened with a smaller mesh size that captured the smaller Vanport lithic debitage. The results indicate that a wide range of chert types was being utilized during the Archaic period.

*Analysis of Woodland Chert Types*

Within the Woodland midden (Feature 3) the chert types are distributed by count as follows: Upper Mercer (42%), unidentified (26%) and Zaleski (18%) (Table 8). Outside of the midden, Upper Mercer (37%) and Zaleski (33%) accounted for the majority of the lithic debitage (Table 8). Unidentified chert types accounted for 18% of the lithic fragments. The midden and unit level data combined indicate that Upper Mercer is the most common chert type (41%) (Table 9). This is followed by Zaleski (21%) and unidentified (24%). Vanport and Brush Creek accounted for less than 10% each, both
Table 7. Archaic chert types.

<table>
<thead>
<tr>
<th>Chert Type</th>
<th>Archaic Unit Levels</th>
<th>Archaic Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Mercer</td>
<td>241 (28%)</td>
<td>18 (8%)</td>
</tr>
<tr>
<td>Zaleski</td>
<td>261 (30%)</td>
<td>16 (7%)</td>
</tr>
<tr>
<td>Brush Creek</td>
<td>165 (19%)</td>
<td>7 (3%)</td>
</tr>
<tr>
<td>Vanport</td>
<td>64 (7%)</td>
<td>164 (77%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>136 (16%)</td>
<td>11 (5%)</td>
</tr>
</tbody>
</table>

Table 8. Woodland chert types.

<table>
<thead>
<tr>
<th></th>
<th>Woodland Unit Levels</th>
<th>Woodland Midden</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Mercer</td>
<td>184 (37%)</td>
<td>861 (42%)</td>
</tr>
<tr>
<td>Zaleski</td>
<td>168 (33%)</td>
<td>377 (18%)</td>
</tr>
<tr>
<td>Brush Creek</td>
<td>43 (9%)</td>
<td>195 (10%)</td>
</tr>
<tr>
<td>Vanport</td>
<td>22 (4%)</td>
<td>91 (4%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>89 (17%)</td>
<td>529 (26%)</td>
</tr>
</tbody>
</table>

Table 9. Archaic and Woodland chert type totals.

<table>
<thead>
<tr>
<th></th>
<th>Archaic</th>
<th>Woodland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Mercer</td>
<td>259 (24%)</td>
<td>1045 (41%)</td>
</tr>
<tr>
<td>Zaleski</td>
<td>277 (25%)</td>
<td>545 (21%)</td>
</tr>
<tr>
<td>Brush Creek</td>
<td>172 (16%)</td>
<td>238 (9%)</td>
</tr>
<tr>
<td>Vanport</td>
<td>228 (21%)</td>
<td>113 (5%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>147 (14%)</td>
<td>618 (24%)</td>
</tr>
</tbody>
</table>

within and outside of the midden. This indicates that the Woodland occupants at the site were primarily using local chert types. Vanport is present but not to a great degree.

Analysis of Heat Treated Chert

Heat-treated chert is defined as chert that has been altered intentionally or unintentionally by fire. Chert is more brittle and not as easy to work in an unfired form. Heat-treating is identified on chert by examining the chert for a reddened color. Heat-treated chert also exhibits other forms of unique modification such as potlids, patina, and
crazing. Crazing is identified as cracks that form as a result of exposure to heat. Potlids are concave-convex or plano-convex fragments of stone that break off due to exposure to heat (Andrefsky 1998). The total amount Archaic of heat-treated lithic debitage outside of the features is 48; three were found within the features. The heat-treated debitage constituted 4% percent of the Archaic lithic fragments. Heat-treated chert is most often found at lithic manufacturing sites. This low amount indicates lithics were not processed at this site during the Archaic periods (Andrefsky 1998).

A total of 111 heat-treated lithic fragments were identified for the Woodland occupation. There were 76 heat-treated artifacts within the midden feature and twelve outside of the midden feature. This constitutes only 4% of the total lithic debitage. This indicated that the chert was not heavily processed at this site during the Woodland period.

**Lithic Tool Analysis**

**Archaic Lithic Tool Analysis**

The Archaic lithic tool assemblage at Nazarene Rockshelter consisted of 29 chert tools, weighing a total of 161.31 grams. The lithic assemblage consisted of 15 complete or nearly complete projectile points, three biface bases, four biface midsections, one biface tip, one knife, three scrapers, and two utilized flakes (Table 10). Projectile points are also sometimes utilized as scrapers and other expedient tools if they are broken. A biface is defined as a tool that has been worked on both sides. Fragments of possible projectile points are referred to here as bifaces due to the possibility that they are knives or other lithic tools. The lithic tools included in this section are all diagnostic Archaic projectile points regardless of their location in the rockshelter, or any tools within the earlier defined Archaic horizons.
Table 10. Archaic lithic tools.

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
<th>Weight</th>
<th>Zaleski</th>
<th>Upper Mercer</th>
<th>Vanport</th>
<th>Brush Creek</th>
<th>Unknown</th>
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</thead>
<tbody>
<tr>
<td>Projectile Points</td>
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<td>5</td>
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<td>Triangles</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td>Biface Bases</td>
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<tr>
<td>Biface Frags</td>
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<tr>
<td>Biface Tips</td>
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<td>1.1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Knives</td>
<td>1</td>
<td>18.1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Scrapers</td>
<td>3</td>
<td>32.8</td>
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<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Utilized Flakes</td>
<td>2</td>
<td>1.4</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Drills</td>
<td>0</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Knives</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Burins</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Bladelets</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td>29</td>
<td>686.31</td>
<td>6</td>
<td>8</td>
<td>7</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

The identified Early Archaic projectile point was an Early Archaic bifurcate (Justice 1987), manufactured from Upper Mercer chert (Figure 4). There were three additional projectiles points that are potentially Early Archaic but could not be typed with any certainty. These three points were small in size, unifacial, serrated, and made from Vanport chert (Figure 5). These were found within the Archaic horizon but were in association with other Late Archaic materials.

Nine projectile points were identified as Late Archaic. These included two Brewerton Side-Notched, one Brewerton Eared-Notched, and one Brewerton Corner-Notched (Figures 4 and 5). Two projectile points were manufactured from Upper Mercer, one was manufactured from Vanport, and one was an unknown chert type.
Figure 4. Archaic Bifaces (A) Brewerton Side-Notched (B) Unidentified Biface Possible Early Archaic (C) Brewerton Side-Notched (D) Early Archaic Bifurcate (E) Brewerton Eared-Notched (F) Unidentified (Scale: one block equals 1 cm.) (Nelson 2008).

Figure 5. Archaic bifaces (A) Brewerton (B-C) Unidentified Bifaces Possible Early Archaic. (Scale: one block equals 1 cm.) (Nelson 2008).
All of these were found within Archaic contexts except for the Brewerton Eared-Notched, which came from the Woodland midden and may represent admixing. The remaining Late Archaic projectile points included a Lamoka (Upper Mercer), a Table Rock Stemmed (Zaleski), a Bottle Neck Stemmed (Unknown), a Buck Creek Barbed (Unknown) and a Genesse (Brush Creek) (Figures 6 and 7).

Four biface midsections were found within the delineated Archaic horizon. Three of the biface midsections were made from Vanport chert, while the fourth was made from Upper Mercer chert. Two of the Vanport midsections exhibit use breaks. Use breaks are breaks that occur in the process of utilizing a tool for a particular activity. In this case these two broke off directly above the stem. Two unidentifiable biface bases were recovered (Figures 6 and 7). The first biface base was manufactured from Upper Mercer chert and was very thick with weak side notches, and exhibited basal thinning. The second biface base manufactured from Zaleski chert had a flared base with weak side-notches. This biface base was found 10 cm below the Late Archaic Lamoka projectile point (Justice 1987), which would place this base within the Late Archaic period.

One large bifacial knife (unknown chert type) weighing 18.1 grams was located and three scrapers were found within the delineated Archaic horizon. The first was a snub-nosed or end scraper from Upper Mercer (Mader 1999). The other two scrapers were broken with one made from Upper Mercer chert and the other made from Zaleski chert. Microwear analysis was not completed at this site. Utilized flakes were instead identified through visual inspection of the flakes for evidence of working on the edges. Two utilized flakes from Zaleski and Upper Mercer chert were identified.
Figure 6. Archaic bifaces (A) Bottle Necked Stemmed (B) Lamoka (C) Unidentified. (Scale: one block equals 1 cm.) (Nelson 2008).

Figure 7. Archaic bifaces (A) Genesee (B) Buck Creek Barbed (C) Unidentified (D) Table Rock Stemmed. (Scale: one block equals 1 cm.) (Nelson 2008).
Woodland Lithic Tool Analysis

There are five complete projectile points of which only one was identifiable (Table 11). The identified point is an Early Woodland Susquehanna Broad of Zaleski chert. This point came from one level above the Woodland midden feature. One biface base was identified as an Early Woodland Snyder of Upper Mercer chert. It came from within the Woodland midden feature. Early Woodland stemmed points included a Robbins of Zaleski chert and two unidentified Early Woodland stemmed types of Upper Mercer chert. One of the Early Woodland Stemmed was reutilized as a scraper.

Table 11. Woodland lithic tools.

<table>
<thead>
<tr>
<th></th>
<th>Count</th>
<th>Weight</th>
<th>Zaleski</th>
<th>Upper Mercer</th>
<th>Vanport</th>
<th>Brush Creek</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Projectile Points</td>
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<td>Triangles</td>
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<td>14.8</td>
<td>1</td>
<td>6</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Biface Bases</td>
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<td>1</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Biface Fragments</td>
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<td>38.5</td>
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<td>4</td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Biface Tips</td>
<td>4</td>
<td>1.8</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Knives</td>
<td>1</td>
<td>9.2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Scrapers</td>
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<td>27.2</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Utilized Flakes</td>
<td>14</td>
<td>19.6</td>
<td>2</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Drills</td>
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<td>3.6</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Burins</td>
<td>1</td>
<td>12.6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Bladelets</td>
<td>1</td>
<td>1.8</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td>57</td>
<td>202.63</td>
<td>10</td>
<td>33</td>
<td>5</td>
<td>7</td>
<td>2</td>
</tr>
</tbody>
</table>
One Vanport bifacial fragment is similar in morphology to the Snyder (Figure 8). The Early Woodland diagnostics were located in the first two levels of the midden with the exception of one that was located in the last level of the midden in the eastern unit.

Nine triangles were recovered of which seven came from the midden feature. One triangle was identified as a Late Prehistoric Hamilton Incurvate and was located in the second to last level of the midden (Figure 9). All of these were manufactured from Upper Mercer or Zaleski chert. One Middle Woodland bladelet manufactured from Vanport chert was located two levels above the midden in the eastern portion of the shelter.

_Sandstone, Granite and Other Lithic Artifacts_

*Archaic Sandstone, Granite and Other Lithic Artifacts*

Fire cracked rock (FCR) is defined as any rock that has been altered by fire. FCR comes from hearths that were lined with rock or rocks used for boiling water by heating them in a fire and then placing them in water. FCR is characterized by a reddened or blackened surface that is cracked or split with sharp angular edges where the rock broke due to heat exposure. A total of 66 pieces of FCR were recovered within the Archaic occupational zone at the site. The FCR consisted of rock made up of sandstone or granite weighing a total of 4,727 grams.

One granite pitted stone, weighing 525 grams was recovered at an approximate depth of 136 cm BUD (Figure 10). The pitted stone was broken and had one small depression. Pitted stones are usually interpreted as nutting stones used for cracking nuts or grinding nutmeat. The second miscellaneous granite artifact found was a circular stone bead weighing 6.9 grams at approximately 120 cm below surface in the western most unit (Figure 11). The bead was not found in association with any other diagnostic artifacts.
Figure 8. Bifaces: (A) Susquehanna Broad; (B) Ovate Knife; (C) Biface Fragment; (D) Snyder; (E) Robbins; (F-H) Early Woodland Stemmed; (I-K) Unidentified Bifaces. Scale: one block equals 1 cm.
Figure 9. Triangular points and drills: (A-B) Drill Fragments; (C-I) Triangular Points; (J-K) Drill Fragments. Scale: one block equals 1 cm.
Figure 10. Pitted stone. Scale: one block equals 1 cm.

Figure 11. Stone bead. Scale: one block equals 1 cm.
Woodland Sandstone, Granite and Other Lithic Artifacts

The FCR included 32 pieces from the units and 135 from the midden. All were either granite or sandstone. They weighed a total of 3,158 grams. Most of the FCR recovered from outside of the midden feature was located within the first level following the terminus of the feature. FCR was located scattered throughout the midden; no concentrations were found.

One ground stone tool was located in the eastern unit one level above the midden. The type or purpose of this tool is unknown. It is rectangular in shape with one flared blunt end that exhibits smoothing and pecking (Figure 12). The second was made of sandstone and most likely served as a type of abrader. It is almost completely unaltered except one side has been worn smooth and has pecking.

One small fragment of mica was found within the midden. It is less than 1cm in diameter. The piece exhibits no modifications.

Figure 12. Unidentified groundstone tool. Scale: one block equals 1 cm.
Faunal Analysis

Nazarene rockshelter had poor preservation of faunal remains. This limited the analytical methods that could be applied to the analysis of this faunal assemblage. Soil pH can be used at an archaeological site to determine preservation quality of the sediments (Farrand 2001). A mechanical sediment probe was used to detect sediment pH for this site. Ten readings were obtained from the area surrounding the excavations at the surface and then averaged. It would have been more advantageous to take pH at varying depths but due to equipment availability constraints, this was not possible. The pH results for the site varied from 5.5 to 6.5; this places the site preservation of animal bone well below the optimal 7.8 to 7.9 range (Reitz and Wing 1999).

The faunal remains were first classified by species. If the remains could not be identified to species level then they were sorted into broader categories: large, medium and small mammal, amphibian, reptile, fish, rodent, mollusks and avian. Large mammals are defined as deer, bear, elk, bobcat, wolf, and other mammals of equivalent size. Medium mammals include fox, skunk, opossum, raccoon, and other mammals of equivalent size. Small mammals include all unidentifiable rodents. The animal bones are classified based on bone density, thickness, and size. Mollusks in this assemblage are gastropods and mussels. If the bones were too fragmented or could not be assigned a class with any certainty, then they were classified as unidentified. Each of these groups was weighed and counted, and modifications were noted. This was done for each level of each unit that was designated within the Archaic occupational zone. Any faunal remains that were large enough in size were recorded according to the element and portion of the bone, as well as age of animal (juvenile, subadult, and adult), and the side of the skeleton.
it came from. The element is defined as the name of the bone within a given skeleton, and the portion is the part of the bone that is present, such as tibia: proximal end (Reitz and Wing 1999; Nelson 2008).

Archaic Animal Bone Analysis

In the unit levels, there was a total of 1,047 animal bone fragments weighing 899.9 grams (Table 12). The average weight of an animal bone fragment was 0.9 grams. A total of 413 fragments (39%) were charred. The specimens were highly fragmentary, only 67 were identified to species level (Table 12). Turkey was the most dominant with 34 identifiable long bone fragments. This was followed by relatively small amounts of black bear (1), turtle (7), and white tailed deer (13). There was one bone awl fragment of an unidentifiable species (Nelson 2008).

In the features there were 4,392 animal bone fragments weighing 1091.0 grams of which 54% were charred (Table 13). The average weight of a fragment was 0.3 grams evidencing the highly fragmented nature of the bone. Only 17 specimens were identifiable to species level of which white-tailed deer and turkey are the most frequently occurring. One fish bone was also identified. In these features there was a greater number of unidentifiable avian totaling 283 fragments.

Faunal remains within the Archaic occupation totaled 5,487 weighing a total of 1615.0 grams of which 59% were charred. Artifact density of the total Archaic faunal remains was 114 per m³ by count and 33.6 grams per m³ by weight. These remains came primarily from the eastern portion of shelter where the Archaic features were concentrated. Medium mammal accounted for 41% of the faunal remains and indeterminate 42%.
Table 12. Faunal remains from Archaic unit levels.

<table>
<thead>
<tr>
<th>Taxon</th>
<th>Species</th>
<th>Common Name</th>
<th>NISP</th>
<th>Charred</th>
<th>Weight (g)</th>
<th>MNI</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Large</td>
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<td>84</td>
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<tr>
<td></td>
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<td>112</td>
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<td>1</td>
<td>0.1</td>
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<td></td>
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<tr>
<td></td>
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<tr>
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<td>White-Tailed Deer</td>
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<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vulpes Vulpes</td>
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<td>0</td>
<td>0</td>
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<td></td>
</tr>
<tr>
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<td></td>
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<tr>
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Table 13. Faunal remains from Archaic features.

<table>
<thead>
<tr>
<th>Taxon</th>
<th>Species</th>
<th>Common Name</th>
<th>NISP</th>
<th>Charred</th>
<th>Weight (g)</th>
<th>MNI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Large</td>
<td>326</td>
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</tr>
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<td>354.1</td>
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<td></td>
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<td>1.5</td>
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<td></td>
<td></td>
</tr>
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<td>Bobcat</td>
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<td>0</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Procyon Lotor</td>
<td>Raccoon</td>
<td>0 0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ursus Americanus</td>
<td>Black Bear</td>
<td>1 0</td>
<td>2.8</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Didelphis Virginiana</td>
<td>Opossum</td>
<td>0 0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mouse</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tamias striatus</td>
<td>Eastern Chipmunk</td>
<td>0 0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sciurus niger or carolinensis</td>
<td>Grey or Red Squirrel</td>
<td>0 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Avian</td>
<td>Meleagris gallopavo</td>
<td>Turkey</td>
<td>7</td>
<td>3 2.7</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Indeterminate</td>
<td>283</td>
<td>0</td>
<td>33.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reptile</td>
<td>Terrapene carolina</td>
<td>Eastern Box Turtle</td>
<td>4</td>
<td>1 1.2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>Indeterminate</td>
<td>1 0</td>
<td>0.1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4392</td>
<td>2361</td>
<td>1091.0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Turkey and indeterminate avian were the most frequently occurring, followed by white-tailed deer (13) and eastern box turtle and indeterminate turtle (42). The lack of large mammal may be attributable to the fragmentary nature of the assemblage. Only one specimen had butcher marks and none had gnaw marks. Indicators of seasonality were limited (Nelson 2008). The presence turtle carapace indicates spring or fall occupation (Carr 1952). However, the turtle carapace may have been brought into the site in the winter after it was already been hunted.

**Woodland Animal Bone Analysis**

The Woodland faunal remain densities by count within the midden was 161 per m³ within the midden and 7 per m³ outside of the midden. By weight there was 55.8 grams per m³ within the midden and 3.3 grams per m³ outside of the midden. The total count of the Woodland faunal remains from the feature and unit levels was 5,857 weighing 2196.7 grams, of which 48% is charred. The majority of the faunal remains came from the midden (92%) of which most were indeterminate (84%). Small, medium and large mammal were well represented. The presence of small mammal is typical of a site with such a large midden that would attract scavengers. Small mammal is also typical of rockshelter sites that serve as their habitats (Reitz and Wing 1998). White-tailed deer was the only species represented that were most likely culturally introduced. Turtle was present of which seven specimens were charred, indicating cultural deposition. There was evidence of gnawing by rodents on 10 specimens, supporting the presence of rodents at the site.

The Woodland occupation unit levels contained 460 animal bone fragments weighing 326.5 grams of which 49% is charred. The average weight of a fragment was
0.7 grams, reflecting the fragmented nature of the remains. Indeterminate animal bone constituted 87% of the remains and only seven of the specimens were identifiable to species level (Table 14). These included four chipmunk and three white tailed deer. The white-tailed deer fragments consisted of one antler tine with no cultural modification. Large, medium and small animal bone fragments were relatively evenly distributed.

The faunal remains recovered from the unit levels were primarily concentrated in the 10 cm arbitrary level following the midden. This can first be attributed to the fact the majority of the Woodland occupation was contained within the midden at this site. There was very little determined to be Woodland occupation in the units. Secondly it is possible the smaller mesh size biased toward recovering more animal bone. However, this is not likely since all animal bone sizes were relatively absent outside of the midden.

The Woodland midden contained 5397 animal bone fragments weighing 1870.0 grams, of which 48% was charred (Table 15). The average fragment weight was 0.3 grams. Indeterminate remains constituted 84% of the bone. Small, medium and large mammal were once again relatively evenly distributed. There were a total of 62 identifiable specimens to species level. The majority of these were naturally occurring species, especially in a rockshelter setting, including opossum, mouse, squirrel, skunk and raccoon.

In addition to the animal bone fragments two bone awl fragments were found within the Woodland midden feature. These were small, weighing 0.5 and 0.6 grams. Butchering marks were located on nine of the large or medium mammal animal bone fragments.
Table 14. Faunal remains from Woodland unit levels.

<table>
<thead>
<tr>
<th>Class</th>
<th>Species</th>
<th>Common Name</th>
<th>NISP</th>
<th>Charred</th>
<th>Weight (g)</th>
<th>MNI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammal</td>
<td>Large</td>
<td>17</td>
<td>7</td>
<td>74.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>15</td>
<td>2</td>
<td>35.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Small</td>
<td>18</td>
<td>1</td>
<td>8.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indeterminate</td>
<td>403</td>
<td>216</td>
<td>186.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odocolieus virginianus</td>
<td>White-Tailed Deer</td>
<td>3</td>
<td>0</td>
<td>22.4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Cervus elaphus</td>
<td>Elk</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vulpes Vulpes</td>
<td>Red Fox</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lynx rufus fasciatus</td>
<td>Bobcat</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procyon Lotor</td>
<td>Raccoon</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skunk</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ursus Americanus</td>
<td>Black Bear</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Didelphis Virginiana</td>
<td>Opossum</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mouse</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sciurus niger or carolinensis</td>
<td>Grey or Red Squirrel</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tamais Striatus</td>
<td>Eastern Chipmunk</td>
<td>4</td>
<td>0</td>
<td>0.2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Avian</td>
<td>Meleagris gallopavo</td>
<td>Turkey</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indeterminate</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reptile</td>
<td>Terrapene Carolina carolina</td>
<td>Eastern Box Turtle</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Turtle</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>Indeterminate</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>460</td>
<td>226</td>
<td>326.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 15. Faunal remains from Woodland midden.

<table>
<thead>
<tr>
<th>Class</th>
<th>Species</th>
<th>Common Name</th>
<th>NISP</th>
<th>Charred</th>
<th>Weight (g)</th>
<th>MNI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammal</td>
<td>Large</td>
<td></td>
<td>337</td>
<td>120</td>
<td>583.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td></td>
<td>233</td>
<td>76</td>
<td>219.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Small</td>
<td></td>
<td>211</td>
<td>6</td>
<td>41.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indeterminate</td>
<td></td>
<td>4540</td>
<td>2363</td>
<td>955.3</td>
<td></td>
</tr>
<tr>
<td>Odocolieus</td>
<td>virginius</td>
<td>White-Tailed Deer</td>
<td>8</td>
<td>0</td>
<td>45.4</td>
<td>1</td>
</tr>
<tr>
<td>Cervus elaphus</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Vulpes Vulpes</td>
<td></td>
<td>Red Fox</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Lynx rufus</td>
<td>fasciatus</td>
<td>Bobcat</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Procyon Lotor</td>
<td></td>
<td>Raccoon</td>
<td>7</td>
<td>0</td>
<td>4.6</td>
<td>1</td>
</tr>
<tr>
<td>Skunk</td>
<td></td>
<td></td>
<td>1</td>
<td>0</td>
<td>1.9</td>
<td>1</td>
</tr>
<tr>
<td>Ursus Americanus</td>
<td></td>
<td>Black Bear</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Didelphis</td>
<td>Virginiana</td>
<td>Opossum</td>
<td>5</td>
<td>0</td>
<td>2.8</td>
<td>2</td>
</tr>
<tr>
<td>Mouse</td>
<td></td>
<td></td>
<td>6</td>
<td>0</td>
<td>0.7</td>
<td>1</td>
</tr>
<tr>
<td>Sciurus niger or carolinensis</td>
<td>Grey or Red Squirrel</td>
<td>2</td>
<td>0</td>
<td>0.2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Tamias striatus</td>
<td></td>
<td>Eastern Chipmunk</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Avian</td>
<td>Meleagris gallopovo</td>
<td>Turkey</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indeterminate</td>
<td></td>
<td>5</td>
<td>0</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Reptile</td>
<td>Terrapene Carolina carolina</td>
<td>Eastern Box Turtle</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Turtle</td>
<td></td>
<td>37</td>
<td>7</td>
<td>14.3</td>
<td>1</td>
</tr>
<tr>
<td>Fish</td>
<td>Indeterminate</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>5397</td>
<td>2572</td>
<td>1870.0</td>
<td></td>
</tr>
</tbody>
</table>
Seasonality indicators are not strong. The presence of turtle may or may not indicate fall or spring occupation (Carskadden 1966). Without other supporting seasonality indicators it is hard to determine.

**Archaic Shells Analysis**

Shells were sorted into two categories: mussels and gastropods. The mussels and gastropods were weighed and counted. Burning and other forms of modification were noted. Due to the highly fragmented nature of most shells, species level identifications were not attempted. The average shell fragment was less than 1cm in diameter.

The shell consisted of a total of 1098.5 grams of mussel shell and 25.8 grams of gastropod shell in the unit levels (Table 16). In the features 560.87 grams of mussel shell and 4.5 grams of gastropod shell was recovered (Table 17). A total of 29 hinges and 77 valves with hinges were recovered from both the features and units. There was an assortment of complete mussel shell valves but they were highly eroded thus prohibiting species level identification. The majority of the mussel shell was recovered from the eastern most 2x2m unit and was found in small tightly packed piles of disintegrating shell. This depositional pattern in combination with the relatively intact stratigraphy indicates the shell was recovered from its original depositional context (Nelson 2008).

**Woodland Shells Analysis**

The unit levels contained 178.8 grams of mussel shell and 15.9 grams of gastropod shell (Table 18). The Woodland midden (Feature 3) contained 1133.7 grams of mussel shell and 114.5 grams of gastropod shell (Table 19). A total of 41 partial valves with hinges and 55 hinges were recovered from the units and midden.
Table 16. Shells located in Archaic unit levels.

<table>
<thead>
<tr>
<th>Taxon</th>
<th>Portion</th>
<th>Count</th>
<th>Weight (g)</th>
<th>Charring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mussels</td>
<td>Fragment</td>
<td>N/A</td>
<td>300.4</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Partial or complete valves with hinges</td>
<td>16</td>
<td>573.8</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Hinges</td>
<td>21</td>
<td>224.3</td>
<td>23%</td>
</tr>
<tr>
<td>Gastropod</td>
<td>Fragments</td>
<td>N/A</td>
<td>4.1</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Complete</td>
<td>54</td>
<td>21.7</td>
<td>0%</td>
</tr>
</tbody>
</table>

Table 17. Shells located in Archaic features.

<table>
<thead>
<tr>
<th>Taxon</th>
<th>Portion</th>
<th>Count</th>
<th>Weight (g)</th>
<th>Charring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mussels</td>
<td>Fragment</td>
<td>N/A</td>
<td>214.7</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td>Partial or complete bivalves with hinges</td>
<td>21</td>
<td>311.5</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Hinges</td>
<td>8</td>
<td>34.67</td>
<td>25%</td>
</tr>
<tr>
<td>Gastropod</td>
<td>Fragments</td>
<td>N/A</td>
<td>0.9</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Complete</td>
<td>14</td>
<td>3.6</td>
<td>0%</td>
</tr>
</tbody>
</table>
Table 18. Shells in Woodland unit levels.

<table>
<thead>
<tr>
<th>Taxon</th>
<th>Portion</th>
<th>Count</th>
<th>Weight (g)</th>
<th>Charring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mussels</td>
<td>Fragments</td>
<td>N/A</td>
<td>98.1</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td>Partial or complete valves with hinges</td>
<td>10</td>
<td>44.1</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Hinges</td>
<td>11</td>
<td>36.6</td>
<td>16%</td>
</tr>
<tr>
<td>Gastropod</td>
<td>Fragments</td>
<td>N/A</td>
<td>7.5</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Complete</td>
<td>14</td>
<td>8.4</td>
<td>0%</td>
</tr>
</tbody>
</table>

Table 19. Shells in Woodland midden.

<table>
<thead>
<tr>
<th>Taxon</th>
<th>Portion</th>
<th>Count</th>
<th>Weight (g)</th>
<th>Charring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mussels</td>
<td>Fragments</td>
<td>N/A</td>
<td>726.9</td>
<td>27%</td>
</tr>
<tr>
<td></td>
<td>Partial or complete valves with hinges</td>
<td>41</td>
<td>266.5</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>Hinges</td>
<td>55</td>
<td>140.3</td>
<td>9%</td>
</tr>
<tr>
<td>Gastropod</td>
<td>Fragments</td>
<td>N/A</td>
<td>53.0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Complete</td>
<td>165</td>
<td>61.5</td>
<td>0%</td>
</tr>
</tbody>
</table>
Unlike the Archaic assemblage, the majority of the hinges and valves were comparatively fragmented and degraded. The majority of the shells outside of the midden were located in the first level following the midden.

Botanical Analysis

*Archaic Botanical Analysis*

The Archaic botanical material was recovered using 1/8” mesh. The Archaic botanical material consisted of nutshell and wood charcoal. These were counted and weighed according to taxon. The only botanicals recovered for the Archaic occupation were from the features. The nut mast included 11 hickory and 28 walnut nutshell fragments, all charred (Table 20) (Nelson 2008). Flotation samples were conducted on the Archaic features but are not included in detail here since a comparable data set is not available for the Woodland feature. Overall, the flotation samples support what was found in the features using 1/8” mesh. Hickory and walnut along with some wood charcoal was recovered. Polygonum seeds were identified in these samples but were not charred and as a result are assumed to be naturally occurring.

Table 20. Botanicals from Archaic features.

<table>
<thead>
<tr>
<th>Class</th>
<th>Taxon</th>
<th>Count</th>
<th>Weight (g)</th>
<th>Charred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutshell</td>
<td>Hickory (Carya sp.)</td>
<td>11</td>
<td>3.0</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Walnut (Juglans sp.)</td>
<td>28</td>
<td>5.9</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Acorn (Quercus sp.)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Wood</td>
<td>Indeterminate</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Woodland Botanical Analysis

Woodland botanicals were counted, weighed and sorted by taxon where possible. The majority of the botanical material was obtained from the Woodland midden (Table 21). This consisted of relatively equal amounts of hickory and walnut and lesser amounts of acorn.

There were 20 indeterminate wood charcoal fragments. Only small amounts of nutshell were recovered from outside the midden (Table 22). No wood charcoal was recovered from outside the midden. The total nut mast includes 37 hickory, 36 walnut and nine acorn nutshell fragments. All of these fragments were charred.

Woodland Ceramic Analysis

The ceramic assemblage was sorted by temper type, surface treatment, decoration, form, sherd type, and basic metric attributes where applicable. Paul Patton, Elliot Abrams, Anncorinne Freter-Abrams, and the author conducted the analysis of the

<table>
<thead>
<tr>
<th>Class</th>
<th>Taxon</th>
<th>Count</th>
<th>Weight (g)</th>
<th>Charred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutshell</td>
<td>Hickory (Carya sp.)</td>
<td>34</td>
<td>3.3</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Walnut (Juglans sp.)</td>
<td>32</td>
<td>2.9</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Acorn (Quercus sp.)</td>
<td>9</td>
<td>0.3</td>
<td>9</td>
</tr>
<tr>
<td>Wood</td>
<td>Indeterminate</td>
<td>20</td>
<td>5.3</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Class</th>
<th>Taxon</th>
<th>Count</th>
<th>Weight (g)</th>
<th>Charred</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutshell</td>
<td>Hickory (Carya sp.)</td>
<td>3</td>
<td>.7</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Walnut (Juglans sp.)</td>
<td>4</td>
<td>1.0</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Acorn (Quercus sp.)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Wood</td>
<td>Indeterminate</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
ceramics. In this analysis three basic types of ceramics were identified Thick, Plain, and Baum. The thick variety is defined as sherds that are greater then 10 mm in thickness and is plain. They are associated with the Early Woodland. Plain sherds are typically 10 mm-7mm in thickness sometimes as thin as 4 mm on rare occasions. They are manufactured using the coiling technique and are characterized by a plain surface. Their finer manufacture quality makes them distinguishable from the thick type. This type is associated with the Woodland Period to Late Prehistoric. Baum sherds have an average thickness of 9-6 mm and have cordmarking that is sometimes smoothed. These are affiliated with the Late Prehistoric period (Patton 2009). Feurt, associated with the Late Prehistoric period was absent from the assemblage. The majority of the sherds were less than 1cm. Twenty of the sherds had heavy erosion. The total sherd count is 211 of which 207 were assigned two one of the basic ceramic types. The four not identified were too fragmented to determine type. One-hundred sixty-three of these sherds came from the midden feature.

Seventy-one sherds were identified as Baum and had a mean thickness of 7.9 mm (Figure 13). Twenty-six were cordmarked and 40 had smoothed over cordmarking. Five sherds did not have cordmarking. However, these were heavily eroded, as result the cordmarking may have been indistinguishable. Tempering consisted of coarse or medium grit for all of the sherds. Two sherds were rims, but were too small to conclusively identify vessel form. Four of the sherds had thick oxidation cores. Four of the sherds from the midden feature were extremely charred and were grayish white in color. One sherd exhibited a pink hue and three an orange hue on their exteriors.
Figure 13. Baum Ceramic Assemblage: (A-D) Cordmarked Baum; (E) Cordmarked Baum Rim Sherd. Note: Scale: one block equals 1 cm.

Figure 14. Plain Ceramic Assemblage: (A-D and L) Plain; (E-H) Thick; (I-K) Thick Rim Sherd; (M) Woodland Plain Thick Incised; (N) Plain Basket Impressed. Scale: one block equals 1 cm.
Ninety-three Plain type sherds were identified and they had a mean thickness of 7.7 mm (Figure 14). Interior charring was evident on 16 sherds, exterior charring on three sherds, and three had charring on both the exterior and interior. Thick oxidation cores were present on two sherds. Sixteen sherds had a pink hue and 15 had an orange hue. Two sherds had unusual blue clay that was not similar any of the other ceramic sherds present. It had an unusual brick red color with dark dusky orange clay. The majority of the temper was grit with two sherds having an unidentified black rock temper and two having a limestone temper. One sherd was incised this is unusual since decorated sherds are typically found with burials or ritual contexts.

Forty-three sherds were identified as the Thick type all having grit temper (Figure 14). The average sherd thickness is 9.9 mm. This is under the ten-millimeter range. However, the sherds’ cruder manufacture quality and average thickness range between 9.4 mm and 11.8 indicates these are of the Thick variety. Two sherds had exterior burning and nine had interior burning. Four of the sherds had an orange hue and two had a thick oxidized core. One sherd had basket weave impressions indicating that it likely dates to very early in the Woodland period.

The ceramic assemblage was overall quite uniform. The grit temper stayed fairly consistent for all of the types. The only variation was greater or lesser quantities of sand or sandstone that made up the grit temper but there was not any discernable pattern for these concentrations. Baum constituted 34% of the ceramic assemblage, Plain (44%), and Thick (21%). Most of the Plain types sherds identified were of a finer quality indicative of the Late Woodland. This, combined with the Baum sherds, indicates that the site was
occupied the heaviest during the Late Woodland/Late Prehistoric and was occupied to a lesser degree during the Early Woodland.
CHAPTER VI: ROCKSHELTER SITES IN OHIO AND FUNCTIONS

To determine the nature of the occupation at Nazarene Rockshelter other rockshelter sites must be examined. In the Hocking Valley data on rockshelters is limited in comparison to other areas in and outside of Ohio. Many rockshelters were excavated in the late nineteenth and twentieth centuries. The two main figures that carried out these investigations were Robert Goslin and Tracey Heft (Cantley and Novick 1980). These excavations were conducted without much regard for stratigraphic context; as a result, much of the data are of limited value for chronological comparisons.

More modern excavations and publications are still limited for the valley but the few that have been conducted have contributed greatly to our knowledge of this subject. In examining rockshelters both within and outside of the Hocking Valley, basic cultural trends can be discerned from rockshelter excavations. It is evidenced from the Hocking sites of Chesser Cave (Prufer 1975; Prufer and Spurlock 2006a), Carpenter Rockshelter (Murphy 1989) and Facing Monday Creek Rockshelter (Spertzel 2005; Spertzel et al. 2007) that they were used primarily in the Late Woodland followed by the Late Archaic. Early and Middle Archaic are almost absent as well as Middle Woodland. Early Woodland occupation is moderate. The rockshelters Wise (Oplinger 1981; Oplinger and Prufer 2006), Raven (Prufer and Spurlock 2006b), White Rocks (Ormerod and Spurlock 2006), Wheelabout (Prufer and Spurlock 2006c) and Peters Cave (Prufer and Spurlock 2006d; McKenzie and Prufer 1966) outside of the Hocking Valley follow this same trend (Table 23).
<table>
<thead>
<tr>
<th>Site Description</th>
<th>Area (m³)</th>
<th>Temporal Period</th>
<th>Function</th>
<th>Midden Thickness (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facing Monday Creek Rockshelter</td>
<td>72</td>
<td>E. Woodland L. Woodland</td>
<td>Hunting Camp</td>
<td>20-40</td>
</tr>
<tr>
<td>Chesser Cave</td>
<td>330</td>
<td>Archaic to L. Prehistoric</td>
<td>Hunting Camp</td>
<td>76-92</td>
</tr>
<tr>
<td>Carpenter Rockshelter</td>
<td>53</td>
<td>L. Woodland to L. Prehistoric</td>
<td>Hunting Camp and Lithic Procurement</td>
<td>8-15</td>
</tr>
<tr>
<td>Wise Rockshelter</td>
<td>27</td>
<td>E. Archaic to L. Prehistoric</td>
<td>Hunting Camp</td>
<td>30-95</td>
</tr>
<tr>
<td>White Rocks</td>
<td>378</td>
<td>L. Woodland to L. Prehistoric</td>
<td>Hunting Camp</td>
<td>61-71</td>
</tr>
<tr>
<td>Raven Rocks</td>
<td>273</td>
<td>L. Archaic to L. Prehistoric</td>
<td>Hunting Camp</td>
<td>30-46</td>
</tr>
<tr>
<td>Peters Cave</td>
<td>92</td>
<td>L. Archaic to L. Woodland</td>
<td>Hunting Camp</td>
<td>30</td>
</tr>
<tr>
<td>Wheelabout Rockshelter</td>
<td>----</td>
<td>E. Archaic to L. Prehistoric</td>
<td>Hunting Camp and Lithic Procurement</td>
<td>----</td>
</tr>
<tr>
<td>Nazarene Rockshelter</td>
<td>56</td>
<td>E. Archaic to L. Prehistoric</td>
<td>Hunting Camp</td>
<td>20-30</td>
</tr>
</tbody>
</table>
These rockshelters indicate that their function remained consistent. They typically served as logistical camps in the procurement of specialized resources. They most commonly were utilized as hunting camps followed by areas for lithic extraction (Oplinger 1981; Murphy 1989; Prufer and Spurlock 2006a; Prufer and Spurlock 2006b; Prufer and Spurlock 2006c; Prufer and Spurlock 2006d; Oplinger and Prufer 2006; Ormerod and Spurlock 2006; Spertzel et al. 2005; Spurlock et al. 2006). The upland setting of rockshelters served as a location that the occupants could camp at in order to extract resources not available to them in low land settings. Most of these sites increased in usage in the Woodland and have ceramics and high numbers of local chert. This indicates that populations were becoming increasingly sedentary during this period. The increased utilization of these sites into the Late Woodland can be correlated with the shifting settlement preference for alluvial bottomlands that are well suited for agriculture (Wakeman 2005). These rockshelter sites were possibly occupied seasonally, most frequently during the winter in order to escape from harsher weather conditions (Spurlock et al. 2006).

Rockshelter Sites in Ohio

Facing Monday Creek Rockshelter is a multicomponent site primarily utilized during the Late Woodland/Late Prehistoric. The artifacts and features at the site represent a trend of increasing site usage intensity into the Late Woodland. It is evident that the site was used to a lesser degree in the Archaic but mostly likely served the same function. Early Woodland occupation was evident through the presence of stemmed points and radiocarbon dates from features. Middle Woodland is represented by one Vanport blade. The site contained a midden with a maximum thickness of 43 cm that dates to the Early
through Late Woodland. In addition to the midden there were several very thin hearth features with little artifacts associated with them. The site was used for hunting and processing of medium to large game. White-tailed deer was well represented within this assemblage. Lithic manufacture was evident from the presence of secondary and primary debitage, most of which was manufactured from Upper Mercer chert. A local outcrop of Upper Mercer chert would make this site an ideal location for lithic production. The site was hypothesized to have been used for short periods of time in the late summer and winter (Spertzel 2005; Spertzel et al. 2007).

Chesser Rockshelter located in Athens County was utilized primarily during the transitional period between the Late Woodland and Late Prehistoric. There is minor evidence of Archaic occupation. It is located in an upland setting in close proximity to Raccon Creek, a small tributary (Prufer and Spurlock 2006a). A Brush Creek outcrop is located less than ½ mile from the site (Prufer 1967). The site had one thick midden (76-92 cm) dating to the Late Woodland/Late Prehistoric. Artifacts included 34,000 debitage, 13,348 animal bone, 1,136 ceramic sherds, 925 lithic tools, 62 bone tools and 80 cores (Prufer 1967; Prufer and Spurlock 2006a). It was concluded that the site was occupied during the Woodland for short periods of time for the procurement of specialized faunal resources during the winter, evidenced by the large proportion of white-tailed deer. It is also hypothesized that some lithic production took place at the site. No discussion is present on how the Archaic and Woodland occupations compare, in the literature on this site (Prufer and Spurlock 2006a).

Carpenter Rockshelter is located only five miles from Chesser Cave in an upland setting along a small tributary. The only diagnostics recovered from the site were
Archaic. However, it was concluded that the site was occupied into the Late Woodland/Late Prehistoric Period due to the fact that most rockshelters were utilized in the Woodland. The site functioned as a hunting camp as well as a lithic procurement area. Brush Creek chert accounted for 146 of the 168 lithic debitage. This is to be expected since this site, like Chesser Cave, is located in close proximity to a Brush Creek outcrop. This site had a midden of moderate thickness (8-15 cm) also believed to date to the Late Woodland. In addition to the midden, one small hearth was also located at the site (Murphy 1989).

Wise Rockshelter is located in Jackson County, Ohio. This area is unglaciated and in close proximity to the Scioto River. The artifacts at this site included 1,764 debitage, 118 ceramic sherds, 44 bone tools, 20 ground stone tools, 108 chert tools and 3,613 animal bone fragments. It was used from the Early Archaic to Late Woodland/Late Prehistoric. Several Kirk serrated points represent the Early Archaic occupation. Middle Archaic is absent. Late Archaic was well represented by fifteen points that were dated to the end of the Archaic period, or Terminal Archaic. Early Woodland was moderately represented. Evidence of Middle Woodland occupation was unsupported but assumed to be present. Late Woodland/Late Prehistoric assemblage consisted of 27 triangular points as well as an associated midden (30-95 cm) and ceramics. In association with the Woodland material were seven fire pits determined to be temporary in nature representing short-term occupations. One large FCR-lined fire pit was also located. The site was interpreted to be a hunting camp or extraction camp utilized in the late summer or fall by groups originating from a centralized village. Some tool manufacture most likely took place at the site as well. Most of the chert was from local sources. It is evident
the site was occupied repeatedly in the through the Archaic and Woodland. However, there is no mention in the literature as to how site function changed (Oplinger 1981; Oplinger and Prufer 2006).

White Rocks is located in Monroe County, Ohio. It is in close proximity to several small tributaries. The site was occupied primarily during the Late Woodland/Late Prehistoric. The Middle Woodland period was better represented at this site than most other Ohio rockshelter sites while Late Archaic period occupation was not significant. The site contained 72,699 animal bone fragments and a large number of bone tools (1,249; Ormerod 1983). The majority of these faunal remains were large mammal: white-tailed deer, bear and elk. Avian was an important part of the faunal assemblage. It consisted of turkey as well as other species of avian. Sixteen percent of the fauna was identified as turtle. Human bone was also identified at the site. These consisted of a molar crown, and several ear bones. Features at the site included poorly defined hearths, post molds, and pit features. It was concluded that the site was used for hunting with much of the processing of the game taking place at the site. The abundant number of bone tools also indicates that some manufacture of these items was taking place. The presence of migratory birds and turtle indicates site was occupied outside of the winter season. Lithic debitage was not significant at this site (Ormerod and Spurlock 2006).

Raven Rocks is located in Belmont County, Ohio. Raven Rocks’ site function is very similar to White Rocks. The majority of the occupation dates to the Late Woodland/Late Prehistoric. Utilization during the Middle Woodland period was evident through the presence of mica and chert blades. Some points located at the site indicate that Late Archaic utilization was present as well. The site yielded 584 ceramic sherds,
354 bone tools, 19,742 animal bones, 241 debitage and 44 lithic tools. The site contained a significant amount of avian although the majority would not have been used for food. It was concluded that the site was used for hunting and the manufacture of bone tools (Prufer and Spurlock 2006b).

Peters Cave was occupied during the Late Archaic through Late Woodland. It is located in Ross County Ohio in an upland setting. Artifacts at this site included 674 animal bones, 244 ceramic sherds, 436 debitage, 21 bone tools, four groundstone tools and five worked shell artifacts. This site was almost equally utilized between the Early Woodland and Late Woodland. Diagnostic points as well as two isolated human bones represented the Late Archaic. One Woodland midden was located at the site with a thickness of 30-40 cm. It is evident that the site was utilized for the purpose of hunting. A greater proportion of migratory birds were found at this site in comparison to others. It is also theorized that the site may have been used as a location for squirrel hunting. This indicates a specialized hunting strategy. The faunal remains indicated a summer or fall occupation. Most of the chert through all temporal periods was local (McKenzie and Prufer 1966; Prufer and Spurlock 2006d).

Wheelabout Rockshelter located in Vinton County is in close proximity to Chesser Cave. The site was primarily utilized during the Late Archaic and Late Woodland/Late Prehistoric. Early Archaic occupation is evidenced from the presence of one bifurcate point and two Kirk points. Utilization during the Middle Archaic is clearly indicated by the presence of two Middle Archaic points. The Late Archaic occupation contained a large number of lithic tools (44) as well as one disarticulated female burial. The Early and Middle Woodland are not significantly present. The Middle Woodland
assemblage did contain one mica fragment. The Late Woodland/Late Prehistoric assemblage consisted of cordmarked ceramics and a large number of triangular points (53). The majority of the chert was local. Most of the Vanport chert was found in context with Early and Middle Woodland diagnostic artifacts. The site was most likely occupied in the late summer, early fall and spring for short periods of time. The site was used as a hunting camp with some lithic production taking place at the site (Prufer and Spurlock 2006c).

Rockshelter Site Types

The site functions listed below are very generalized. These are the most common category of sites and these categories are not mutually exclusive. For example, bone tool manufacture and nut harvesting were usually conducted in tandem. This was the case at sites like Raven (Prufer and Spurlock 2006b) and White Rocks (Ormerod and Spurlock 2006). In addition, site function can shift over time. However, overall changes in site function have not been well documented at Ohio rockshelters.

Hunting camps

Hunting camps are sites used for the processing of faunal resources. These site types typically contain lithic tools like scrapers that are affiliated with the processing of game animals (Magne 1989; Brush 1990). The middens at these sites are of moderate thickness with small ephemeral hearths associated with them. If processing and/or smoking of the game are taking place at the site, then it can be expected that the faunal remains will be charred. Remains will often exhibit butcher marks (Reitz and Wing 1999).
**Lithic Production Sites**

Quarry sites are used for the production of lithic tools. These sites are typically near chert outcroppings (Spurlock et al. 2006). The lithic debris at this site type has a higher percentage of primary manufacture lithic debris than secondary or tertiary. Debitage will have a higher frequency of cortex at these site types. Cores and flake blanks are typical at these site types (Magne 1989; Brush 1990).

**Burial/Rituals Sites**

Burials are frequently found in rockshelters both within and outside of Ohio. One of the most extensive reports on burial practices in Ohio rockshelters is Pedde and Prufer’s (2006) paper on Hendricks Cave and other related rockshelter sites used for mortuary purposes. In their study they concluded that, in Ohio rockshelters were utilized most frequently for mortuary purposes during the Late Archaic and Early Woodland. Most of the burials at these sites were disarticulated and did not contain any grave goods. The disarticulated remains usually consisted of a few isolated human bones (Pedde and Prufer 2006).

**Opportunistic Sites**

Rockshelters are often used as an emergency shelter to escape from rain and bad weather. These are usually occupied for no more than a day. They typically do not have any features and few artifacts; thus they are less visible in the archaeological record (Spertzel 2005).

**Base Camps/Residential Sites**

Rockshelters in Ohio have rarely been used as base camps/residential sites and their usage as such as been logically inferred without much empirical support. The lithic
assemblage is very diverse with lithic debris from all manufacturing stages with late stage production being the least represented (Magne 1989). Overall, the artifact assemblage is very diverse representing many activities. Ceramics and groundstone tools, hallmarks of more sedentary societies, are commonly located at these sites. Rockshelters that are suitable for base camps are large and are near a water source that is present all year round (Mickelson 2002).
CHAPTER VII: DISCUSSION AND CONCLUSIONS

Archaic Occupation

The Archaic occupation at Nazarene Rockshelter is typical of rockshelters in the Hocking Valley. Evidence of Early Archaic occupation is weak, Middle Archaic occupation is absent, and Late Archaic occupation is well represented.

The artifact assemblage for the Archaic period is a clear representation of a specialized processing camp. The artifacts included 1,083 lithic debitage and 5,439 animal bone fragments. Sixty percent of the animal bone was charred, indicating that hunting and processing of game was the central activity at the site. It is evident from the results of the analysis that they were procuring both medium and large game. The identified species white-tailed deer, black bear, elk, and turtle are typical for rockshelter sites in this area. Birds constituted 6% of the faunal remains with 41 turkey long bone fragments of the 424 bird remains, thus that procurement of bird species was a part of the hunting strategy. Mussel shell fragments (1659.4 g) were also evident and most likely served to supplement the diet while away from their base camp. The lack of species level identification limits seasonality indicators. Most rockshelters in the Hocking Valley were probably utilized during the winter to escape harsher climates. It can be assumed that most likely this is true for Nazarene Rockshelter as well. However, the presence of turtle and mussel shell indicates that the site was potentially utilized in the spring or fall. The faunal remains for the Archaic are overall very similar to the Woodland faunal remains.

Botanical remains were sparse. This is potentially a function of the poor preservation at the site. Small amounts of hickory (3.0 grams) and walnut (5.9 grams) were recovered.
The triple cortex analysis indicated that cortex was absence on 86% of the lithic debris indicating late stage manufacture. The size grade analysis places 77% of the lithic debris within the grade 3 and 4 categories also indicating late stage manufacture. It is inferred from these data that most of the tool working taking place during the Archaic period was repair or resharpening work. Chert types were fairly evenly distributed. Vanport was clearly evident (21%). Tool count was relatively low (29) and was manufactured from a variety of chert types including seven from Vanport chert.

The features were representative of typical Late Archaic short-term site occupations. The hearths were small and not lined with FCR. The middens were also shallow and small. These features are often overlapping, suggesting repeated use and abandonment of the site. There is evidence of sediment accumulation between features suggesting that the site was abandoned for longer periods of time during the Late Archaic period. There was one burial dated to 3000 B.C. that indicates that mortuary activity did take place at the site. Overall, the Archaic data suggests that during this period the site was utilized by mobile and hunter gatherers for the purpose of hunting and processing of game. This is in contrast to increased sedentism in the Woodland period as indicated by the larger midden with higher artifact densities.

Woodland Occupation

The Woodland occupation is also typical of most rockshelters in the Hocking Valley. There is evidence that the site was used most frequently in the Late Woodland followed by Early Woodland and then Middle Woodland. The presence of Baum and Plain ceramics is consistent with Late Woodland/Late Prehistoric as well as the nine triangular points. One Vanport blade, one mica fragment and two Snyder points indicate
Middle Woodland occupation. The Early Woodland assemblage includes plain thick ceramics and several diagnostic points. Both the ceramics and triangular points indicate shifts in subsistence for the Woodland period. Triangular points can be used to procure smaller game. Ceramics can be use for food storage and cooking. The latter is affiliated with more sedentary Woodland communities.

The Woodland artifact assemblage consisted of 2,559 lithic debitage and 5,857 animal bone fragments. This is a significant increase over the number of artifacts present in the Archaic occupation. Forty-eight percent of the animal bone is charred. Species level identification is minimal. Most of the species identified were most likely introduced through noncultural agents. These include the faunal remains of chipmunk, squirrel, raccoon, opossum and skunk, species that often habitate rockshelters. Compared to the Archaic occupation, there was a larger number of small mammals (229 versus 51) for the Archaic. The identified species that were likely exploited by the Woodland populations include white-tailed deer and turtle. There is very little avian (5) compared to the Archaic occupation (424). Ninety-two percent of the Woodland faunal material came from within the midden. The increased density of artifacts within this midden compared to the lower densities of artifacts in the Woodland midden indicates an increase in intensity in occupation of the site. The presence of this large midden would attract scavengers and small rodents, which may explain the higher frequency of these remains.

The large number of faunal remains in proportion to the lithic debitage indicates that hunting was the primary activity. The presence of charring indicates that meat was processed at this site and then brought back to a main habitation area. It is evident that both medium and large mammal were being exploited. There are very few data to
indicate seasonality but, as with the Archaic occupation, it is assumed that the site was used during the winter.

Woodland botanicals are similar to those of the Archaic period. There were small amounts of acorn (0.3 grams), hickory (3.9 grams), and walnut (4.0 grams). The amounts were too small to draw any conclusions from.

The Woodland lithic debitage is indicative of both late stage and secondary manufacture. This indicates that some tool manufacture, most likely from prepared cores, was taking place during this temporal period. This is most strongly evidenced through the triple cortex analysis. Eighty-two percent (2,110) of the flakes are indicative of secondary manufacture. This is striking in comparison to the Archaic results where cortex was absent from the majority of the flakes. The size grade analysis places 85% of the debitage within grades 3 and 4 further supporting secondary and late stage manufacture. It is surprising that not more of the debris were in grade 2 considering the large presence of cortex.

The chert types were mostly composed of Upper Mercer (41%) followed by Zaleski (21%), Brush Creek (9%) and Vanport (5%). There are a greater number of lithic tools (57) for the Woodland occupation, the majority of Upper Mercer (33) and Zaleski (10) manufacture. The increase in Upper Mercer, a local chert, is indicative of more restricted sedentary populations.

The Woodland period is only represented by one large midden. No hearths or other features were identified. It is possible that the Woodland hearths were not located in the process of the excavation. The presence of charred faunal remains indicates that hearths should be present at the site. Hearth features at other rockshelter sites in the area
are typically very thin with little to no artifacts associated with them. As a result the shovel testing strategy and subsequent excavation at Nazarene Rockshelter may not have located them.

Sixteen square meters of the midden, an estimated 50%, were excavated. The midden varied in thickness from 15-25 cm, containing the majority of the Woodland artifacts. The midden did not exhibit any sediment breaks. It is most likely that the hiatuses between occupations were not long; as a result, sediment did not have an opportunity to accumulate to a great degree. The thin sediment layers would easily be disrupted and subsequently obscured. Additionally, the small rodents would contribute a great deal of mixing within the midden. This contrasts with the Archaic occupation, which had many smaller features with some sediment accumulation between occupational episodes. The increased size of the midden and absence of sediment breaks indicates more intense usage of the site during the Woodland. This is consistent with populations becoming more sedentary during the Woodland.

Comparison of Nazarene Rockshelter’s Site Function

Nazarene Rockshelter, unlike most other rockshelter sites, has relatively low artifact densities. Faunal procurement sites like White Rocks (Ormerod and Spurlock 2006) and Raven Rocks (Prufer and Spurlock 2006b) had over 10,000 animal bone fragments as well as a significant number of bone tools. Lithic procurement sites like Chesser (Prufer 1967; Prufer and Spurlock 2006a) had well over 10,000 chert artifacts. Nazarene Rockshelter’s assemblage is similar in scale to Peters Cave (Prufer and Spurlock 2006d), Wise (Oplinger 1981; Oplinger and Prufer 2006), and Carpenter Rockshelter (Murphy 1989) that had fewer than 17,000 total artifacts. Nazarene
Rockshelter has a total of 14,938 lithic debitage and animal bone fragments. Total chert tool count is 86. Animal bone tools only included three specimens.

Although, Nazarene Rockshelter has low artifact numbers, its significance lies in its distinct cultural stratigraphy. The majority of excavated rockshelter sites do not have clear cultural horizons. Many of the sites, like White Rocks (Ormerod and Spurlock 2006), Carpenter (Murphy 1989) and Chesser (Prufer 1967; Prufer and Spurlock 2006a), either lacked well-defined stratigraphy or were determined to be too mixed to ascertain definitive cultural affiliations. In these cases the more ambiguous materials like debitage and faunal remains were lumped into an assumed occupational period. Often this is Late Woodland/Late Prehistoric since this is the most commonly occurring occupational period. Recent excavations at Facing Monday Creek Rockshelter (Spertzel et al. 2007) have begun to better define occupations at these sites through refined stratigraphic analysis. Nazarene Rockshelter’s remarkably well-defined stratigraphy enables a clear delineation of cultural horizons and the artifacts affiliated with them. This is important for determining how site usage changed and how this relates to landscape utilization.

It is evident upon conclusion of this analysis that Nazarene Rockshelter is typical of most rockshelters in Ohio. It follows the same trend of intensity of occupations as sites like Chesser (Prufer 1967; Prufer and Spurlock 2006a) and Facing Monday Creek Rockshelter (Spertzel et al. 2007) in the Hocking Valley. Its use as a hunting camp is consistent with other rockshelter hunting camps like Facing Monday Creek Rockshelter (Spertzel 2005), Carpenter (Murphy 1975), Peters Cave (Prufer and Spurlock 2006d), Wise (Oplinger 1981; Oplinger and Prufer 2006), White Rocks (Ormerod and Spurlock 2006), Raven Rocks (Prufer and Spurlock 2006b) and Wheelabout (Prufer and Spurlock...
The similarities include a higher proportion of faunal remains to lithics, low tool diversity and a significant Woodland midden. Higher densities of artifacts for the Woodland occupation also support the increase in intensity of usage during this period. It is also evident Nazarene Rockshelter also began to be utilized as a lithic manufacturing station during the Woodland period. This is consistent with sites like Wheelabout (Prufer and Spurlock 2006c) and Wise (Oplinger 1981; Oplinger and Prufer 2006), where it is evident lithic manufacturing was a secondary activity during the Woodland period.

Nazarene Rockshelter helps support these general patterns of occupation but at the same time it provides clues to how rockshelter usage may have changed with sedentism. It is evident from other rockshelter studies that intensity of occupation changed but there is little evidence to address how rockshelter functions may have shifted. Nazarene Rockshelter functions did change over time in subtle ways that are consistent with changes sedentism. Lithic manufacturing and ceramics were introduced during the Woodland period. Faunal resources have changed, especially avian species being more significantly during the Archaic period. Other faunal resources like mussel, turtle, and white-tailed deer remain consistent.

The duration and length of time between occupations also changed between the two periods. The smaller Archaic midden features compared to the one large Woodland midden indicate that length of time between occupations changed and that population densities increased. The small overlapping middens and hearth features evidence that the site was occupied repeatedly during the Archaic period. This is consistent with a seasonally nomadic settlement pattern as defined for the Late Archaic Period (Stump et al. 2005). Sediments were allowed to accumulate during these absences indicating that
abandonment of the site was for longer periods of time. Unlike the smaller middens, the Woodland midden, did not have sediment accumulation. The midden data indicates that the site was abandoned for only short periods, consistent with longer-term sedentary communities (Wakeman 2005). The lack of Woodland hearths unfortunately inhibits determining more specifically the nature of the duration and abandonment of the site during this period.

Chert preferences also changed. During the Archaic a wider range of chert types, including Vanport, was utilized, indicating a more nomadic settlement pattern. During the Woodland, Upper Mercer chert was utilized most frequently while Brush Creek, Zaleski, and Vanport were not as significant indication a population location restriction with sedentism. This is most likely a reflection of the introduction of lithic manufacturing at the site.

These changes reflect how utilization of the landscape shifted between these two periods. Starting in the Late Archaic period, populations became more restricted to the valley as inter-valley movement decreased. Seasonal mobility, however, still dominated, which accounts for short-term usage of the site as indicated by wide ranging chert types and smaller midden features. By the Woodland period, populations were restricted to the valley and had a more sedentary settlement pattern (Stump et al. 2005; Hicks et al. 2008). Logically, as mobility decreased, certain sites would be more intensely utilized. The use of fewer chert types is also typical of less mobile populations. The addition of lithic reduction at this site during the Woodland period is also indicative of more sedentary populations. The size of the one large Woodland midden further indicates the increased sedentism during this period.
These data can be used not only to determine how rockshelters were utilized but also to elucidate the occupational patterns of the broader communities, which relied upon them. A rockshelter is only one part of the settlement pattern and its usage varied based on how the broader landscape was being utilized. The changing usage of Nazarene Rockshelter reflects the overall shifting cultural patterns for the Hocking Valley as discussed in research by Wakeman (2005), Stump et al. (2005) and Abrams and Freter (2005).

Conclusion

Rockshelters have played a significant role throughout prehistory in the Hocking Valley. Archaeological investigations of these site types have been extensive but have been chronologically restricted. Most studies lack well-defined stratigraphy. As demonstrated here, these modern methods can help elucidate the finer details of prehistoric occupation in these sites as well provide a means to make comparisons between different temporal occupations.

Nazarene Rockshelter has a remarkably intact stratigraphy that enabled a clear delineation between cultural occupations at the site. Within these cultural delineations is a relatively rich artifact assemblage. It did not offer the preservation quality of nearby dry rockshelters but nonetheless succeeded in providing evidence from which to compare the Archaic and Woodland periods.

It is evident that change in usage of rockshelters did occur between these two periods. The Archaic assemblage indicates short-term occupations for the purpose of hunting with lengthy periods of abandonment between occupations. This is congruent with evidence from other rockshelter sites in the area with similar occupations. During
the Woodland period it is evident that the site began to be used more frequently with less
time elapsed between periods of occupation. However, the site continued to serve its
primary function as a hunting camp. In the Woodland period this function was augmented
with that of lithic manufacture.

Although site usage remained relatively consistent, the frequency and intensity of
site usage changed. In the Early and Middle Woodland site length of occupation
increased as well as intensity as indicated by artifact densities. Due to the lack of hearths
the exact nature of this change is hard to discern. Artifacts numbers and densities
increased in the Late Woodland indicating a renewed interest in usage of this site. The
Woodland period is also defined at this site by the introduction of ceramics, an indicator
of more sedentary communities. Midden size and artifact densities within it also
increased indicating site usage intensified. Local cherts began to be utilized more
frequently during the Woodland period, at this site, further supporting that it began to be
utilized by more sedentary communities. This increase in site intensity is a reflection of
changes in utilization of the landscape throughout these time periods. Overall, these data
illustrates how changes in sedentism affect usage of rockshelters and how this relates to
overall settlement trends.

Nazarene Rockshelter serves an indicator of how settlement and subsistence
patterns changed in the Hocking Valley. It is a reflection of how mobility impacts the
usage of the landscape. Further research needs to be conducted on both upland and
lowland rockshelter sites in order to better define the differences in the usage of these two
site types. Additionally, further work needs to be conducted on rockshelters with more
complete occupational records in order to better define how site usage changed.
More specifically, the seasonality of rockshelter usage needs to be better examined, including finding more evidence on the nature of winter occupations at these site types. This would include if these sites served as habitation areas. Overall, the work here has shown the importance of rockshelter sites as part of the archaeological record and how they can contribute to our knowledge of the prehistory of this area.
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APPENDIX A: UNIT PROFILES AND DESCRIPTIONS
Nazarene Rockshelter
33HO701
2 x 2 meter Unit
South Wall

Descriptions
I. 10YR6/3 Pale Brown
Oversand with small pebbles
Rockfall present

II. 2.5YR/3 Olive Brown
Crumb-like pebbles

III. 2.5YR/4 LL Yellowish Brown
Flood deposit

IV. 10YR/4 Yellowish Brown
Contains small pebbles

V. 2.5YR/2 DK Geoish Brown
Crumb-like pebbles

VI. 2.5YR/4 Pale Yellow
Flood deposit

VII. 10YR/4 DK Geoish Brown
Contains small pebbles

F3. 10YR/4/3 Brown
Crumb-like pebbles
Midden feature

F6. 10YR/4/3 Brown
Midden feature

F8. 10YR/4/3 DK Yellowish Brown
Midden feature

F17. 10YR/4/4 DK Yellowish Brown
Midden feature

VII. 10YR/4/4 DK Yellowish Brown
Midden feature

IX. 10YR/4/2 LL Gray

Unexcavated

Shells
Solid Rock

Datum Line

0 20 40 Centimeters
Nazarene Rockshelter
33HO701
1 x 3 meter Unit
South Wall

Descriptions
I. 10YR6/3 Pale Brown
   Overburden w/small pebbles
II. 2.5Y5/4 LL Olive Brown
    Iron oxidation traces
    Flood deposits less than
    1 cm thick (2.5Y 7/4 silt)
III. 2.5Y4/3 Olive Brown
     Iron oxidation traces
     Flood deposits less than
     1 cm thick (2.5Y7/4 silt)
IV. 2.5Y4/4 Olive Brown
    Green and small pebbles
V. 2.5Y5/3 LL Olive Brown
    Flood deposits less than
    1 cm thick (2.5Y7/4 silt)
VI. 10YR4/2 DL Conglomerate Brown
    Small pebbles
VII. 10V6/3 Brown
     Clump-like pebbles
VIII. 10YR6/6 Brownish Yellow
     P.2
IX. 10YR4/3 Brown
    Clump-like pebbles
    Midden features
D. 10YR6/3 Pale Brown
    Recent burrow disturbances
    Filled with overburden

Legend
= Sandstone
= Charcoal
= Burnt Earth
= White chalky inclusion (historic)
Descriptions

I. 10YR4/3 Pale Brown
Oxidation zone with small pebbles

II. 2.5Y5/4 Lt. Olive Brown
Flood deposits less than 1 cm. thick
(2.5Y7/4 Pale Yellow)
Iron oxidation traces

III. 2.5Y4/3 Lt. Olive Brown
Flood deposits less than 1 cm. thick
(2.5Y7/4 Pale Yellow)
Iron oxidation traces

IV. 2.5Y5/5 Lt. Olive Brown
Flood deposits less than 1 cm. thick
(2.5Y7/4 Pale Yellow)
Iron oxidation traces

V. 10YR5/4 Yellowish Brown

VI. 10YR4/2 Lt. Grayish Brown
Contains small pebbles and sandstone fragments

VII. 10YR4/3 Brown
Contains sandstone fragments

VIII. 10YR6/6 Brownish Yellow

IX. 2.5Y6/2 Lt. Brownish Gray
Iron oxidation traces

F3. 10YR4/3 Brown
Clump of pebbles
Midden feature

D. 10YR3/2 Lt. Grayish Brown
Reddish burnish disturbance

= Sandstone