Legacy 95-0597

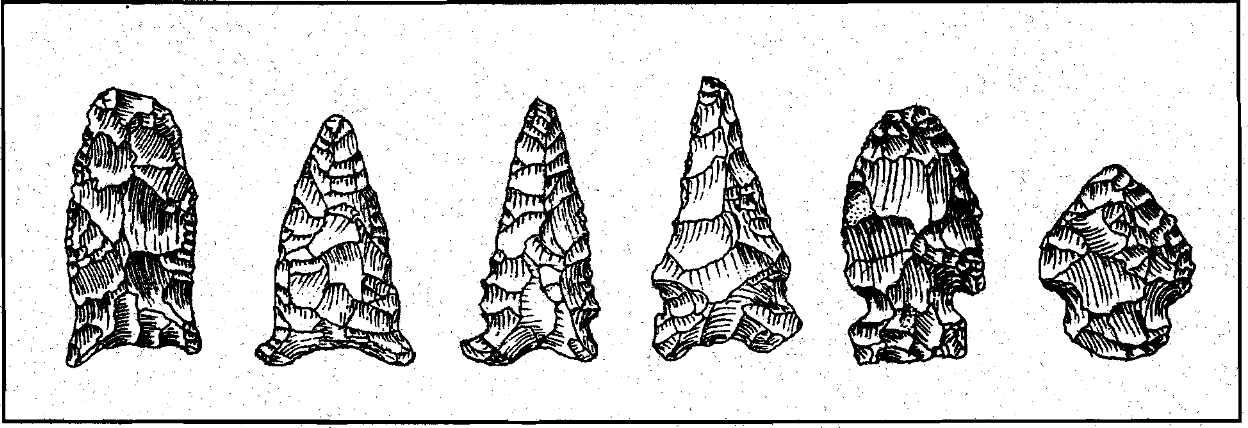
Legacy #- 95-0597

THE BEARTAIL ROCKSHELTER LEGACY PROJECT

Charles M. Hubbert

contributions by
Michael B. Collins
Paul Goldberg
Scott C. Meeks
Catherine C. Meyer

Michael B. Collins, Principal Investigator
Boyce N. Driskell, Co-Principal Investigator



Prepared for
U.S. Army Aviation and Missile Command
AMSAM-RA-EMP
Contracts
DAAH03-94-C-0039
DAAH03-94-C-0114
DAAH03-95-C-0114

Prepared by
Office of Archaeological Services
University of Alabama Museums
The University of Alabama
13075 Moundville Archaeological Park
Moundville, Alabama 35474

1997

THE BEARTAIL ROCKSHELTER LEGACY PROJECT

Charles M. Hubbert

contributions by
Michael B. Collins
Paul Goldberg
Scott C. Meeks
Catherine C. Meyer

Michael B. Collins, Principal Investigator
Boyce N. Driskell, Co-Principal Investigator

Prepared for
U.S. Army Aviation and Missile Command
AMSAM-RA-EMP
Contracts
DAAH03-94-C-0039
DAAH03-94-C-0114
DAAH03-95-C-0114

Prepared by
Office of Archaeological Services
University of Alabama Museums
The University of Alabama
13075 Moundville Archaeological Park
Moundville, Alabama 35474

1997

ACKNOWLEDGEMENTS

It would be virtually impossible to express our thanks to everyone who made a contribution to the archaeological investigations at Beartail Rockshelter. It would be an extremely long list that would include many people at Redstone Arsenal who participated in one way or another. It would include the many volunteers who gave their personal time to come to the site to lend us their energy, and who made it possible for us to do some things we could not otherwise have done. It would include all the personnel at Test Area 6 and the Redstone Technical Testing Center who worked with us and helped us out, and pleasantly tolerated our interruption of their routine. It would include the personnel of the Directorate of Environmental Management and Planning who worked diligently behind the scenes to make it all happen. Finally, it would certainly include Major General James Link and his staff, who unfailingly provided their personal interest and support.

Charles M. Hubbert
Staff Archaeologist
Office of Archaeological Services

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

LIST OF FIGURES

LIST OF TABLES

CHAPTER I

INTRODUCTION

Beartail Rockshelter (1Ma96) is a multicomponent site located within the boundaries of Redstone Arsenal in Huntsville, Alabama (Figure 1). The site was the focus of a U.S. Army Legacy Resource Grant from 1994 to 1996. During that period archaeologists under the direction of the Office of Archaeological Services at The University of Alabama focused research efforts on the rockshelter, its prehistoric contents, and its stratigraphic and chronological characteristics.

The site is situated beneath a limestone bluff within the southern exposure of Bradford Mountain approximately 200 m from Indian Creek (Figure 1). The fieldwork reported here was conducted under Archaeological Resources Protection Act Permit No. 07-AL-2-94 issued by the U.S. Fish and Wildlife Service; and Special Use Permit WHEELER-6-0004 issued by the Wheeler National Wildlife Refuge, federal manager of this area of the Arsenal property. The research was conducted under contract with the U.S. Army Aviation and Missile Command under DAAH03-94-C-0039, DAAH03-94-C-0114, AND DAAH03-95-C-0114.

The site consists of a medium-sized bluffshelter and large talus slope. The site measures 5 m from the back of the shelter wall to the maximum extent of the dripline and is approximately 37 m in length on an east to west axis. The large talus extends approximately 18 m from the dripline and slopes at a steep angle downward to the edge of the Indian Creek floodplain.

Beartail Rockshelter, Site 1Ma96, was recorded in July of 1978 by Lawrence Alexander, who was a Staff Archaeologist at the Office of Archaeological Research, University of Alabama. The Alabama State Site File form completed by Alexander describes the site as a rockshelter, 5 m deep and 15 m long, located at the base of a bluff overlooking Indian Creek 121 m to the south. Alexander suggested that extensive colluvial deposits indicated possible stratified deposits in the shelter floor and on the slope below the shelter.

In the spring of 1989, the Huntsville Chapter of the Alabama Archaeological Society conducted a testing project at Site 1Ma366, an open floodplain site located on the left bank of Indian Creek (Figure 1) near Beartail Rockshelter. This project was conducted under the direction of Charles Hubbert. It was during this testing project that Beartail Rockshelter, located immediately across the creek to the west of Site 1Ma366, came under closer scrutiny.

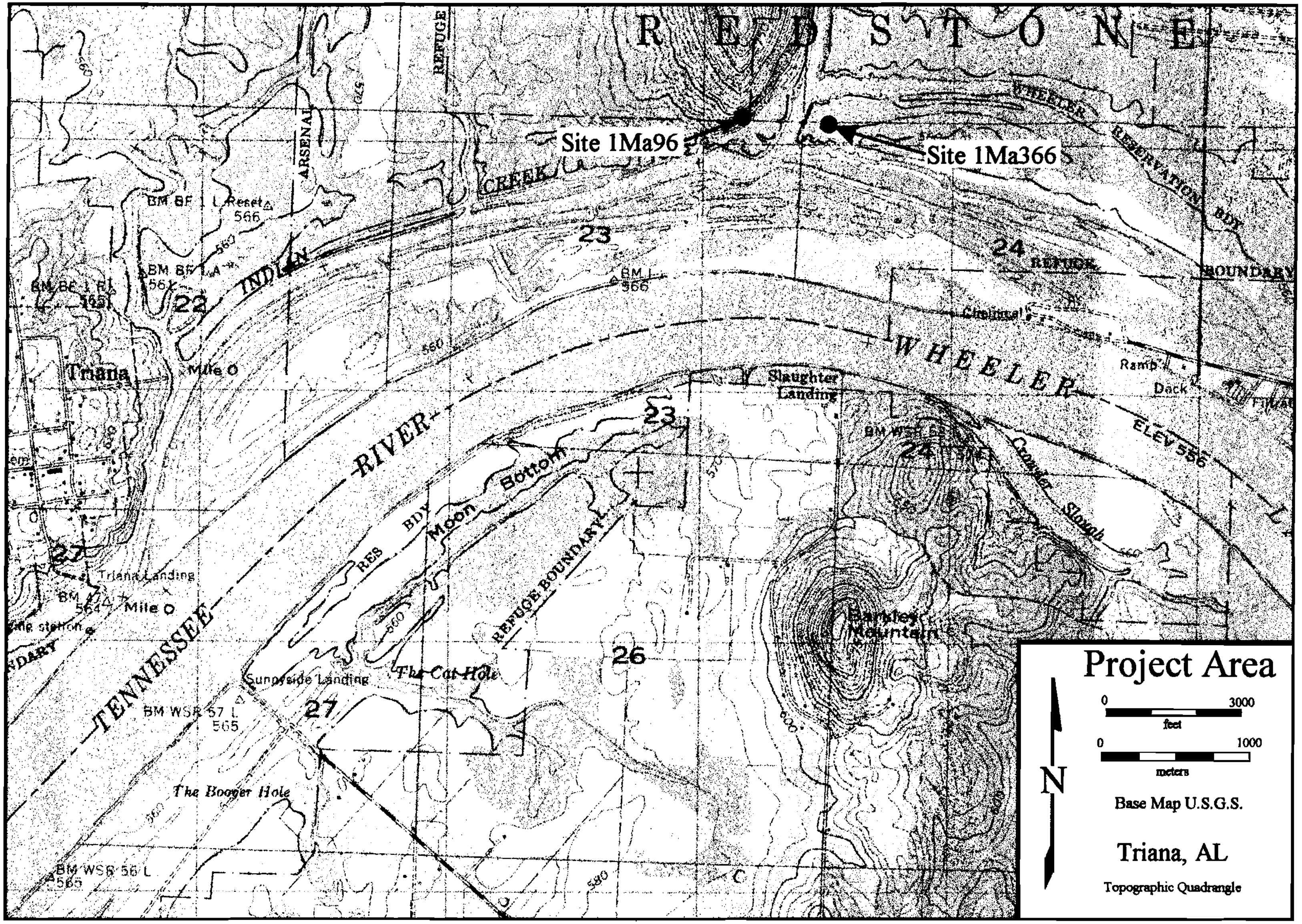


Figure 1. Location of Beartail Rockshelter (Site 1Ma96) and Site 1Ma366.

Testing in the vicinity of Site 1Ma366 consisted of a series of test pits and posthole tests placed from the bank of Indian Creek at 30 m intervals for a distance of 800 m along the crest of a floodplain levee. The purpose of the reconnaissance was two-fold: (1) to identify any prehistoric sites located along the second levee at Redstone Arsenal, and (2) to test an operational postulate that the second levee is an older landform (riverbank) than the modern riverbank. It was reasoned that if the second levee was the older landform, older cultural remains would be found there than on the present riverbank (Figure 2). Each of the seventeen test pits yielded cultural materials. While cultural materials were found to be as deeply buried as 80 cm, in most of them, sterile soil was reached at a depth of 40 cm to 50 cm.

Of the prehistoric artifacts recovered from that testing project, only five were considered to be age-diagnostic. The oldest of these was classified as a Hardaway Dalton projectile point. This point type is considered to have a Late Paleoindian cultural affiliation, slightly over 10,000 years in age. Two projectile points were classified as Early Side Notched and two were classified as Kirk Corner Notched. These are considered Early Archaic, ranging from 7500 to 9900 years in age.

The cultural remains recovered from the modern riverbank date to more recent periods of time. No artifact older than 7500 years has been found on or in the modern riverbank in this area, except where bedrock is exposed (bluffs). Radiocarbon dates from a trench along the riverbank at another nearby site (1Ma285) indicate that the upper 3.2 m of the modern riverbank has developed within the last 5000 years (Oakley and Driskell 1987). Prior to that time, the so-called second levee apparently formed the north riverbank of the Tennessee River in the area.

As a result of the 1989 testing project at Site 1Ma366, Hubbert suggested that Levee 2 was the early Holocene riverbank. That landform was already in place and had already acquired its present basic configuration. Beartail Rockshelter was near this early Holocene riverbank. Hubbert also suspected that the shelter is located at an extinct confluence, where Indian Creek flowed into the Tennessee River during the early Holocene. Today, the actual confluence is located approximately 2.01 km (1.25 mi) downstream, at the town of Triana. During early Holocene times, however, when the north bank of the Tennessee River was what is now the second levee, the confluence of the streams may have been almost directly in front of the shelter, and no farther than a few hundred meters.

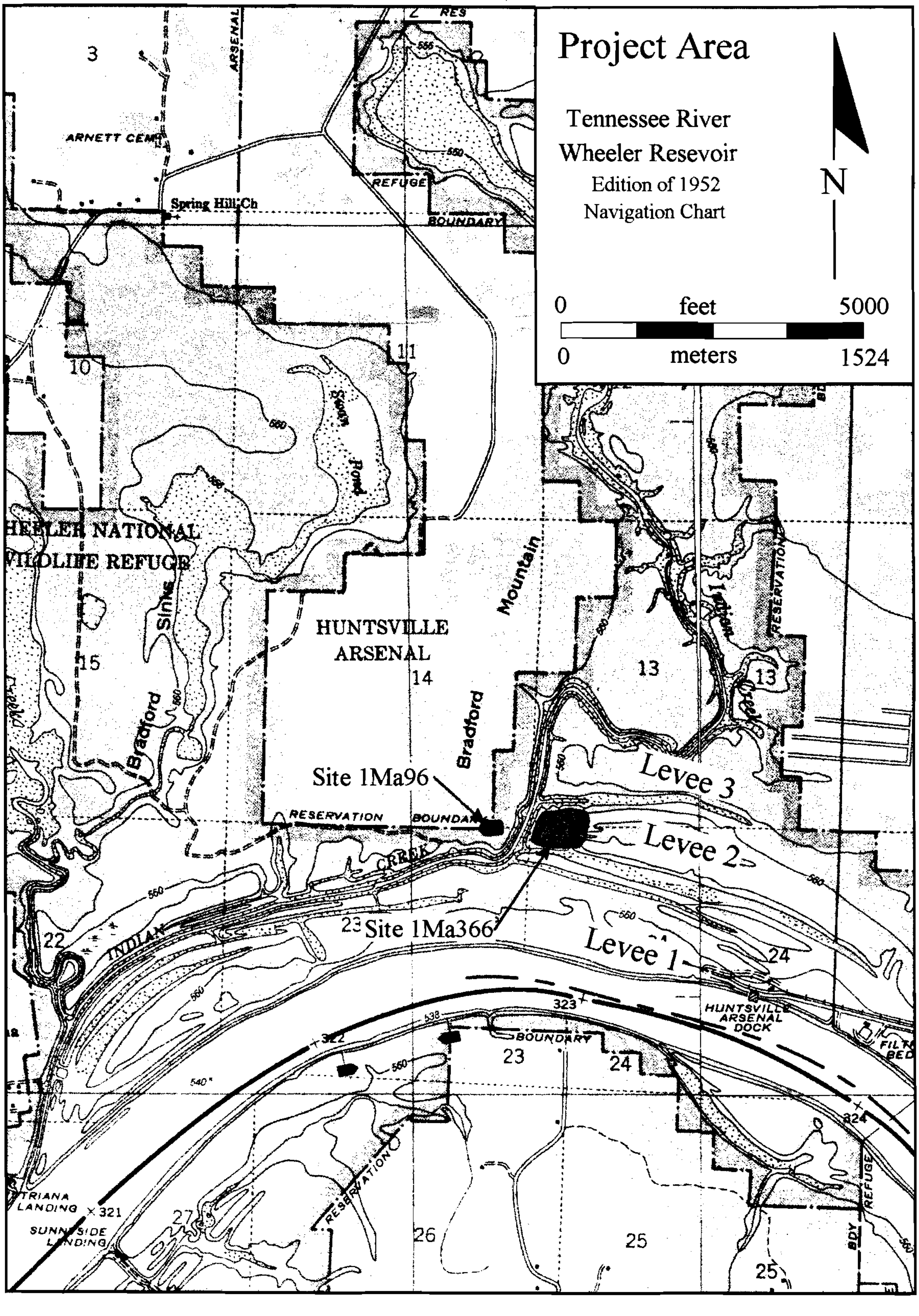


Figure 2. Map Showing Levees in Area near Beartail Rockshelter.

Other characteristics of the location noted by Hubbert was that a spring currently flows from the foot of the bluff immediately adjacent to Beartail Rockshelter. The site was large enough and deep enough to provide a natural shelter from the elements which could be utilized with a minimum of preparation. Finally, early Holocene cultural materials had been found in archaeological test pits and as surface finds in the immediate vicinity of the shelter. Early artifacts were found in the testing project at Site 1Ma366. In addition, local artifact collectors familiar with the area reported finding artifacts, the oldest being Clovis projectile points, on the surface directly across the creek from the rockshelter.

Based on these factors, Hubbert reasoned that Beartail Rockshelter was a location of strategic significance to prehistoric people during the earliest stages of the Holocene. Thus, he chose the site for preliminary testing with the hope of identifying intact deposits of sufficient age and preservation to elucidate late Pleistocene/early Holocene cultures and environments.

In October of 1992, the Redstone Arsenal Division of Environmental Quality (AMSMI-RA-EH-EQ) was requested to prepare proposals for a Legacy Resource Management Grant, one of which would be directed to archaeological research. Accordingly, a proposal was prepared and submitted on October 23, 1992, for review by the Legacy Committee. Redstone Arsenal received the grant to conduct the proposed investigation at Beartail Rockshelter.

In September of 1993, Division of Environmental Quality cultural resource staff, under Hubbert's direction, began excavation of three 1 m by 1 m test pits at the shelter. Test Pit 1 was carried to a depth of 140 cm. Test Pit 2 was abandoned and refilled after a human burial was encountered at a depth of 30 cm. Test Pit 3, located at the bottom of the talus slope, was terminated at about 40 cm after penetrating through the surficial midden deposits in this area. This work was terminated when Redstone Arsenal was notified that the project had been funded by the Legacy Program and a larger scale excavation was then feasible.

The University of Alabama's Office of Archaeological Services was selected to perform the Legacy Program investigations. The project was conducted under the direction of Principal Investigators Michael B. Collins, Texas Archaeological Research Laboratory, University of Texas, and Boyce N. Driskell, University of Alabama. During the time between March 19-24, 1993, a University of Alabama field crew made a contour map of the site and deepened Test Pit 1 to bedrock.

Figure 3. View of Beartail Rockshelter from the South Showing the Lower Talus Stratigraphic Trench and 1994 Test Pits.

The first full field season of excavation extended between August 10 and September 18, 1994 (Figure 3). The work conducted during this season was directed to evaluate the potential of Beartail Rockshelter to provide information about late Pleistocene/early Holocene environments and occupations. The results of this investigation were preliminarily reported by Meeks et al. (1995). Artifacts representing a record of human occupation extending for nearly 10,000 years were recovered from a midden deposit that was 1.8 m deep. The artifacts most closely associated in time depth with the targeted late Pleistocene/early Holocene boundary were Early Archaic Big Sandy and Kirk Corner Notched projectile points. Strata lying beneath the midden were of uncertain origin and were virtually sterile of cultural content.

Following the 1994 season, a research design was prepared for the second season of field work which stressed the need to explore the deeper, as yet undated deposits at the site. The second season was initiated on June 21 and continued until August 11, 1995. Additional mechanically-assisted explorations were conducted in the early fall on September 28-30, 1995. Preliminary results of this field season were reported by Charles Hubbert (1996).

Returning to the rockshelter May 8 and continuing through June 21, 1996 for a third field season, investigations under the field direction of Hubbert consisted of excavation of a block of deposits under the shelter. Several other excavation units were also deepened.

The following report provides an overview of the complete project and synthesizes details of investigations and findings from each of the seasons. Chapter II reviews the natural and cultural history of the region with an emphasis on the late Pleistocene and early Holocene environmental and cultural setting for the area. Chapter III discusses the overall research design, tasks performed, and methods applied during the three seasons of investigation. Chapters IV reviews and discusses the material remains recovered from the rockshelter excavations, while Chapter V presents a discussion of several special analyses including a palynological study, radiocarbon age determinations, and geomorphological analysis of site sediments. Chapter VI, which discusses the stratigraphy and chronology of the site and its locality, attempts to place the archaeological remains discovered at the shelter in understandable geological and cultural context. The report concludes (Chapter VII) with a project overview and discussion of the contribution of the investigations at Beartail Rockshelter to our understanding of regional cultural and environmental history.

CHAPTER II

THE CULTURAL AND NATURAL SETTING

The Wheeler Basin of the middle Tennessee Valley in north-central Alabama is the setting for the Beartail Rockshelter as well as numerous other known archaeological sites, some dating to as many as 12,000 years ago. Archaeologists have explored these sites and gleaned scientific and historical information from them for over 100 years. Yet, the record of prehistory remains considerably incomplete. The first section below reviews the local culture history. This is followed by a section on pollen studies. While there have been no local pollen studies relevant to our interests and virtually no other paleoenvironmental studies targeting the area of Wheeler Basin, some reconstruction by extrapolation from other areas is possible. Thus, the final section of the chapter presents a reconstruction, to the extent possible, of the paleogeography of the area during the temporal span of human occupation. Nevertheless, many questions remain concerning the specific environments in which the prehistoric people of the Wheeler Basin lived.

PREHISTORY OF THE WHEELER BASIN

Scott C. Meeks

The location of Wheeler Basin between the adjacent Pickwick and Guntersville basins has greatly influenced the course of prehistory; as a result, the cultural developments in the area must be viewed to some extent against the larger backdrop of middle Tennessee Valley developments. Further, much of the information concerning Wheeler Basin prehistory or archaeology was obtained during the WPA-era excavations prior to the development of methods to recover small floral and faunal remains and prior to development of absolute dating methods. This has resulted in a lack of information concerning subsistence patterns, site dating, and paleoenvironments. In such cases, information is drawn from surrounding areas to augment the local data. For a more thorough, although somewhat dated, account of regional archaeology, one should refer to Walthall's (1980) synthesis of Alabama prehistory. Figure 4 shows the chronological development of the study area.

Stage	Date	Period	Culture/Horizon
Mississippian	A.D. 1200 to A.D. 1500	Mature	
	A.D. 1000 to A.D. 1200	Early	Madison
Woodland	A.D. 500 to A.D. 1000	Late	
	A.D. 700 to A.D. 1000	(Late)	Hamilton Incurvate
	A.D. 500 to A.D. 700	(Early)	Candy Creek Bakers Creek
	A.D. 350 to A.D. 500		
	A.D. 100 to A.D. 350	Middle	Copena
	100 B.C. to A.D. 100		Ebenezer
	300 B.C. to 100 B.C.		
	600 B.C. to 300 B.C.	Early	
Gulf Formational	1000 B.C. to 600 B.C. ?	Late	Gary Stemmed Flint Creek
	1200 B.C. to 1000 B.C.	Middle	
Archaic	2000 B.C. to 1200 B.C.	Late	Kays Stemmed, Motley, Wade, Little Bear Creek Ledbetter / Pickwick
	3000 B.C. to 2000 B.C.		Cotaco Creek, Mulberry Creek
	4000 B.C. to 3000 B.C.		Buzzard Roost, Benton
	5000 B.C. to 4000 B.C.	Middle	Eva / Morrow Mountain Sykes / White Springs
	6500 B.C. to 5000 B.C.		Kirk Stemmed / Serrated
	7000 B.C. to 6500 B.C.		Kirk Corner Notched / Bifurcate
	8000 B.C. to 7000 B.C.	Early	Early Side Notched
Paleoindian	8500 B.C. to 8000 B.C.		Dalton, Hardaway
	9000 B.C. to 8500 B.C.	Late	Quad / Beaver Lake
	10,000 B.C. to 9000 B.C.	Middle	Cumberland
	10,000+ B.C.	Early	Clovis

Figure 4. Prehistoric Cultural Chronology of the Middle Tennessee Valley.

Paleoindian Stage (10,000+ B.C. to 8500 B.C.)

Initial human occupation of the middle Tennessee Valley is believed to have occurred during the late Pleistocene, dating sometime prior to 10,000 B.C. Although large numbers of Paleoindian points have been found in the middle Tennessee Valley, the majority of these points have been recovered as surface finds or from eroded contexts, resulting in a lack of radiometric dates for these Paleoindian materials in the middle Tennessee Valley. As a result, dating of the sequence of Paleoindian projectile point types is primarily inferential. However, based on stylistic variations in Paleoindian projectile point types, the Paleoindian stage in the Southeast has recently been divided into a tentative temporal sequence (Sassaman and Anderson 1990, Anderson et al. 1990, O'Steen et al. 1986). In the middle Tennessee Valley, this sequence is divided into the following three periods: Early Paleoindian (10,000+ B.C), represented by Clovis points, Middle Paleoindian (10,000 B.C. to 9000 B.C), represented by Cumberland and Redstone point types, and Late Paleoindian (9000 B.C. to 8500 B.C.), represented by both Beaver Lake and Quad point types. Recently, however, this sequence has been modified to include Dalton within the Late Paleoindian period. Based on technological aspects of the Dalton point and Dalton tool kit, as well as associated radiocarbon dates, it has been argued by several scholars (Goodyear 1974, 1982; Morse 1973, 1994) that Dalton is a Late Paleoindian manifestation.

In addition to the diagnostic projectile points discussed above, Paleoindian tool kits are marked by a sophisticated uniface technology comprised of true blades, formal scrapers, and gravers. In northern Alabama, this uniface technology has been documented at a number of Paleoindian sites, including the Quad site (Cambron and Hulse 1960, Soday 1954), the Pine Tree site (Cambron 1956), the Belle Mina site (Ensor 1992), and, more recently, at Dust Cave (Meeks 1994), and is consistent with uniface technologies reported from other Paleoindian sites in the Southeast and Midwest (Coe 1964, Daniel and Wisenbaker 1989, Goodyear 1974, 1982, Irwin and Wormington 1970, Morse 1969, 1973). Further, Paleoindian biface and uniface technologies in the middle Tennessee Valley usually are associated with high quality blue/gray Fort Payne chert (Futato 1983, Soday 1954). The use of a highly formalized tool kit (i.e., curated), combined with the use of high quality chert, during the Paleoindian period suggests technological adaptations in response to a settlement/subsistence strategy of high mobility and specialized resource scheduling (Goodyear 1989).

Traditionally, Paleoindian settlement has been viewed as a highly mobile system associated with the exploitation of Pleistocene megafauna (Kelly and Todd 1988, Martin and

Klein 1984). An alternative to this traditional view, however, has recently been proposed by Anderson (1992). Anderson's model suggests that early Paleoindian people rapidly colonized core areas and used these as staging areas for later population expansion. As Anderson (1992:37) notes:

> The major Early Paleoindian artifact concentrations that occur in various parts of the Eastern Woodlands are thus postulated as the settlement nuclei from which later Middle Paleoindian regional cultural traditions emerged. A particularly striking aspect of the regional Paleoindian projectile point distribution is the fact that, most typically, neither the large nor small artifact concentrations that have been identified occur in isolation, that is, within a single county. Instead, moderate numbers of Paleoindian points are also present in most surrounding counties, decreasing in incidence away from the central or core areas. These distributions may hint at the territorial (i.e., settlement and mobility) ranges, or habitual use areas, of the groups occupying these areas.

One such area is the middle Tennessee Valley, which contains some of the most concentrated remains of Paleoindian materials in North America. In a survey of Paleoindian points from the eastern United States, a total of 1654 fluted points was recorded for the state of Alabama, with the majority coming from the middle Tennessee Valley (Futato 1982).

Paleoindian settlement patterns in the middle Tennessee Valley are, in general, distinct from later periods, as Paleoindian sites are usually confined to two environmental settings: upland sites located adjacent to sinks, natural ponds and lakes, and riverine sites located along levees of the Tennessee River (Futato 1980, 1992; Hubbert 1978, 1980, 1989; Walthall 1980). By the Late Paleoindian period, however, there appears to be a change in this settlement system. Futato (1982) and Hubbert (1989) have argued, based on site distribution, for an upland/lowland dichotomy similar to subsequent Early Archaic settlement patterns. Evidence supporting this contention is the presence of projectile points associated with the Late Paleoindian period (e.g., Beaver Lake and Quad), while not as prevalent as Early Archaic types, in several caves and bluff shelters in northern Alabama (Cambron and Waters 1959, 1961; Clayton 1965, 1967; DeJarnette et al. 1962; Driskell 1992, 1994; Meeks 1994). Several Paleoindian sites are present in the Wheeler Basin area, the most notable being the Quad locality located near present-day Decatur, Alabama. Comprised of three site complexes (Pine Tree [Cambron 1956], Stone Pipe [Cambron 1955], and Quad [Soday 1954, Cambron and Hulse 1960]), the Quad locality recently has been interpreted as a seasonal base camp at which several related bands aggregated during certain times of the year (Hubbert 1989).

Evidence for Paleoindian subsistence is largely nonexistent in the Southeast. The traditional view has been to associate the idea of broad ranging, nomadic settlement with an emphasis on the exploitation of migratory Pleistocene megafauna (Mason 1962, Stoltman and Baerreis 1983); however, the association of Paleoindian materials with Pleistocene megafauna generally comes from sites in the western United States, and few sites in the Southeast possess evidence of Paleoindian materials associated with megafauna (e.g., Little Salt Springs [Clausen et al. 1979] and Wacissa River [Webb et al. 1984]). In contrast to this focal economy, recent evidence suggests that Paleoindian subsistence economies were more generalized, and consisted of a hunting/foraging strategy involving a variety of both large and small mammals as well as plant foods similar to later Archaic subsistence patterns (Meltzer and Smith 1986). Preliminary analysis of floral and faunal remains from Dust Cave suggests that, at least by Late Paleoindian times, the inhabitants of the Tennessee Valley had begun to exploit both large and small game as well as local nut crops (Driskell 1996, Gardner 1994, Grover 1994).

Archaic Stage (8500 B.C. to 1200 B.C.)

EARLY ARCHAIC PERIOD

The beginning of the Early Archaic period, circa 8500 B.C., coincides with the onset of the Holocene. This post-glacial period is marked by warmer climatic conditions, resulting in changes in the vegetation and fluctuations in sea level (Delcourt et al. 1983, Delcourt and Delcourt 1985). Corresponding with this post-Pleistocene environment is the development of a series of highly regionalized projectile point types, which may be taken to indicate increasing numbers of socially distinct groups in the southern United States. As Sassaman (1990:9) notes:

> The abundance of these types and related variants throughout the Southeast suggests an extensive regional Native American population was in place by the tenth millennium. Morphological variation in point forms across the Southeast is further indicative of the initial development of subregional traditions (i.e. development and stabilization of subregional populations).

The Early Archaic projectile point sequence for the middle Tennessee Valley is a follows: Big Sandy (8000 B.C. to 7000 B.C.); Kirk Corner Notched (7000 B.C. to 6300 B.C.); and various bifurcate forms (6500 B.C. to 6000 B.C.), including the LeCroy and Kanawha types.

In terms of Early Archaic settlement patterns, site data for the middle Tennessee Valley reflects land use patterns encompassing both riverine and tributary floodplains, plateau pond margins, and upland (e.g., caves and bluff shelters) localities. As noted earlier, the use of such a settlement system had begun by the late Pleistocene, as riverine sites, and to a lesser extent caves and bluff shelters, possess evidence of Late Paleoindian occupation. However, there are changes between Early Archaic and Late Paleoindian land use patterns, as Early Archaic sites occur not only more frequently at caves and rockshelters, but also occur in smaller tributary drainages and upland areas. Further, Early Archaic sites are not only associated with more varied localities, but are also much more frequent and more widely distributed. Such a shift in location, distribution and number of Early Archaic sites probably represents "...at least in part a reflection of increasing population. That in turn reflects a successful adaptation to a habitat that was very similar to the modern, natural environment" (Futato 1992).

Early Archaic peoples most likely practiced seasonal patterns of movement revolving around the use of base camps and special purpose locations, which included episodes of aggregation and dispersal. Such periods of aggregation and dispersal may be similar to the band/macroband model proposed by Anderson and Hanson (1988) for the Atlantic Slope, with aggregation of several related bands during which the exchange of goods, mates and information transpired. Such a model remains to be tested for the middle Tennessee Valley, however.

Data concerning Early Archaic period subsistence in the middle Tennessee Valley is available from several buried contexts. Faunal remains excavated from Zone D at Stanfield-Worley suggests exploitation of a variety of animal species, including white-tail deer, raccoon, rabbit, squirrel, and turkey (Parmalee 1962). Recent excavations at Dust Cave suggest similar varieties of faunal remains, as well as a variety of nut and seed crops (Gardner 1994, Grover 1994). Farther afield, evidence from the Little Tennessee River valley (Chapman 1977) and the Savannah River Valley (Anderson and Hanson 1988) suggests that by the terminal Early Archaic an increase in the use of plant foods appears to be taking place.

MIDDLE ARCHAIC PERIOD

The beginning of the Middle Archaic period coincides with changing environmental conditions commonly referred to as the Hypsithermal or Altithermal. During this time, the climate became warmer and drier resulting in decreased rainfall and changes in the vegetation. Evidence obtained from pollen samples suggests that the cool, temperate mixed hardwood forests were replaced by oak-hickory, mixed hardwood, and southern pine forests (Delcourt et al. 1983, Delcourt and Delcourt 1985).

In the southeastern United States, the Middle Archaic is marked by the replacement of the Early Archaic notched points with a series of regional stemmed point types (Chapman 1985, Sassaman and Anderson 1990). For the middle Tennessee Valley, this point sequence is defined as follows: Kirk Stemmed/Serrated (6500 B.C. to 5000 B.C.), Eva/Morrow Mountain (5000 B.C. to 4000 B.C.), Sykes/White Springs (4200 to 3600 B.C.), and Benton Stemmed (4000 B.C. to 3000 B.C.) point types.

Settlement during the initial Middle Archaic period (i.e., Kirk Stemmed/Serrated horizon) is, at present, poorly understood. It may be that settlement patterns during this time were similar to that of the preceding Early Archaic period, as Kirk Stemmed/Serrated projectile points are generally found as components on sites also possessing Early Archaic components (e.g., caves, rockshelters, and open sites on tributary drainages). More important, however, is the fact that Kirk Stemmed/Serrated points are not associated with the development of the vast shell middens in the middle Tennessee Valley. Whether this reflects a settlement-subsistence pattern similar to the Early Archaic or was the result of unstable river action that did not promote mussel exploitation at that time remains unclear.

The occupation of large riverine sites, and subsequent accumulation of substantial shell midden deposits, begins circa 5000 B.C. with the Eva/Morrow Mountain horizon and continues throughout the Middle Archaic. In the middle Tennessee Valley, major Middle Archaic shell midden occupations are present at Site 1Lu86 in the Wheeler Basin and the Perry (1Lu25), Little Bear Creek (1Ct8), and Mulberry Creek (1Ct27) sites in the Pickwick Basin (Webb 1939, Webb and DeJarnette 1942). Paralleling the shell middens in the Tennessee Valley are a series of midden mounds along the Tombigbee drainage (Bense 1987, Dye and Watrin 1985). In addition to the large shell midden occupations, there is continued use of caves, rockshelters, and upland tributary sites. The development of large, warm season base camps (e.g., shell middens), coupled with the smaller, presumably cool season base camps in uplands, suggests that a seasonal settlement system was established at least by Eva/Morrow Mountain times (Futato 1992). Subsistence economies during this period included harvesting a variety of nut foods (hickory, acorn and walnut), a variety of both large and small mammals (white-tail deer, turkey, raccoon, beaver, and squirrel), and supplemented with intensive collecting of shellfish (Chapman and Shea 1981, Curren 1973, Gardner 1994, Parmalee 1962, Weigel et al. 1974).

The Middle Archaic period is also marked by the first significant numbers of human burials in the Southeast. In the middle Tennessee Valley, Middle Archaic burials have been reported at a number of shell midden sites (including 1Lu25, 1Lu86 and 1Ct27 [Webb 1939, Webb and DeJarnette 1942]), as well as several caves and rockshelters (including Stanfield-Worley [DeJarnette et al. 1962], Dust Cave [Hogue 1994], and Russell Cave [Griffin 1974]). Although interment of the dead is generally associated with the emergence of the Eva/Morrow Mountain horizon, evidence of burials associated with the preceding Kirk Stemmed/Serrated horizon has been recently reported at Dust Cave (Hogue 1994). Interment of the dead included cremations, sitting burials, and flexed burials, the latter being most frequent. Mortuary offerings, if present, consisted of projectile points, bone tools, turtle shell rattles, and atlatl components. Evidence of increasing hostility during the Middle Archaic is reflected in some of these burials, which exhibit evidence of trauma, including embedded projectile points. In addition to human burials, intentional dog burials occur during this period, sometimes interred with humans.

Another hallmark of the Middle Archaic period is the development of increased extra-regional social interaction, witnessed by the establishment of a broad ranging trade network by the terminal Middle Archaic period (i.e., Benton horizon) in the middle Tennessee Valley and surrounding areas. One major aspect of this interaction was the exchange of blue/gray Fort Payne chert, often in the form of biface blanks, throughout an area encompassing the middle and lower Tennessee River area, the upper Tombigbee area, and the Cumberland area (Futato 1983, 1993; Johnson and Brookes 1989). In addition, Webb and DeJarnette (1942, 1948a) report massive amounts of debitage and large numbers of biface blanks within the lowest occupational level (Zone E) of the Perry site (1Lu25), which is attributed to Benton occupation. This suggests that the Benton people in the Pickwick Basin may have been producing biface blanks at the site for use as trade commodities.

LATE ARCHAIC PERIOD

The Late Archaic period, beginning at circa 3000 B.C., is marked by the appearance of climatic conditions similar to modern times. Corresponding with this climatic change is the development of three Late Archaic horizons: Ledbetter/Pickwick (3000 B.C. to 2000 B.C.), Little Bear Creek (2000 B.C. to 1000 B.C.), and Wade (2000 B.C. to 1000 B.C). Data available on Late Archaic settlement in the middle Tennessee Valley indicates patterns relatively unchanged from the preceding Middle Archaic period. Seasonal movements between upland/lowland localities is evident by continued use of riverine sites (e.g., shell middens), upland tributaries, caves, and rockshelters (O'Hear and DeJarnette 1974; Dye 1977, 1980; Futato 1983, 1993; Oakley and Futato 1975). Although the settlement system of the Late Archaic parallels that of the Middle Archaic, there appears to be a dramatic increase in population during this period in the middle Tennessee Valley and surrounding area (Futato 1980, 1992).

Late Archaic subsistence economies are characterized by a continued emphasis on shellfish, various nut crops (e.g., hickory, acorn, and walnut), and a variety of both small and large mammals including white-tail deer, turkey, raccoon, beaver, and squirrel (Curren 1973; Dye 1977, 1980; Hale 1983; Jenkins 1974). In addition, archaeobotanical evidence from some areas of the Midwest and Midsouth suggests the development of incipient horticulture, as Late Archaic people began exploiting a variety of seed producing cultigens, including squash, gourd, chenopod, sumpweed and sunflower (Asch and Asch 1985, Chapman et al. 1982, Chapman and Shea 1981, Smith 1985a).

The Late Archaic period is further characterized by a continued development of the social and economic processes first documented during the Middle Archaic. Burial of the dead similar to the preceding period continues during Late Archaic, suggesting that the social system was still egalitarian (Futato 1992). Finally, extra-regional interaction and long distance trade, first documented during the terminal Middle Archaic period, becomes more extensive during the Late Archaic. Associated with the broad ranging Poverty Point interaction sphere, a large array of exotic materials and goods began entering the middle Tennessee Valley including steatite and sandstone bowls, steatite slabs, marine shell, red jasper beads, and a variety of siliceous stone including novaculite from Arkansas and Tallahatta quartzite from the Coastal Plain (Futato 1983, 1992).

Gulf Formational Stage (1200 B.C. to 400 B.C.)

The importation of ceramic technology into the middle Tennessee Valley at circa 1200 B.C. marks the Gulf Formational stage. Although the advent of ceramics in the eastern United States was traditionally considered part of Woodland ceramic traditions developed in the north, the presence of early ceramic complexes in the Coastal Plain, as well as northern Alabama, was viewed as a ceramic tradition distinct from later ceramic complexes (Walthall and Jenkins 1976). The stage is divided into early, middle and late periods; the latter two periods are represented in the middle Tennessee Valley.

MIDDLE GULF FORMATIONAL PERIOD

The Middle Gulf Formational period in the middle Tennessee Valley is represented by the appearance of the Bluff Creek phase (Walthall and Jenkins 1976). Dating from approximately 1200 B.C. to 800 B.C., the Bluff Creek phase is distinguished by the presence of four types of fiber tempered ceramics: Wheeler Plain, Wheeler Punctated, Wheeler Simple Stamped, and Wheeler Dentate Stamped (Sears and Griffin 1950). Based on stratigraphic distribution of Wheeler ceramics at the Bluff Creek site (1Lu59), Walthall (1980) suggests the plain and punctated wares predate the simple stamped and dentate stamped wares.

Although Wheeler series ceramics are found throughout the middle Tennessee Valley, their distribution is not uniform across the landscape. Wheeler ceramics are generally restricted to the western portion of the middle Tennessee Valley in the Pickwick Basin area. Two shell middens, the Perry site (1Lu25) and the Bluff Creek site (1Lu59), in the Pickwick Basin contain substantial Wheeler components (Webb and DeJarnette 1942), and a number of Wheeler components, associated with the Broken Pumpkin phase, have been documented in the Tombigbee drainage (Jenkins and Krause 1986); however, the number of Wheeler components is noticeably small in the Wheeler and Guntersville basin areas. Griffin (1939) reported only 114 fiber tempered sherds out of 3749 sherds analyzed from WPA sites in the Wheeler Basin. Similarly, Heimlich (1952) reported only 22 fiber tempered sherds from over a quarter of a million sherds from the Guntersville Basin.

This dearth of fiber tempered ceramics is paralleled, not surprisingly, by a scarcity of sites in the Wheeler Basin area. In fact, out of 756 sites recorded on the Wheeler Reservoir, only 11 of the sites possess a Wheeler component (Shaw 1996). This paucity of Wheeler sites in the eastern portion of the middle Tennessee Valley may be the result of several factors. First, in terms of the prevalence of Wheeler components in the Pickwick Basin and Tombigbee drainage, the distribution of these sites to the west of Wheeler Basin may reflect the movement of fiber tempered ceramic technology from the Gulf Coastal region northward into the Tennessee Valley by way of the Tombigbee River (Jenkins 1975). Further, Futato (personal communication 1994) believes that the movement of fiber tempered ceramics into the middle Tennessee Valley, and the subsequent distribution of Wheeler sites, reflects adaptations to differing environmental zones. This argument is supported by the distribution of sites possessing Wheeler components in the Wheeler Basin. The majority of sites containing Wheeler components are located in the western portion of the Wheeler Basin, an area which falls within the Interior Plateau region. This region is similar to the Coastal Plain, which buffers the western portion of the middle Tennessee Valley to the south. To the east, near present-day Decatur, Alabama, there is an abrupt change in environment, which coincides with the Cumberland Plateau region.

A second possible explanation relates to the introduction of limestone tempered ceramics in the eastern portions of the middle Tennessee Valley at an earlier date than previously believed. As will be discussed later, Futato (1980) reports that limestone ceramic technology, indicative of the Colbert culture, was introduced from eastern Tennessee into the eastern portions of the middle Tennessee Valley by circa 600 B.C. As a result, it is probable that, at least by the Late Gulf Formational period and possibly earlier, ceramic technology already existed in the eastern portion of the middle Tennessee Valley. Finally, it may be that many ceramic sites identified as Late Archaic are, in fact, Gulf Formational sites. This is quite possible since projectile points diagnostic of the Late Archaic (e.g., Motley, Wade, Cotaco Creek, and Flint Creek) continue into the Gulf Formational (Dye and Galm 1986, Futato 1983).

Data pertaining to the settlement and subsistence practices during the Bluff Creek phase are lacking for the Wheeler Basin; however, several inferences can be drawn from the Pickwick Basin and Tombigbee drainage. Settlement appears similar to the preceding Late Archaic period, with warm season aggregations at riverine sites (e.g., shell middens) and upland sites during the cooler months (Jenkins 1974, Walthall 1980). The subsistence system appears similar to that practiced during the Late Archaic period, as there is a continued emphasis on the exploitation of fresh water shellfish and nutfoods, hunting of both large and small mammals, and cultivation of seed crops (Chapman and Shea 1981, Dye 1980, Jenkins 1974).

LATE GULF FORMATIONAL PERIOD

By approximately 1000 B.C., Wheeler ceramics in the middle Tennessee Valley are replaced by Alexander ceramics. Dating from circa 1000 B.C. to 600 B.C., these highly decorative, sand tempered wares are associated with the Hardin phase (Dye 1973). Alexander surface treatments include Alexander Incised, Alexander Pinched, Smithsonia Zone Stamped, and O'Neal Plain (Haag 1942, O'Hear 1990).

The distribution of sites containing Alexander series wares, although slightly higher in frequency (N=24), is analogous to that of the preceding Wheeler series. Major concentrations of Alexander ceramics are found in the Pickwick Basin and Tombigbee River drainage, while the frequency of Alexander ceramics are relatively scarce in the eastern region of the middle Tennessee Valley encompassing both Wheeler Basin and Guntersville Basin. Further, sites possessing Alexander components are, as is the case for sites possessing Wheeler components, largely confined to the western portion of the Wheeler Basin.

The Hardin phase settlement system is relatively unchanged from the preceding Bluff Creek phase. In fact, sites possessing Bluff Creek phase components usually have Hardin phase components (Futato 1980). The settlement system is characterized by an upland/lowland dichotomy of sites, with large, warm season base camps located within the floodplain (e.g., shell middens) and cool season, temporary camps in the uplands (e.g., caves, rockshelters, and sites along upland tributaries).

In terms of subsistence economies during this time, Hardin phase subsistence is similar to the preceding Bluff Creek phase. Recent work at a number of Alexander sites in Alabama, Mississippi, and Tennessee indicates a varied diet, including a variety of fruits (e.g., persimmon, grapes, plums), nut crops (e.g., acorn and hickory), as well as the continued exploitation of shellfish and both large and small game (Dye 1980, Dye and Galm 1986, Krause and Jenkins 1986). In addition, evidence from the Sanders site in Mississippi suggests that sunflower had been domesticated by this time (Scarry 1990a).

Woodland Stage (600 B.C. to A.D. 1000)

EARLY WOODLAND PERIOD

Since the development of the Gulf Formational stage by Walthall and Jenkins (1976), the convention in building cultural chronologies of the middle Tennessee Valley has been to supplant the Early Woodland period with the two Gulf Formational periods. Recent evidence from the eastern portion of the middle Tennessee Valley, namely Wheeler Basin and Guntersville Basin, has suggested a different cultural sequence, however. In terms of Walthall and Jenkins' original scheme, Futato (In prep) notes:

> This was done in the belief that the Alexander occupation of the Late Gulf Formational occupied the time period ordinarily assigned to Early Woodland. But recent radiocarbon dates have pushed back both Alexander and Colbert, allowing time for an Early Woodland Colbert occupation in the valley. And changing views of Alexander settlement, confined more to the western area, allow space for such an occupation. Indeed, we now consider that the Alexander occupation in the Western Middle Valley is probably in large part contemporaneous with Early Colbert in the Eastern Middle Valley.

Supporting this contention is the introduction of limestone tempered ceramics into Guntersville Basin, and possibly eastern Wheeler Basin, from East Tennessee by approximately 600 B.C. (Futato 1980). Further, Gulf Formational sites, both Wheeler and Alexander, are largely confined to the western portions of the Wheeler Basin, while Colbert ceramics dominate in the eastern portions of the middle Tennessee Valley. From this viewpoint, it is now possible to assign the development of limestone tempered pottery in the eastern portion of the middle Tennessee Valley to the Colbert I culture, an Early Woodland manifestation (Futato 1983, Knight 1990, Solis and Futato 1987).

The Colbert I culture, which dates from approximately 600 B.C. to 300 B.C., is marked by the appearance of two limestone tempered wares, generally dominated by Long Branch Fabric Marked ceramics augmented with lesser amounts of Mulberry Creek Plain ceramics (Futato, In prep; Knight 1990; Sears and Griffin 1950). Colbert I assemblages are also characterized by Upper Valley and Ebenezer projectile point clusters (Futato 1977).

Settlement-subsistence patterns during this period are relatively unchanged from the Late Archaic period. Settlement continues to be semi-sedentary and seasonal, with large warm season settlements along the Tennessee River floodplain, including the Whitesburg Bridge site (1Ma10) and the Flint River site (1Ma48), and smaller sites, presumably fall/winter occupations, located along upland tributaries and at a number of caves and rockshelters (Clayton 1965, 1967; Futato 1980; Griffin 1974; Nielsen 1972; Walthall 1980, Webb and DeJarnette 1948a, 1948b). Subsistence practices continue to focus on the harvesting of nutfoods and shellfish, and hunting of both large and small game.

MIDDLE WOODLAND PERIOD

The earliest manifestation of the Middle Woodland period in the Wheeler Basin is the Colbert II culture. Dating from approximately 300 B.C. to 100 B.C., the Colbert II culture is marked by the presence of three limestone tempered wares: Mulberry Creek Plain, Wright Check Stamped and Long Branch Fabric Marked, the latter being the dominant type (Futato, In prep; Knight 1990). Colbert II is further marked by the presence of the Greenville projectile point cluster (Futato 1983).

The settlement pattern of the Colbert II culture is characterized by riverine village sites (e.g., Whitesburg Bridge site and Flint River site) coupled with small, limited activity procurement sites in the interior (e.g., Beartail Rockshelter). Similar to the earlier Colbert I subsistence pattern, Colbert II subsistence continues to focus on cultivation of seed crops and nut foods, hunting of both large and small game, as well as continued exploitation of shellfish.

Beginning at circa 100 B.C., Colbert II is replaced by an elaborate mortuary complex referred to as Copena, which spans a time frame from approximately 100 B.C. to A.D. 500. Building on Knight's (1990) Woodland chronology for the eastern Wheeler Basin area, the Copena mortuary complex is subdivided here into three phases: Green Mountain phase, Walling phase, and Bell Hill phase. In terms of Copena manifestations in the western portion of the Wheeler Basin, there is at present no phase sequence for this area. For further discussion of the temporal and spatial distinctions of Copena in the middle Tennessee Valley, one should refer to Cole (1981) and Knight (1990).

The two distinctive characteristics of Copena are the presence of mortuary sites, both burial mounds and burial caves, and exotic trade goods frequently associated with these sites. In his description of Copena burial mounds and practices of interment, Walthall (1980:119) notes:

> These mounds are typically low, relatively small conoidal structures made of sand and clay, constructed over subsoil burial pits and usually containing numbers of secondary burials within the mound fill. The most typical burial position is extended on the back, but flexed and bundle burials are also known. Cremation was also commonly practiced.

Many of these burials contain a variety of mortuary offerings, including copper gorgets, earspools, breastplates, and beads; nodules of galena; mica; greenstone celts; and large, triangular projectile points.

In terms of exchange, the presence of exotic goods such as copper, mica, galena, marine shell, and greenstone indicates contact with groups outside the middle Tennessee Valley. Although this long distance trade network, commonly referred to as the *Hopewellian Interaction Sphere* (Caldwell 1964, Struever 1964), was participated in by Copena people, it has been suggested by Walthall (1980:127) that the number of exotic trade goods is relatively low and could have resulted from only a few exchange transactions. Further, Goad (1979) suggests that the restriction of Copena sites to the middle Tennessee Valley indicates a contained network system. From this standpoint, it is probably best to view Copena interaction with contemporary groups further north as a movement of ideas rather than the movement of large quantities of trade goods.

The Copena settlement pattern in the Wheeler Basin appears to be a development out of the preceding Colbert system, with some modifications. Walthall (1980:128) suggests that Copena settlement is characterized by a reduction of river bank sites with an increased use of interior valley settlements during the warmer seasons, and use of upland sites, including caves and rockshelters, during the fall/winter. Walthall further suggests that there was a gradual shift in the use of upland sites from temporary camps of nuclear families to male-oriented hunting camps, which he attributes to the introduction of maize cultivation; however, direct evidence for maize cultivation during the Middle Woodland in the middle Tennessee Valley is presently lacking.

In terms of subsistence, recent excavations at the Walling site have provided evidence suggesting a "mixed foraging/gardening" strategy (Scarry 1990b:115). Based on the archaeobotanical remains from the site, Scarry (1990b:127) contends that:

> ...the Walling people were horticulturalists who cultivated cucurbits, sunflower, chenopod, maygrass, little barley, and perhaps other plants as well. Maize may have been produced, but was only a minor element in a diverse cropping strategy. The Walling phase people also may have practiced selective weeding, tolerating or encouraging volunteer plants that yielded edible sources, such as greens and fruit.

Augmenting this practice of horticulture was a continued reliance on hunting and gathering, including exploitation of nut crops (e.g., hickory and acorn) as well as a variety of both large and small animal species. One apparent change in subsistence practices from the preceding 4000 years of human occupation of the middle Tennessee Valley, however, is the lack of shellfish exploitation by Copena peoples (Walthall 1980).

LATE WOODLAND PERIOD

By A.D. 500, mound construction, mortuary practices, and widespread exchange associated with the preceding Copena complex had declined in the middle Tennessee Valley. These changes coincide with the development of two distinct Late Woodland period occupations in the Wheeler Basin area: the Flint River culture and the Baytown culture.

The Flint River culture, which dates from approximately A.D. 500 to A.D. 1000, is largely confined to the eastern portion of the Wheeler Basin area. Although Walthall (1980:132) had originally defined the Flint River culture as encompassing an area extending from Green Mountain east into Guntersville Basin, recent works by Oakley and Driskell (1987) and Knight (1990) have demonstrated that ceramics characteristic of Flint River are found further west than previously known. As a result, Knight suggests that the transition zone between the Flint River and Baytown cultures is most likely in the vicinity of Decatur, Alabama. The Flint River culture is characterized by several grog tempered wares including the roughened or scraped variety of Mulberry Creek Plain, Flint River Brushed, Flint River Cord Marked, and Flint River Incised (Futato, In prep; Knight 1990). A further technological development, associated with both the Flint River and Baytown cultures, is the introduction of small triangular projectile points (e.g., Hamilton cluster), which probably testify to use of the bow and arrow.

The Baytown culture is largely confined to the western portion of the Wheeler Basin, where it extends into its core area within the Pickwick Basin. Dating from A.D. 500 to A.D. 1000, the Baytown culture is divided into two phases: McKelvey I and McKelvey II (Walthall 1980:137). McKelvey I (A.D. 500 to A.D. 700) is marked by higher percentages of Mulberry Creek Plain and Wheeler Check Stamped, and the later McKelvey II phase (A.D. 700 to A.D. 1000) is represented by higher percentages of Mulberry Creek Cord Marked (Futato, In prep; Walthall 1980).

Large, semipermanent riverbank settlements and small upland camps characterize the Late Woodland settlement system. Walthall (1980) suggests a summer/fall utilization of the nucleated floodplain villages, and a shift to small, temporary upland camps during the winter. The presence of a large number of post molds at several of the riverine sites (e.g., Flint River site and the McKelvey site) is suggestive of rather substantial structures. Similar Late Woodland structures have been reported for Miller III occupations in the Gainesville Lake area (Jenkins 1982).

Late Woodland subsistence is marked by a renewed emphasis on the exploitation of mussels as evidenced by the occupation of two large shell middens during this period: the Whitesburg Bridge site and the Flint River site. Although data concerning Late Woodland subsistence economies are currently lacking for the Wheeler area, archaeobotanical and faunal remains from contemporary Late Woodland manifestations in the Gainesville Lake area suggest continued exploitation of a variety of wild plant resources (e.g., wild bean, blackberry, and pokeweed) and nut crops (e.g., hickory and acorn), as well as a variety of animals including deer, rabbit, turkey, opossum, and turtle (Caddell 1981, Jenkins and Krause 1986, Woodrick 1981). In addition, Walthall suggests, based on Late Woodland settlement patterns, that maize cultivation had begun by this period. As Walthall (1980:139) suggests:

> While there is yet no direct evidence of cultigens from McKelvey sites, maize and squash were probably grown by these peoples. In fact, the McKelvey settlement pattern almost duplicates that of later Mississippian peoples. At nearly every site in the Pickwick and Wheeler basins where McKelvey ceramics are found, shell-tempered Mississippian pottery is also present. It appears reasonable to infer a similar economic base for both groups.

Although maize has been reported at Late Woodland sites in close proximity to the Wheeler Basin (Futato 1977), as well as at several sites in the Gainesville Lake area (Caddell 1981, Jenkins and Krause 1986), the utilization of maize as a major supplement to the Late Woodland diet, at least in the middle Tennessee Valley, was by no means comparable to that of contemporary groups in the Lower Mississippi Valley.

Mississippian Stage (A.D. 1000 to A.D. 1500)

EARLY MISSISSIPPIAN PERIOD

The Early Mississippian period in the eastern portion of the Tennessee Valley is represented by the Langston phase (Walthall 1980). Dating from circa A.D. 1000 to A.D. 1200, the Langston phase is represented by two major ceramic types, Plain Shell and Langston Fabric Marked (Heimlich 1952, Walthall 1980). Although originally confined to the Guntersville Basin area, recent work at the Walling site near Huntsville has produced a small number of Langston sherds, suggesting some, albeit ephemeral, occupation of the Wheeler Basin during this period (Knight 1990). Further west, in the Pickwick Basin, Haag (1942) reports a few Langston-like sherds, suggesting very little Early Mississippian period occupation in this area. Whether this paucity of Langston components in both Wheeler Basin and Pickwick Basin reflects a lack of Mississippian influence in the two areas or is the result of sample bias during WPA excavations, two possibilities offered by Walthall, is at present unclear. For further discussion of the Langston phase, one is referred to Walthall (1990:200-205).

MATURE MISSISSIPPIAN PERIOD

While evidence of Early Mississippian occupation in the Wheeler Basin is currently lacking, there is evidence to suggest that full blown Mississippian societies had developed in the area by circa A.D. 1200. In Wheeler Basin, the Mature Mississippian period has been assigned to the Hobbs Island phase and dates from approximately A.D. 1200 to A.D. 1500 (Walthall 1980). The spatial distribution of the Hobbs Island phase is from Tick Island in Lawrence County to the Flint River in Madison County.

The Mature Mississippian period is characterized by a number of technological and social developments. In terms of technology, the most distinctive development is the introduction of shell tempered ceramics. Mississippi Plain is the dominate ceramic ware in the middle Tennessee Valley, augmented with small quantities of ceramic wares such as Bell Plain, Moundville Incised and Moundville Engraved (Futato, In prep; Walthall 1980). Several minority types further characterize the Hobbs Island phase ceramic assemblage, including Nashville Negative Painted bottles, as well as Barton Incised and Matthews Incised ceramic types (Futato, In prep). The presence of both Moundville ceramic wares and Nashville Negative Painted bottles suggests trade with Moundville to the south and with Tennessee-Cumberland groups to the north. The use of small, triangular points (e.g., Madison), bone tools (e.g., pins, fishhooks, and awls), and a variety of ground stone tools (e.g., hoes, celts, and pestles) further characterize the artifact assemblage during this period.

Another hallmark of the Mature Mississippian period is the development of increased sociopolitical organization. Although no large Mississippian mound centers comparable to Moundville are present in the middle Tennessee Valley, Mississippian peoples in the area did construct both residential and burial mounds. Variable treatment of the dead included the incorporation of large amounts of burial goods with certain individuals and inclusion of various types and quantities of ceramic vessels, copper ornaments (e.g., pendants and earspools), effigy pipes, greenstone celts, and decorated marine shell ornaments has been interpreted to reflect ranking in a complex social hierarchy (Peebles 1971, 1978; Pebbles and Kus 1977; Webb 1939).

In addition, an elaborate ritualistic system known as the Southeastern Ceremonial Complex provides decorative testimony to aspects of the belief system. Widespread throughout the southeastern United States, this complex is distinguished by ceremonial artifacts inscribed with a variety of motifs, including stylized animals, the sun symbol, the weeping eye, and the swastika (Walthall 1980).

Settlement during the Hobbs Island phase is characterized by hierarchy of site types consisting of mound centers, villages, and hamlets. Although a large number of Mississippian sites have been recorded in the Wheeler Basin area, the majority of major archaeological investigations of these sites occurred during the early part of this century with the works of Moore (1915) and Webb (1939), including excavation of two burial mounds on Tick Island, a mound and village site on Hobbs Island, and a mound and village site near Whitesburg Bridge (Walthall 1980). In addition, there is evidence for continued use of caves and bluff shelters during this period in the Wheeler Basin area (including 1La40 [Webb 1939]; Beartail Rockshelter (1Ma96) [Meeks et al. 1995]), as well as other areas of northern Alabama (e.g., Stanfield-Worley [DeJarnette et al. 1962], Russell Cave [Griffin 1974], Smith Bottom Cave [Cobb et al. 1994]).

The settlement system outlined above was, in large part, influenced by the subsistence strategies practiced during this period. The adoption of intensive corn, bean, and squash agriculture required well-drained, easily cultivated, fertile soils; as a result settlements were concentrated along terraces of the fertile floodplain (Chapman and Shea 1981, Smith 1985b, Steponaitis 1986). Further, the concentration of large populations along the floodplain resulted in a dispersed system of Mississippian settlements. As Smith (1985b:75) notes:

> The best way for Mississippian populations to have occupied a floodplain habitat, so as to take advantage of its soils and wild foods most effectively, was in a pattern of small, dispersed settlements on preferred soil types, adjacent to channel-remanent lakes and ponds. The typical floodplain habitat is a line of small settlements along natural levees adjacent to oxbow lakes.

Although agriculture provided a major portion of Mississippian subsistence, hunting and gathering was still an important part of the subsistence strategy. Subsistence economies are characterized by a continued emphasis on a variety of both large and small game including deer, turkey, raccoon, water fowl, and a variety of fish (Smith 1975, 1985b). In addition, archaeobotanical evidence suggests continued exploitation of a variety of nut crops, fruits, berries, and seed producing plants (Smith 1985b).

THE PALEOENVIRONMENTAL SETTING

Archaeologists interested in the study of the earliest human inhabitants of the middle Tennessee Valley region are hampered by an inadequate understanding of the nature of the environment during the late Pleistocene and early Holocene, the time when those early occupations occurred. One may view the succession of cultural expressions through time--Paleoindian, Archaic, Gulf Formational or Woodland and Mississippian--as a series of cultural adaptations to changing physical environments. If one adheres to that point of view, it might be said that in order to study the earliest cultures of North America, one must study the paleo (old) environments of the region that existed during the period of time when those cultures made their appearance on the landscape.

One of the principal goals of the Beartail Rockshelter Legacy Project is to elucidate late Pleistocene and early Holocene environments in the area around Redstone Arsenal, the middle Tennessee Valley. The period of time during which weather conditions shifted from late Pleistocene to early Holocene regimes commonly is believed to be between 12,000 and 9000 years ago. It should be noted that this same period brackets Paleoindian occupation and the earliest phases of Early Archaic occupation. Thus, our attention is focused upon the time between these dates. Recent successes in delineating climatic change during the late Pleistocene and Holocene in the Midsouth has resulted from palynological studies (Delcourt and Delcourt 1975, 1979, 1980, 1985; Watts 1980). Much of what we know about the late Pleistocene/early Holocene transition has resulted from these palynological studies.

Palynology is the study of fossil pollen and spores. Pollen and spores are relatively resistant to decay and can be used to index the dates of soil strata and to reconstruct the flora and climate that prevailed at the time when the strata were laid down. Although pollen data have been gathered from a great many sites across the eastern United States, no successful fossil pollen studies have been conducted in the middle Tennessee Valley.

Beartail Rockshelter is located on U.S. Army property at Redstone Arsenal, which is located in the southwestern part of Huntsville, Alabama. Huntsville is slightly south of the 35th degree of north latitude. The climate is characterized as humid, temperate and continental. Summers are long and hot. Generally, winters are mild. Winter temperatures sometimes drop below freezing at night and can remain below freezing for one to three days. Precipitation is distributed fairly evenly throughout the year, but it is highest in the winter and lowest during the fall. Floods are common from the middle of December until mid-April, although they sometimes occur at other times. The heaviest floods have occurred in the summer. Prevailing winds are from the northwest. Winds from the west and the north are also common during the winter.

In order to gain an understanding of the paleoclimatic conditions in the vicinity of Huntsville, a discussion will be presented of pollen studies conducted in middle Tennessee and northeastern Alabama, specifically Anderson Pond and Cahaba Pond, which geographically bracket Huntsville (Figure 5). The work in these locations will be discussed in relation to the Beartail Rockshelter project area. Differences in average annual rainfall and average annual temperature between Huntsville and these locations are slight. During modern climatic regimes, both of these locations fall within a region supporting a natural vegetational cover classified as a mixed mesophytic forest (Braun 1950).

Pollen Studies at Cahaba Pond

Delcourt, Delcourt, and Spiker (1983) examined a 12,000 year record of forest history from Cahaba Pond in St. Clair County, Alabama. Cahaba Pond is located near the town of Leeds, approximately 128.74 km (80 mi) south of Huntsville, near the southern end of the Ridge and Valley Province. This small, spring-fed pond on the valley floor near the headwaters of the Cahaba River is contained within a sinkhole formed by the collapse of underlying limestone bedrock. Delcourt et al. (1983) examined a 650 cm sediment sequence from Cahaba Pond. It spans the past 12,000 years and yielded a pollen and plant-macrofossil record indicating major changes in forest composition during the Holocene.

12,000 B.P. to 10,200 B.P.

Interpretation of the pollen spectra revealed the following series of events. During the interval between 12,000 and 10,200 years ago, Cahaba Pond was surrounded by a primarily deciduous forest that was dominated by beech and oaks. Atlantic white cedar and bald cypress grew around the margins of the pond. Beech, hornbeam, ash, elm, and a number of maple species occupied the slopes of the pond. The valley floor and hillsides were dominated by oak and hickory. This assemblage is representative of a mesic hardwood forest and probably no

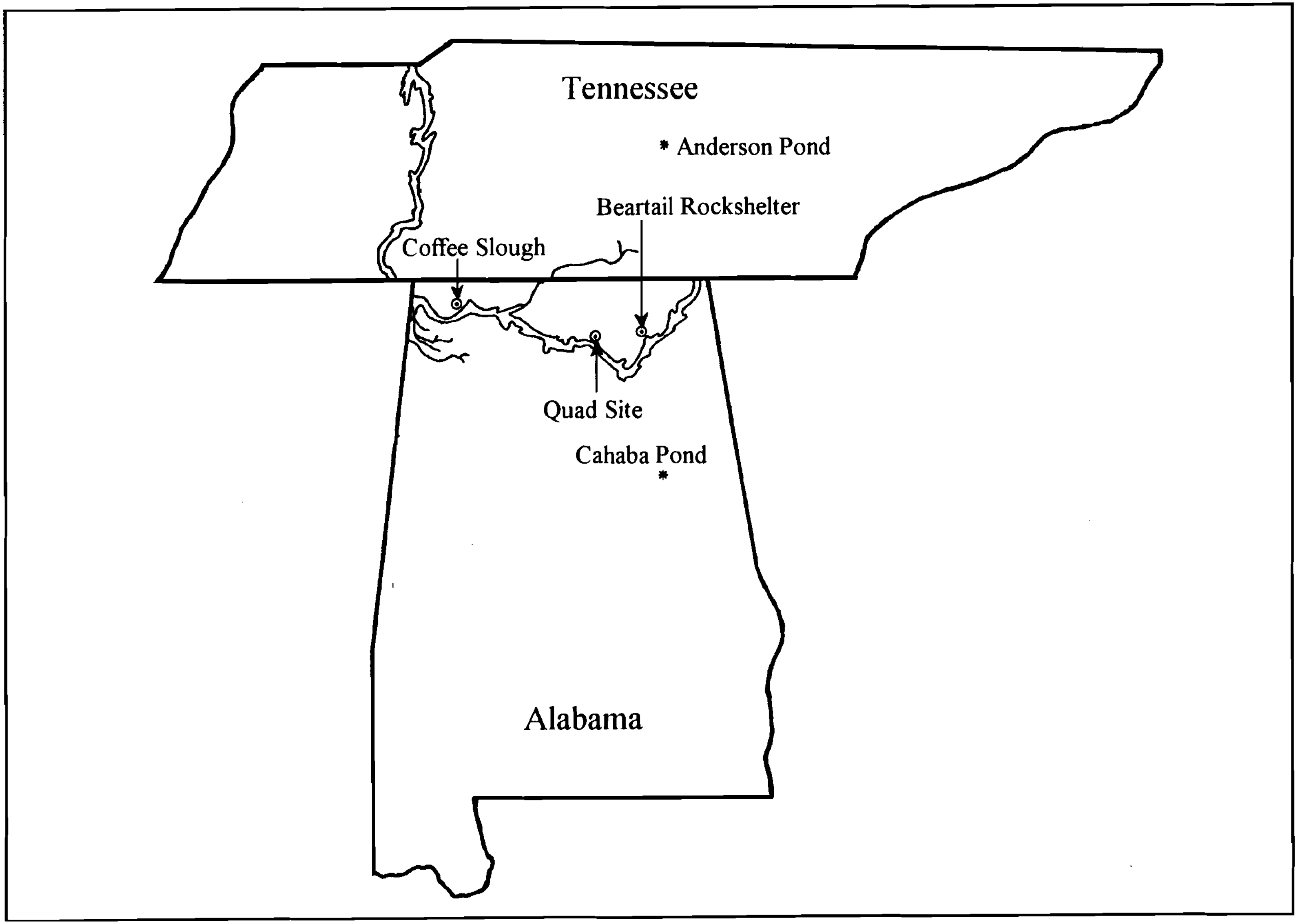


Figure 5. Map Showing General Locations of Pollen Sites and Paleoindian Localities.

longer has a true analog anywhere in North America. It was somewhat similar to the cove hardwood forest type described by Braun (1950) that in modern times occupies the cool, moist, north-facing slopes in the Cumberland Plateau.

The soil stratigraphy of the core samples, which were taken from the bottom of the pond, showed alternating bands of coarse sand interspersed with leaf mats. This indicates episodes of heavy runoff, which would have flushed coarser-grained sediments into the pond, followed by quieter periods when organic matter would have settled in layers. Preserved pollen grains were isolated from the various depths and identified by species. Radiocarbon dates were taken to establish temporal control within the cores. According to the authors, both pollen and plant macrofossils from sediments of this .2 hectare pond primarily reflect changes in local and extralocal forests within the surrounding watershed (Delcourt et al. 1983:874). This section draws from their work and explains their findings.

10,200 B.P. to 10,000 B.P.

Based on the findings of their research, Delcourt et al. (1983) asserted that between 10,200 and 10,000 years ago, major compositional changes occurred in the forests surrounding Cahaba Pond. Beech requires a higher soil moisture than many other broad-faced temperate deciduous trees, such as oaks. Moisture dependent tree taxa, which included the Atlantic white cedar and bald cypress, diminished, indicating an increasingly drier climate. Oaks and pines increased in percentages.

10,000 B.P. to 8,400 B.P.

The research of Delcourt et al. (1983) indicated that between 10,000 and 8,400 years ago, there was a continuing reduction of mesic (moist) species in the forests surrounding Cahaba Pond and corresponding increases in the percentages of oak and hickory. They suggested these changes may have been responses to lowered precipitation rates, but they also noted that another factor which may have had some influence upon the forest is the increased evaporation rates resulting from warmer temperatures. Soil deposition on the pond bottom during this period suggests lowered rates of soil erosion from the uplands, making lower precipitation the more probable explanation.

Pollen Studies at Anderson Pond

Delcourt and Delcourt (1979) conducted pollen and plant macrofossil analyses of radiocarbon-dated sediment cores from Anderson Pond in White County, Tennessee. Anderson Pond is located about 161 km (100 mi) northeast of Huntsville, Alabama, near the outer edge of the eastern portion of the Nashville Basin. It is located slightly south of the 36th degree of north latitude. Anderson Pond, similar to Cahaba Pond, is a karstic solution pond.

The results of Delcourt and Delcourt's (1979) analyses of the radiocarbon-dated sediment cores from this pond presented the basis for interpretation of the history of vegetation change in and near the present Mixed Mesophytic Forest Region for the past 25,000 years, ±300 years. Forests of jack pine, spruce and fir, all of which are boreal species, were dominant from 19,000 B.P. to 16,300 B.P. during the late Wisconsin continental glacial maximum (Delcourt and Delcourt 1984). By 16,000 years ago, jack pine populations had decreased, and mesic boreal species of spruce and fir had become more abundant. Temperate species of oak and hickory also increased during the interval between 16,000 and 12,500 years ago. Paleoclimatic curves for temperature and precipitation based upon modern geographic analogues indicate both an increase in absolute precipitation and a marked rise in temperature, beginning by 16,000 B.P.

The boreal jack pine-spruce-fir forest was displaced by 12,500 B.P. It was replaced by a deciduous forest composed of oaks, ash, ironwood, hickory, beech, butternut, willow and elm. The major varieties of modern flora had become established in Middle Tennessee. Mixed mesophytic species would be abundant there throughout the early Holocene.

Conclusions Drawn from Pollen Studies

Delcourt and Delcourt (1984) summarized the results of the interpretation of data from the two pond sites as well as data collected from one hundred other sites located south of the glacial margins. They concluded that during full-glacial conditions (some 20,000 years ago), the region between the 34th degree and the 37th degree of latitude (which includes Huntsville), supported a boreal forest with jack pine and spruce as the dominant tree species.

By 16,500 years ago, jack pine had declined in abundance, and cool, moist species of fir and spruce, as well as oak and hickory, expanded across the area. Delcourt and Delcourt

(1984) attributed the increase in spruce and fir to the persistence of cool climatic conditions and an increase in precipitation.

Even during full-glacial conditions, the broad-leafed deciduous forest had not completely disappeared from the Tennessee Valley landscapes. Refuges for the deciduous hardwood forest existed in many south-facing gorges of the Cumberland Plateau and on south-facing slopes all through the southern Appalachians, possibly including Monte Sano Mountain, Green Mountain, and other erosional remnants of the Cumberland Plateau in the Huntsville vicinity. As weather conditions ameliorated, it was from these locations, the south slopes of such local features, as well as from the south, that the deciduous forest spread across the middle Tennessee Valley. By some time between 12,500 B.P. and 10,000 B.P., the vicinity of Huntsville supported an arboreal vegetation containing basically the same constituents as it does today, although not necessarily in the same precise proportions.

PALEOGEOGRAPHY OF THE MIDDLE TENNESSEE VALLEY

In the eastern United States, the boundaries of vegetational regions coincide with those of major climatic zones. Past positions of vegetational ecotones can be used to infer the past positions of major climatic boundaries. Between 12,500 B.P. to 10,000 B.P., the development and expansion of mesic deciduous forests occurred in the middle Tennessee Valley. At that time, North Alabama, lying between the 34th degree and the 37th degree of north latitude, experienced the maximum seasonality of solar radiation (the greatest contrast between summer conditions and winter conditions).

North Alabama lay within a meridional zone of tension between two climatic regions, the Arctic and Pacific air masses to the north, and the Maritime Tropical airmass to the south. In their palynological study, Delcourt and Delcourt (1984) attributed the forest they observed in the region to a cool temperate climate with abundant rainfall during the growing season. They concluded that the Pacific Airmass dominated the region during the winter, and the Maritime Airmass dominated the region in the summer.

Haynes (1968 as found in Goodyear 1991) asserted that there was a marked period of erosion at the end of the Pleistocene, dating between 12,500 B.P. and 11,500 B.P. It was a broad geologic, climate-related event when stream regimes were dominated by net degradation and channel incision.

Paleoindian sites across the Southeast show their initial human occupation at the contact between the previous erosional surface and subsequent Holocene deposition. Goodyear (1991) addressed the circumstances that might explain this pattern. He pointed out that using modern flora records, environmental scientists (Knox 1976, 1984) have focused on the role of floods in destabilizing floodplains from states of depositional equilibrium. He noted that Knox (1976, 1984) observed that during periods of extreme climatic change, floodplains move from depositional regimes to erosional regimes, which are generally produced by severe storms, especially those occurring temporally in clusters. Weather patterns dominated by meridional airflow produce frequent severe storms and concomitant floods. These conditions would be the result of the Arctic and Pacific Airmass moving southward across north Alabama in winter and the Maritime Tropical Airmass moving northward during the summer.

Goodyear's (1991) scenario presents a possible explanation for the pattern of Paleoindian site locations along the river floodplain of the middle Tennessee Valley. Across Indian Creek from Beartail Rockshelter, early Holocene human occupations are located on the second levee back from the river, while sites of later cultural groups are located on the first levee, the modern river bank. This same pattern of site location is present at the Quad site, which is about 32.19 km (20 mi) down river, and at Coffee Slough, which is about 112.65 km (70 mi) down river. The Quad site is a Paleoindian locality in a backwater slough near the city of Decatur, Alabama. Coffee Slough is a Paleoindian locality in a similar setting near the city of Florence, Alabama.

This pattern of site location suggests that at the time of Paleoindian occupation of north Alabama, the modern riverbank was not at its present location; then the riverbank was what is now the second levee (Figure 6). The second levee was apparently already in place, and had a configuration that approximates its modern one, as testing has found Paleoindian remains encapsulated in the uppermost .5 m of the levee.

It can be suggested that the mechanism for producing this wider, perhaps deeper, river channel was the torrential floods resulting from the tumultuous interaction of the Polar and Pacific Airmasses with the Maritime Airmass over north Alabama. Indications of this were noted in the analysis of fish remains from the late Pleistocene faunal materials recovered at Cheeks Bend Cave. Dickinson (1982) suggested that Duck River, as well as other rivers in the area, had a steeper gradient due to down cutting by the channel, a situational characteristic of many rivers during glacial times. He asserted that the more torrential currents would have increased substrate size (i.e., more boulders), as well as reduced the number and size of pools.

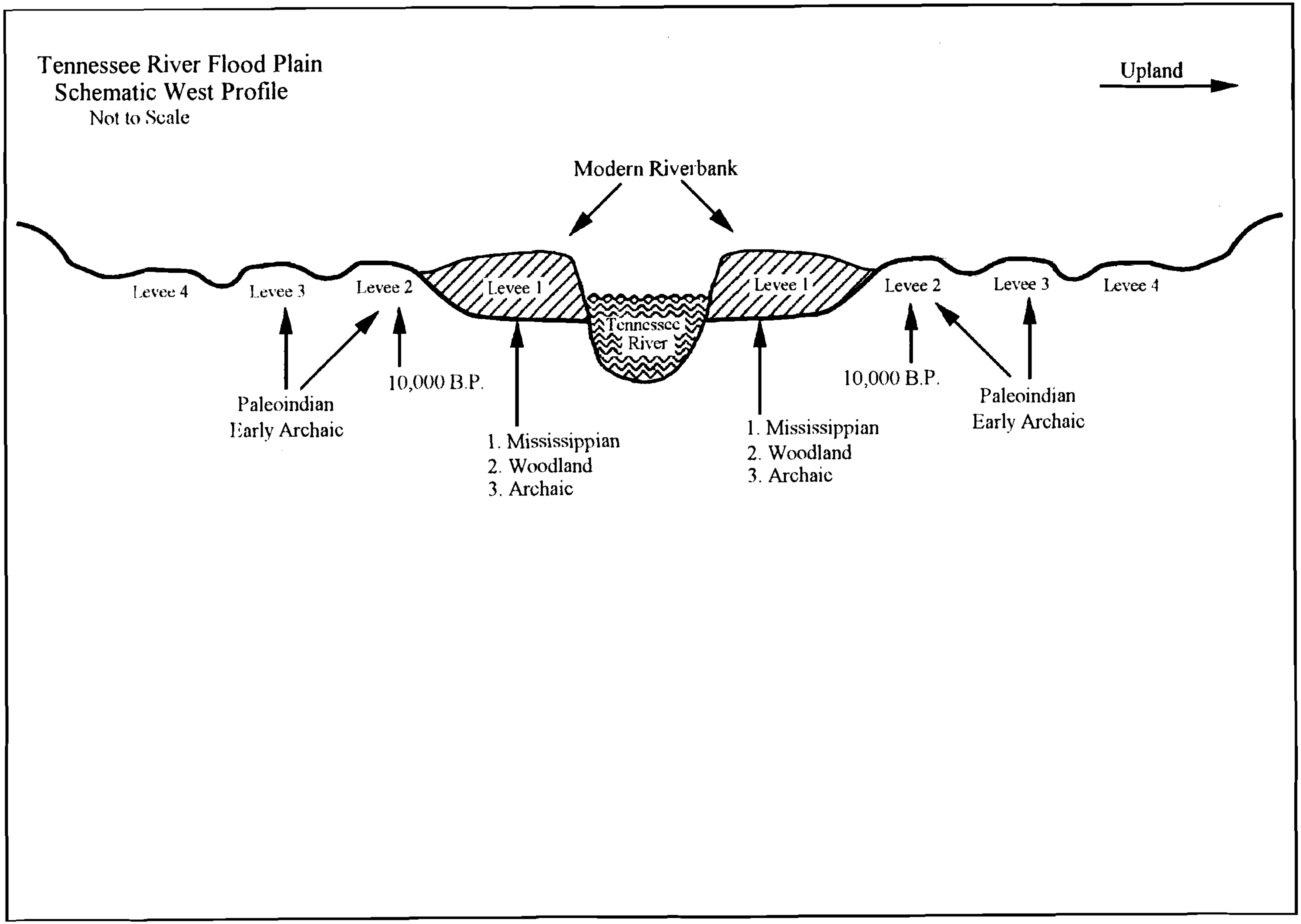


Figure 6. Schematic Drawing Showing Hypothetical Development of Levee System in the Middle Tennessee Valley.

The modern riverbank that we see in the Tennessee River valley today may not have begun to aggrade until Holocene times. If that were the case, at the time the first humans occupied Beartail Rockshelter, Indian Creek ran into the Tennessee River directly in front of the shelter, and a few meters away from it. The earliest occupants would have camped at the mouth of the creek.

Using palynological, paleontological, and paleogeographic information which is pertinent to, but not directly derived from, the middle Tennessee Valley, a characterization of the environment surrounding Beartail Rockshelter 12,000 to 9000 years ago has been developed. Between 12,000 and 9000 years age, there appears to have been a period of dramatic weather conditions. The summers would have been warm, but perhaps shorter than modern ones. During winter, cold bursts of Arctic air would have swept from the north and west, driving temperatures lower than is usual in modern winters. The seasons in between, when warm, moist Gulf air and cold northern air contended for dominance, would have been times of temptuous storms and floods.

Arboreal pollen preserved in the soil has indicated the nature of arboreal cover during Holocene times (Delcourt and Delcourt 1984). In addition, herbaceous pollen types provide strong hints of prairie, or barrens, at sites in the Southeast (Delcourt et al. 1983).

By Clovis times, some 12,000 years ago, the region between the 34th and the 37th degree north latitude, including the Huntsville area, was seasonally dominated by the Pacific and Maritime Airmasses. To the north, at about the 37th degree latitude, was the southern limits of the Polar Frontal Zone; to the south, at the 34th degree latitude, was the northern limits of the Maritime Tropical Airmass (Goodyear 1991).

CHAPTER III

RATIONALE AND METHODS OF INVESTIGATION

The Beartail Rockshelter Legacy Project developed as a three season effort to address two broad goals: (1) the elucidation of late Pleistocene and early Holocene environments, and (2) the explication of the nature of the human occupations in the project area during that period of time. These overall goals remained unchanged, although each season's rationale, planned tasks, and methods to accomplish those tasks were developed in response to the findings and progress of the previous work. This is discussed by season below (Figure 7).

Excavations during each of the three field seasons were conducted using standard control techniques. Excavations usually proceeded in arbitrary 10 cm levels within natural zones. Soils from the excavations were normally water screened through 1/4 in (6 mm) mesh screen. Artifacts recovered in the screens were bagged and labelled by provenience. Extensive documentation of the excavations was made on an ongoing basis, including field notes, level forms, profile drawings, maps, logs and photographs. All artifacts, samples (i.e., soil, thin-section, etc.) and documentation (i.e., field records, photos, etc.) were transported to the David L. DeJarnette Laboratory at Moundville Archaeological Park for processing and analysis.

FIRST SEASON (1994)

The first season (1994) at Beartail Rockshelter was designed to explore the cultural history of the site and to reveal stratigraphic associations within the shelter and talus slope. Although Hubbert's initial limited test excavations in 1993 had revealed deposits at the site spanning Early Archaic through Mississippian periods, many questions remained concerning the depth, nature and distribution of these archaeological deposits, particularly within the talus slope. These were addressed during the 1994 field season.

Beginning in August of 1994, a series of deep test pits was initiated by The University of Alabama research team in an attempt to further delineate the development of both archaeological and geological deposits at the shelter. In addition to determining the horizontal and vertical extent of these deposits, this testing program was further aimed at retrieving data concerning the temporal sequence and integrity of cultural deposits at the site. In order to

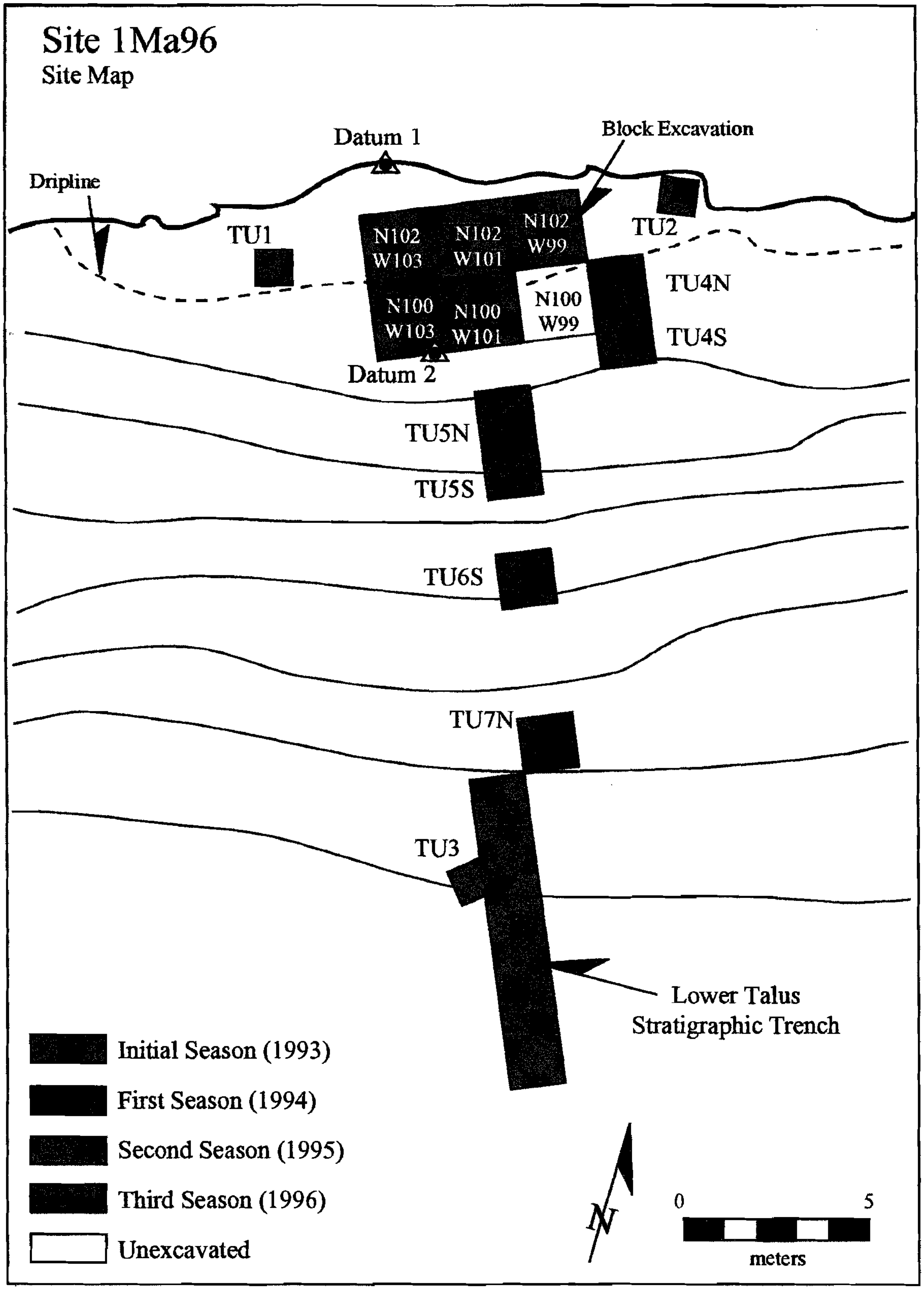


Figure 7. Excavation Plan Map.

accomplish these tasks, a transect perpendicular to the bluffline was established. The site was mapped and gridded in metric units and a series of 1.5 m by 3 m excavation units was established along the transect.

A total of four test units was excavated during the 1994 field season. Test Unit 4 was placed at the juncture of the level shelter surface and talus slope. Originally a 1.5 m by 3 m excavation, this excavation was reduced to a 1.5 m by 1.5 m unit to avoid disturbance of a human burial encountered in the south half of the unit. The north half of this unit was excavated to a depth of 2.8 m. Two test units, Test Units 5 and 6, were placed into the talus slope. Test Unit 5 was originally a 1.5 m by 3 m excavation, but was later reduced to a 1.5 m by 1.5 m unit to facilitate deep penetration of the talus deposits. The north half of this unit was excavated to a depth of 4 m. Test Unit 6 was also originally a 1.5 m by 3 m excavation, but a human burial was encountered in the north half of the unit. As a result, the excavation of the unit was restricted to the south half and continued to a depth of 3.8 m. Test Unit 7, a 1.5 m by 1.5 m excavation, was placed near the interface of the talus slope and Indian Creek floodplain. This unit was excavated to a depth of 2 m. In addition, a 0.3 m by 5 m backhoe trench was excavated in the Indian Creek floodplain adjacent to the water's edge. Finally, one of Hubbert's original units excavated during the initial testing (1993), Test Unit 1, was excavated an additional 40 cm revealing bedrock at a depth of 1.9 m.

SECOND SEASON (1995)

Findings of the first season demonstrated the presence of an upper midden at the site which varied in thickness from fairly deep deposits within the shelter to much thinner deposits down the talus slope. This midden contained materials dated from the early Holocene to the late prehistoric era. The research design for the 1995 field investigations at Beartail Rockshelter focused on the archaeological and geomorphological remains of the Pleistocene-Holocene interface.

In order to address that goal, the 1995 season sought to identify a Paleoindian occupation floor, or the soil horizon which was the appropriate age for such an occupation. In 1994, temporally diagnostic cultural materials known to date as early as 9000 years ago had been recovered from near the contact between the overlying midden and an underlying zone of yellow cherty clay. This suggested that the top of the yellow cherty clay zone might represent the early Holocene soil surface; however, investigators had been divided in their opinions as to whether or not the talus soils (yellow cherty clay zone) were the result of alluvial deposition or of colluvial deposition. If the talus soils were alluvial, and had been washed in and deposited at the foot of the bluff by the Tennessee River, then they probably dated to the Last Glacial Maximum (17,000 to 18,000 years ago), based upon their elevation above the present floodplain. If that was the case, these deposits would predate human occupation in this region of North America. On the other hand, if they were colluvial and had been eroded from the mountain slope, or had fallen from up above, then they could be much younger, and cultural deposits could be buried deeply within the shelter below the talus.

If the yellow cherty clay zone was alluvially deposited, it would contain remains of river biota (these biota would have been washed along by the river and deposited along with the soils). This zone also should contain mica that would have eroded from the mountainous Appalachian region, carried within the river's bed load, and deposited against the bluff (mica flakes have been observed in river-deposited soils throughout the middle Tennessee Valley). The archaeological profile would likely contain evidence of stratigraphic soil units deposited by the river, i.e. bedding planes, sorting of constituent particles by size, and water-rolled polished/rounded boulders and stones. Some successive soil surfaces might show visible pedogenesis from periods of surface stability.

If the talus soils were primarily colluvial in nature, that is, if they had been deposited by shelter collapse and the erosion of soils from the slopes of the mountain above the shelter, soils would have been deposited at the foot of the bluff. The yellow cherty zone would contain soil components directly related to the soils of the mountain slopes above the shelter, i.e. large boulders of limestone from the collapse of the limestone overhang. This could have occurred anytime prior to the oldest cultural deposits within the midden; therefore, older cultural deposits could be present below the rocky debris discovered in the lowest levels of the 1994 test pits.

Today, there are caves and springs in close proximity to the bluff shelter. During the early spring of 1995, the trickling sounds of water could be heard between large boulders in the bottom of Test Pit 4. It was speculated that prior to the collapse of the roof (marked by large boulders buried deep in the talus), a spring had exited the bluff below the overhang. Such a spring could have been one of the factors that attracted the first human occupants to the site. It is possible, too, that a cave could have been present beneath the overhang and was later covered by roof collapse. Excavations were unable to determine this, however, as huge boulders created a formidable obstacle that could not be penetrated and prevented exploration.

If a spring flowed from the base of the bluff toward Indian Creek during the early Holocene, then a deep trench excavated in front of the talus slope, running parallel with the bluff, might intersect the extinct spring bed. Indian Creek also may have flowed closer to Beartail Rockshelter during the early Holocene than it does at present. If it did, excavation of a deep trench running perpendicular to the bluff and extending toward the modern course of Indian Creek might reveal the extinct creek bank.

With these issues in mind, the primary research goals for the 1995 field season were: (1) to identify the archaeological remains of the human occupants of Beartail Rockshelter at the time of the interface between late Pleistocene environmental conditions with those of the early Holocene; (2) to learn the depositional origin(s) of the talus soils and the floodplain in front of the shelter; and (3) to acquire the appropriate radiocarbon, palynological, and geomorphological samples to support the eventual conclusions. A set of testable propositions was devised which would have explanatory value in terms of the eventual interpretation of the cultural and geomorphological history of the site. They were:

1. *The yellow cherty clay was deposited by alluvial action.* This would be indicated by the presence of mica in the yellow cherty talus soils. Mica washed from the Appalachian region is present in the floodplain soils of the Tennessee River throughout the middle Tennessee Valley. Mussel shells, fish scales and remains of other river biota would be other corroborating evidence.

2. *The yellow cherty clay was deposited by shelter collapse and/or down slope erosion and colluviation.* This would be demonstrated if profiles of the thick zone showed no internal stratification, or if soils within the zone could be directly related to those of the mountain slope above the shelter. The presence of cultural materials deeply buried beneath the yellow cherty talus soils would also support this interpretation.

3. *A spring flowed from the base of the bluff beneath the overhang during Holocene times.* If this was true, the spring bed could be found in the profile of trenches excavated on the floodplain in front of the shelter.

4. *Indian Creek flowed closer to Beartail Rockshelter during the early Holocene than it does at present.* The extinct creek bank would be identified in slot trenches on the floodplain in front of the rockshelter.

In order to address the research questions presented above, a set of field strategies was set forth for the 1995 season's work.

1. *Lower Talus Stratigraphic Trench.* A long, continuous profile was prepared. It began near the foot of the talus slope and extended inward toward the bluff (Figure 8). All cultural horizons were excavated from the top of the deposits, then heavy equipment was used to dig a deep trench which extended below the level of the colluvium and recent floodplain deposits, i.e. below the deposits which would be required to test Propositions 1 and 2.

2. *Shelter Block Excavations.* A 2 m by 6 m unit was begun at the top of the talus slope, beneath the overhanging limestone roof (Figure 9). This was believed to be the part of the site that had the highest probability of containing the most complete record of human occupation. Prior to the initiation of this excavation, ground penetrating radar (GPR) was used to assess the presence of anomalies below the ground surface in order to avoid excavating in an area where large boulders or human burials were present. In this location of the excavation, researchers hoped to identify evidence of Paleoindian occupation.

3. *Floodplain Stratigraphic Trench.* Two backhoe trenches were excavated beyond the foot of the talus slope to test Propositions 3 and 4. One of them extended parallel with the bluff line, directly in front of the rockshelter. The other ran perpendicular with the bluff line, beginning near the foot of the talus slope and extended toward Indian Creek.

4. *Deepening of Test Pits.* Test Pits 4, 5 and 6, which were excavated during the 1994 field season, were deepened approximately one meter.

Three 2 m by 2 m units were opened beneath the overhanging shelter: N102 W99, N102 W101, and N102 W103 (Figures 10-11). The first arbitrary level of soil removed from these units was a 20 cm cut to remove the disturbed overburden resulting from pothunting activities. After this was removed, the excavation continued in 10 cm cuts. A 1 m by 1 m control block was left intact in the SW 1/4 of N102 W101. It was to be excavated by natural zones at a later time. When the unit surrounding this control block had been excavated to a depth of 65 cm, no natural stratigraphy was visible in the control block; therefore, the control block was removed.

Figure 8. View of Lower Talus Stratigraphic Trench.

Figure 9. View of Block Excavation (N102 W101/W99).

Figure 10. Base of Block Excavation (N102 W101/99) at ca. 210 cm.

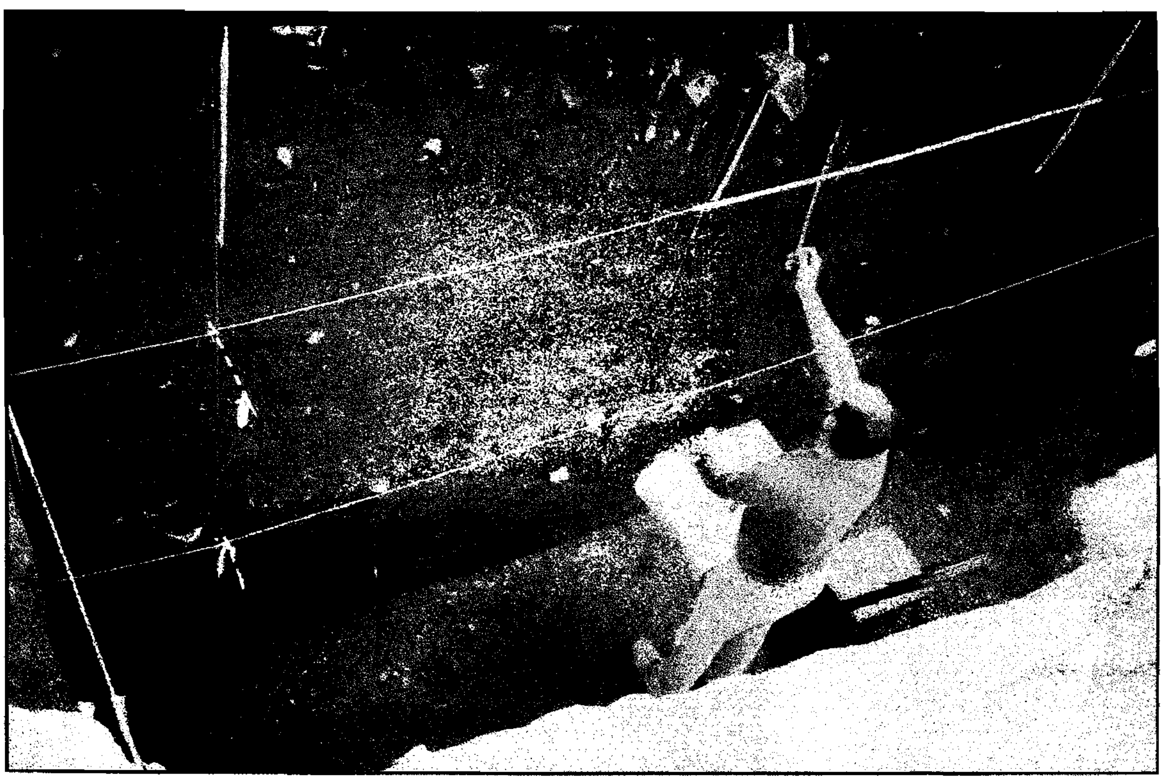


Figure 11. View of N102 Profile.

By early July, it was apparent that if excavations were continued in all three of the units, there would not be sufficient time in the field season schedule to excavate each unit to bedrock. Accordingly, excavation in N102 W103 was ceased at a depth of 55 cm. Excavation of this unit was completed during the 1996 field season.

The culture bearing zone on the steep slope was a dark brown organic humus, much of which appeared to have washed down from the upper slopes. The thinnest zones of the humus were in the squares closest to the foot of the slope. It was evident that these steep slopes contained no intact cultural stratigraphy. Mississippian and Late Woodland artifacts were sometimes found lying at the contact between the humus and the underlying yellow cherty zone, and Archaic artifacts frequently were found lying on the ground surface. The humus was loose and friable in all units except for N76 W101.5 and the lower half of N77.5 W101.5. These units were closest to the foot of the slope and the soil was lighter in color and had a much higher clay content. This soil appears to be a mixture of colluvial wash from the talus and floodplain sediment from Indian Creek.

All cultural materials had been excavated from the top of the lower talus trench by July 13, 1995. A backhoe was brought to the site and used to remove the yellow cherty clay soils from the trench to a depth of 3 m. At that point, the trench had penetrated into a lower fluvial deposit that could be identified as overbank deposition from the Tennessee River; however, the backhoe trench revealed inconclusive evidence of the ancient course of Indian Creek and the stream bed of the hypothetical spring.

THIRD SEASON (1996)

Because of the potential significance of findings made late in the 1995 field season, Redstone Arsenal officials and University archaeologists decided to return to Beartail Rockshelter for a third season of excavation. Side notched projectile points had been found stratigraphically below, and isolated from, Late Paleoindian artifacts usually thought to be much older. Excavations in 1995 had failed to produce reasonably acceptable radiocarbon dates for the bottom of the 1.5 m deep midden, or for the side notched component isolated a half meter below it. This field season focused on obtaining a larger sample of the artifactual material from the deep, isolated zone and to obtain suitable samples for radiocarbon analysis.

The 1996 season began on May 8, 1996 and ended June 20, 1996. The excavation plan was to excavate three additional 2 m by 2 m units beneath the overhanging bluff. Accordingly, N102 W103 (begun during 1995), N100 W101, and N100 W103 were prepared. N102 W103 continued the alignment along the back wall of the shelter with the 1995 units (N102 W99 and N102 W101). N100 W101 and N100 W103 were adjacent squares located almost directly beneath the shelter dripline. As the focus of the excavations was on the most deeply buried deposits, the excavation proceeded in 20 cm arbitrary levels until the top of Zone E was encountered at a depth of 165 cm. A 30 cm thick column was left standing between N100 W101 and N100 W103. Another separated N100 W103 and N102 W103. Excavation within Zone E proceeded in 10 cm levels.

When excavation into the light colored, dense soils of Zone E was begun, it became obvious that the zone was truncated along the approximate north-south midpoint of N100 W101 and N100 W103. Zone E deposits were left in place as the darker and more recent soils on the south half of those units was removed. Work ceased in these two units on June 20, 1996, the last day of the field season, without having identified the bottom of the truncation. Zone E was left in place in N100 W103 from a depth of 180 cm. N100 W101 was excavated to a depth of 240 cm.

N102 W103 was the only unit completely excavated and was the only unit where the most deeply buried cultural component was identified. As each 10 cm level was removed, the top of the succeeding level was completely cleaned and all evidence of possible contamination was carefully removed. Excavation was completed at a depth of 240 cm. Soils from Zone E in N102 W103, initially, were floated in order to recover minute particles of charred organic materials. Eventually this effort had to be halted due to time constraints. Soil samples were collected from each level and returned to the laboratory. Eight bone fragments (mammal long bone) were recovered from a depth of 200 cm to 210 cm. Adhering to one of the bones, in the matrix of soil surrounding the sample, was a mass of charred organic matter. A sample of the bone and the charred organics were submitted to Beta Analytic, Inc. for AMS dating.

CHAPTER IV
MATERIALS RECOVERED

Excavations at Beartail Rockshelter have produced a vast array of cultural materials associated with the Paleoindian period through the Mississippian period. These materials consist mainly of stone tools, manufacturing debris, and ceramics, but also include shell, bone, and charred plant remains. The presence of a variety of diagnostic hafted bifaces (i.e., projectile points) and several types of ceramic wares provides a general chronological development for the site. The following sections provide descriptions, illustrations and discussions of the artifact assemblage from the site. The first section discusses the lithic artifacts, the most numerically dominant category, followed by a section on the prehistoric ceramics. Other cultural remains are discussed under the rubric of miscellaneous artifacts.

The cultural material recovered during the investigations was returned to the David L. DeJarnette Archaeological Laboratory in Moundville, Alabama for analysis. Charles Hubbert, students, and volunteers analyzed the majority of the lithic artifacts. Scott Meeks analyzed the lithics from the first field season. Catherine Meyer analyzed the ceramics from all three field seasons. Cultural material was washed, sorted, analyzed and catalogued in accordance with standard laboratory procedures. Standardized analysis forms were used to record data and tabulated (Appendix). Materials were bagged according to provenience and eventually will be prepared for curation. Artifacts and documentation will be curated at the Erskine Ramsay Archaeological Repository at Moundville Archaeological Park. This facility meets federal standards of curation as delineated under 36 CFR Part 79 guidelines.

LITHIC ARTIFACTS

The lithic artifact inventory for Beartail Rockshelter is quite extensive. The assemblage is divided into three primary categories: chipped stone tools, debitage, and blocky chert (ground/pecked stone is included under the Miscellaneous Artifacts section). Chipped stone tools, lithic artifacts which were intentionally flaked or flaked through usage, are further subdivided into diagnostic hafted bifaces (projectile points/knives), nondiagnostic bifaces, and unifaces. These subcategories are discussed in the following sections. Debitage, the by-product of tool manufacture, has yet to be analyzed due to the mass quantity retrieved. Blocky chert includes unmodified rock, is not considered archaeologically significant, and has not been quantified. So few ground/pecked stone tools were recovered that they are included under the miscellaneous category (discussed at the end of the chapter).

A total of 619 chipped stone tools were analyzed from the Beartail Rockshelter. These include a wide assortment of hafted bifaces, preforms, blanks, drills, probable hafted biface fragments, as well as a variety of uniface tools. The vast majority of these tools were produced from locally available Bangor chert. Minor occurrences of other chert types are also present in the sample, including, among others, blue/gray Fort Payne, fossiliferous Fort Payne, Pickwick, and Camden. It would appear that the inhabitants at the site utilized the local resource base for the majority of tool production throughout the occupational history of the site.

Diagnostic Hafted Bifaces (Projectile Points/Knives)

Projectile points/knives are considered to be important cultural and chronological markers in prehistory. Since they are the products of particular cultural traditions from specific time periods, it can be said that they represent the fossilized behavior patterns of their makers. They may be seen as a material representation of ancient ideas. Specific types were produced consistently during a particular time period because of cultural standards of what constituted a structurally and stylistically appropriate tool (Justice 1987). They may be used to denote general periods of time, and, in an ideal archaeological circumstance, they should be ordered from the top of the deposits to the bottom of the deposits in an order of increasing age. Unfortunately, the majority of the deposits were not found in an ideal archaeological circumstance and are jumbled in context. The oldest deposits, however, were found below the mixed midden, leaving an intact late Pleistocene/early Holocene interface.

Diagnostic hafted bifaces from the site total 255 and represent occupations spanning the Late Paleoindian to Mississippian times (Table 1). For detailed descriptions of the hafted biface types, one is referred to Cambron and Hulse (1975), Futato (1983), and Justice (1987). Specific descriptions are provided later for those specimens associated with the late Pleistocene/early Holocene occupation. Chronologically, the oldest occupation of the site may date to about 10,000 years ago, and is represented by two Early Side Notched points and a rounded base leaf shaped point (and an assortment of biface and uniface tools to be discussed

Table 1. Beartail Rockshelter PP/Ks.

	1994 Season					1995 Season	
						N102	N102
	T.U. 1	T.U. 4	T.U. 5	T.U. 6	T.U. 7	W99	W101
Bakers Creek	-	-	-	-	-	1	-
Benton	1	3	1	2	-	6	10
Big Sandy/Early Side Notched	-	1	-	-	-	1	1
Bradley Spike	-	-	-	-	-	-	-
Buzzard Roost Creek	-	-	-	-	-	1	-
Candy Creek	-	-	-	-	-	1	-
Cotaco Creek	-	2	-	-	-	-	1
Beaver Lake/Dalton	-	-	-	-	-	1	-
Elora	-	-	-	-	-	-	-
Eva	-	-	-	3	-	-	-
Flint Creek	-	-	-	1	1	4	4
Flint River Spike	-	1	-	-	-	-	-
Gary	-	-	-	-	-	2	-
Greenville Cluster	-	-	1	1	-	1	3
Guntersville	-	-	-	-	-	-	-
Hamilton	2	3	3	7	3	1	2
Hamilton Stemmed	-	-	-	-	-	-	-
Jacks Reef Corner	-	-	-	-	-	-	1
Jude	-	-	-	-	-	-	-
Kays Stemmed	-	-	-	-	-	-	1
Kirk Corner Notched	-	1	-	3	-	3	3
Kirk Serrated	-	1	-	-	-	-	-
Kirk Stemmed	-	-	-	-	-	-	-
Knights Island	-	1	-	-	-	-	-
Leaf shaped-rounded base	-	-	-	-	-	-	1
Ledbetter	-	-	-	-	-	-	2
Lerma-like	-	-	-	-	-	1	-
Limestone	-	-	-	-	-	1	-
Little Bear Creek	1	1	1	-	-	7	3
Madison	-	2	-	1	-	1	7
McIntire	-	1	-	-	-	-	-
Morrow Mountain	-	-	-	-	-	2	1
Motley	-	-	-	-	-	2	-
Mud Creek	-	-	-	-	-	-	-
Mulberry Creek	-	-	-	-	-	1	1
New Market	-	-	-	-	-	-	-
Nodena	-	-	-	-	-	-	-
Pickwick	-	-	1	-	-	1	-
Pine Tree	-	-	-	-	-	-	-
Quad	-	-	-	-	-	-	1
Stanley	-	-	-	-	-	1	-
Sublet Ferry	-	-	1	-	-	-	-
Swan Lake	-	-	1	-	-	-	-
Sykes/White Springs	-	2	-	1	-	1	1
Wade	-	-	-	-	-	2	-
TOTAL COUNT	4	19	9	19	4	42	43

Table 1. Beartail Rockshelter PP/Ks (continued).

	1996 Season					
	N100 W101	N100 W103	N102 W103	Lower Talus	TOTAL	PERCENT
Bakers Creek	1	1	-	1	4	1.57%
Benton	-	-	1	1	25	9.80%
Big Sandy/Early Side Notched	2	-	1	-	6	2.35%
Bradley Spike	1	-	1	-	2	0.78%
Buzzard Roost Creek	-	-	-	-	1	0.39%
Candy Creek	-	-	-	-	1	0.39%
Cotaco Creek	-	1	-	-	4	1.57%
Beaver Lake/Dalton	-	1	-	-	2	0.78%
Elora	4	-	-	1	5	1.96%
Eva	1	1	-	-	5	1.96%
Flint Creek	4	2	-	1	17	6.67%
Flint River Spike	-	-	-	-	1	0.39%
Gary	-	2	-	3	7	2.75%
Greenville Cluster	-	-	-	2	8	3.14%
Guntersville	-	-	-	1	1	0.39%
Hamilton	5	-	1	1	28	10.98%
Hamilton Stemmed	-	-	-	2	2	0.78%
Jacks Reef Corner	-	-	-	-	1	0.39%
Jude	-	-	1	-	1	0.39%
Kays Stemmed	-	-	-	-	1	0.39%
Kirk Corner Notched	-	-	-	-	10	3.92%
Kirk Serrated	2	-	2	-	5	1.96%
Kirk Stemmed	-	-	-	-	0	0.00%
Knights Island	-	-	-	-	1	0.39%
Leaf shaped-rounded base	-	-	-	-	1	0.39%
Ledbetter	-	-	-	-	2	0.78%
Lerma-like	2	-	-	-	3	1.18%
Limestone	-	-	-	1	2	0.78%
Little Bear Creek	1	1	-	-	15	5.88%
Madison	4	2	3	7	27	10.59%
McIntire	-	1	-	-	2	0.78%
Morrow Mountain	2	1	1	1	8	3.14%
Motley	-	1	-	-	3	1.18%
Mud Creek	-	2	1	-	3	1.18%
Mulberry Creek	-	1	-	-	3	1.18%
New Market	-	-	1	-	1	0.39%
Nodena	-	1	-	-	1	0.39%
Pickwick	2	4	3	1	12	4.71%
Pine Tree	1	-	-	-	1	0.39%
Quad	-	-	-	-	1	0.39%
Stanley	-	-	-	-	1	0.39%
Sublet Ferry	-	-	-	-	1	0.39%
Swan Lake	-	2	3	-	6	2.35%
Sykes/White Springs	8	2	3	2	20	7.84%
Wade	-	-	-	2	4	1.57%
TOTAL COUNT	40	26	22	27	255	100.00%

later). However, a Late Paleoindian occupation, represented by a Quad/Dalton point, a Hardaway/San Patrice point, and a Beaver Lake/Dalton point, was suggested in deposits above the lowest Early Side Notched points. These projectile point types suggest a dating of about 10,000 to 10,500 years ago. An Early Archaic occupation is evidenced by 18 projectile points, including 10 Kirk Corner Notched, 6 Big Sandy/Early Side Notched, 1 Jude and 1 Pine Tree. Substantial occupation of Beartail Rockshelter during the Middle-Late Archaic is suggested by more than 110 projectile points which encompass 43 percent of the total projectile point assemblage. Specifically, the Middle Archaic is epitomized in 25 Benton and 20 Sykes/White Springs projectile points while the Late Archaic is distinguished by 15 Little Bear Creek and 12 Pickwick points. A handful of projectile points, like the Flint Creeks (17) and Cotaco Creeks (4), could be associated with a Gulf Formational occupation. The Early and/or Middle Woodland is represented by a small but varied point collection, including Greenville cluster and Spike cluster projectile points. Finally, the Late Woodland to Mississippian is strongly manifested in the recovery of over 50 Hamilton and Madison points.

Nondiagnostic Bifaces

The largest category of chipped stone tools from the site is comprised of nondiagnostic bifaces. A total of 263 specimens was analyzed from the block excavations (Table 2). This category primarily includes preforms (I, II, III), bifaces (I, III, III), and unidentified hafted biface fragments. Smaller classes within this category include core, adze, hafted knife, drill and drill fragments, hafted biface scraper, and microlith. Following is a description of each biface type and the frequencies of each within the block excavation:

Biface I. This tool type exhibits flake scars on two faces. No effort was made to shape the overall form of the artifact through flake removal; rather, the intent was to create an expedient, serviceable cutting edge. These tools probably were not curated items. Some wedges may be included in this category. Wedges are blocky chert fragments with a bifacial edge flaked along one margin. That margin would be backed by a broad, flat opposing edge sometimes showing impact damage along its margins. A total of 50 Biface I specimens was retrieved from the block excavations and represents 19.01 percent of the lithic tool assemblage.

Table 2. Lithic Tools from N102 W99/W101/W103 and N100 W101/W103.

	0-20 cm	20-40 cm	40-60 cm	60-80 cm	80-100 cm	100-120 cm	120-140 cm	140-150 cm	150-160 cm	160-170 cm
Biface Tools										
Biface I	1	-	9	1	2	3	8	5	16	2
Biface II	-	-	1	5	1	3	5	6	7	2
Biface III	1	-	2	1	1	2	3	5	2	6
Preform I	-	-	-	-	-	-	-	-	-	-
Preform II	-	-	-	-	-	1	-	-	-	1
Preform III	-	-	-	-	-	-	1	-	-	-
Core	-	1	-	-	1	-	-	-	-	1
Adze	-	1	-	-	-	-	-	-	-	-
Hafted Knife	1	-	-	-	-	-	-	-	-	-
Drill	-	-	3	1	-	-	-	-	-	-
Unidentifed Biface Fragment	-	1	14	5	2	10	11	2	4	7
Microlith	-	-	-	-	1	1	-	-	-	-
Uniface Tools										
Scraper with Graver	-	-	-	-	-	-	-	-	-	-
Side Scraper/Knife	1	-	-	-	-	-	2	-	1	2
End Scraper	-	-	-	1	-	-	3	3	2	1
Chopper	-	-	-	1	-	-	-	-	-	-
Spoke Shave	-	-	-	-	-	-	-	1	-	-
Blades	-	-	-	-	-	-	-	-	-	1
Utilized Flakes	-	1	8	-	-	2	4	1	6	3
TOTAL COUNT	4	4	37	15	8	22	37	23	38	26

Table 2. Lithic Tools from N102 W99/W101/W103 and N100 W101/W103 (continued).

	170-180 cm	180-190 cm	190-200 cm	200-210 cm	210-220 cm	220-230 cm	230-240 cm	TOTAL	%
Biface Tools									
Biface I	3	-	-	-	-	-	-	50	19.01%
Biface II	2	-	-	1	-	-	-	33	12.55%
Biface III	-	-	3	2	1	-	-	29	11.03%
Preform I	-	-	-	-	-	-	-		
Preform II	-	-	5	1	-	-	-	8	3.04%
Preform III	-	-	-	-	-	-	-	1	0.38%
Core	1	-	-	-	-	-	-	4	1.52%
Adze	-	-	-	-	-	-	-	1	0.38%
Hafted Knife	-	-	-	-	-	-	-	1	0.38%
Drill	-	-	1	-	-	-	-	5	1.90%
Unidentifed Biface Fragment	2	-	1	2	1	-	-	62	23.57%
Microlith	-	-	-	-	2	-	-	4	1.52%
Uniface Tools									
Scraper with Graver	-	-	1	-	-	-	-	1	0.38%
Side Scraper/Knife	1	-	3	3	2	1	-	16	6.08%
End Scraper	1	-	1	-	1	-	-	13	4.94%
Chopper	-	-	-	-	-	-	-	1	0.38%
Spoke Shave	-	-	-	-	-	-	-	1	0.38%
Blades	-	-	2	1	2	-	1	7	2.66%
Utilized Flakes	1	-	-	-	-	-	-	26	9.89%
TOTAL COUNT	11		17	10	9	1	1	263	100.00%

Biface II. This tool type exhibits bifacial flaking along more than 50 percent of its margins, or bifacial flaking along opposing edges. This tool type totals 33 from the block excavation, representing 12.55 percent of the lithic tool assemblage.

Biface III. Specimens in this category have bifacially removed flake scars along all margins but lack evidence of any thinning. A total of 29 Biface III specimens were retrieved from the block excavations, encompassing 11.03 percent of the lithic tool assemblage.

Preform I. Artifacts in this category are medium or large in size and ovoid to rectangular in shape. They have been bifacially flaked to produce a regular, elongated shape but show no evidence of secondary retouch. No Preform I specimens were recovered from the block excavations (two were recovered from the 1994 test units).

Preform II. This category includes specimens that are small or medium in size. They have been thinned in the interior portion and have minor amounts of secondary retouch along their margins. Some examples have rudimentary stems but show no tertiary or finishing flake removal. Eight preforms were found in the block excavations, representing 3.04 percent of the lithic tool assemblage.

Preform III. These artifacts are small or medium in size and triangular or lanceolate in shape. They have fine, regular retouch along blade margins, and some have been basally thinned. Beyond that they show no edge damage and/or evidence of resharpening. Preform III artifacts are considered to be final stage preforms. Only one Preform III artifact was recovered from the block excavations, encompassing .38 percent of the lithic tool assemblage.

Unidentifiable Biface. These specimens are medial or distal fragments of bifaces which are too fragmentary to further classify. A total of 62 unidentifiable bifaces were retrieved from the block excavations, representing 23.57 percent of the lithic tool assemblage.

Core. These artifacts are chert nodules, blocks, or cobbles from which flakes have been removed, and which do not exhibit positive flake characteristics. Negative bulbs of percussion and platform preparation are common on cores. Four cores were found in the block excavations, which represents 1.52 percent of the lithic tool assemblage.

Adze. These tools are medium or large in size. They are bifacially worked to an ovoid or rectangular shape. The distal end, and sometimes both ends are bevelled to the ventral face. They are assumed to be woodworking tools. Only one adze was found in the block excavations, representing .38 percent of the lithic tool assemblage.

Hafted Knife. These are large hafted bifaces exhibiting edge damage along their blade edges, which suggests a cutting function. One hafted knife was found in the block excavations and includes .38 percent of the lithic tool assemblage.

Microlith. These specimens are extremely small tools that generally need to be studied under a microscope to view their flaking scars. The use of these tools is undetermined. Four microlith tools were retrieved from the block excavations, encompassing 1.52 percent of the lithic tool assemblage.

Unifaces

A total of 39 unifaces was analyzed from the site (Table 2). Uniface tools were manufactured by the removal of flakes from a single face. Tool types include: scraper with graver (N=1), side scraper/knife (N=16), end scraper (N=13), chopper (N=1), spoke shave (N=1), and blade (N=7). While the uniface tools comprise a smaller percentage of the chipped stone tool assemblage, they represent the most intriguing group of chipped stone tools from the site. Paleoindian and Early Archaic tool kits are characterized by a sophisticated uniface technology and several of these specimens, especially from the deepest component of the site, are associated with these early occupations. Those specimens associated with the late Pleistocene/early Holocene occupation are described in another section of this chapter.

Utilized Flakes

These artifacts are expedient tools based upon larger flakes. They show an irregular pattern of nibbling along one or both faces, indicating utilization of one or more edges. A total 26 utilized flakes was identified from the block excavations, representing 9.89 percent of the lithic tool assemblage (Table 2).

Late Pleistocene/Early Holocene Flaked Stone Tools

This section provides a description of a series of stone tools which, because of their morphological characteristics and their stratigraphic positioning, are believed to date to a time when the amelioration of late Pleistocene weather conditions was almost complete, and early Holocene conditions were beginning. A few of them were recovered in a 1.5 m deep midden overlying the deepest excavated cultural levels at the site. All of the other artifacts were recovered from between 190 cm and 220 cm deep.

A word is in order about the definitions of the descriptive terms that are used, and about how the measurements were made. Dimensions of the artifacts are given in millimeters (mm) and are expressed as maximums. Length was measured along the long axis of the artifact, and includes any basal indentation. Width was measured perpendicular to length. The thickness measurement was perpendicular to both. In the descriptions, *proximal* and *basal* refer to the approximate half of the artifact that served as the hafting element. The terms *distal*, *blade*, and *tip* refer to the approximate half of the artifact that included the pointed end. *Margins* and *edges* are where the two faces of the artifact come together at an acute angle. *Faces* are the widest surfaces of the artifact. *Lateral* refers to the long edges of the artifact. *Resharpening*, *reworking,* and *retouching* denote flakes that were removed after the primary shaping of the artifact had been completed. *Thinning* is used to denote flakes where the main purpose was to remove material from the face of the artifact rather than from the edge. *Grinding* refers to the deliberate dulling of a sharp edge. *Smoothing* and *polishing* means the dulling and rounding of edges and tips due to use-wear. *Nibbling* means a pattern of small, irregular flakes from an edge. Nibbling may have been deliberately produced or may have resulted from usage of the implement.

PROJECTILE POINTS / KNIVES

Seven projectile points/knives are morphologically associated with the Late Paleoindian to Early Archaic occupations. Three were recovered from within the disturbed midden; the other four were retrieved from Zone E (190 cm to 220 cm).

Specimen No: 494-1 (Figure 12)
Classification: Beaver Lake/Dalton

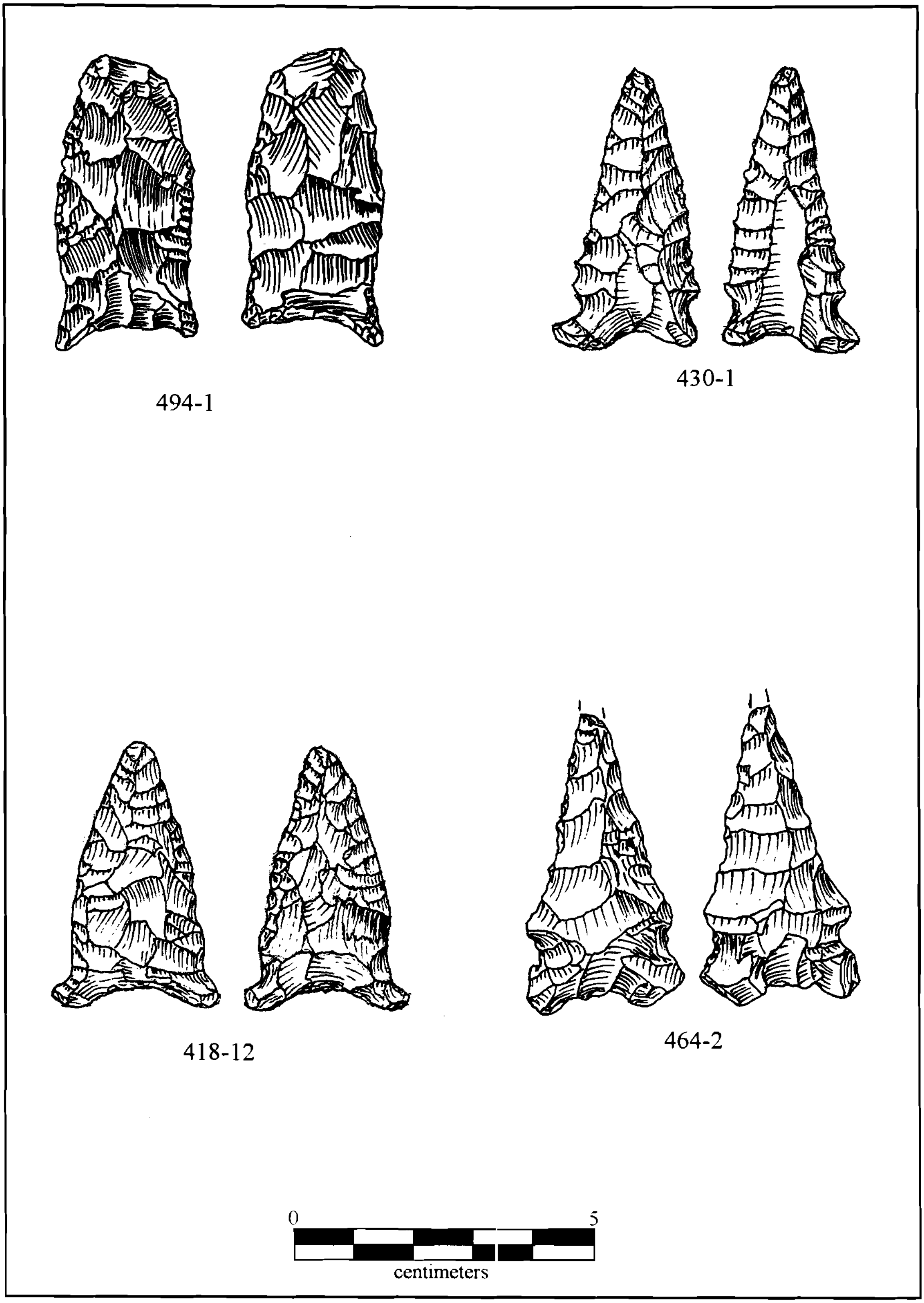


Figure 12. Obverse/Reverse Views of Projectile Points/Knives: 494-1, 430-1, 418-2, 464-2.

Provenience: N100 W103 (40 cm to 60 cm)

Length: 47 mm

Maximum Thickness: 6.5 mm

Width at Base: 22 mm

Minimal Width at Hafting Area: 19 mm

Width at Widest Point: 22 mm

Length of Hafting Area (defined by marginal grinding): 16 mm; 19.5 mm

Intensity of Marginal Grinding: light

Intensity of Basal Grinding: light to moderate

Raw Material: Tuscumbia chert (commonly called Ft. Payne)

Two basal thinning flakes on one face are 9 mm long. An aborted attempt on the other face resulted in an immediate hinge-out and destruction of the platform. The tip is missing from this point, resulting from a probable impact fracture. One face of the specimen is damaged at the approximate mid-point as a result of some impact on one edge. The marginal smoothing of the hafting area has been impinged upon by blade retouch or resharpening. This point has the constriction of the hafting area and the flaring of the basal ears that are characteristic of Beaver Lake projectile points. However, if this point was resharpened another time or two, further reducing the area of the blade, it would become a Dalton.

Specimen No: 430-1 (Figure 12)

Classification: Hardaway Side Notched/ San Patrice

Provenience: N102 W99 (170 cm to 180 cm)

Length: 46 mm

Maximum Thickness: 7 mm

Width at Base: 23 mm

Minimum Width at Hafting Area: 16.5 mm

Width at Shoulder: 21 mm

Length of Hafting Area: 10.5 mm

Marginal Smoothing: moderate (inside notches)

Basal Smoothing: moderate

Raw Material: unknown

This specimen appears to have been basally thinned during a preform stage. A single basal thinning scar on one side is 21 mm long. On the other, it is 17 mm long. On both faces the platform for the thinning flake has been removed by bifacial retouch. At one time this projectile point had serrated blade edges. All the serrations, except one or two nearest the notches, have been removed by bevelling. The bevelling of the point was accomplished by a downward (away) pressure on the right side edge with the distal end pointed away from the knapper. The raw material used in the manufacture of this projectile point does not occur locally in the middle Tennessee Valley. It has, at least, a superficial resemblance to some examples of Tallahatta quartzite, although it is less grainy than most.

It is difficult to separate Hardaway Side Notched projectile points from San Patrice projectile points. It may be that the major difference between the two types is whether they are found in the eastern parts of the Coastal Plain or further west along the Gulf Coastal Plain. Because we have noted the similarity of the raw material used in this point to the Tallahatta variety, which occurs in southwestern Alabama, we will leave the final classification of this specimen to the interpretation of the reader.

Specimen No: 418-12 (Figure 12)
Classification: Quad/Dalton
Provenience: N102 W101 (140 cm to 150 cm)
Length: 43 mm
Maximum Thickness: 6 mm
Width at Base: 27 mm
Minimum Width at Hafting Area: 21 mm
Maximum Width: at base
Length of Hafting Area: 19 mm; 13 mm
Marginal Smoothing: moderate to heavy
Basal Smoothing: moderate
Raw Material: Tuscumbia chert (Ft. Payne)

Thinning of the body of this projectile point was accomplished by lateral flakes that carried almost all the way across the body of the point. The basal concavity was retouched with pressure flakes. This point has been retouched or sharpened along both edges. This has had the effect of shortening the total length of the point, and breaking the parallel sided contours, giving a slight *steepling* to the blade shape. Although the point has the overall form of Quad points, the flaring of the ears is more pronounced than on most specimens. Had the specimen been resharpened once more, further reducing the dimensions of the blade, it would probably have been classified as a Greenbriar/Dalton.

Specimen No: 464-2 (Figure 12)
Classification: Early Side Notched (Big Sandy)
Provenience: N102 W101 (210 cm to 220 cm)
Length: 48.5 mm
Width at Base: 26 mm
Minimum Width at Haft (notch): 20.5 mm
Width at Shoulder: 24 mm
Length of Hafting Area: 14 mm; 15.5 mm
Lateral Grinding (in notches): light
Basal Grinding: light-to-moderate
Raw Material: Bangor chert

As discussed above, the hafting area on these projectile points is defined by the most distal extension of grinding along lateral edges. In the case of these side notched projectile points the grinding extends to the most distal corner of the notches. Measurement of the hafting area was made from that point to the corner of the base. This projectile point has been bifacially resharpened along the blade margins. In addition, a burin spall has been removed from the distal tip.

Specimen No: 96-23 (Figure 13)
Classification: Early Side Notched (Big Sandy)
Provenience: N102 W103 (200 cm to 210 cm)
Length: 44 mm
Maximum Thickness: 7.5 mm
Width at Base: 20 mm
Minimum Width at Haft: (in notch) 14.5 mm
Width at Shoulder: 24 mm
Length of Hafting Area: 12 mm; 13.5 mm
Lateral Grinding: (in notches) light
Basal Grinding: light (on ears only)
Raw Material: Tuscumbia chert (Ft. Payne)

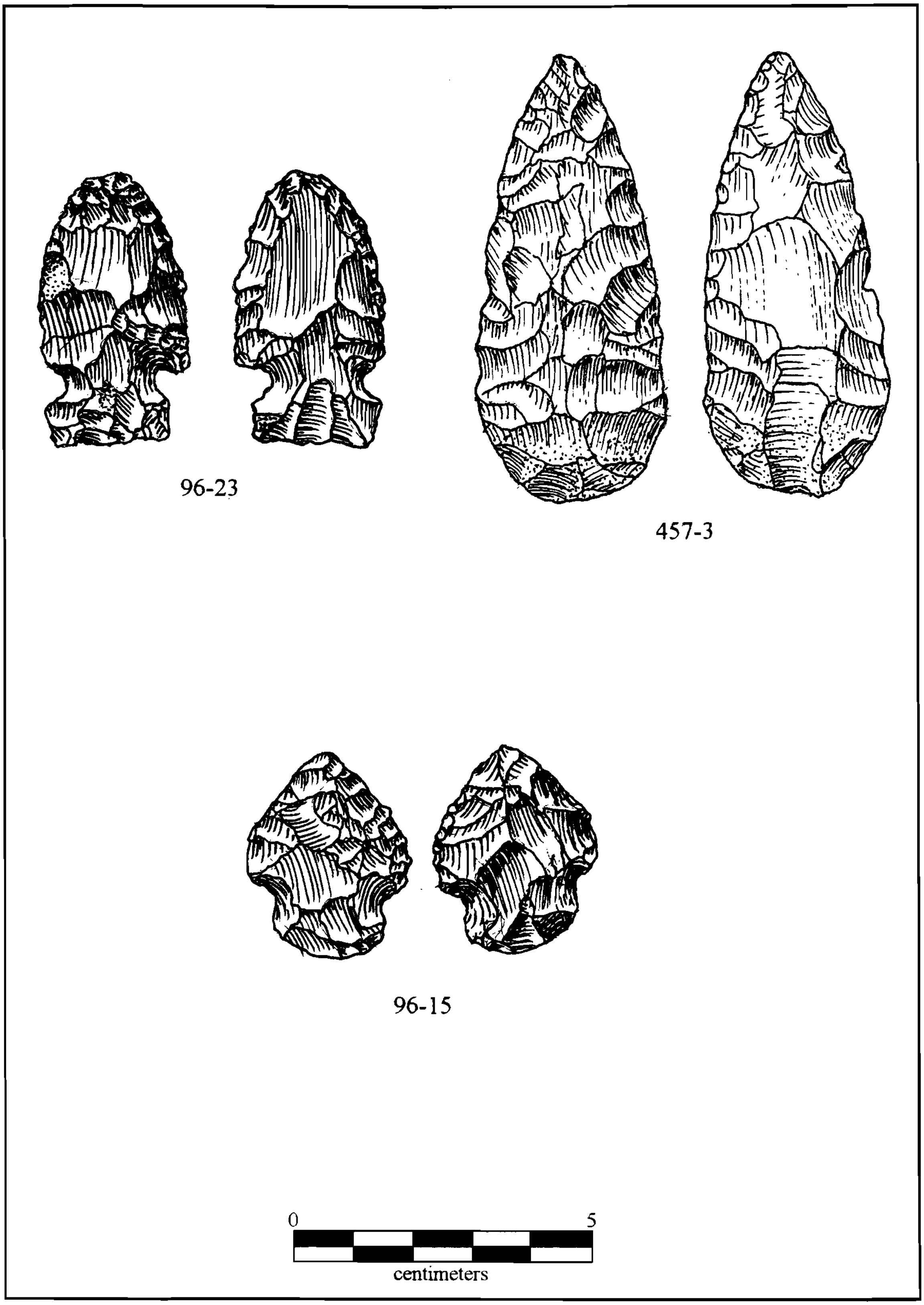


Figure 13. Obverse/Reverse Views of Projectile Points/Knives: 96-23, 457-3, 96-15.

This projectile point was thinned in a late preform stage. Remnants of those thinning flake scars remain, but have been encroached by the flakes producing the notches as well as by some lateral flakes on the blade which have extended into the center of the body of the point. A late attempt at thinning on the reverse side resulted in a hinge-out after travelling only 5 mm.

Specimen No: 457-3 (Figure 13)
Classification: Leaf Shaped, Rounded Base
Provenience: N102 W101 (190 cm to 200 cm)
Length: 73 cm
Thickness: 8 mm
Width at Widest Point: 29.5 mm
Length of Hafting Area: 15 mm
Marginal Grinding: light
Basal Grinding: light
Raw Material: unknown

It is not known if this artifact was ever hafted. Light grinding, or smoothing, of the basal edges is present but inconsistent around the basal edges. The grinding, or smoothing, begins so far back on the body of the artifact that it is not likely that it marks the full extent of a hafting area. However, examination under 10x magnification indicates that the artifact has been resharpened at least once along both margins. The resharpening may have impinged upon a smoothed edge of the blade. This would indicate that the artifact was not hafted during the resharpening process. A centrally located thinning flake, or flute, was detached from the base of the point and extended for a length of 25.5 mm toward the distal end. Lateral flakes from the resharpening process extend onto, but do not obliterate, the flute scar.

Specimen No: 96-15 (Figure 13)
Classification: Jude
Provenience: N102 W103 (187 cm to 207 cm) (floatation sample)
Length: 34 mm
Maximum Thickness: 7 mm
Maximum Stem Width: 18.5 mm
Minimum *Stem Width:* 17.5 mm

Length of Stem: 12 mm
Maximum Width: 27 mm (shoulders)
Basal Grinding: light (confined to the sides and base of the stem)
Raw Material: Tuscumbia chert (Ft. Payne)

During the examination of this projectile point it was noted that the flakes that were removed to produce the stem originated from the margins, in much the same way notches are produced. A portion of the stem base is missing. There is a possibility that the point was side notched, or intended to be side notched, at one point in its history. Serrations are present along a short portion of one blade margin. The artifact has been resharpened.

PREFORMS

Fourteen relatively small, mostly biface preforms were found buried between 190 cm and 220 cm. All are trianguloid to ovoid in shape.

Specimen No: 457-12 (Figure 13)
Provenience: N102 W101 (190 cm to 200 cm)
Classification: Large preform (broken)
Maximum Length: 55 mm
Maximum Width: 35 mm
Basal Grinding: none
Marginal Grinding: none
Raw Material: Bangor chert

This specimen has the same basic rounded-base form as Specimen 457-3 (discussed in the previous section), but has not been finished with fine pressure retouch along the margins. Specimen 457.3 has the appearance of a nicely finished artifact, while this one is unfinished. One of the lateral edges has been damaged by utilization, and the other edge has been resharpened.

Specimen No: 464-3 (Figure 14)
Classification: Preform/tool

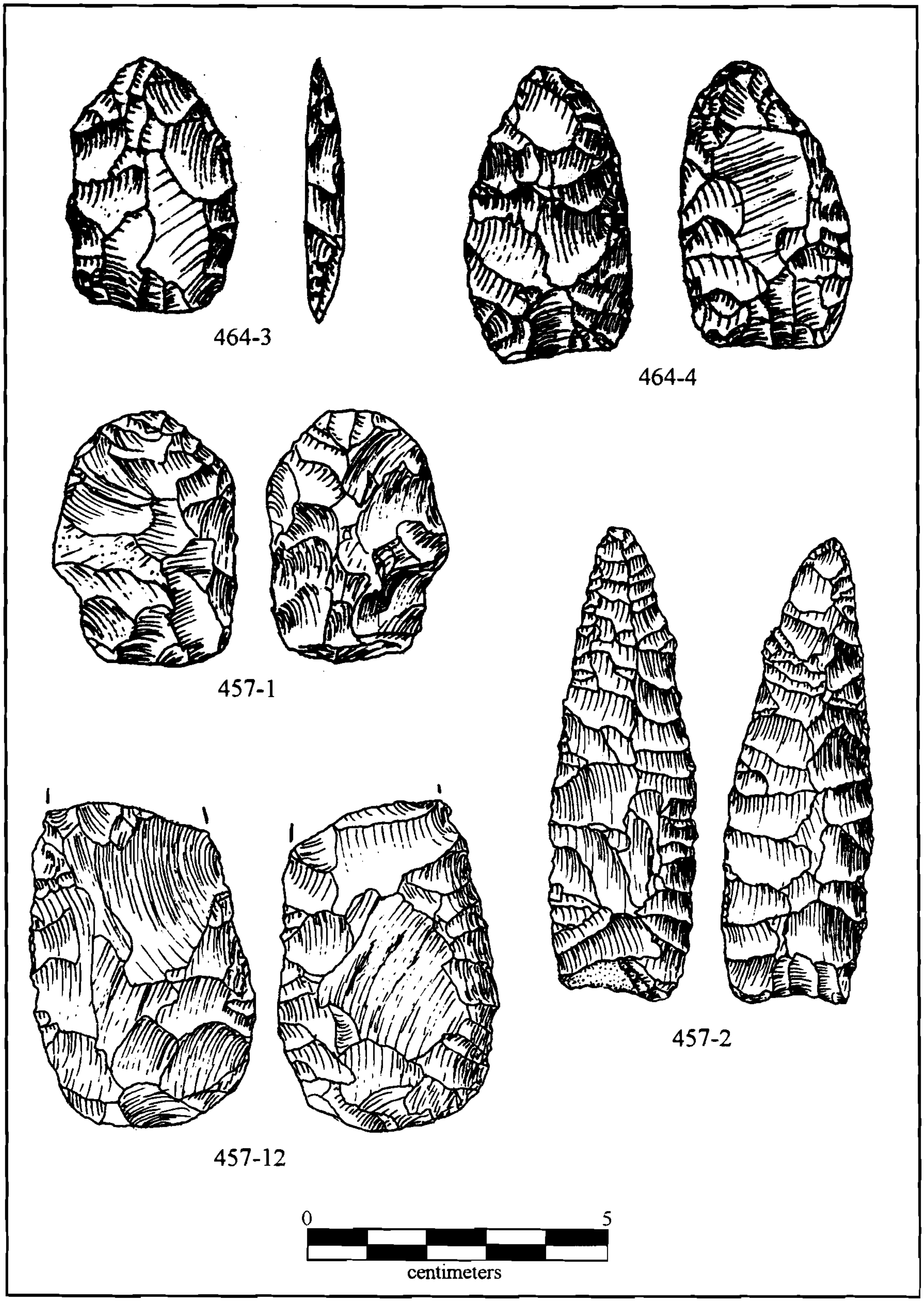


Figure 14. Obverse/Reverse Views of Preforms: 457-12, 464-3, 464-4, 457-1, 457-2.

Provenience: N102 W101 (200 cm to 210 cm)
Maximum Length: 41.5 mm
Maximum Width: 27 mm
Maximum Thickness: 7 mm
Overall Shape: trianguloid
Raw Material: Bangor chert

This artifact was manufactured on a flake, and the majority of the reverse face retains a weathered, flat cortex. Both lateral edges were resharpened at least once. Step fractures and other wear on the extreme distal end indicate that the artifact was finally utilized in a twisting, boring motion. There is also slight polishing and rounding of the extreme distal tip.

Specimen No: 464-4 (Figure 14)
Classification: Preform/tool
Provenience: N102 W101 (200 cm to 210 cm)
Maximum Length: 46.5 mm
Maximum Width: 27.5 mm
Maximum Thickness: 9 mm
Overall Shape: trianguloid
Raw Material: blue/gray Ft. Payne chert

This artifact, manufactured on a flake, retains cortex on its reverse side. The cortex makes up approximately 40 percent of the total face of the tool. One lateral edge shows step flake scars and subsequent unifacial retouch along the length of the edge. The opposite edge has been resharpened, changing the contour of the edge. The resharpening left a thick, unfinished spot on the edge. Battering of the edge at that point indicates the knapper attempted to thin that spot toward the center of the blade. Failure to accomplish the thinning probably damaged the artifact's utility as a projectile point preform.

Specimen No: 457-1 (Figure 14)
Classification: Preform/tool
Provenience: N102 W101 (190 cm to 200 cm)
Maximum Length: 42 mm
Maximum Width: 29.5 mm

Maximum Thickness: 8.5 mm
Overall Shape: ovoid
Raw Material: Tuscumbia chert

This preform has been broken and reworked. The distal end broke off and one of the basal corners broke away. The truncated distal end was repaired with bifacial percussion flaking. No attempt was made to repair the broken corner. Intermittent unifacial nibbling around the margins indicate that it was subsequently used in an activity that required a light, scraping motion. There is light smoothing and other damage at the extreme distal tip.

Specimen No: 457-2 (Figure 14)
Classification: Preform/tool
Provenience: N102 W101 (190 cm to 200 cm)
Maximum Length: 78.5 mm
Maximum Width: 24 mm
Maximum Thickness: 7.5 mm
Basal Width: 20 mm
Overall Shape: trianguloid/lanceolate
Raw Material: blue/gray Ft. Payne chert

The distal half of one lateral edge of this artifact has been unifacially resharpened, giving that face a bevelled appearance. It also created an off-set medial ridge along the distal half of the artifact. The reverse face has a smoothly lenticular curvature. The lenticular face has three short (9-10mm long) basal thinning flake scars. On the face with the medial ridge, there is no obvious basal thinning flake removed. An attempt may have been made to thin the artifact, but a weathered fault in the stone caused an unintended, larger flake to break away, destroying the platform, and failing to accomplish any significant thinning of the base. There is light smoothing and polish at the extreme distal tip.

Specimen No: 457-4 (Figure 15)
Classification: Preform/tool
Provenience: N102 W101 (190 cm to 200 cm)
Maximum Length: 45.5 mm
Maximum Width: 29 mm

Maximum Thickness: 9.5 mm
Overall Shape: trianguloid
Raw Material: Bangor chert

This artifact was once a longer one. It has been unifacially resharpened along the distal half. After the resharpening event, the extreme distal end was used with a light scraping motion causing light unifacial nibbling on the margin of one face. There is light damage on the distal tip.

Specimen No: 457-5 (Figure 15)
Classification: Preform/tool
Provenience: N102 W101 (190 cm to 200 cm)
Maximum Length: 47mm
Maximum Width: 27 mm
Maximum Thickness: 8 mm
Overall Shape: trianguloid
Raw Material: Tuscumbia chert (Ft. Payne)

The distal half of this artifact has been reworked by the removal of both percussion flakes and pressure retouch, resulting in a more abrupt convergence of the lateral edges along that portion of the blade. One face has been basally thinned by the removal of a thinning flake 18.5 mm long. The distal tip shows smoothing and polish probably resulting from use, as do some of the protuberances along the retouched distal edges.

Specimen No: 457-7 (Figure 15)
Classification: Preform/tool
Provenience: N102 101 (90 cm to 200 cm)
Maximum Length: 46.5 mm
Maximum Width: 29 mm
Maximum Thickness: 10 mm
Overall Shape: trianguloid
Raw Material: Bangor chert

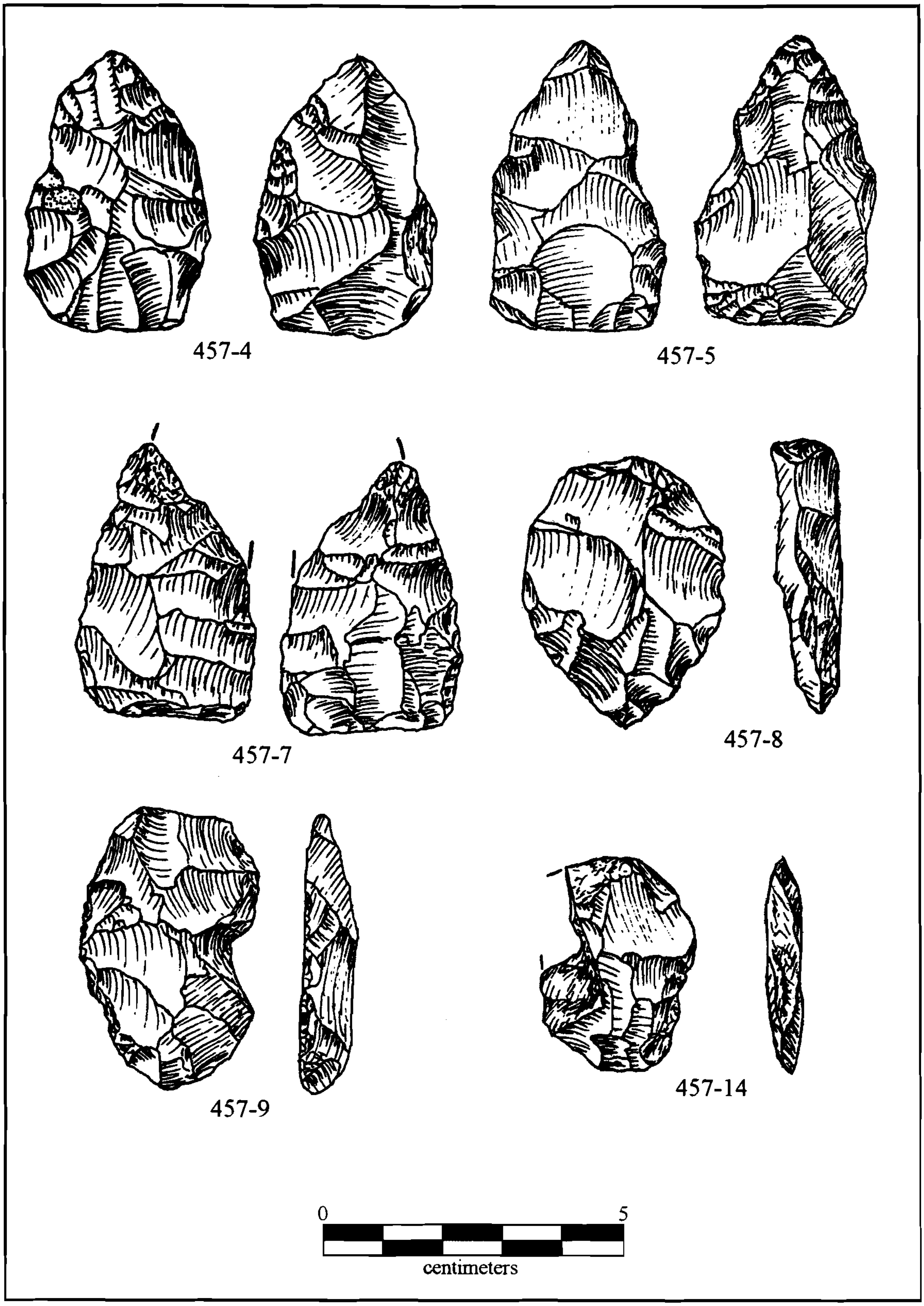


Figure 15. Obverse/Reverse Views of Preforms: 457-4, 457-5, 457-7, 457-8, 457-9, 457-14.

The distal half of this artifact has been reworked or resharpened, causing a reorientation of the blade edges from parallel to sharply converging. Following the resharpening event, the artifact was further utilized, perhaps with a light twisting or boring motion. The extreme distal tip shows light smoothing and polish.

Specimen No: 457-8 (Figure 15)
Classification: Preform/tool
Provenience: N102 W101 (190 cm to 200 cm)
Maximum Length: 44 mm
Maximum Width: 34 mm
Maximum Thickness: 8 mm
Overall Shape: ovoid
Raw Material: Bangor chert

This artifact has a thick bulb on one face which precluded thinning of the base. Perhaps as many as four attempts were made to remove the thick bulb without success. The distal end has been reworked, changing the contour of the blade edges to steeply converging. No further utilization is observed.

Specimen No: 457-9 (Figure 15)
Classification: Preform/tool
Provenience: N102 W101 (190 cm to 200 cm)
Maximum Length: 46 mm
Maximum Width: 28 mm
Maximum Thickness: 9 mm
Overall Shape: ovoid
Raw Material: Bangor chert

This specimen could almost be classified as a uniface inasmuch as one face is almost entirely composed of weathered cortex. A thick, blocky flake that broke all the way through the preform has been removed from one lateral edge. This probably resulted from a fault in the raw material, because a weathered plane is visible on a portion of the flake scar. The distal half has been reworked with percussion flake removal. There is some slight damage at the distal tip probably resulting from utilization.

Specimen No: 457-14 (Figure 15)
Classification: Preform/tool
Provenience: N102 W101 (190 cm to 200 cm)
Maximum Length: 36 mm
Maximum Width: not measurable
Maximum Thickness: 6.5 mm
Overall Shape: ovoid
Raw Material: Tuscumbia chert

This biface tool has potlid fractures on both faces, and the rough, unpatterned face of the broken edge suggests that it resulted from thermal stress.

Specimen No: 457-18 (Figure 16)
Classification: Preform/tool
Provenience: N102 W101 (190 cm to 200 cm)
Maximum Length: 46 mm
Maximum Width: 20 mm
Maximum Thickness: 8.5 mm
Overall Shape: trianguloid
Raw Material: Tuscumbia chert

One face of this specimen has been thinned by transverse oblique lateral flake removal. The other face has not been thinned; short lateral flakes produce a median ridge. The distal tip shows polishing and smoothing as a result of use.

Specimen No: 472-1 (Figure 16)
Classification: Preform tool
Provenience: N102 W99 (210 cm to 220 cm)
Maximum Length: 46.5 mm
Maximum Width: 23 mm
Maximum Thickness: 7.5 mm
Overall Shape: trianguloid
Raw Material: Bangor chert

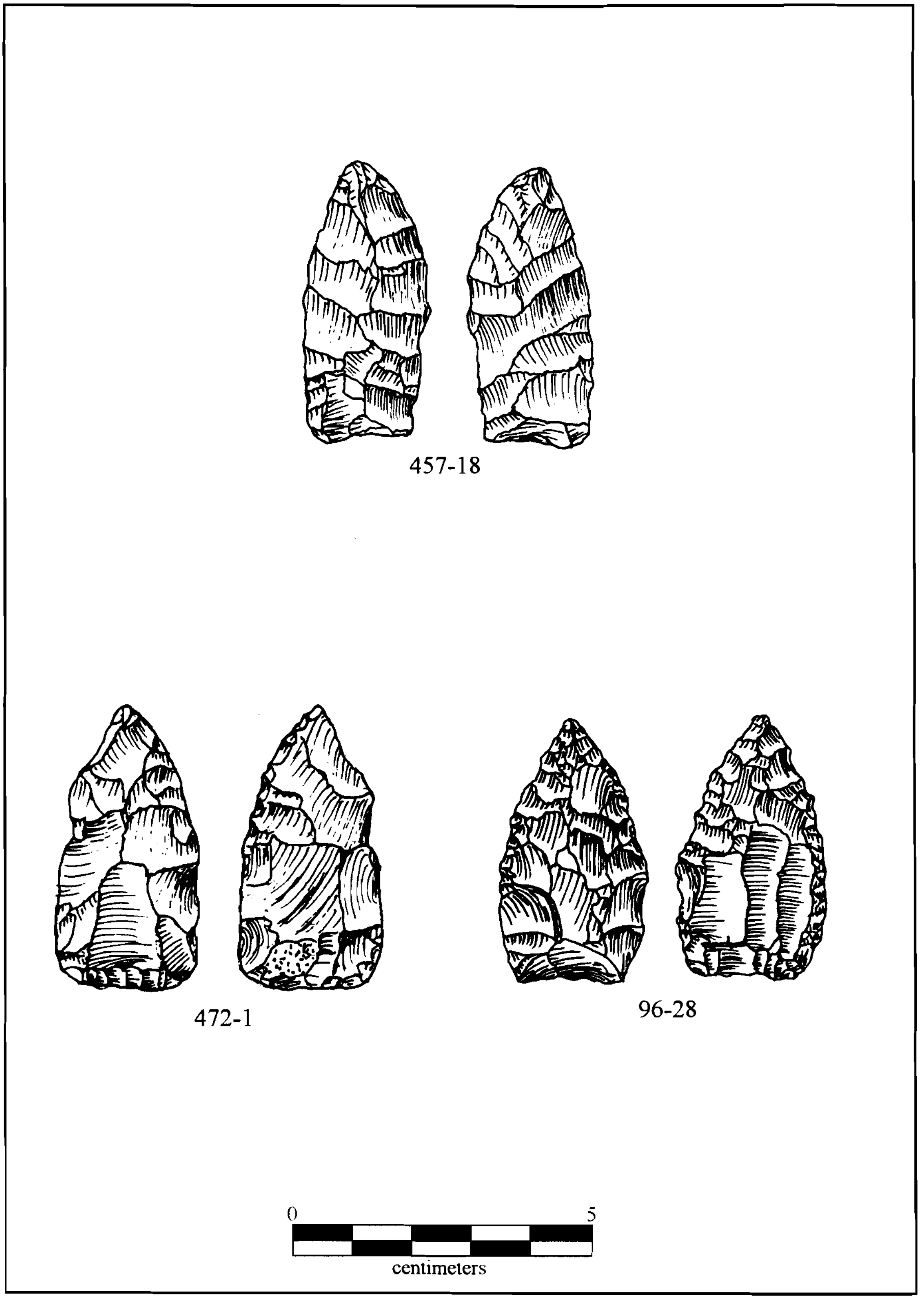


Figure 16. Obverse/Reverse Views of Preforms: 457-18, 472-1, 96-28.

A basal thinning flake was removed from one face of this artifact at an earlier stage in the manufacturing process. After the flake was removed the base was pressure flaked to bevel the base and prepare a platform for thinning the reverse side. The other side was never thinned. One lateral edge exhibits damage resulting from utilization. At the extreme distal end of the artifact, a burin-like flake was removed by accident or by design. Slight retouching of that flake scar took place. The distal tip shows polishing and smoothing from utilization of the acute tip. Both marginal edges show indication that some resharpening has taken place. Light polishing and smoothing is visible on the extreme tip.

Specimen No: 96-28 (Figure 16)
Classification: Preform/tool
Provenience: N102 W103 (200 cm to 210 cm)
Maximum Length: 43.5 mm
Maximum Width: 24 mm
Maximum Thickness: 8.5 mm
Overall Shape: trianguloid
Raw Material: Bangor chert

One face of the artifact was thinned at an earlier manufacturing stage by the removal of three longitudinal flakes struck from the base. Those travelled 20 mm down the face of the artifact before feathering, or hinging out. The reverse face is not thinned. The distal half of the tool has been reworked by bifacial pressure retouch. There is no evidence of use wear on this tool.

UNIFACE TOOLS

Nineteen uniface tools were found between 190 cm to 220 cm. These sort of tools are commonly found on Late Paleoindian to Early Archaic sites.

Specimen No: 467-1 (Figure 17)
Classification: Backed knife/scraper
Provenience: N102 W101 (210 cm to 220 cm)
Maximum Length: 79 mm

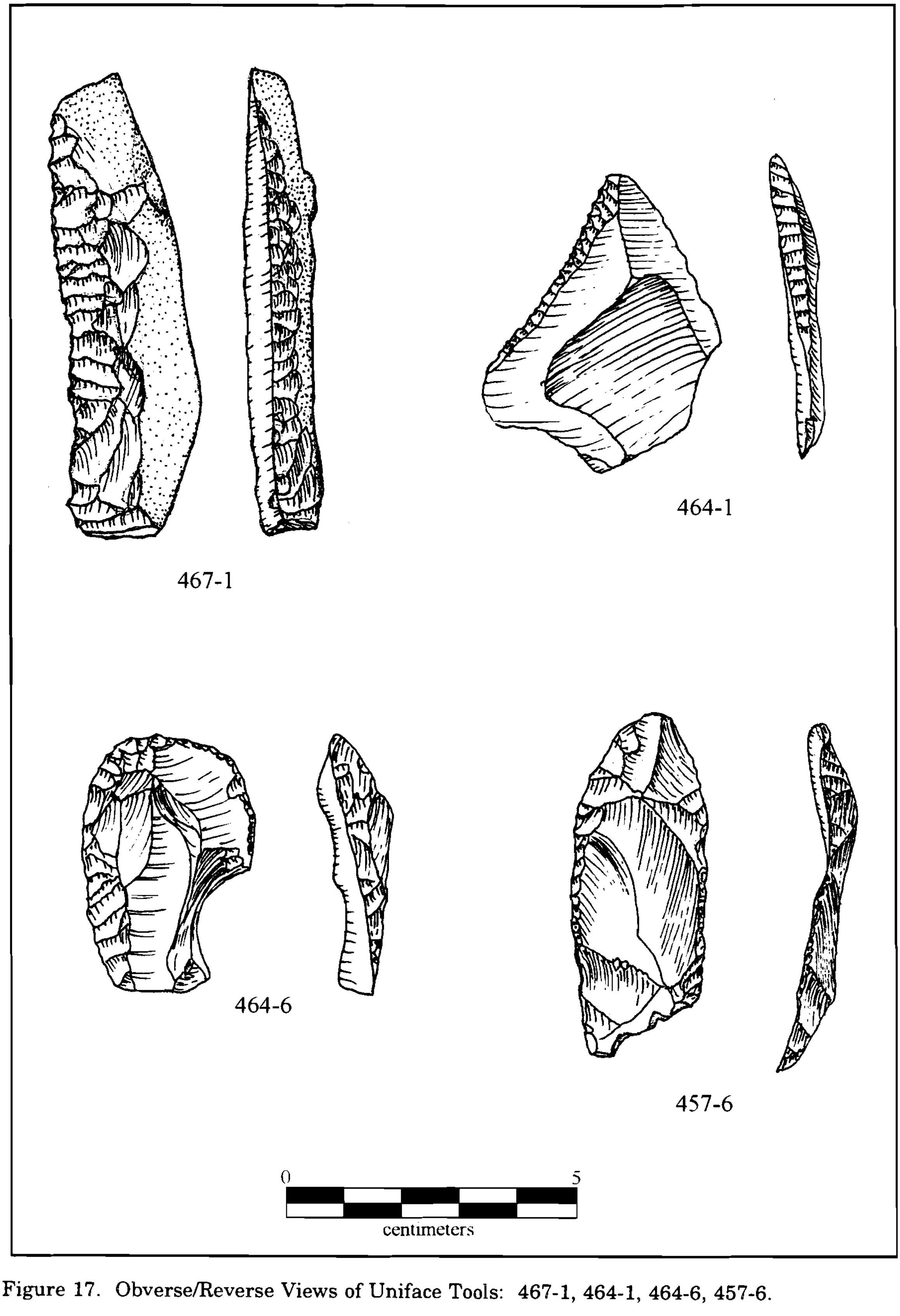


Figure 17. Obverse/Reverse Views of Uniface Tools: 467-1, 464-1, 464-6, 457-6.

Maximum Width: 22 mm
Maximum Thickness: 10 mm
Overall Shape: Blade-like
Raw Material: Tuscumbia chert

This tool is retouched along its long axis. It is not made on a true blade, rather it is made on a flake that apparently occurred fortuitously. There is no evidence of a bulb of percussion nor remnants of a striking platform. The working edge was created along one long axis. That edge is backed by an unmodified, thick section of cortex. The blade-like flake was a cortical segment of a nodule. Slight biface nibbling and polish is visible at irregular intervals along the retouched edge.

Specimen No: 464-1 (Figure 17)
Classification: Pointed side scraper
Provenience: N102 W101 (200 cm to 210 cm)
Maximum Length: 51 mm
Maximum Width: 32 mm
Maximum Thickness: 6 mm
Overall Shape: amorphous
Raw Material: blue/gray Ft. Payne chert

This specimen is retouched along the longest axis of the flake. An opposing, steeply converging edge shows bifacial nibbling and polish.

Specimen No: 464-6 (Figure 17)
Classification: Side scraper
Provenience: N102 W101 (200 cm to 210 cm)
Maximum Length: 43 mm
Maximum Width: 29 mm
Maximum Thickness: 10 mm
Overall Shape: amorphous

This tool is retouched along the left (viewed from the dorsal face) edge of the long axis. There is nibbling and polish around the circumference of the distal end. Although this flake was deliberately flaked to produce a scraping/cutting edge, we believe the tool was manufactured to be used and discarded rather than curated. In that respect we consider it to be of a utilized flake than a formal side scraper.

Specimen No: 457-6 (Figure 17)
Classification: Scraper/graver
Provenience: N102 W101 (190 cm to 200 cm)
Maximum Length: 59 mm
Maximum Width: 22 mm
Maximum Thickness: 6 mm
Overall Shape: blade
Raw Material: Bangor chert

This specimen has a short lateral scraper edge flaked on the left side at one end of the blade, and a graver spur (broken) at the opposite end. As with the above specimen (464-1) this tool is probably not intended to be a curated tool.

Specimen No: 457-11 (Figure 18)
Classification: Oval scraper/knife
Provenience: N102 W101 (190 cm to 200 cm)
Maximum Length: 70 cm
Maximum Width: 32.5 mm
Maximum Thickness: 9 mm
Overall Shape: ovoid/rectangular
Raw Material: blue/gray Ft. Payne chert

This artifact obviously was intended to be curated. It was made of the best stone available in North Alabama. It is worked over the entire dorsal face. There is polishing around almost the entire circumference of the tool.

Specimen No: 457-13 (Figure 18)
Classification: Uniface knife
Provenience: N102 W01 (190 cm to 200 cm)

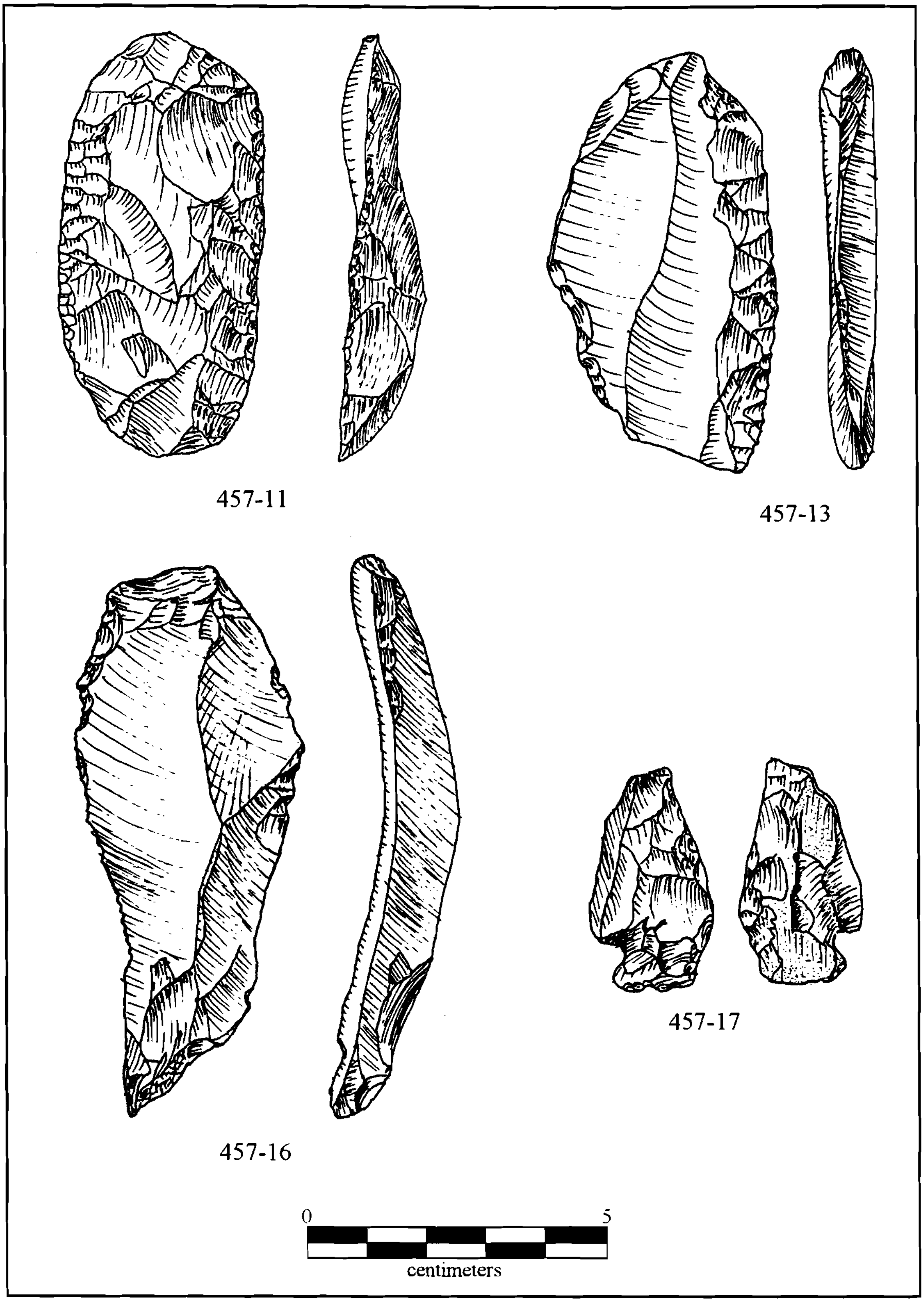


Figure 18. Obverse/Reverse Views of Uniface Tools: 457-11, 457-13, 457-16, 457-17.

Maximum Length: 70 cm
Maximum Width: 34 mm
Maximum Thickness: 9 mm
Overall Shape: blade
Raw Material: blue/gray Ft. Payne chert

This artifact also was intended to be a curated tool. It was manufactured on a large blade which had hinged-out of the core. The tool meets the criteria of a true blade in that there are multiple scars of blade-flake removal on the dorsal face. The major working edge has apparently been freshly retouched, for there is no use-wear along that edge. On the opposing edge a shorter segment of retouch shows considerable smoothing and polish.

Specimen No: 457-16 (Figure 18)
Classification: Modified blade-flake
Provenience: N102 W101 (190 cm to 200 cm)
Maximum Length: 91 mm
Maximum Width: 36 mm
Maximum Thickness: 11 mm
Overall Shape: ovate/pointed, blade-like
Raw Material: Tuscumbia chert (Ft. Payne)

This artifact has not been deliberately shaped. It has no formally prepared working edge. It retains small amounts of cortex on its dorsal face. It has nibbling and edge damage on both lateral edges, and a possible short graver spur on one of those edges. It is made on local chert. It is probably not a curated tool.

Specimen No: 457-17 (Figure 18)
Classification: Notched flake (burinated)
Provenience: N102 W101 (190 cm to 200 cm)
Maximum Length: 37 mm
Maximum Width: 20 mm
Maximum Thickness: 7 mm
Overall Shape: trianguloid/ovoid
Raw Material: Tuscumbia chert (Ft. Payne)

A single flake struck from each face has created a side-notch near the proximal end of the artifact. The base has short flakes removed from the dorsal face. A bifacial edge has been worked along the right edge of the blade. At least two burin spalls have removed the tip of the artifact and the margin which backs, or opposes, the bifacial edge. The reverse face is composed mostly of cortex, and is unmodified except for one flake which produced the notch and the pressure flaking that produced the bifacial edge.

Specimen No: 475-1 (Figure 19)
Classification: Modified flake
Provenience: N102 W99 (220 cm to 230 cm)
Maximum Length: 50.5 mm
Maximum Width: 20 mm
Maximum Thickness: 6 mm
Overall Shape: trianguloid/blade-like
Raw Material: Tuscumbia chert (Ft. Payne)

This utilized flake is not a curated tool. Its utilized lateral edge is backed by a relatively thicker cortical edge. There is no deliberately flaked working edge. There is an irregular arrangement of flakes taken from alternate sides of the flake all along the utilized edge.

Specimen No: 96-16 (Figure 19)
Classification: Uniface scraper/knife
Provenience: N102 W103 (230 cm to 240 cm)
Maximum Length: 46 mm
Maximum Width: 26.5 mm
Maximum Thickness: 11 mm
Overall Shape: Undetermined
Raw Material: Bangor chert

This is a unifacially worked artifact with no sign of utilization or intent. Most (60-70 percent) of the surface of the dorsal side is composed of cortex.

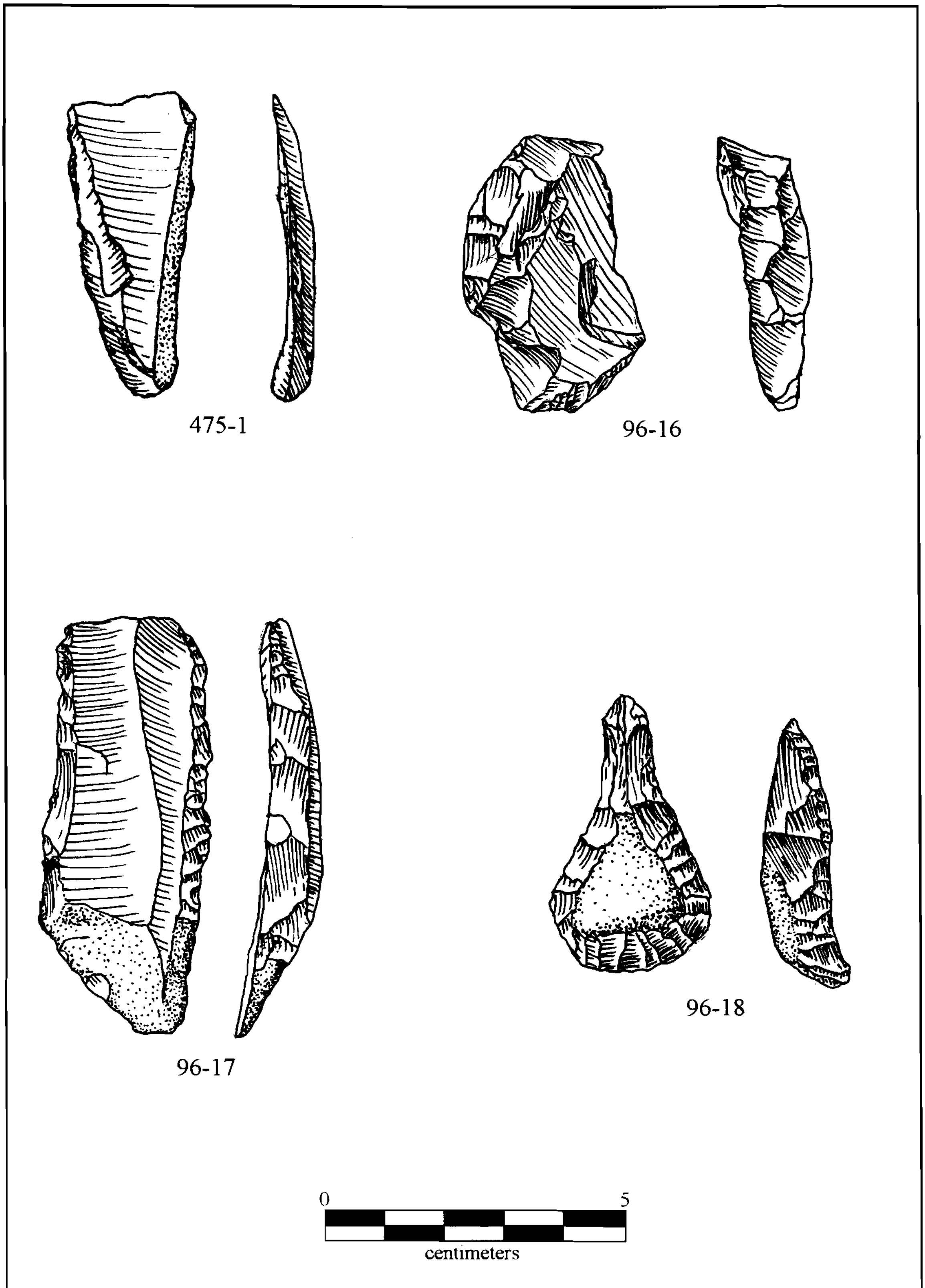


Figure 19. Obverse/Reverse Views of Uniface Tools: 475-1, 96-16, 96-17, 96-18.

Specimen No: 96-17 (Figure 19)
Classification: Uniface knife
Provenience: N102 W103 (230 cm to 240 cm)
Maximum Length: 68.5 mm
Maximum Width: 26 mm
Maximum Thickness: 8 mm
Overall Shape: blade

This artifact has deliberate pressure retouch along both lateral margins. It retains flake scars from the removal of two previous blade flake scars on the dorsal surface.

Specimen No: 96-18 (Figure 19)
Classification: Hafted end scraper
Provenience: N102 W103 (210 cm to 220 cm)
Maximum Length: 35 mm
Maximum Width: 25.5 mm
Maximum Thickness: 11 mm
Overall Shape: tear drop
Raw Material: Tuscumbia chert (Ft. Payne)

The dome on the dorsal crest of this artifact is a remnant of heavily weathered cortex. Relatively long, narrow flakes that shaped the working edge of the scraper extend laterally around both margins of the bit to the point where the artifact is widest. At that point the carefully placed pressure flakes end, and percussion flaking was used to reduce the width of the artifact toward its proximal end. The result was a relatively long, narrow thick uniface shaft with a dorsal crest. The shaft would have been suitable for use as a borer, but there is no sign of use-wear suggesting that. It would also have been suitable for insertion into a socket, and that may have been the means of hafting. The distal edge is sharp and undamaged by use.

Specimen No: 96-30 (Figure 20)
Classification: Modified flake
Provenience: N102 W103 (200 cm to 210 cm)
Maximum Length: 44 mm

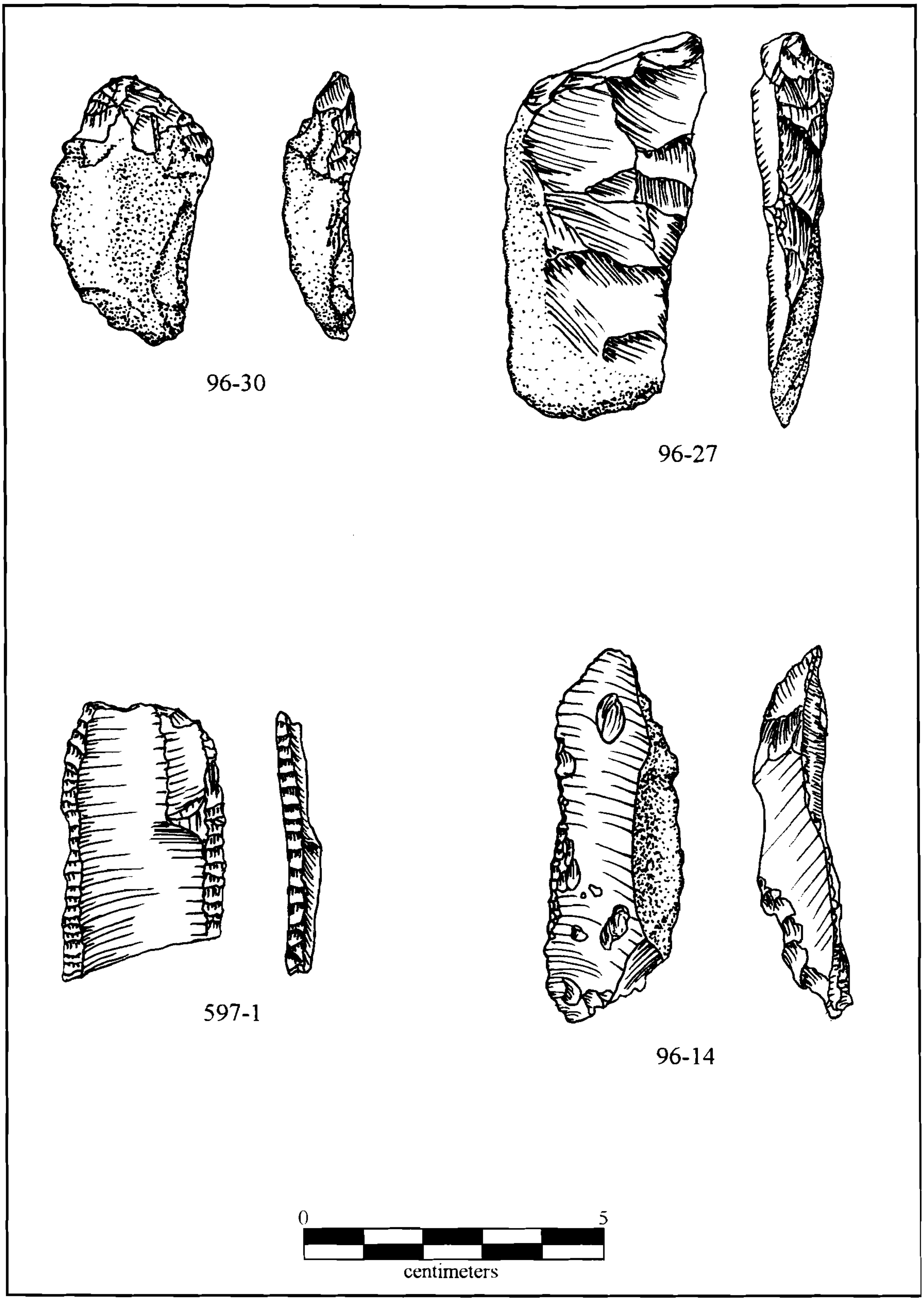


Figure 20. Obverse/Reverse Views of Uniface Tools: 96-30, 96-27, 597-1, 96-14.

Maximum Width: 26 mm
Maximum Thickness: 10 mm
Overall Shape: ovoid
Raw Material: Bangor chert

The dorsal face of this artifact is almost entirely covered with cortex. At the distal end the cortex was chipped away to reveal unweathered stone, and a short scraping/cutting edge was flaked. Some edge damage resulting from use is visible along both lateral edges of the piece.

Specimen No: 96-27 (Figure 20)
Classification: Modified blade/flake
Provenience: N102 W103 (200 cm to 210 cm)
Maximum Length: 66 mm
Maximum Width: 31 mm
Maximum Thickness: 12.5 mm
Overall Shape: blade-like
Raw Material: Bangor chert

This blade-like flake was a core preparation flake. Most of the dorsal face, as well as the end of the blade that was the point of origin, retain much cortex. There was no platform preparation for the removal of the flake. The blow which detached it was struck directly on the weathered and rounded cortex of a cobble. The portion of the dorsal face that is not covered with cortex has flake (blade-like) scars that demonstrate the previous removal of two other core trimming flakes. The lateral edge of the tool that is mostly cortex has a pattern of regular retouch extending almost the entire length. The opposing edge has irregular edge damage scars resulting from utilization.

Specimen No: 597-1 (Figure 20)
Classification: Uniface knife/raclette
Provenience: N102 W103 (210 cm to 220 cm)
Maximum Length: 47 mm
Maximum Width: 27 mm
Maximum Thickness: 4.5 mm

Overall Shape: blade-like
Raw Material: Ft. Payne chert

This artifact has been broken. It was made on a long, thin, parallel sided, blade flake. Both lateral margins are steeply retouched by pressure flaking. The striking platform for the removal of this blade is intact.

Specimen No: 96-14 (Figure 20)
Classification: Backed blade
Provenience: N100 W103 (210 cm to 220 cm)
Maximum Length: 61 mm
Maximum Width: 19.5 mm
Maximum Thickness: 9.5 mm
Overall Shape: blade-like
Raw Material: Tuscumbia chert (heated) (Ft. Payne)

One long edge of the tool is a wide, unmodified band of cortex. The opposing edge has short retouch flakes removed from one face, and irregular flakes removed from the other (apparently by utilization). There are four potlid flake scars on one face and six on the reverse face. The entire artifact has a red color.

Specimen No: 96-13 (Figure 21)
Classification: End scraper
Provenience: N100 W103 (N1/2) (190 cm)
Maximum Length: 35 mm
Maximum Width: 24.5 mm
Maximum Thickness: 9 mm
Overall Shape: teardrop
Raw Material: Bangor chert

This tool has been shaped around all its margins except the extreme proximal end. The striking platform for removal of the original flake remains intact. The thickest part of the tool is at the distal end, and retouch along that end is very steep.

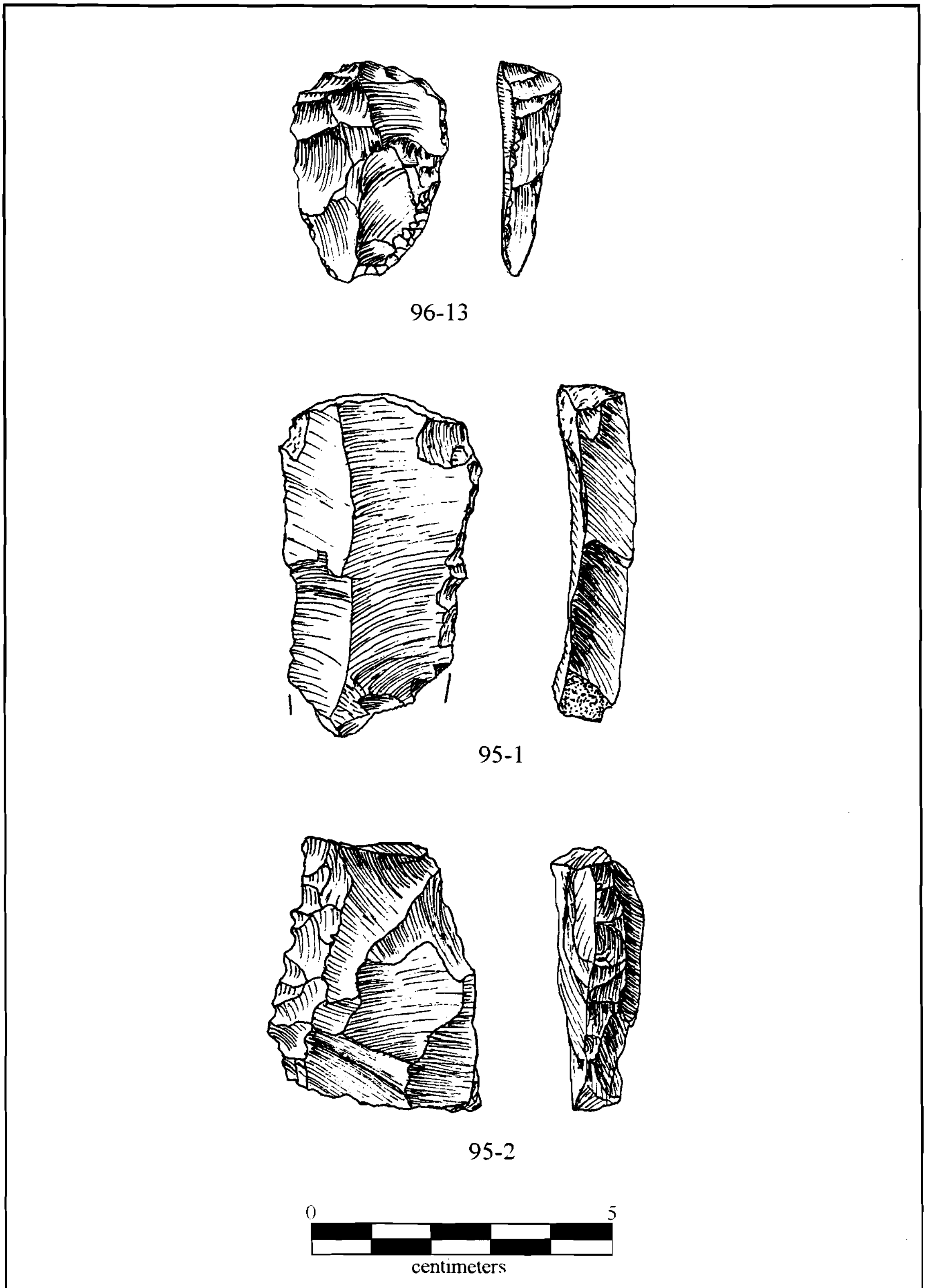


Figure 21. Obverse/Reverse Views of Uniface Tools: 96-13, 95-1, 95-2.

Specimen No: 95-1 (Figure 21)
Classification: Blade tool
Provenience: N80.5 W101.5 (200 cm)
Maximum Length: 57 mm
Maximum Width: 31 mm
Maximum Thickness: 10.5 mm
Overall Shape: blade-like
Raw Material: blue/gray Ft. Payne chert

This artifact is broken on both ends. It is the midsection of a larger blade flake. The dorsal surface retains scars from the removal of two previously removed blades. One lateral margin bears scars of a unifacial edge created by the removal of pressure flakes followed by severe scalar (flakes terminating in step fracture) damage. There are five potlid fractures visible on the ventral face. The rough, irregular, unpatterned faces of the broken end suggest that the breakage at the ends of the piece may be the result of thermal damage. This artifact was found buried in clay deposited by the Tennessee River at the foot of the talus slope.

Specimen No: 95-2 (Figure 21)
Classification: Uniface/denticulate
Provenience: N85 W101.5 (187 cm)
Maximum Length: 52.5 mm
Maximum Width: 33 mm
Maximum Thickness: 13 mm
Overall Shape: amorphous
Raw Material: Bangor chert

This artifact was made on a thin, wedge-shaped flake. The working edge is along one lateral side. The working edge is backed by a thick edge that is composed of cortex. Sharp serrations along the working portion give it the denticulate designation. This artifact was found buried in alluvial clay deposited at the foot of the talus slope.

NONDIAGNOSTIC BIFACES

Six biface (nondiagnostic) tools were found between 190 cm to 230 cm, including one unidentified biface, one biface disc, one drill, and three unidentified projectile point/knife fragments.

Specimen No: 96-20 (Figure 22)
Classification: Biface fragment/unidentifiable
Provenience: N102 W103 (218 cm)
Maximum Length: 45 mm
Maximum Width: 32.5 mm
Maximum Thickness: 8.5 mm
Overall Shape: ovoid
Raw Material: Tuscumbia chert (Ft. Payne)

This piece has a finished face and portions of a biface edge. The reverse face is covered with overlapping potlid fractures, indicating that piece broke from a larger artifact as a result of thermal stress.

Specimen No: 96-7 (Figure 22)
Classification: Biface disc
Provenience: N100 W99 (240 cm)
Maximum Length: 45 mm
Maximum Width: 43 mm
Maximum Thickness: 8 mm
Overall Shape: disc
Raw Material: Bangor chert

This disc-shaped artifact has deliberate flake removal around the entire circumference as well as over both faces. Nibbling and polish are also present around the entire circumference except for one 20 cm segment where the original flake hinged-out. It was discovered in place during profile work.

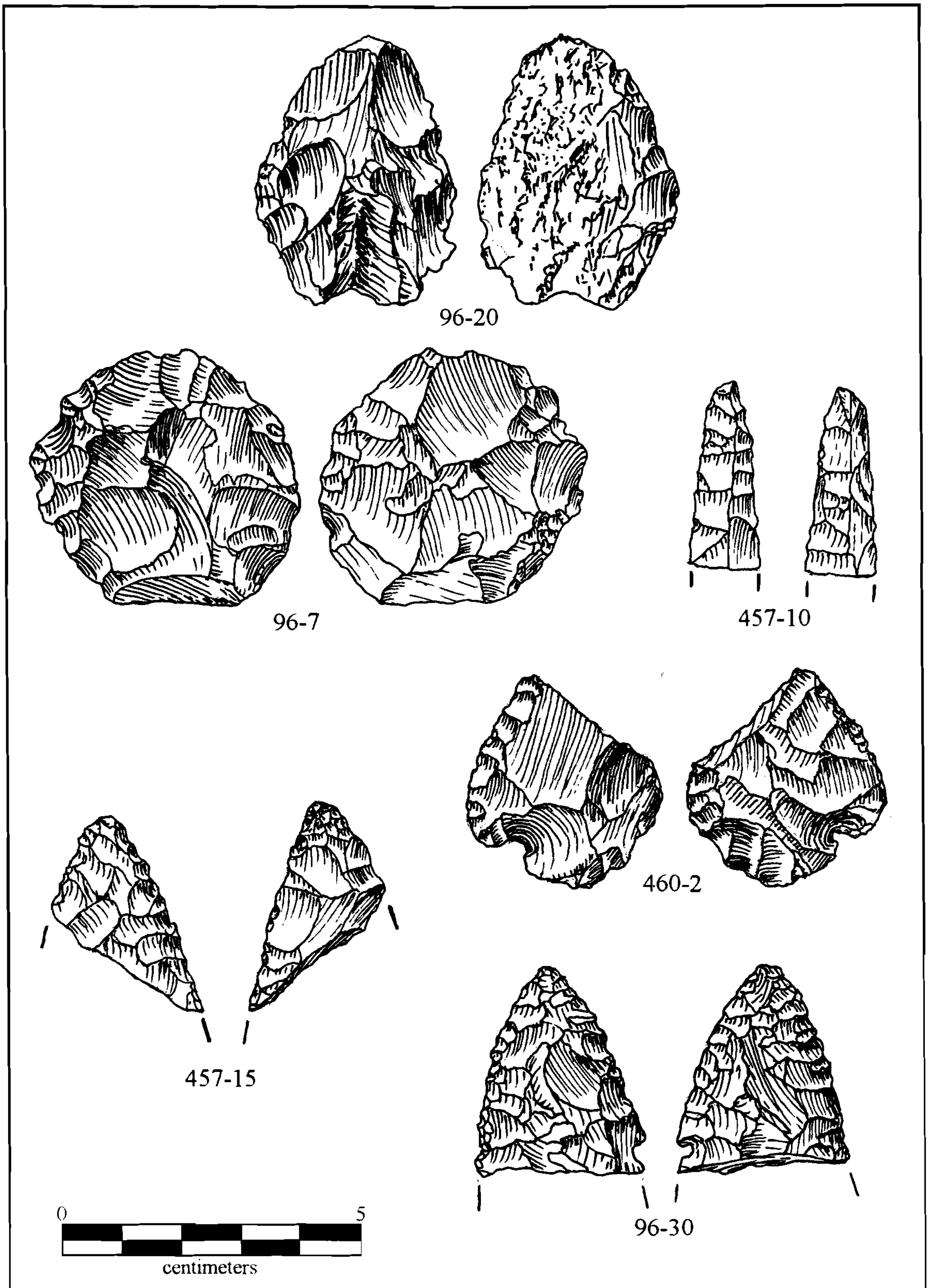


Figure 22. Obverse/Reverse Views of Nondiagnostic Bifaces: 96-20, 96-7, 457-10, 457-15, 460- 2, 96-30.

Specimen No: 457-10 (Figure 22)
Classification: Biface drill fragment
Provenience: N102 W101 (190 cm to 200 cm)
Raw Material: Tuscumbia chert

Light smoothing and polishing is visible irregularly along both margins of the fragment.

Specimen No: 457-15 (Figure 22)
Classification: PP/K (distal fragment), unidentifiable
Provenience: N102 W101 (190 cm to 200 cm)
Raw Material: Tuscumbia chert (Ft. Payne)

Specimen No: 460-2 (Figure 22)
Classification: PP/K, notched (proximal fragment), unidentifiable
Provenience: N102 W99 (200 cm to 210 cm)
Raw Material: unidentifiable

Specimen No: 96-30 (Figure 22)
Classification: PP/K (distal fragment), unidentifiable
Provenience: N102 W101 (200 cm to 210 cm)
Raw Material: Tuscumbia chert

MICROLITHS

Specimen No. 467-1a and 467-1b are so small that it is remarkable that they were recovered. They could have easily passed through the 6 mm mesh of the water screen. Perhaps other specimens did. It is notable that this type of artifact has never been discussed in relationship with Paleoindian or Early Archaic cultures in existing literature. These specimens were examined under a microscope (10x).

Specimen No: 467-1a
Classification: Microlith
Provenience: N102 W101 (210 cm to 220 cm)
Maximum Length: 11.5 mm
Maximum Width: 3 mm (diameter)
Overall Shape: roughly cylindrical
Raw Material: quartz crystal

The shaft of this specimen shows minute flaking, much of which is almost obliterated by smoothing and polish. A drilling or incising function might be suggested.

Specimen No: 467-1b
Classification: Microlith
Provenience: N102 W101 (210 cm to 220 cm)
Maximum Length: 16 mm
Maximum Width: 2.5 mm (diameter)
Overall Shape: cylindrical
Raw Material: quartz crystal

Like Specimen 467-1a, this specimen shows scars from the removal of very tiny flakes as well as smoothing and polishing. This wear may have resulted from use.

Comments on the Lithic Assemblage

It is a kind of archaeological truism that base camps, villages, towns, and other kinds of long-term, frequently visited, or populous human occupations produce archaeological assemblages that are rich and varied in artifactual content. Beartail Rockshelter is not a large site. It measures less than 50 m wide and 100 m long. In all probability, the artifact spread from the site is much less than that. The rockshelter was sporadically occupied by small groups for brief periods of time.

Except for projectile points, relatively few ceramics, an occasional ground stone item, some bone artifacts, and an occasional shell bead, the artifact assemblage at Beartail Rockshelter consists mostly of extemporaneous lithic tools--ones that were made, used and discarded on the site. Biface I and Biface II artifacts occur at a higher frequency than finished bifaces. These two classes are a sort of catch-all category. Some of the specimens may have been used as wedges, and others were probably a quickly made and discarded cutting edge. This sort of assemblage is indicative that Beartail Rockshelter never functioned as a principal habitation for a large group, nor for a particularly long period of time. It was not a dwelling, it was a camp site. A few hundred meters away, along the banks of the Tennessee River, there are large, rich middens that were occupied repeatedly and consistently since at least Middle Archaic times.

The projectile point/knife assemblage, combined with the stratigraphic and radiocarbon evidence, indicates occupation of Beartail Rockshelter beginning around 10,000 years ago. This initial occupation was probably by people making and using Dalton Complex projectile points, Quad, Hardaway/San Patrice, and Beaver Lake. Occupation during the Early Archaic seems to be a little more substantial as evidenced by 18 projectile points, including Kirk Corner Notched, Big Sandy/Early Side Notched, Jude and Pine Tree points. Use of Beartail Rockshelter was most significant during the Middle-Late Archaic times, as suggested by more than 110 projectile points. Major Middle Archaic point types include Benton and Sykes/White Springs points, while Late Archaic point types include mostly Little Bear Creek and Pickwick points. A handful of points, like the Flint Creeks and Cotaco Creeks, could be associated with a Gulf Formational occupation. The Early and/or Middle Woodland is represented by a small but varied point collection, primarily including Greenville cluster and Spike cluster projectile points. Finally, the Late Woodland to Mississippian is strongly manifested in the recovery of over 50 Hamilton and Madison points. The Woodland and Mississippian cultures, however, are better represented by the ceramic assemblage.

Regarding the deepest excavated levels at Beartail Rockshelter, those that represent late Pleistocene/early Holocene occupations, forty-one artifacts were found buried at depths between 190 cm and 220 cm. In the above analysis, thirteen small, triangular to ovoid preforms were analyzed. Ten of those were found in N102 W101 between 190 cm to 210 cm. Nine of the preforms have been reworked or resharpened along the margins of their distal halves. Seven show evidence of smoothing and polishing of the edges at the extreme distal tip. Furthermore, the two microliths that were described were found in the same provenience. The area around N102 W101 may represent a discrete activity area on the site. The tools recovered may have been used to accomplish a single task, or perhaps several very similar tasks. At any rate, whatever took place there seems to have taken place in the context of a single episode of human behavior. Thus, it can be argued that the deepest excavated cultural zone at Beartail Rockshelter is the result of a single, brief occupation during late Pleistocene/early Holocene times.

PREHISTORIC CERAMICS

Catherine C. Meyer

A total of 1758 ceramic sherds was analyzed from the three field seasons. Although the ceramic cultures were not the focus of the research, the pottery assemblage still contains ceramics which cover the range of ceramic occupation for the Tennessee Valley. An overwhelming majority of the ceramics are associated with the Woodland cultural periods (600 B.C. to A.D. 1000). The Mississippian (A.D. 1000 to A.D. 1500) is represented to a lesser extent. A Gulf Formational (1200 B.C. to 600 B.C.?) component is vaguely indicated, as is a Watts Bar (400 B.C. to A.D. 250) component. The following is a brief discussion of the Beartail ceramic assemblage. The pottery typologies utilized here primarily are those defined by Haag (1939, 1942) and Heimlich (1952). While these ceramic types relate directly to the prehistoric chronology of the site, unfortunately, they were contained within an extremely mixed context. A list of the ceramics by type and unit provenience is provided in Table 3.

The overwhelming majority of ceramics are classified as Mulberry Creek Plain. This is a limestone tempered plainware which, in the Wheeler Basin, spans the Woodland times. Two varieties of Mulberry Creek Plain exist and temporally place them within the Woodland. *Variety Mulberry Creek*, distinguished by its smooth or burnished exterior, dates to the Early-Middle Woodland Colbert and Copena cultures throughout the Tennessee Valley. *Variety Hamilton*, distinguished by a roughened surface of smoothing marks that oftentimes are mistaken for brushing (i.e. Flint River Brushed), dates to the Late Woodland Flint River culture, which is localized in the Guntersville Basin to the east and extends into the eastern Wheeler Basin. A total of 1146 Mulberry Creek Plain, *var. Mulberry Creek* sherds represents 65.19 percent of the total ceramic assemblage. Mulberry Creek Plain, *var. Hamilton* totals only 119 specimens, or 6.77 percent of the total ceramic assemblage. The paste of the Mulberry Creek Plain sherds varies to a large extent within the assemblage. Most of the specimens exhibit a typical clumpy paste (with angular limestone tempering) and a soap-like texture. Others had a slightly to very sandy texture. Whether the sand was an additive or an attribute of the parent clay material is unknown. The limestone tempering of several of these specimens is crystalline, making the limestone temper appear gritty.

Table 3. Analyzed Ceramics from the Three Testing Seasons.

CERAMICS	1994 Field Season TU 1	TU 4	TU 5	TU 6	TU 7	1995 Field Season N102 W99	N102 W101	1996 Field Season N102 W103	N100 W103	N100 W101	Total n	%
Shell Tempered												
Plain	1	79	13	17	8	3	20	4	3	12	160	9.10%
Limestone Tempered												
Mulberry Creek Plain, *var. Mulberry Creek*	8	175	136	128	151	73	70	100	198	107	1146	65.19%
Mulberry Creek Plain, *var. Hamilton*	4	13	19	14	1	5	21	8	12	22	119	6.77%
Flint River Cord Marked	4	3	1	5	2	6	11	0	9	3	44	2.50%
Long Branch Fabric Impressed	0	24	1	1	1	4	6	11	19	10	77	4.38%
Wright Check Stamped	4	5	1	2	1	1	4	0	10	1	29	1.65%
Bluff Creek Simple Stamped	0	2	0	0	0	0	2	0	2	0	6	0.34%
Flint River Brushed	0	0	0	1	0	0	0	24	2	0	27	1.54%
Incised (Unclassified)	1	0	0	0	0	0	0	0	0	0	1	0.06%
Punctated	0	0	1	0	0	0	0	2	1	0	4	0.23%
Residual Decoration	1	3	0	4	1	0	3	0	0	0	12	0.68%
Eroded	0	0	0	0	0	2	6	1	21	25	55	3.13%
Grog Tempered												
McKelvey Plain	0	5	2	0	4	1	5	0	0	0	17	0.97%
Residual	0	3	0	0	0	0	0	0	0	0	3	0.17%
Mulberry Creek Cord Marked	0	2	0	0	0	0	0	0	0	0	2	0.11%
Grog-Limestone Tempered												
Plain	0	5	1	1	4	0	3	0	0	0	14	0.80%
Punctated	0	0	0	1	0	0	0	0	0	0	1	0.06%
Grog-Limestone-Shell Tempered Plain	0	1	0	0	0	0	0	0	0	0	1	0.06%
Sand-Limestone Tempered												
Brushed	0	2	0	0	2	0	0	0	0	0	4	0.23%
Fabric Impressed	0	0	0	0	0	0	0	0	0	2	2	0.11%
Sand Tempered												
Plain	0	2	1	1	0	0	1	0	0	0	5	0.28%
Brushed	0	1	0	0	0	0	0	0	0	0	1	0.06%
Alexander Incised, *var. Unspecified*	0	0	0	0	0	0	0	0	1	0	1	0.06%
Alexander Incised, *var. Smithsonia*	0	0	0	0	0	0	0	0	2	0	2	0.11%
Watts Bar Fabric Impressed	0	0	0	0	0	0	0	0	15	1	16	0.91%
Eroded	0	0	0	0	0	0	0	0	6	1	7	0.40%
Fiber Tempered												
Eroded	0	0	0	0	0	0	1	0	0	0	1	0.06%
Incised	0	1	0	0	0	0	0	0	0	0	1	0.06%
Total Ceramics	23	326	176	175	175	95	153	150	301	184	1758	100.00%

While Mulberry Creek Plain can represent cultural components throughout the Woodland period in the Wheeler Basin (excluding the Late Woodland McKelvey culture), it is the presence and percentage of decorated Woodland pottery within a ceramic assemblage that helps to discern what specific components are present. Just over 11 percent (11.38) of the Beartail ceramic assemblage includes decorated limestone tempered pottery. Long Branch Fabric Impressed is most commonly associated with the Early Woodland Colbert I and early Middle Woodland Colbert II, although it can occur (less frequently) during the late Middle Woodland Copena culture. A total of 77 sherds is classified as Long Branch Fabric Impressed, representing 4.38 percent of the Beartail ceramic assemblage. This is the predominant decorated limestone ceramic type for the site. Wright Check Stamped generally is associated with the late Middle Woodland Copena culture. This pottery type is represented by 29 specimens at Beartail Rockshelter, encompassing 1.65 percent of the total ceramic assemblage. Flint River Cord Marked, Flint River Brushed, and Bluff Creek Simple Stamped are all representatives of the Late Woodland Flint River culture. Within the Beartail Rockshelter assemblage, Flint River Cord Marked is the second-most predominate decorated limestone pottery type, totalling 44, or 2.5 percent of the ceramics. Flint River Brushed totals 27 sherds (1.54 percent) and Bluff Creek Simple Stamped totals just 6 sherds (.34 percent), both representing less than two percent of the Beartail pottery assemblage. Another 72 sherds are unclassified limestone tempered sherds: one incised, four punctated, twelve residual decoration, and fifty-five eroded. These cannot be associated with a particular Woodland culture.

There seems to be a small representation of the Late Woodland McKelvey culture at Beartail (A.D. 500 to A.D. 700) as manifested by grog tempered pottery. Within the Tennessee Valley, the McKelvey culture thrives in the Pickwick Basin to the west and extends into the western portion of the Wheeler Basin. A total of 22 grog tempered sherds (1.25 percent) was recovered from the site, including eleven McKelvey Plain and two Mulberry Creek Cord Marked. Three sherds are classified as residual decorated. Some of the McKelvey pottery appears to have small amounts of limestone present, though grog is the predominate tempering agent.

The Mississippian is well-represented at Beartail Rockshelter. This cultural stage is embodied in 160 shell tempered plain ceramics. This represents 9.10 percent of the pottery assemblage. No decorated sherds are present. A few lug handles and one discoidal are present among the Mississippian ceramics. Another specimen is identified as a pottery trowel, a mushroom-shaped tool used to smooth the interior and exterior surfaces of ceramic vessels

(Figure 1). It is large for a trowel, the head having a diameter of 95 mm, and must have been used in the manufacture of very large pots. The presence of this pottery trowel suggests that pottery was being produced at the site during the Mississippian period. It is suspected that the shell tempered sherds are associated with the Mature Mississippian Hobb's Island phase (A.D. 1200 to A.D. 1500).

There is a small Gulf Formational representation at the site. Two fiber tempered sherds are associated with the Middle Gulf Formational Wheeler culture (1200 B.C. to 1000 B.C.). Neither of the sherds is typable, however. One is eroded and the other is incised. The occurrence of incising on fiber tempered pottery is unusual. The incising is well-executed and closely resembles Alexander Incised, a sand tempered pottery type of the Late Gulf Formational Alexander culture (1000 B.C. to 600 B.C.?). Without considering the tempering agent, the decoration would be considered classic Alexander. An Alexander component is suggested by five O'Neal Plain sherds and three Alexander Incised sherds: two *var. Smithsonia* and one *var. Unspecified*. The Gulf Formational ceramics represent a negligible portion (.45 percent) of the ceramic assemblage, but still allude to one of the earliest ceramic cultures of the Tennessee Valley.

Another early ceramic tradition found in the upper Tennessee Valley of eastern Tennessee is present at Beartail Rockshelter. A total of 16 Watts Bar Fabric Impressed sherds was identified within the assemblage. The Watts Bar ceramic tradition is characterized by grit tempered wares and dates to the Early Woodland between 400 B.C. and A.D. 250. This pottery tradition is contemporaneous with the Colbert I culture. Although the Watts Bar culture is localized to the north of here in the upper Tennessee Valley, Watts Bar ceramics have been sparsely reported for the Guntersville Basin (Futato 1977, Solis and Futato 1987) and further south in the Murphrees Valley (Meyer 1996). The presence of the Watts Bar ceramics at Beartail Rockshelter suggests their influence within the Wheeler Basin.

Several sherds with differing tempers are present which cannot definitively be associated with a particular time period. These sherds collectively represent less than two percent of the total ceramic assemblage. Fifteen grog-limestone tempered ceramics are present, ten plain and one punctated. It seems reasonable to tentatively associate these with the Late Woodland, as a cross between the Flint River and McKelvey cultures. One grog-limestone-shell tempered plain ceramic is present and may also be associated with the Late Woodland. Five unclassified coarse tempered/grit ceramics were recovered, one brushed and seven eroded. The brushed sherd may be associated with the Watts Bar pottery tradition. Six sand-limestone tempered sherds are also present, four brushed and two fabric impressed. An association with the Watts Bar culture is also possible, especially considering the contemporaneity of the grit tempered Watts Bar and limestone tempered Colbert wares.

The ceramic assemblage for Beartail relates a long ceramic prehistory; however, the stratigraphic context is extremely jumbled. In viewing the tabulations, there does not seem to be any stratigraphic integrity for the ceramic components. Unfortunately, this seriously lessens the significance of these ceramic deposits.

Nevertheless, sherd frequencies have proven important for inferring the intensity of certain cultural occupations at the site. This, in turn, helps to better understand the ceramic chronology of the Wheeler Basin. The earliest pottery traditions in the Tennessee Valley, the Gulf Formational Wheeler and Alexander cultures, are barely represented (less than one percent) within the pottery assemblage. The most intense occupation of the site seems to have been during the Early-Middle Woodland. A decisive separation of the pottery from the Colbert and Copena cultures is difficult as their plainwares (Mulberry Creek Plain, *var. Mulberry Creek*) are identical and make-up a majority (65 percent) of the assemblage. Definite associations can only be made for the decorated wares. Long Branch Fabric Impressed (Colbert) sherds includes 4.38 percent of the assemblage and Wright Check Stamped (Copena) sherds encompass 1.65 percent of the collection. The absence of Pickwick Complicated Stamped sherds, a common Copena pottery type, within the pottery assemblage is notable. Influences from the Watts Bar pottery culture of eastern Tennessee, which is contemporaneous with the Colbert I, are also vaguely present within the assemblage, and may be the first indications of that intrusive culture into the Wheeler Basin. The site seems to have been regularly occupied during the Late Woodland, primarily by the Flint River culture which is localized to the Guntersville Basin and eastern Wheeler Basin. This culture is manifested in 11.15 percent of the ceramic sherds. The McKelvey culture, which occupies the Pickwick Basin and the western portion of the Wheeler Basin, is only vaguely evinced (1.25 percent) in the pottery assemblage. A significant occupation during the Mississippian, probably during the Hobb's Island phase, is also suggested by 9.10 percent of the pottery collection. In short, the Beartail Rockshelter ceramic assemblage represents the continuum of pottery traditions found in the middle Tennessee Valley, with occupation being most intense by the Woodland Colbert, Copena and Flint River cultures.

MISCELLANEOUS ARTIFACTS

Twenty-five artifacts are included within the miscellaneous category. All of the specimens were retrieved from the disturbed midden context. Artifacts include: three bone awls, fifteen ground/pecked stone, two copper beads, one copper sheet piece, and four modern glass fragments. The bone awls could have been associated with any of the prehistoric occupations. The ground/pecked stone specimens include seven hammerstones, one pitted stone, one gorget fragment, three sandstone bowl fragments (commonly associated with the Gulf Formational), and a grooved limestone axe fragment. Copper is commonly found associated with Middle Woodland Copena burials, but is only weakly offered as a cultural association for the copper items.

CHAPTER V

SPECIAL STUDIES

In anticipation of collecting samples containing a variety of organic materials such as animal bone, shell, and charred plant remains, initial research plans called for special analyses by zooarchaeologists and archaeological botanists. However, the excavations produced very few specimens for such analyses. Several special studies were possible, however. Soil samples were submitted for analysis of preserved fossil pollen in the site. Although fossil pollen was not well enough preserved at the site for any analysis, a brief discussion of our attempt is presented below. This is followed by a section reporting the radiocarbon dates secured for the site. The final and most substantial section of the chapter is a discussion of the geomorphology of the site and its immediate setting by Michael B. Collins and Paul Goldberg.

PALYNOLOGICAL ANALYSIS

During the 1995 season, the western profile of Test Unit 1 at Beartail Rockshelter was cleaned and prepared for the recovery of soil samples. Six samples were collected from various depths in the profile, including one from the deepest part of the pit, and one from the surface of the ground immediately outside the pit. The samples were packaged and mailed to Stephen A. Hall, a palynologist with the Department of Geography, University of Texas at Austin. Hall weighed each sample and processed it with HCI, HF, heavy liquid separation (zinc chloride, sg 1.95), acetolysis (acetic anhydride and sulfuric acid), and safranin O stain. He then prepared slides from each of the six samples. Before processing, a known spike of *Lycopodium* spores was added to each sample. All six of the samples which were processed contained abundant *Lycopodium* spores, indicating that the laboratory techniques were operating smoothly and pollen grains were not being lost or destroyed during processing.

The five samples taken from the lowest levels of the pit contained no preserved pollen. The sixth sample, taken from just outside the test pit, contained small amounts of pine pollen. Due to the small amount of pollen recovered, Hall concluded that a pollen record could not be established from the deposits at Beartail Rockshelter. Accordingly, no additional samples were processed.

RADIOCARBON STUDIES

Thirty samples have been collected from the Beartail Rockshelter for radiocarbon analysis. Eleven of the samples have been assayed and are reported here. The first four samples were soil humate samples collected from test pits in 1994 and submitted to the Radiocarbon Laboratory, The University of Texas at Austin. Five additional samples were collected during the 1995 field season. They were submitted to Beta Analytic, Inc., a Miami-based commercial laboratory. The final two samples were collected during the 1996 field season and were also submitted to Beta Analytic, Inc. This section of the report presents the results of those assays. Following the presentation of the dates will be a discussion of their results and an evaluation of their significance to the research on this project.

1994 Samples

TX-8342
Soil Sample Analysis
Corrected C-14 Age: 7990±70 B.P.

This sample was collected near the top of Zone IV in Test Unit 6, at a depth of 278 cm to 295 cm. It was expected to provide baseline data on the stratigraphy of the talus cone at Beartail Rockshelter. This sample was a soil sample submitted for analysis of the humate fraction.

TX-8343
Soil Sample Analysis
Corrected C-14 Age: 9371±81 B.P.

This sample was collected from near the bottom of Test Unit 6, at a depth of 345 cm to 357 cm.

TX- 8344
Soil Sample Analysis
Corrected C-14 Age: 6480±60 B.P.

This sample was collected from Zone III in Test Unit 6, at a depth of 235 cm to 250 cm. It was a soil sample submitted for analysis of the humate fraction.

TX-8345
Soil Sample Analysis
Corrected C-14 Age: 7955±86 B.P.

This sample was collected from Zone III in Test Unit 5, 235 cm to 242 cm. It was a soil sample submitted for analysis of the humate fraction.

1995 Samples

Five samples were collected during 1995 and were submitted to Beta Analytic, Inc. for AMS dating procedures.

Beta-85153
AMS Analysis (Lawrence Livermore)
Measured C-14 Age: 5650±60 B.P.

This sample was collected from a small portion of carbonized organic material found at a depth of 110 cm to 120 cm in Unit N102 W99. This was the eastern-most of the units excavated beneath the overhanging shelter. The sample was taken from near the bottom of stratigraphic Zone B (Hubbert 1995). It was expected that the sample would date an occupation of the site during Middle Archaic times.

Beta-85154
AMS Analysis (Lawrence Livermore)
Measured C-14 Age: 6760±60 B.P.

This sample was collected from Unit N102 W99. The sample of carbonized material was located near the interface between stratigraphic Zone B and Zone D. Both Early Archaic and Late Paleoindian artifacts had been found in the excavation stratigraphically above this sample. It was expected to date slightly over 10,000 years old.

Beta-85155
AMS Analysis (Lawrence Livermore)
Measured C-14 Age: 6390±60 B.P.

This sample was taken from a depth of 217 cm in Unit N102 W101. It was below the major part of the deepest culture bearing strata at Beartail Rockshelter. It was believed that the age of the sample would approximate the age of the Late Paleoindian component at the site.

Beta-85156
AMS Analysis (Lawrence Livermore)
Measured C-14 Age: 9590±60 B.P.

This sample was a composite of small charcoal fragments removed from the profile of the Lower Talus stratigraphic Trench at a depth of 217 cm to 225 cm, in the north end of the trench. The sample was taken from the top 5 cm to 10 cm of the alluvial deposits, underlying the colluvium. It was believed that the sample would date the onset of colluvial outwash onto the Tennessee River floodplain.

Beta-85157
AMS Analysis (Lawrence Livermore)
Measured C-14 Age: 9960±60 B.P.

This sample was collected from the same soil zone as the sample discussed above, except 35 cm deeper in the zone of alluvium, and from the west profile. It was near the bottom of Unit N83.5 W101.5. The sample consisted of a band of charcoal extending along the bottom of a depression visible in the profile of the deeply buried Tennessee River alluvium. This alluvium contains small amounts of cultural material, including two uniface scrapers.

1996 Samples

Two C-14 samples were acquired during 1996. They were submitted to Beta Analytic, Inc. for AMS (Oxford) analysis.

Beta-105642
AMS Analysis (Oxford)
Measured C-14 Age: 8320±90 B.P.

The sample consisted of scraps of long bone collected between 210 cm to 220 cm below surface in Unit N102 W103. This unit lies along the back wall of the bluff shelter, beneath the overhang. It was believed that the sample would date the deepest and oldest cultural component discovered at the site.

Beta-105643
AMS Analysis (Oxford)
Measured C-14 Age: 9820±60 B.P.

The sample consisted of nuggets (6 cm to 7 cm in diameter) of charred material found lying in a concentrated lump among chipped stone cultural items and a few fragments of long bone. The smooth contours and spheroidal shape of the sample resembled peas or seeds. They were found at a depth of 210 cm to 220 cm in Unit N102 W103. It was believed that the sample would date the deepest cultural component at the site.

DISCUSSION OF RADIOCARBON RESULTS

The first four C-14 dates for Beartail Rockshelter were run on humate samples taken from Test Units 5 and 6. Test Units 4 through 7 were located on the steep talus slope in front of the rockshelter. The slope is covered with a .5 m thick sheath of dark, midden-like soil which contains cultural remains dating from Middle Archaic through Mississippian times (Meeks et al. 1995). Deeper buried soils, where the samples were taken, pre-date Middle Archaic time periods. It is now believed that those dates represent episodic periods of greater and lesser downslope erosion. Until we are able to link the stratigraphy in the talus with that beneath the rockshelter, we must consider these dates to refer to arbitrary stages in the development of the colluvial fan (talus slope) in front of the shelter. Although the soils in this fan contained occasional culturally produced chert flakes, and even more occasional examples of non-diagnostic stone tools, they were basically sterile. Given the present stage of investigation, it is not possible to precisely correlate the ephemeral stratigraphy of the colluvial slope with the stratigraphy of the midden at the top of the slope.

The oldest, and most deeply buried, of the humate samples yielded a date of 9371±81 B.P. (TX-8343). Quad, Hardaway and Dalton projectile points were recovered from within the midden at the top of the slope. These artifact types are believed to be slightly older than that date. It would seem, therefore, that the shelter was experiencing human occupation prior to the time when the talus slope had reached the stage of development indicated by this C-14 date.

It was expected that Beta-85153 would date an occupation of the site during Middle Archaic times. The reported age of the sample is reasonable in that context since it conforms closely with dates for Middle Archaic levels at Dust Cave (Goldman-Finn and Driskell 1994). At Beartail Rockshelter, however, Middle Archaic projectile points were associated in the 110 cm to 120 cm level with McFarland Cluster (Woodland) and Madison (Mississippian) projectile points, as well as Early Woodland ceramics. The sample probably dates a Middle Archaic cultural event. However, it cannot be used to date artifacts found at that level at Beartail Rockshelter. It demonstrates that the midden soils at this location on the site are considerably disturbed from their original place of deposition.

Beta-85154 was collected from near the bottom of the midden soils in Unit N102 W99. It was near the interface between the dark colored midden soils of Zone B and the hard, inorganic, light colored soils of Zone D. Both Early Archaic and Late Paleoindian artifacts had been found above the sample. It was expected to date those early occupations. The 6760±60 B.P. date for the sample is much younger than the known age of those artifacts. It is believed that the sample may have been carbonized from an event that took place at a later time. This emphasizes, again, the mixed nature of the midden soils.

Beta-85155 was collected from a depth of 217 cm in Unit N102 W101. This was associated with the deepest buried cultural component discovered at Beartail. It is believed, however, that the early remains found at the site predate the 6390±60 B.P. age reported for this sample by some 4000 years. It is now believed that the sample was composed of tree root material which had intruded beneath the midden long after the earliest occupations had taken place.

Beta-85156 was taken at depth between 217 cm to 225 cm in the Lower Talus Stratigraphic Trench, near the foot of the slope. The sample was a composite of small charcoal fragments scattered through the upper 10 cm of a zone of alluvial clays deposited by the Tennessee River. Immediately overlying the sample, the alluvium was capped by the more brightly colored, calcitic and sandy soils washed down the talus slope from the mountain side above the site. The reported age of 9590±60 B.P. seems a reasonably acceptable date for the time when colluvial soils began to spread over the floodplain deposits. This would also date the time when the Tennessee River retreated southward toward its modern channel. It should be noted that the alluvial soils beneath the stratigraphic location of the sample contained small amounts of cultural material, including unifacial tools. No culturally diagnostic artifacts were recovered.

Beta-85157 was recovered from near the sample discussed above, but 35 cm deeper in the alluvial zone. It appeared in the profile as a band of charcoal distributed along the bottom of a small, shallow depression. It is possible that the depression may have been a fireplace or hearth, but there was no evidence of firing, nor any discoloration of the clay soils around that portion of the depression which was exposed. The remainder of the depression was not excavated. The uncalibrated age of 9960±60 B.P. is acceptable as a time when the Tennessee River was depositing soils beneath the rockshelter, and when colluvial soils from the talus cone had not yet begun to spread over floodplain deposits in this area of the site.

The 1996 field season was the last year of this project, and we hoped to recover samples which would date the bottom of the midden, and especially the cultural component that is buried almost half a meter below the midden. We were unable to recover samples which would conclusively date the bottom of the midden. The following two samples, however, were stratigraphically associated with the deepest buried component. They were expected to date that component, including the side notched projectile points and uniface tools that underlay the midden.

Beta-105642 was composed of fragments of bone recovered from a depth of 210 cm to 220 cm in Unit N102 W103. The sample is unquestionably associated with the lowest cultural component. A date on the collagen fraction was requested from Beta Analytic, Inc. Unfortunately, when the sample had been examined in the lab, it was determined that the bone did not contain sufficient protein for analysis. Residual organic matter retrieved after elimination of the bone apatite was analyzed. That is the most readily contaminated fraction of a bone sample. The organic fraction may or may not have contained exogenous carbon. Beta-105642 yielded a measured C-14 age of 8320±90 B.P. A cluster of C-14 dates from Dust Cave suggest a range from 9000 to 10,000 years ago (Goldman-Finn and Driskell 1994) for Early Side Notched, or Big Sandy projectile points.

Beta-105643 was removed from the same matrix as was the above sample. One of the bone fragments which produced Beta-105642 was adhering to this sample. The sample was described as an unknown number of small lumps, or nuggets, of charred material. The sample was removed from the ground encased in the soil matrix, and was never entirely visible. The smooth and rounded contours of the lumps suggested some kind of large seed, smaller than an acorn. Beta-105643 yielded a measured radiocarbon age of 9820±60 B.P. This date is consistent with dates for side notched projectile points from Dust Cave (Driskell 1994). Excavators observed nothing about the circumstances of this sample's occurrence which would suggest the possibility of the intrusion of this sample into the place of its discovery from some other location.

GEOMORPHOLOGICAL INVESTIGATIONS

Michael B. Collins and Paul Goldberg

Investigations at Beartail Rockshelter have brought the perspectives of geology and archaeology jointly to bear on specific aspects of the larger archaeological study of the site. Basically, the issue addressed in this section is one of site formation process. This involves questions of the age and source of natural deposits in and near the shelter, what changes have occurred in the size and configuration of the shelter in the past, what environmental conditions have existed around the site over the span of its occupations, and how much the site's deposits have been subjected to natural disturbances since being laid down. There is the evidence that three main geologic processes have impinged on the history of this site--formation and degradation of the limestone overhang, fluvial deposition by waters of the Tennessee River and Indian Creek, and movement of ground water and transported sediments through the karstic passages and cracks in the bedrock above, below, and behind the shelter.

Background

Rockshelters in limestone bedrock have been studied extensively as geologically-dynamic settings for archaeological sites (Laville 1975, 1976; Farrand 1985). The natural fill in rockshelters is often complex and along with debris resulting from human utilization are often found deposits resulting from degradation of the rockshelter roofs and walls. In some cases, the physical characteristics of deposits resulting from the degradation of occupied limestone shelters have been successfully used as evidence for the environmental conditions under which the limestone weathered (Laville 1975, 1976; Laville et al. 1980; Collins 1991). Degradation of limestone overhangs may proceed at rates ranging from extremely slow to relatively fast, geologically speaking. Resultant deposits on the shelter floor may be composed of limestone particles from dust-size to large blocks.

When applied to sites in the Tennessee Valley near Muscle Shoals (Collins 1995; Collins et al. 1994), this approach has proven valuable in understanding the nature of sites in limestone rockshelters and the mouths of karstic caves. It also became apparent in that work that the human use of limestone caves and shelters was affected greatly by the geologic processes of the Tennessee River (Collins et al. 1994; Goldberg and Sherwood 1994). In the vicinity of Coffee Slough, the Tennessee River flows in a comparatively narrow canyon and it has changed its base level dramatically over the last 14,000 years (Collins et al. 1994). Over approximately the same period of time in the vicinity of Beartail Rockshelter, the river has remained at about the same base level, but has become progressively less sinuous (Collins and Goldberg n.d.).

These findings indicate the importance of the local setting for understanding the geologic history of any given site. The findings at Coffee Slough, just 150 km down the Tennessee River, seem not to apply at Beartail Rockshelter.

Setting

Bradford Mountain is a prominent erosional isolate of Mississippian-age limestone (Monteagle formation) capped by sandstone (Hartsville formation). The limestone varies from massive to finely bedded, is fractured and jointed, and in some beds contains quantities of nodular chert. Beartail Rockshelter not only occurs in a more massive part of the section, is 9 m above the valley floor, and has a prominent colluvial cultural debris, but it also contains a considerable amount of limestone blocks, at least some of which derived from degradation of a once-larger overhang.

Near the crest of Bradford Mountain are large exposures of fine-grained sandstone. These exposures are weathering into a loose, sandy soil. Where the sandstone cap has weathered back, it has left a sandy mantle lying on vertically-jointed limestone bedrock. Rainwater transports unconsolidated sand down these joints and ejects it at the base of the limestone face of Bradford Mountain in the vicinity of Beartail Rockshelter. One wet-weather, sand-laden spring flows out of the base of the limestone bluff some 100 m west of the shelter, and another has ejected sand onto the top of the deposits in the east end of the shelter. These currently active features provide an important modern analog to a significant early Holocene deposit of sand in the shelter.

East of the shelter, the valley floor is punctuated by an arcuate series of ridge-and-swale features which are characteristic of this stretch of the valley (Collins and Goldberg n.d.). These ridge-and-swale features occur on the outside of bends in the river, from which it is apparent that the outer ridges are the older and that they are progressively younger toward the river. This relative sequence can be somewhat more precisely dated by the distribution of known-age archaeological occurrences, which indicate that the ridge-and-swale sequence covers the entire Holocene (Collins and Goldberg n.d.). The colluvial slope in front of Beartail Rockshelter is interbedded with fluvial deposits that are apparently part of this Holocene valley fill, but their precise relationship to the ridges and swales farther to the east is not known.

Investigations

Profiles exposed in the archaeological excavation units as well as in backhoe trenches dug specifically for geologic exposure were examined and sampled for geologic information. Seven segments of a north-south profile (Figure 23) provide the basis for the primary interpretation of the geologic history of this locality.

Findings

Seven profiles are briefly described in terms of the major geologic characteristics exposed. Beginning at the south end of this series and moving toward the north, Profile 1 is completely in the flood plain, Profiles 2 and 3 span the interface between the flood plain and the toe of the colluvial slope, Profiles 4 and 5 are entirely in the colluvial slope, and Profiles 6 and 7 are in the shelter. All of these profiles are of the west face of the excavation unit or trench except Profiles 1 and 7; none is a measured section. These depictions are schematic profiles of the geologic units produced to emphasize the relationships among deposits.

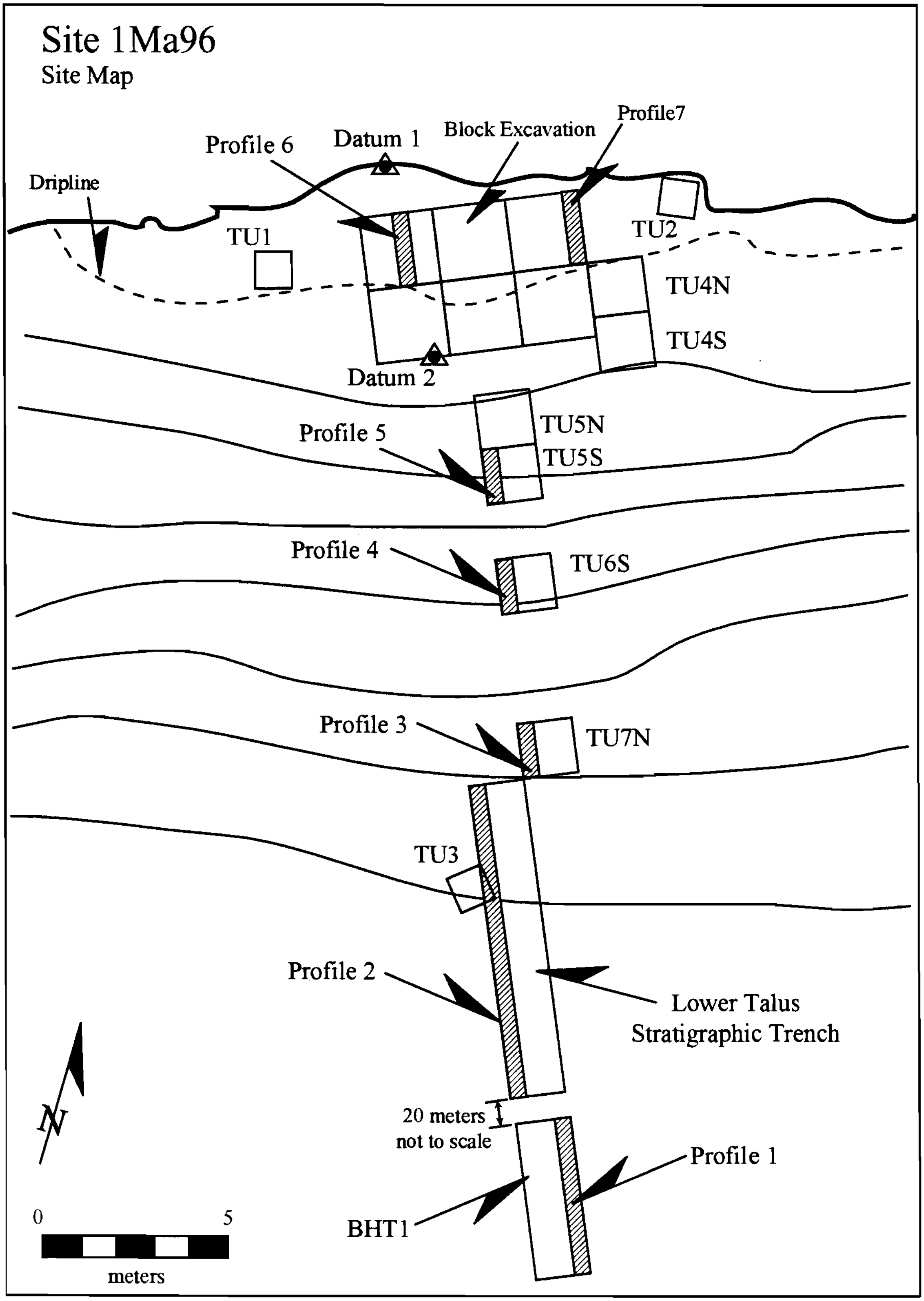


Figure 23. Plan View Showing Locations of Geomorphic Profiles.

Profile 1. The east face of Backhoe Trench 1 (Figure 24) shows no presence of archaeological materials, but reveals two major suites of stream deposits, a lower and an upper. The lower consists of weathered clay loam containing mica. The presence of mica in fluvial deposits in the middle Tennessee Valley is characteristic of the fluvial deposits of the Tennessee River. This is overlain by a similar clay loam lacking mica, the signature of fluvial deposits of a tributary stream, in this case, Indian Creek. Midway in the vertical exposure of the mica-free fluvial deposit is a sloping line of sub-rounded to well-rounded gravel to 4 cm in diameter (mostly 1 cm to 2 cm in diameter). This gravel line slopes down to the south and is clearly traction-load gravel in the bed of a moderate-energy stream. The slope indicates that the stream thalweg was a short distance farther south. A weakly developed soil has formed at the present surface of the upper fluvial deposits.

The sequence here can be interpreted as a valley floor setting dominated earlier by overbank flood deposition of the Tennessee River. This would probably correspond to a time when a high-amplitude meander loop of the river was flowing up against, or relatively close to, the foot of Bradford Mountain and Indian Creek debauched into the river some distance upstream from Beartail Rockshelter. Then, with a shift to a lower amplitude meander, the river no longer swung this far north, and lower Indian Creek replaced the river as the waterway in front of Beartail Rockshelter. Most of the upper deposits revealed in this profile are overbank flood deposits of the creek, but, at one time, the creek cut into these loamy deposits and either its main channel or the channel of a flood shoot was situated here. Radiocarbon dating will help in determining when the shift occurred from Tennessee River to Indian Creek drainage of the locality.

The present surface has been stable long enough for a soil to have formed. However, the soil does not appear to have been in place very long.

Profile 2. One of the most informative exposures available at this site is that on the west face of the lower talus trench (Figure 25). This spans the area where valley-fill deposits are interdigitated with colluvial slope deposits. The relationships seen in this profile provide valuable clues to the geologic history of this locality and help explain some of the characteristics of both the valley fill and the colluvial slope deposits. There are sparse archaeological vestiges in the profiles of this trench. The three main suites seen in this profile are a lower fluvial deposit, an upper fluvial deposit, and a colluvial deposit. The lower fluvial unit is a reddish tan loam that contains mica and is inferred to have originated as overbank flood

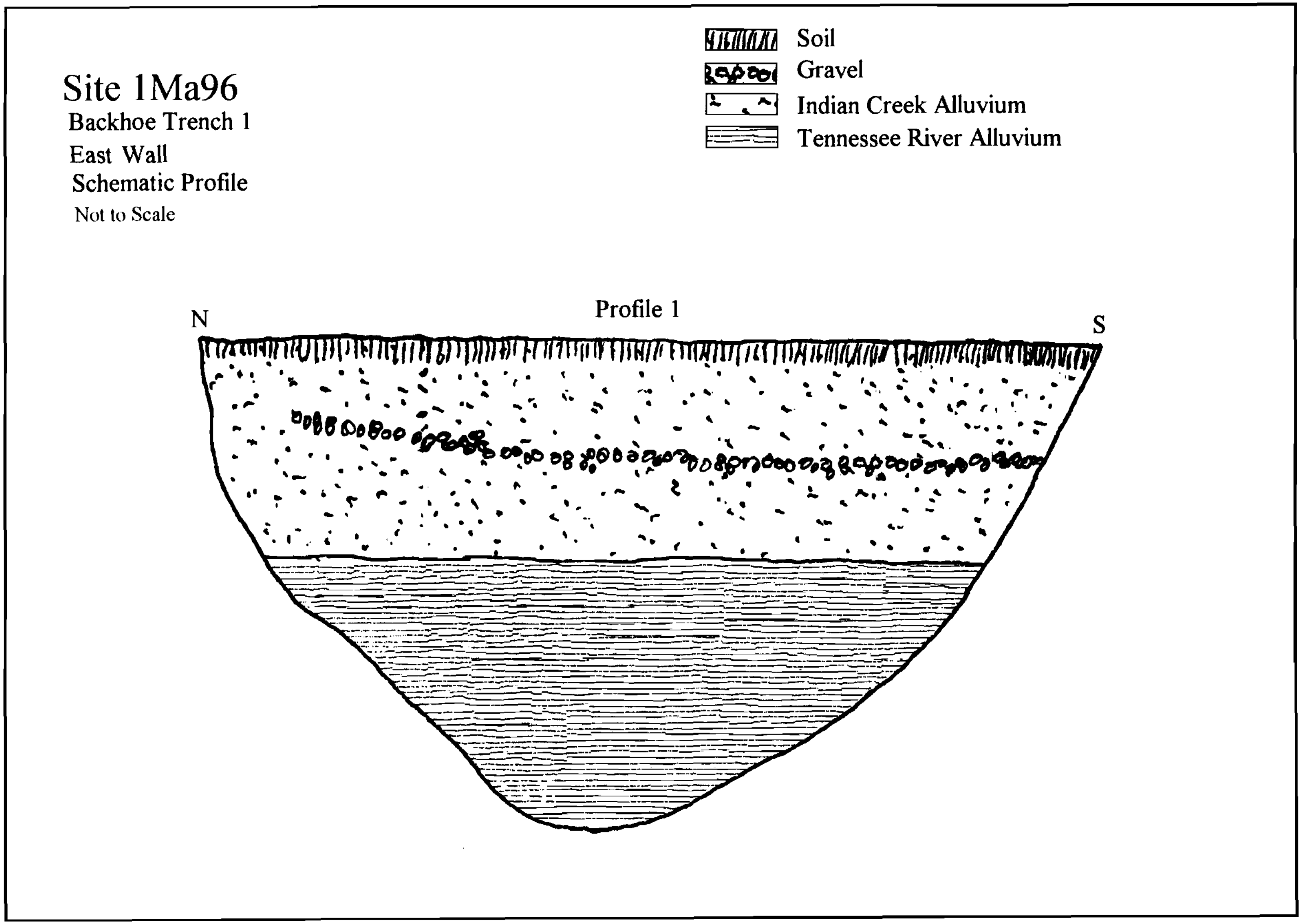


Figure 24. East Profile of Backhoe Trench 1.

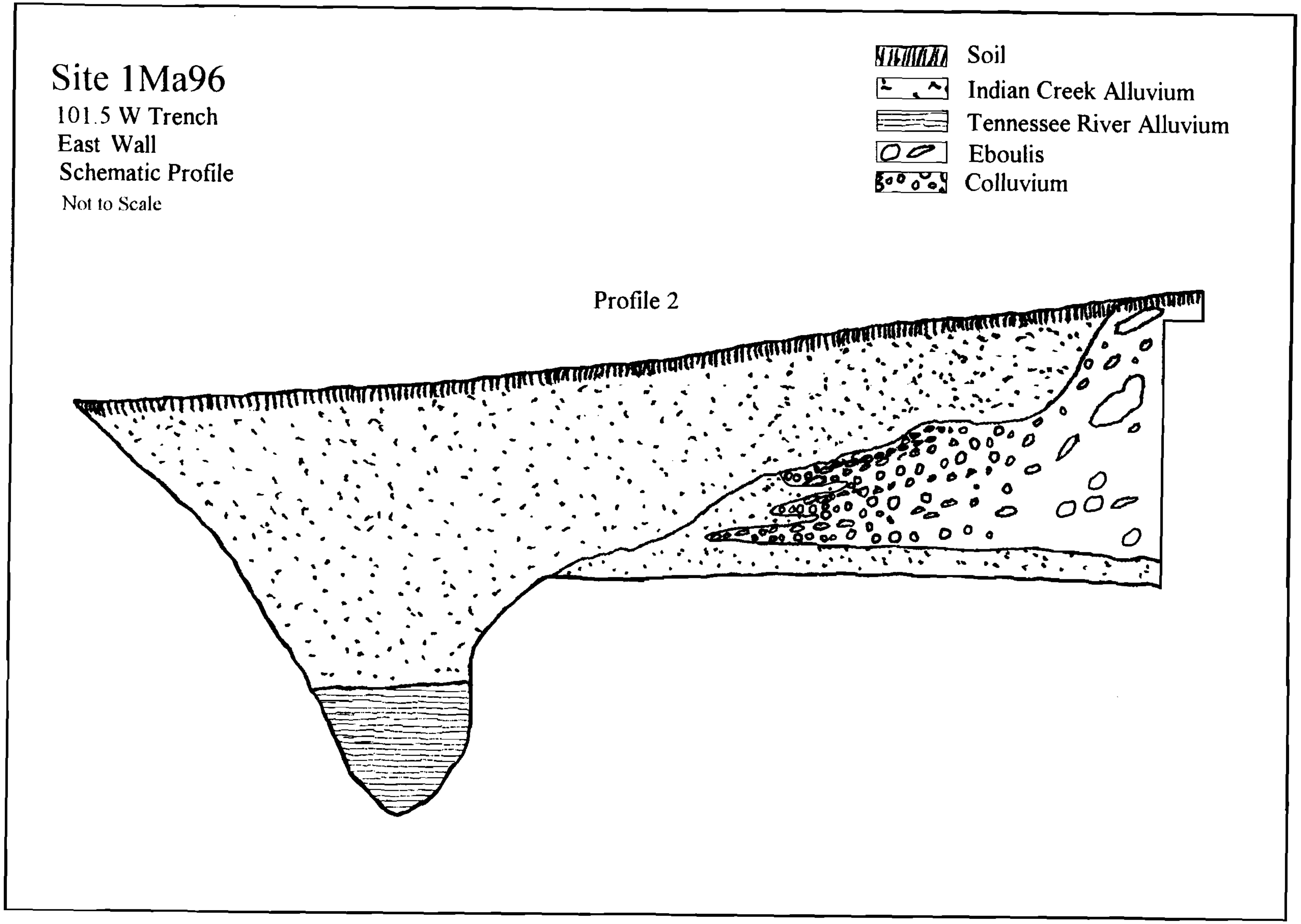


Figure 25. West Profile of N101.5 Trench.

deposition of the Tennessee River. This is overlain by similar deposits lacking mica, inferred to be overbank flood deposits of Indian Creek. Roughly in their mid-point, the latter interfinger with the lower toe of the colluvial slope. The upper portion of the upper fluvial unit is darker red in color and unconformably overlies the lower extent of the colluvial slope.

A soil has formed at the present surface of both the fluvial and the colluvial deposits. It is not a well-developed soil and does not represent an extended period of surface stability, which is consistent with the late Holocene age of the upper part of the colluvial deposits based on archaeological content.

It is inferred that Tennessee River alluvium was deposited here first, followed by Indian Creek alluvium. Early in the deposition of Indian Creek alluvium, the toe of the colluvial slope began to develop onto the surface of Indian Creek alluvium and was occasionally buried by flood deposits of the creek, resulting in the interfingering seen in the most distal toe slope. This was followed by rapid burial of the lower colluvial slope by Indian Creek alluvium.

Profile 3. In the west face of Test Unit 7 are exposed three suites of deposits (Figure 26). The lowest is densely packed limestone rubble and blocks derived either from degradation of the shelter overhang or from retreat of the limestone bluff above the shelter. In either case, this is not in-place bedrock, as shown by the various orientations of the individual blocks. Overlying this is a deposit of rocky, gritty clay loam colluvium. Some of the grit occurs in lines dipping slightly to the south. An unconformity is visible at the top of the colluvium. The upper suite is visible at the top of the colluvium. The upper suite is reddish clay loam of fluvial (creek) origin. There is one grit line in this deposit and it is overlain by a soil and moderately dense midden debris.

This sequence is one where colluvial slope deposition grades upward from coarse to fine material. This graduation indicates an earlier time of either more rapid degradation of the limestone at the source of the material, or a higher energy environment at the point of deposition followed by either a slowing of bedrock degradation or a reduction in the energy level at the place of deposition. At the present, neither of these alternatives is favored. It is important to note, however, that the upper surface of the coarse blocks at the bottom of the profile and the two grit lines in the colluvium dip at a much lower angle than either the top of the colluvium or the present surface. The more steeply sloping upper surface of colluvium

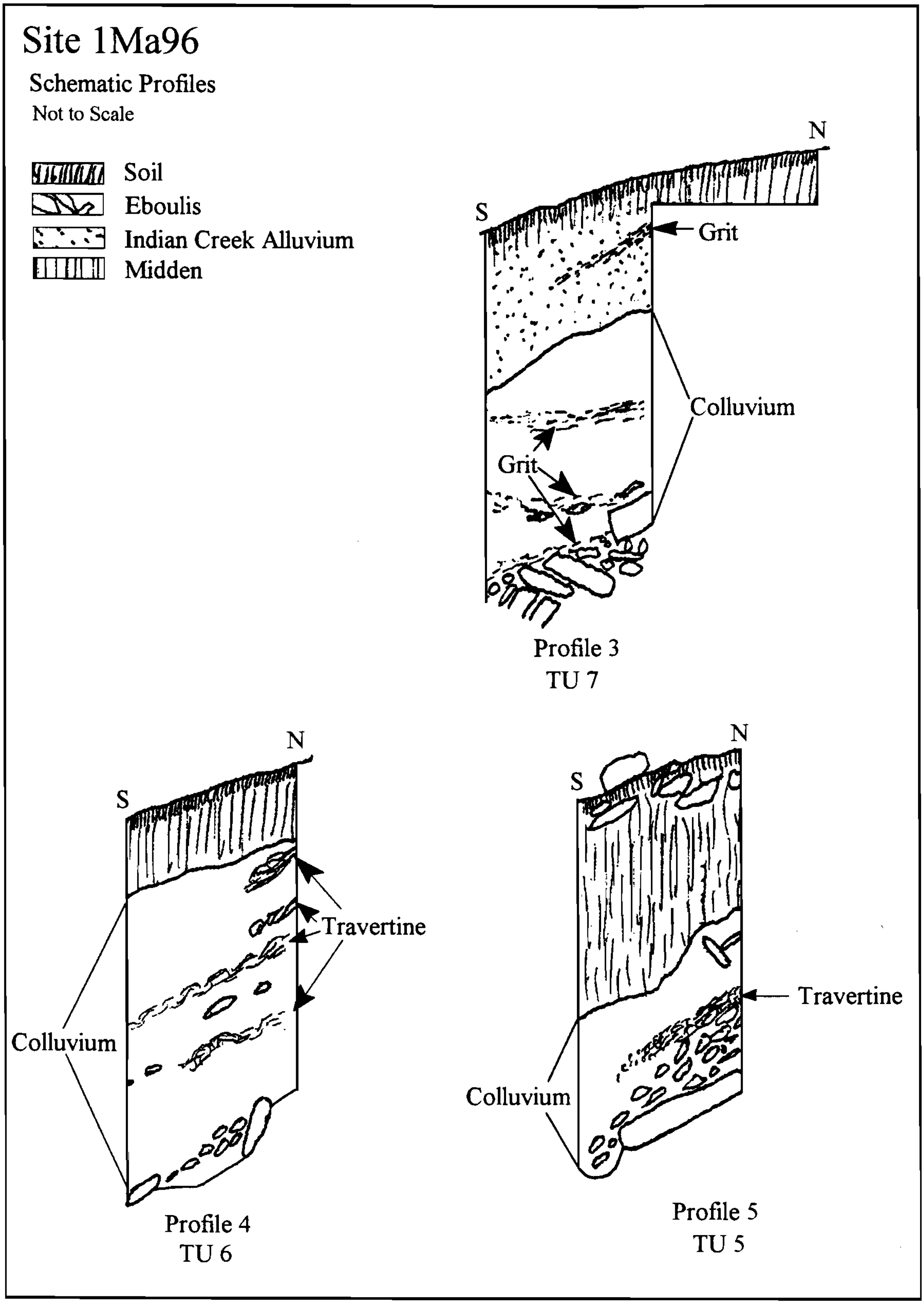


Figure 26. Schematic Drawings of Profiles in Test Units 5, 6, and 7.

indicates a time when the colluvial slope was steeper than it had been earlier. Preliminarily this is interpreted to mean that the lower slope has prograded southward during the span of time represented by this profile. Overbank flood deposits reaching sufficiently high elevations to cover the toe of the colluvial slope are represented by the upper suite of deposits in Test Unit 7. This material is derived from Indian Creek, as indicated by the absence of mica. A steeply dipping grit line within the upper portion of the flood deposit indicates an interval colluvial movement onto a sloping (and now buried) surface of alluvium. The capping soil and midden material indicate a fairly recent age for the present surface.

Profile 4. Profile 4, the west face of Test Unit 6, is of deposits entirely colluvial and anthropogenic in origin (Figure 26). At the base of the exposure is a layer of limestone rubble. This is overlain by loamy, gritty colluvium, capped in turn by the top soil and midden debris. Within the colluvium are four stringers of travertine, extending partly to completely across the profile. These are interpreted to have resulted from ground water precipitation of calcium carbonate either on top of, or more likely, within the colluvium. Two radiocarbon samples processed from this exposure place the upper part of the colluvium within the middle Holocene. These deposits indicate that during the early to middle Holocene a fairly steep colluvial slope was actively degrading at this point and that carbonate-laden ground water was precipitating travertine either at the top of the deposit or within it.

Profile 5. The profile of the west face of Test Unit 5 exposes two suites of deposits (Figure 26). The lower is colluvium and the upper is anthropogenic. The base of the colluvium is composed of limestone rubble and blocks, indicative of bluff line or rockshelter degradation. The remainder of the colluvium is clayey and is cut by a single zone of precipitated carbonate. The contact at the top of the colluvium appears to be unconformable. The overlying deposit is of midden capped by small limestone blocks derived either from shelter roof or bluff face degradation. The same processes inferred for Profile 4 apply here.

Profiles 6 and 7. The west face of N102 W101 (main block excavation in the shelter) reveals a complex history of changing environments of deposition (Profile 6, Figure 27). A small portion of the floor of the excavation is bedrock. This is covered with a yellow zone of sand and grit with small to large roof blocks. Through the center of this is a manganese-rich line of calcium carbonate precipitate. Just beneath the precipitate was found an artifact assemblage that appears to be of late Paleoindian derivation. Near the top of the sand and toward the front of the shelter is a wedge of angular *eboulis*. Overlying this is a dark, ashy, silty, rocky midden.

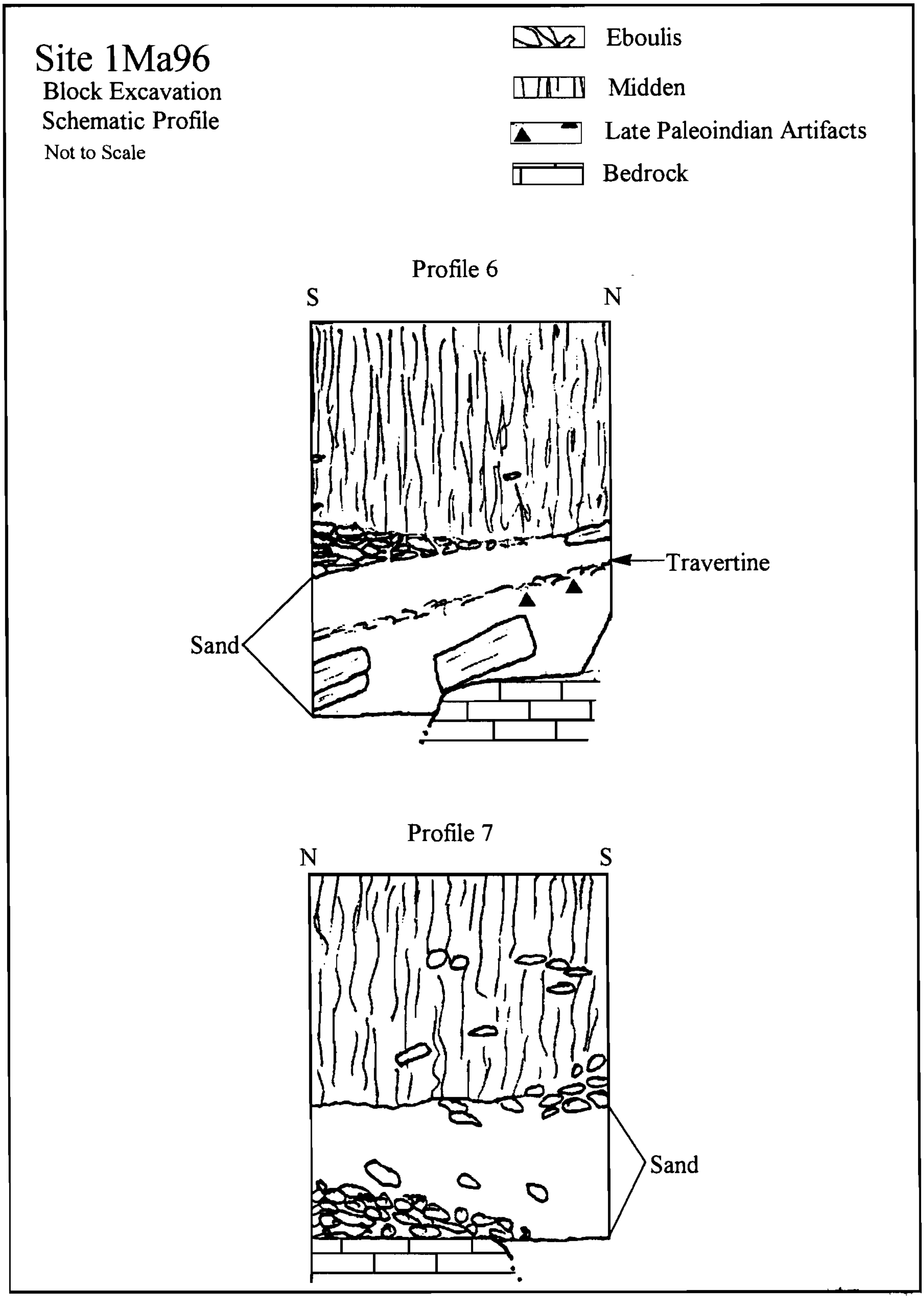


Figure 27. Schematic Drawings of East and West Profiles in Shelter Block Excavations.

A very similar exposure in the east face of the same excavation block is designated as Profile 7 (Figure 27). Directly on bedrock at that profile is another wedge of *eboulis* originating from the back of the shelter. This *eboulis* cone is lower in the profile, and, therefore, older than the one at the west end of the excavation block. The same yellow sand deposit is prominent in Profile 7, bounded at the top by an unconformity and another smaller wedge of *eboulis*. Overlying this is the midden deposit with a sparse content of small limestone blocks.

The depositional sequence revealed in the exposures of the main excavation block is inferred to begin with development of an *eboulis* cone on bedrock and centered near the back of the shelter. Either concurrently or subsequently, a spring emanating from the back of the shelter deposited a quantity of sand in the floor of the shelter. It was during the accumulation of that sand that the earliest known human use of the shelter occurred, probably sometime near 10,000 years ago. Subsequently, another *eboulis* cone developed, this one near the front of the shelter either from collapse of the lip of the shelter or from rocks breaking off of the bluff face above the shelter entrance. The prominent midden in the shelter was formed on top of this sand and *eboulis* deposit, with evidence that some roof degradation continued during the site's occupation.

Note on observations of T.U. 4. Near the end of the excavation of Test Unit 4 in front of the shelter, voids were encountered in the deposits beneath the excavation. The sound of moving water could be heard in the deeper of these voids. This suggests that water passes through bedrock beneath the floor of the shelter and flows through the matrix making up the colluvial slope. Evidently, this flowing water is removing the fines and leaving an open matrix of larger limestone clasts. The extent of this process is unknown, but wherever this is occurring, considerable loss of original deposits will result. This and considerable down-slope movement have resulted in disturbances and some loss of integrity in the slope deposits.

Conclusions

The sequence as a whole is characterized by two basic types of materials, alluvium and slope-derived sediments (colluvium). The alluvium is best exposed in the backhoe trenches dug near the toe of the talus and into the floodplain. Observed there are micaceous silts representing Tennessee River alluvium at the base overlain by over 2 m of massive, non-micaceous silts deposited by Indian Creek. Built out and over these alluvial beds are thick, poorly-sorted, slope-derived accumulations of predominantly reddish clayey sands and clays that locally exhibit large pieces of angular limestone rockfall derived from the bluff face to the north; terrestrial and aquatic snails, which are generally well-preserved; calcareous domains which are locally concentrated as lenses of dripstone; and occasional animal borrows.

This "colluvial facies" thickens to the north, in the direction of the bluff face. Here, in the block excavation partially cemented yellow clayey sand with large, decimeter-size platy pieces of roof fall are found at the base of the trench (145 cm to 210 cm) overlain by markedly anthropogenically modified ashy sediments. These sediments are comprised of massive gray, loose silty sand and sandy silty ash, with isolated angular blocks of rockfall about 20 cm in diameter. Many roots and charcoal pieces are contained in this unit which becomes siltier upward, probably reflecting the inputs of loessial soils and sediments that occur on the slopes above the shelter. These sediments, like many ashy sediments observed elsewhere throughout the world, appear to have been extensively bioturbated.

The lowest sediments derive from Tennessee River flooding with the river near the front of the shelter but migrating southward near the end of the Pleistocene. As the river migrated southward, the mouth of Indian Creek migrated southwestward (i.e., downstream) and Indian Creek began to flow across the former Tennessee River floodplain in front of the site. As such, it deposited its own alluvium over the local floodplain. Being a smaller stream, the volume of Indian Creek alluvium was smaller than its predecessor, and alluvial deposition did not keep pace with deposition of slope-derived colluvial components (limestone spalls from the bluff line and sand from the uplands). With time, these colluvial components built out and over previously deposited alluvia.

When integrated into a synoptic and schematic profile (Figure 28), the several exposures just described depict the major events in the history of formation of this site. Only in the shelter where bedrock has been exposed is the base of the Quaternary section established. In the shelter, on bedrock is seen a deposit of *eboulis* which resulted from rapid degradation of the shelter roof, perhaps under cooler, moister conditions of the late Pleistocene. This was followed by a time when karstic flow brought a large deposit of sand into the shelter and when large roof blocks detached and fell to the shelter floor. Humans briefly used the shelter at this time. A later debris cone developed near the front of the shelter and extended some distance down slope.

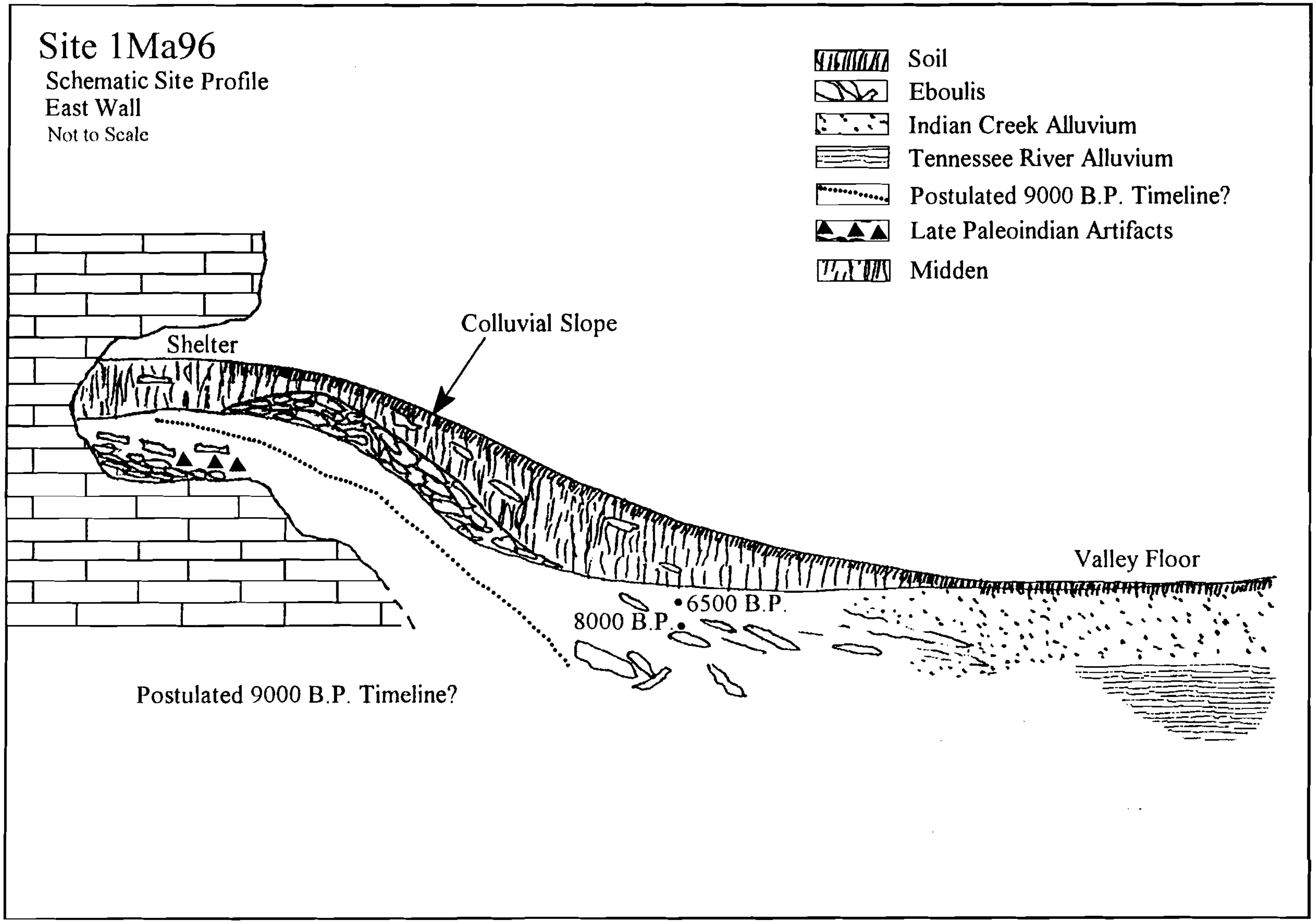


Figure 28. Speculative Model of Deposition and Degradation at Beartail Rockshelter.

Considerable growth of the colluvial slope is indicated during the Holocene. Excavation has not yet exposed the base of this material, so it is not known when it began nor the nature of its earlier formation. Limestone blocks periodically became part of the colluvial slope deposits, although their precise origin is not known. Two dates place the upper part of the colluvium at mid-slope as accumulating between ca. 8000 B.P. and 6500 B.P. The toe of the colluvial slope interfingers with an upper fluvial deposit inferred to have resulted from overbank flooding of Indian Creek. Deeper in the valley floor section is Tennessee River alluvium. No exposure shows a direct relationship between the colluvium and the Tennessee River sediments, however, it might be speculated that the river once scoured to the base of Bradford Mountain at this point and that no development of the colluvial slope could begin until the river's course had shifted farther away.

In organizing these relatively diverse observations, a time line of approximately 9000 B.P. has been interpolated for the shelter and upslope part of the colluvium. The steepness of this line indicates that a considerable amount of colluvium of culturally relevant age may be present in front of Beartail Rockshelter. It is not known if significantly different cultural deposits could be expected in the alluvium, but it seems unlikely.

CHAPTER VI

STRATIGRAPHY AND CHRONOLOGY

The Beartail Rockshelter site is a deeply stratified accumulation of debris (rocks and soil-sized particles) that resulted from thousands of years of degradation of the adjacent and overhanging bluff and colluviation of soil materials from the plateau above the bluff. The following sections describe the nature of observed strata in each of four areas of the site: the shelter block excavation, the talus slope, the lower talus stratigraphic trench, and the floodplain trenches. Using data on strata and chronological indicators, the final section presents an overview of the stratigraphy.

THE SHELTER BLOCK EXCAVATION

Five 2 m by 2 m blocks were excavated beneath the overhang of the rockshelter. Units N102 W99, N102 W101, and N102 W103 were aligned from east to west along the back wall of the sheltered area. Units N100 W101 and N100 W103 were further south, toward the front of the shelter, and below the modern dripline of the overhang.

As a result of the excavation of N102 W99, N102 W101, and N102 W103, the following observations were made (Figure 29):

> Zone A was a loose, dark brown/grayish (7.5YR 3/2) organic silt which contained numerous rodent burrows. At a depth of 45 cm to 65 cm in the zone was a lense of very small limestone spalls, testifying to degradation of the shelter walls. The spall layer covered the entire unit.
>
> Zone B was recognized at a depth of 80 cm. The zone was subsequently divided into BI, an upper unit, and BII, a lower unit. Zone BI was slightly more sandy than Zone A. It had a slightly more compact texture, and was slightly lighter in color (10YR 2/2). It contained abundant charcoal, charcoal flecking, and univalve and bivalve shells. Zone BII extends from 95 cm to the top of Zone D. This zone is a dark grayish brown (10YR 4/2) silt containing some clay and sand. Moderate amounts of rock from the overhanging bluff are scattered throughout Zone BII.

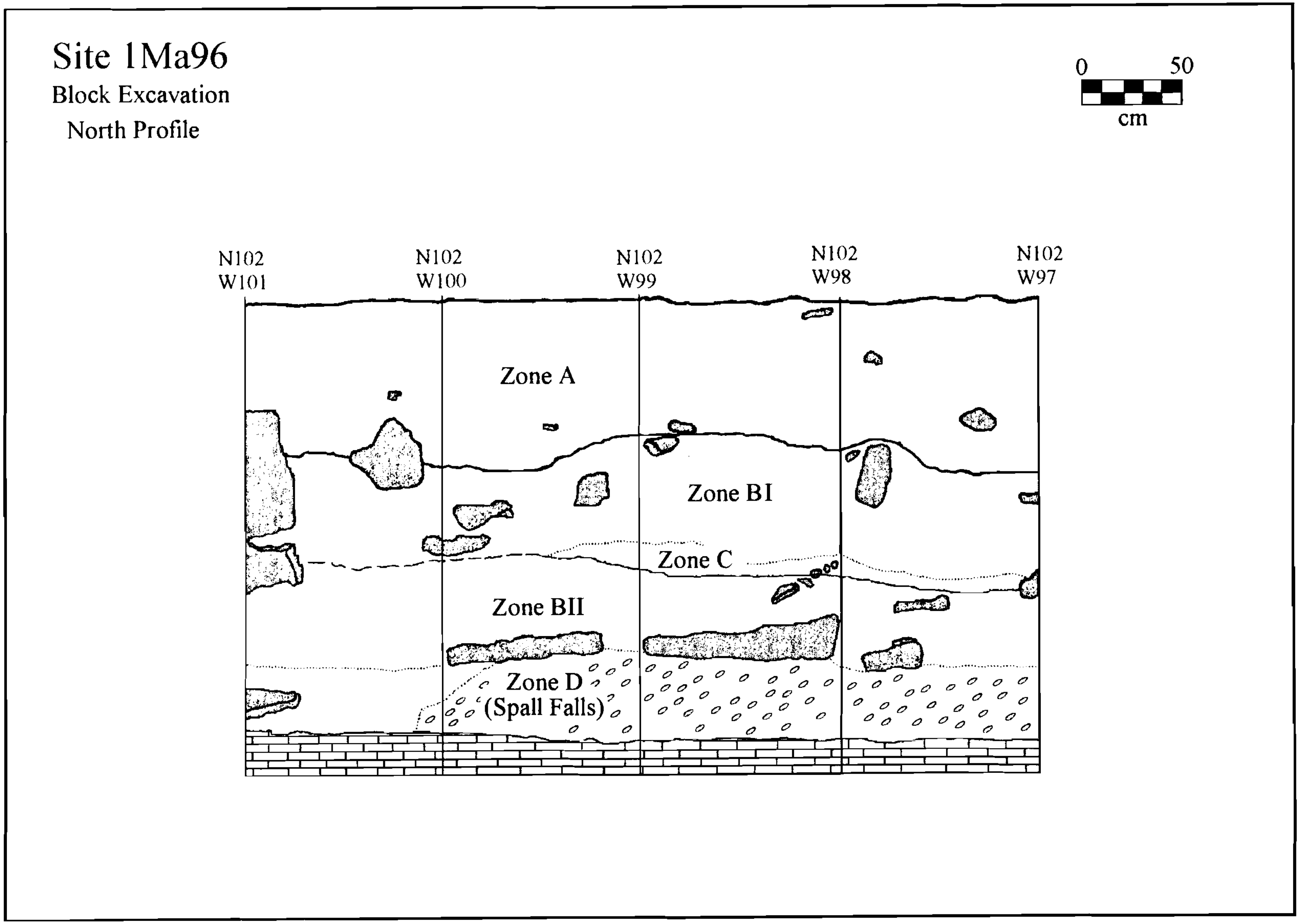


Figure 29. North Profile of N102 Block Excavation.

A thin (20 cm) zone of yellowish/red (2.5YR 3/4) sandy clay extended over a large portion of N102 W99 and N102 W101. This was initially assigned the designation Zone C. Further excavation identified it as a rodent (groundhog) burrow which had been filled by colluvial material flushed from a joint in the bluff. Similar events can be seen along the foot of the bluff on the modern surface, including one less than 3 m from these excavation units.

Zone D was recognized at a depth of 150 cm in N102 W101 and at a depth of 163 cm in N102 W99. It is a yellowish brown (10YR 5/6) sandy clay. The entire zone contains large patches of caliche some of which was hard enough that it had to be broken into pieces to be removed. Zone D ended on bedrock at a depth of 250 cm in N102 W101. Bedrock was recognized at a depth of 230 cm in the most northern part of N102 W99. Excavation ended at that depth. N102 W103 was excavated to a depth of 240 cm without encountering bedrock.

Within the block excavation beneath the rockshelter the most clearly defined natural stratigraphy was seen in the profile of N100 W99. That unit was unexcavated, and remained standing as a stratigraphic control block, but the north profile was visible from the adjacent unit and several distinct stratigraphic zones can be recognized (Figure 30):

Zone AI extends from the surface to a depth of 35 cm. It is a band of dark, almost black (10YR 2/1) loosely unconsolidated loam. It contains a small amount of rock and shell as well as cultural materials. Zone AII is very similar except that it contains more rock and shell. AII extends to a depth of 90 cm below surface.

Zone B is a dark brown (7.5YR 3/4) sandy clay. It contains little rock except at the bottom of the zone. It does not extend completely across this unit and is marked, at the eastern edge of the unit, only by that line of rocks, which seem to lie upon an old soil surface.

Zone C is a wedge of soil which extends into the western one-half of the unit, but does not extend into the eastern half. It is composed of dark brown (10YR 5/8) to yellowish brown (10YR 5/8) very sandy clay. The thickest portion of the zone is at the western edge of the profile, where it extends from 100 cm to 130 cm in depth. It thins to the eastward to the middle of the unit. From there Zone C is visible only as a line of horizontal rocks extending at the east of the edge of the unit.

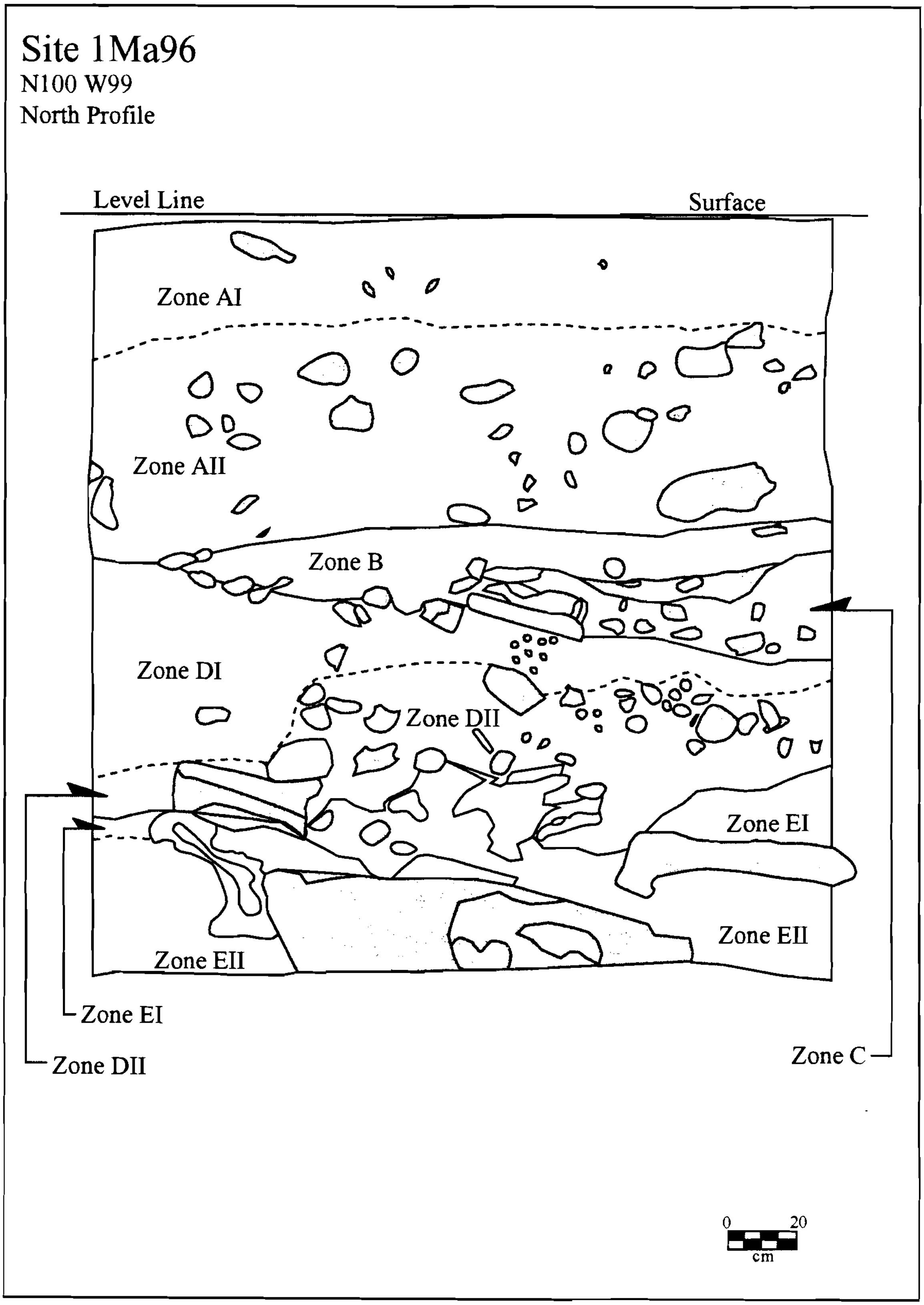


Figure 30. North Profile of N100 W99.

Zone D extends from 130 cm to 170 cm. The upper portion, Zone DI, is described as dark yellowish brown (10YR 3/4, 10YR 2/2) sandy-very sandy clay. Zone DII is described as dark grayish brown (10YR 4/2, 10YR 3/3) silty sandy clay. It is very rocky. It contains a large amount of shell and charcoal. The bottom of Zone D, at 170 cm below surface, is the bottom of the midden deposits at this site.

Zone E in this unit is the yellow/cherty colluvium which underlies all of the midden at Beartail Rockshelter. It equates with Zone D in the units which lie along the back wall of the rockshelter. In N100 W99, Zone EI is a 30 cm thick band of intense cementation by caliche. Below the caliche, Zone EII is a light yellowish brown (10YR 6/4), compact sandy clay, interspersed with smaller caliche masses.

THE TALUS SLOPE

Excavations at Beartail Rockshelter have identified several strata within the talus resulting from both natural and human activities. These strata were defined by differences in soil color, composition, and texture. Although these strata appear to be consistent across the area of the talus in terms of defining characteristics, these strata vary considerably in depth from one area to another. This is probably the result of movement downward of the steep talus slope deposits. As such, the following offers a generalized overview of talus stratigraphy (Figure 31).

Stratum I: ranges in thickness from 30 cm to 130 cm in depth across the site and represents the dense midden deposits. This stratum is fairly homogenous across the site and consists of a mixture of a dark brown organic rich sediment (7.5YR 3/2). However, three substrata of the midden deposits have been defined within the shelter area. Substratum IA is essentially the midden deposit just described. Substratum IB ranges in thickness from 20 cm to 40 cm in depth and consists of a dark brown silty clay (7.5YR 4/2). This substratum is slightly lighter than Substratum IA, which is separated from it by a thin layer of limestone spalls. Further, the bottom of this substratum appears to represent the interface between ceramic and pre-ceramic occupations at the site. Substratum IC ranges in thickness from 25 cm to 45 cm and consists of a dark reddish gray sandy clay (5YR 4/2). This substratum is comprised of pre-midden deposits and represents the pre-ceramic occupations at the site.

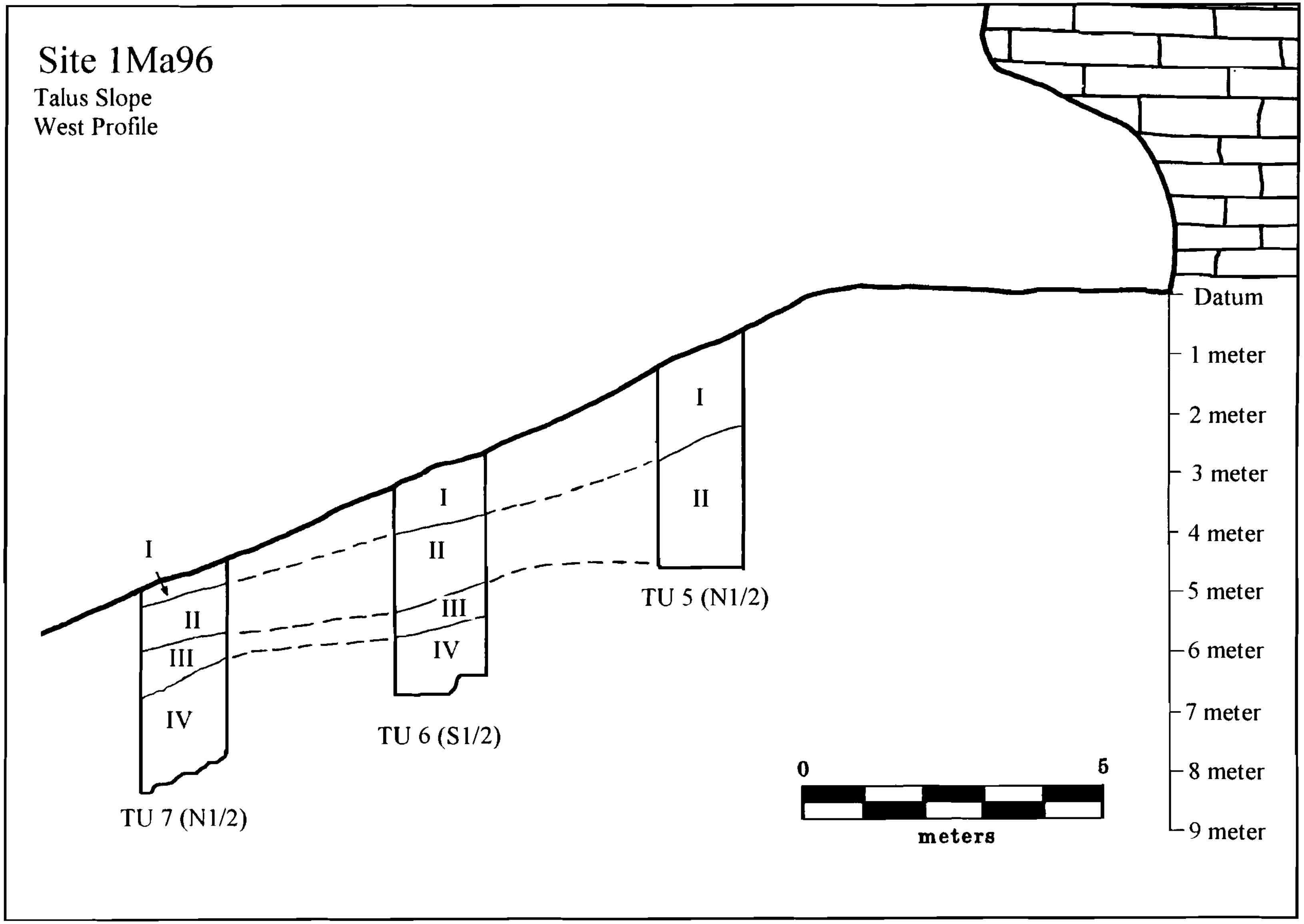


Figure 31. West Profile of Talus Slope.

Stratum II: ranges in thickness from 50 cm to 110 cm and consists of a yellowish brown sandy clay (10YR 5/6) with mottled areas of calcified sediments. This stratum appears to be culturally sterile.

Stratum III: varies in thickness from 50 cm to 70 cm and consists of a dark yellowish brown sandy clay (10YR 3/4). Although no diagnostic materials were recovered from this stratum, some cultural materials were excavated; including one intact uniface blade, one uniface scraper fragment, one biface fragment, and a few flakes. However, it is unclear at present if these materials represent a sealed deposit containing evidence of human occupation or if these materials are intrusive into the stratum as the result of some form of disturbance (i.e., animal burrows, tree roots, etc.). A series of soil samples was taken above, within, and below this stratum for radiocarbon dating.

Stratum IV: consists of a reddish brown clay (5YR 4/4) with calcified sediment inclusions similar to Stratum II. This stratum extended to a depth of 100 cm in Test Unit 6 before excavation was halted due to the close of the field season. This stratum is devoid of cultural materials.

THE LOWER TALUS STRATIGRAPHIC TRENCH

When all the soil had been removed from the trench, a 6 m long profile was exposed (Figure 32). The profile extended into the talus from the base of the slope. A suite of four major depositional units (top to bottom) was exposed in two profiles, one on the eastern side of the trench and one on the western side.

Zone I is a dark grayish brown (10YR 4/2) sandy loam soil. This soil capped the entire talus slope. At the location of this trench, it is the last vestige of midden soil eroding from the top of the slope.

Zone II is located at a depth of approximately 35 cm. It is a light yellowish brown (10YR 5/5) alluvial clay. This clay is non-micaceous and is believed to have resulted from deposition by Indian Creek.

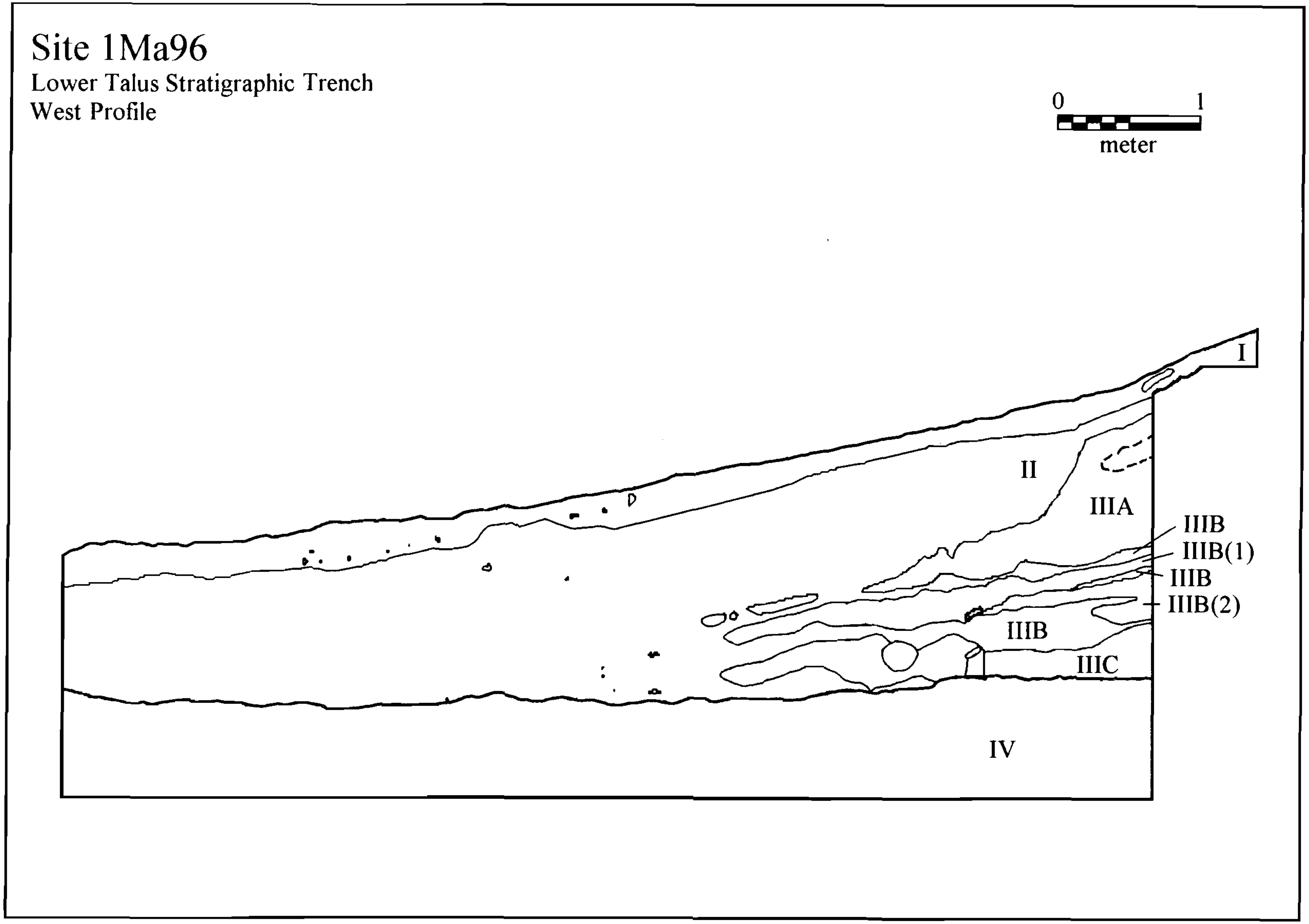


Figure 32. West Profile of Lower Talus Stratigraphic Trench.

Zone III consists of a series of colluvial wedges representing the toe of the colluvial slope. They contain large amounts of blocky chert fragments, limestone fragments, and caliche fragments, demonstrating their origin on the upper slope. These wedges have been designated Zones IIIA, IIIB, IIIB(1), IIIB(2), and IIIC.

Zone IV is the basal soil zone exposed in the Lower Talus Stratigraphic Trench. It consists of a very dense brownish gray clay with a blue cast. Zone IV was extremely hard when dry. The zone contains small amounts of cultural material. Two carbon samples were recovered from Zone IV.

THE FLOODPLAIN TRENCHES

During the late summer of 1995, archaeologists and geomorphologists dug a series of four backhoe slot trenches extending from the toe of the talus, southward toward the channel of Indian Creek. The purpose of these tests was to: (1) search for evidence of former channel(s) of Indian Creek, (2) trace the stratigraphic position of Tennessee River sediments, (3) find evidence of the bed of a spring which might have flowed from beneath the rockshelter during the late Pleistocene/early Holocene period of time.

In the Lower Talus Stratigraphic Trench Extension, Zone A was composed of alluvial clays attributed to deposition by Indian Creek. Zone A extended to a depth of 280 cm.

Slot Trench 1 was placed 26 m south of the lower end of the Lower Talus Stratigraphic Trench. It was excavated to a depth of 3 m. Zone A was composed of alluvial deposits attributed to deposition by Indian Creek. A lense of water-worn pebbles and gravel was discovered approximately 1 m below the surface. It was not clear if this lense was a floodwater channel of Indian Creek, or if it could be the bed of the hypothetical spring. Zone B was encountered at a depth of 1.6 m. It was evidenced by the appearance of large amounts of mica as constituents in the clay. Zone B is attributed to deposition by the Tennessee River.

Slot Trench 2 was placed 50 m south of the Lower Talus Stratigraphic Trench. The trench was excavated to a depth of 3.1 m. Zone A was composed of alluvial clays attributed to deposition by Indian Creek. Zone B was encountered at a depth of 1.7 m and extended below the excavation.

Slot Trench 3 was located 85 m south of the Lower Talus Stratigraphic Trench, near the present day bank of Indian Creek. Here, Zone A, attributed to deposition by Indian Creek, extended to a depth of 1.9 m. Zone B, attributed to Tennessee River deposition, extended below the excavation. This zone had a blue/gray color which might suggest deposition in the bottom of a backwater swamp.

SPECULATIONS ON STRATIGRAPHY AND CULTURAL CHRONOLOGY

Even after three seasons of intensive investigation of Beartail Rockshelter, many specific relationships of early site development, deep sediment origins, and their chronology remain unclear. This is primarily the result of logistical obstacles to deep and extensive penetration of the shelter and its talus. Ideally, the investigators would have opted for excavation of a deep, continuous trench bisecting the shelter deposits and extending down and through the talus deposits past the toe of colluviation. Such an exposure would have allowed fieldworkers to carefully follow and record stratigraphy from top to bottom of the site. This approach was not feasible because of the magnitude of such an undertaking, either by hand excavation or by mechanically assisted means, or some combination of the two, nor was it advisable to remove so much of the upper layers of the site in order to systematically penetrate to lowest deposits.

An alternative was chosen in which discontinuous test pits, block excavations, and mechanically excavated slot trenches were used to sample underlying and deep deposits in a transect from the shelter floor to the floodplain below the toe of the talus. While leaving many questions about specific stratigraphic relationships unanswered, a general, if somewhat speculative model of the development of the shelter and talus can be discussed. The following section, which categorizes the historical development of Beartail Rockshelter in five stages, attempts to summarize and synthesize the data presented above on individual stratigraphic exposures and their archaeological and environmental correlates.

Stage I
Late Pleistocene Antecedents

Prior to the time when humans first used the shelter, and almost certainly prior to the time when humans first entered the Tennessee Valley, the bluff area at the present location of Beartail Rockshelter may have looked something like the speculative cross-sectional depiction in Figure 33. This diagram depicts the depositional context prior to 10,500 B.P.

It is certainly clear that the deposits existing at that time (just prior to the 10,500 date) were derived from overbank flooding of the Tennessee River, since these deposits (as revealed in the base of the Lower Talus Stratigraphic Trench) contain quantities of mica, a reliable signature of the main river but not of local tributaries. These same Tennessee River derived alluvial deposits are also present in Backhoe Trench 1, located about 20 m south of the Lower Talus Stratigraphic Trench.

The conformation of the bluffline and the shelter itself is quite speculative, however. Figure 33 depicts the shelter and bluffline cross-section as similar to that today. However, there is little in the way of evidence relating to this question. Bedrock in the shelter was encountered fairly uniformly across the Block Excavation, giving a clue to early shelter confirmation. However, the overhanging bluff above the shelter may have extended further to the south in these early times since there is considerable rock fall in the upper test units (TU 4, TU 5) and there may be much more below the levels of penetration of these test units. In fact, Figure 33 depicts a wedge of this detritus accumulated at this early stage but this depiction is quite speculative.

While the rockshelter today faces the banks of Indian Creek about 200 m to the south, it is possible that Indian Creek actually emptied into the river upstream of the site at this early time. Certainly, this scenario is supported by the identification of site sediments deriving from the Tennessee River proper. The river probably flowed closer to the site at this time and may have occupied what is now the channel of Indian Creek.

Stage II
Early Human Component

During the last stages of the Pleistocene, there was a long period of time when the climate was characterized by intense seasonal precipitation. It may have been near the end of that time when a large portion of the overhanging roof at Beartail Rockshelter collapsed, but this is not clearly attested (Figure 34). Almost certainly, sand, clay and gravel from the mountain slope above the shelter flushed through a subterranean spring within the shelter.

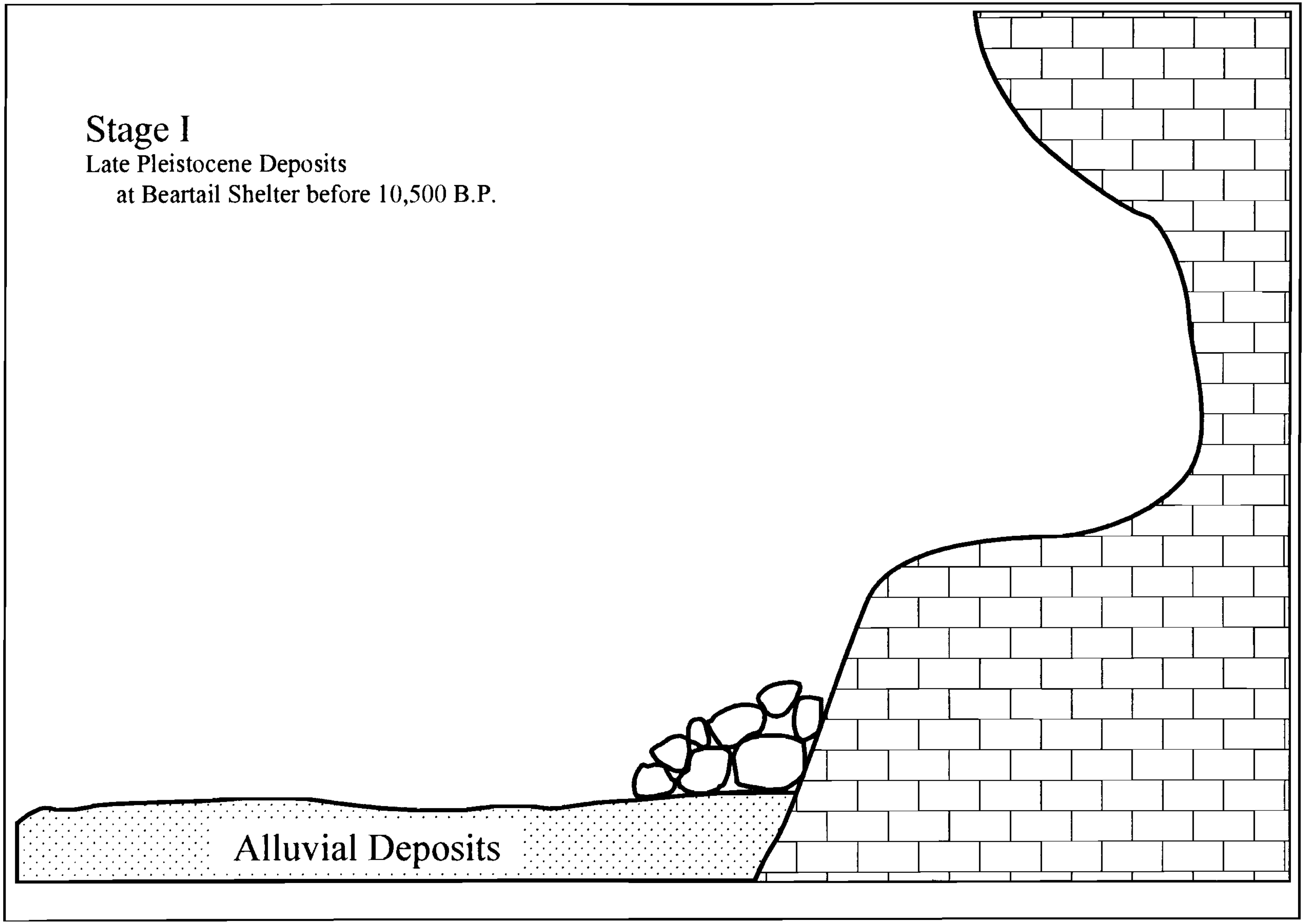


Figure 33. Stage I, Late Pleistocene Deposits.

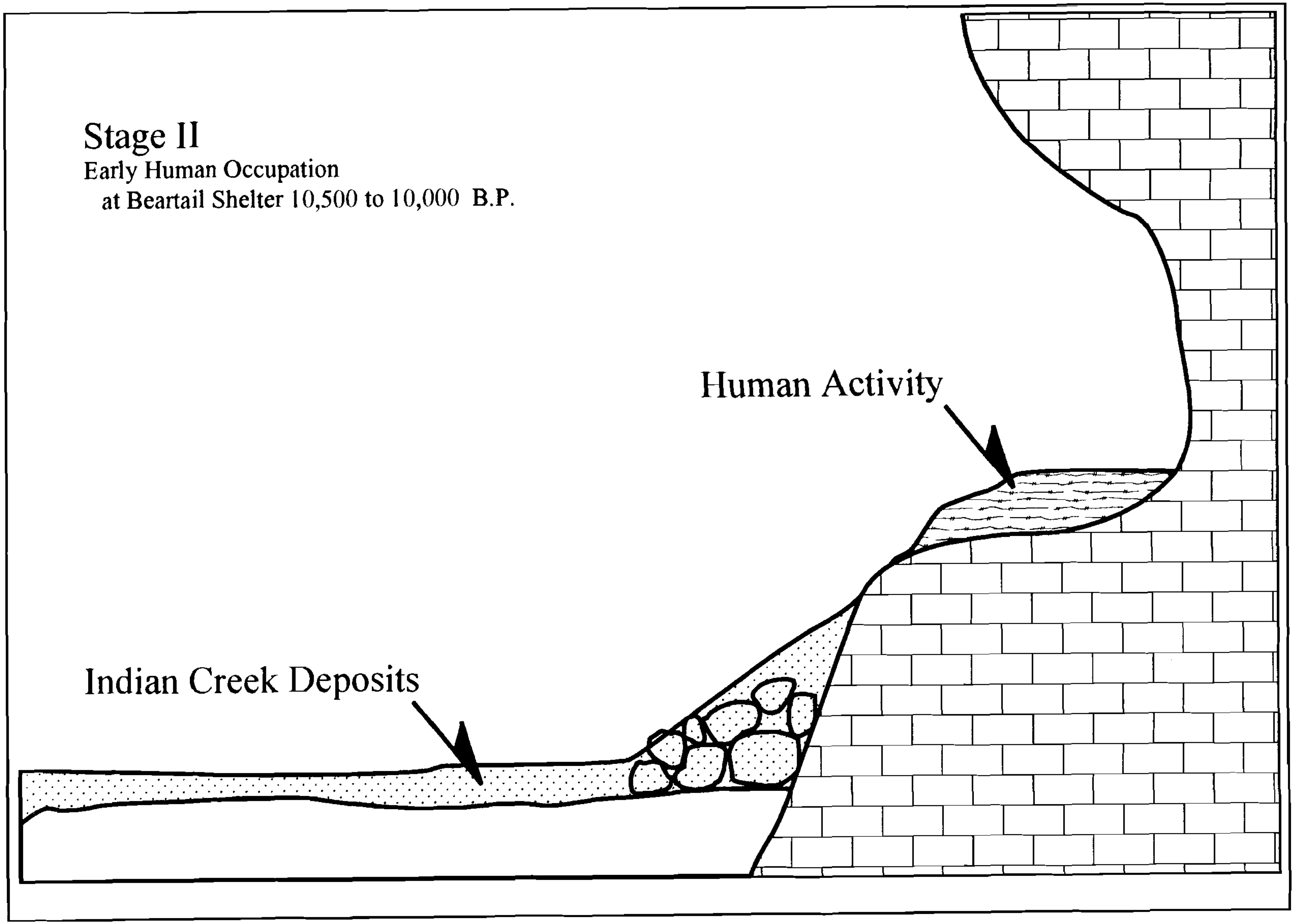


Figure 34. Stage II, Early Human Occupation.

More washed over the top of the remaining shelter roof and was deposited at the foot of the bluff covering the large roof fall boulders. The result may have been a talus cone formed directly against the bluff beneath the overhang.

To what extent these sediments were removed by intense flooding is not known. In fact, excavations in the test units did not penetrate deeply enough to confirm the presence of large roof fall at the earliest levels of this stage, but the accumulation of sediments derived from floodwaters of Indian Creek is attested in the Lower Talus Stratigraphic Trench and in Backhoe Trench 1. In Zone IV, the lowest stratigraphic unit recognized in the trench, sediments from Indian Creek (see discussions in Chapter V and descriptions in this chapter above) are superimposed on Tennessee River alluvium. Similarly, Tennessee River alluvium underlies Indian Creek alluvium in Backhoe Trench 1. Interestingly, a relic stream bed was detected within the Indian Creek alluvium in Backhoe Trench 1. This may be a relic bed of Indian Creek, or alternatively, a relic bed of a small tributary to the creek which originated along the bluff in or near the site. At any rate, there was an active stream course within 20 m of the site at about the same time that the first humans apparently visited and used the site.

Evidence from the lowest levels of the Block Excavation within the shelter proper attests to the earliest human usage of Beartail Rockshelter. Apparently, a human group or groups making Late Paleoindian lanceolate projectile points made camp on top of the talus, within the shelter, sometime during this period. Their use of the shelter, along with outwashed sand on the shelter floor, began the development of what would become over two meters of archaeological deposits beneath the overhang.

The seemingly oldest human deposit within the shelter is represented by two side notched projectile points, a rounded base leaf shaped projectile point or preform, a Jude projectile point, and an assortment of biface and uniface tools. A radiocarbon date from this deepest zone (EII) in the Block Excavation yielded a date of 9820±60 B.P. (Beta-105643) and would appear to date the earliest deposit in the cave (Figure 35). However, several problems should be discussed concerning the evidence from the Block Excavation.

First, the above referenced radiocarbon date is quite consistent with dating of Early Side Notched (Big Sandy) projectile points, at least the earliest of these, elsewhere in the middle Tennessee Valley (Driskell 1994). Additionally, a date around 10,000 B.P. is particularly consistent with one (Specimen 464-2 [Chapter IV]) of the two side notched

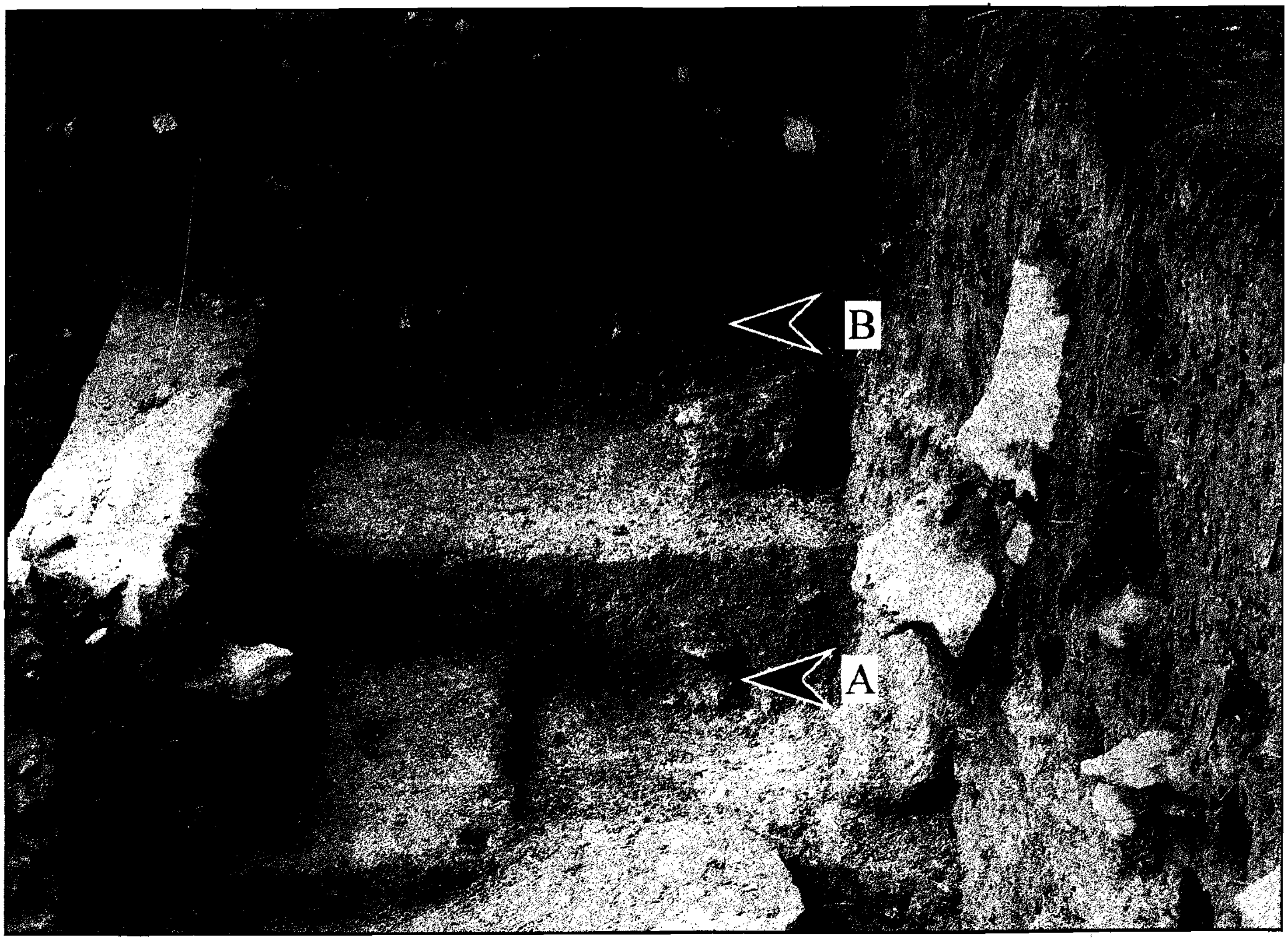


Figure 35. Photograph of N102 W103: (A) Location of Early Side Notched Zone and Beta-105642 and 105643; (B) Approximate Stratigraphic Position of Late Paleoindian Artifacts.

specimens. This specimen resembles a Hardaway or Hardaway Dalton, a style which has been reliably dated at Dust Cave (Driskell 1994) to about 10,000 B.P. However, another radiocarbon date (Beta-105642) from the same area of Zone EII produced an assay of 8320±90 B.P., unacceptably too young for the deposit. Problems with this date are discussed elsewhere in this report.

Higher in this same basal deposit (Zone E) beneath the shelter was found a Quad/Dalton projectile point, a Hardaway/San Patrice projectile point, and a Beaver Lake/Dalton projectile point. This assemblage was found above the side notched points at or near the interface between the upper midden and the lower deposits. Based on very reliable chronology for this point complex at Dust Cave, a date of 10,500 to 10,000 B.P. is postulated. Therefore, the recovery of the Early Side Notched projectile points in the lowest levels with a consistent radiocarbon date was unexpected and is considerably perplexing.

The Early Side Notched projectile point is generally considered to be an Early Archaic type dating not much earlier than 10,000 years (Driskell 1994). Ordinarily, in North Alabama, projectile points like these would be classified as Big Sandy points. Side notched projectile points like Big Sandy, Taylor and Bolen points are morphological correlates, and bear strong similarities to both Graham Cave Side Notched and Simonsen points. There is great variability in the morphological range of side notched projectile types which may or may not have temporal significance.

The evidence from Beartail Rockshelter might indicate that side notching came into use very early and persisted through Late Paleoindian times. Notching in order to facilitate hafting is a simple concept that could be mastered by any craftsman skilled enough to produce a fluted projectile point. Furthermore, it would seem to be much more economical in terms of time, failed attempts (broken preforms), and perhaps especially regarding the quality requirements for raw materials from which the points would be made. The archaeological record indicates that when the basally fluted or thinned projectile point tradition waned, side notched points became the dominant hafting technique, quickly followed by corner notched varieties such as Palmer and Kirk types.

Beartail Rockshelter is far from being the only location in the Southeast and the surrounding areas where side notched projectile points have been recovered in surprisingly early contexts. At the Stanfield-Worley Bluff Shelter (DeJarnette et al. 1962), a Dalton complex was recognized that included three varieties of Daltons, Beaver Lakes, Hardaway Side

Notched, other side notched forms called Big Sandy, and a large assortment of resharpened Late Paleoindian lanceolate projectile points. These were accompanied by a wide assortment of uniface tools and blades similar to those of preceding fluted point technologies. These were found within a basal cultural deposit, Zone D, separated from overlying more recent Archaic artifacts by a sterile Zone C. Radiocarbon dates for the cultural context of Zone D were 9640±450 B.P. and 8920±400 B.P. Zone D rested disconformably upon a weathered, yellow-orange sand and gravel which was culturally sterile.

Stanfield-Worley was not the first, nor the last, site to produce side notched projectile points in surprisingly early contexts. DeJarnette et al. (1962) cited: the Renier site in Wisconsin (Mason and Irwin 1960) where a side notched specimen was found in burial association with Eden and Scottsbluff points; the Graham Cave and Modoc Rockshelter where side notched points were found in the lowest cultural levels; and the Hardaway site (Coe 1959) in North Carolina where side notched points formed a considerable part of the earliest artifact complex. Sellards (1940) found a side notched point stratigraphically beneath Folsom at a bison-kill site in Bee County, Texas.

Investigations at a number of rockshelters in North Alabama yielded duplications of the early Dalton complex assemblages. Side notched projectile points were stratigraphically associated with Late Paleoindian projectile point forms (Clayton 1965, 1967; Stowe 1970). LaGrange Rockshelter (DeJarnette and Knight 1976) showed cultural and natural stratigraphy that is directly comparable to the Stanfield-Worley finds. It is notable that all of these North Alabama early Holocene cultural components were stratigraphically located just above a presumed late Pleistocene soil surface. At the Cherokee Sewer site (Anderson and Semken 1980) in Northwestern Iowa, side notched projectile points were found associated with Agate Basin projectile points in a bison-kill, separated from later materials by almost 1.8 m of sterile alluvium.

The Packard site is located in northeastern Oklahoma on the border between the Eastern Woodlands and the Prairie Plains. Wyckoff (1985) found a Dalton component buried 1.5 m to 2 m deep in the alluvial soil that contained only Dalton materials. Wyckoff observed that although the Dalton component was interesting, its main importance was that it was stratigraphically above and later than a different assemblage (termed the Packard complex) that contained Agate Basin-like projectile points and one side notched point. Wyckoff (1989) concluded that side-notching preceded Dalton technology at the Packard site. The Packard complex materials have been dated 9880±90 B.P., 9830±70 B.P., and 9770±80 B.P.

In Texas, Leland Patterson (1989) has reported finding an Early Side Notched point in the same excavation level with a Folsom point at Site 41WH19. There is an associated radiocarbon date of 9920±530 B.P. for that level. Patterson cites Weir (1985) indicating that, in Central Texas, side notched projectile points were found at the Wilson-Leonard site in contexts earlier than Plainview points.

In Florida, a large Paleoindian component has been excavated at the Harney Flats site (Daniel and Wisenbaker 1989). At Harney Flats the major portion of the Paleoindian projectile point assemblage was made up of Suwannee and Simpson points, but they were associated stratigraphically (vertically) and horizontally with a total of thirteen side notched Bolen specimens and with lozenge-shaped (rounded base, leaf-shaped) specimens. In a discussion of the lozenge-shaped bifaces, Daniel and Wisenbaker cite Goodyear et al. (1983), indicating that these forms should date to the Paleoindian period based on their technological attributes. Specimens of these artifacts are also commonly associated with Late Paleoindian components in the middle Tennessee Valley (DeJarnette et al. 1962; Stowe 1970; Cambron and Waters 1959; Cambron and Hulse 1960a).

The above discussion does not constitute an exhaustive search of the literature for instances of stratigraphic evidence that side notching as a hafting technique was in use by Late Paleoindian times. It is sufficient, however, to indicate that there is a significant body of data to support such a contention. It has fueled a debate. Some archaeologists are comfortable with the idea, while others are not. For instance, as early as 1976, in a discussion of the Bee County, Texas site where a side notched point was found stratigraphically beneath a Folsom, Thomas Hester (1976) commented, "Furthermore, the occurrence of the two large side notched points in the Lower Horizon is not the problem it used to be. Recent archaeological work in Texas has shown that such points extend back into late Paleoindian and immediate post-Pleistocene times, and side notched points have been found elsewhere in clear association with a kill-site of late-Pleistocene bison." Research on the Aucilla River in Florida by Dunbar et al. (1988) indicate that the temporal continuity of Bolen and Clovoid cultural material may infer that side notching evolved out of a Clovoid precursor.

An alternative point of view is expressed by Morse (1994) who concluded that the Dalton complex existed during the Late Paleoindian period, which in the East corresponds to the terminal Pleistocene; the Early Side Notched point complex is post-Dalton and initial Holocene in date; side notched and Dalton assemblages are mutually exclusive; and the side notched and Dalton assemblages at Stanfield-Worley were separate stratigraphic events.

Morse is supported in his point of view by Goodyear (1982) who has pointed out the problem of mixed deposits in bluff shelter and cave deposits. Goodyear has been skeptical of the association of Dalton points and side notched points at Stanfield-Worley and other bluff shelter sites.

The recent research at Dust Cave near Florence, Alabama, supports Morse and Goodyear's contentions concerning the chronological relationships of Late Paleoindian lanceolate projectile points and side notched projectile points. Dust Cave, where a substantial Late Paleoindian component of Quad and Beaver Lake projectile points exists as the basal component, has produced consistent radiocarbon dates for the Late Paleoindian component of 10,000 to 10,500 B.P. Early Side Notched projectile points are restricted to zones above the Late Paleoindian component with consistent dates of 9000 to 10,000 B.P.

Finally, the basal deposits of the Block Excavation did not appear to be disturbed by either intrusive pitting or bioturbation of any kind. However, there remains the real possibility that, like most other areas and levels within the site, these basal deposits were churned to some extent accounting for the dilemma the Early Side Notched points. At any rate, based on the apparent affiliation of the lanceolate projectile points, at least, with the time period from 10,000 to 10,500 B.P., the basal component has been assigned to a Late Paleoindian provenience.

Stage III
Archaic Component

At the very end of the Pleistocene (about 10,000 B.P.), the Tennessee River experienced a reduction in the volume of its flow. It began to deposit gravel bars and mud along the sides of its banks, and no longer scoured them completely away during floods. With its volume and velocity reduced, it no longer had so strong an inclination to swing wide on bends, and so its channel became straighter and less sinuous (Collins and Goldberg, this volume). As the gravel and mud accumulated in front of the former bank, the river channel moved further to the south and a new river bank began to develop (Oakley and Driskell 1987). Likely, people visiting the site after about 10,000 B.P. found the local topography similar to that of today with a similar looking shelter, a talus which was lower than today, but basically similar in conformation, and the banks of the river and Indian Creek near their modern location. By the end of this stage, about 3200 B.P., the talus had grown to within 80 cm to 100 cm of its present height.

In front of the shelter, the colluvial deposits from near the top of the talus remained unstable, and continued to spread down slope (Figure 36) over the top of late Pleistocene floodplain deposits at the foot of the talus as evidenced in the lower levels of the Lower Talus Stratigraphic Trench. A few artifacts (two unifacially worked scrapers and a few flakes) made by some of the early occupants of the site were buried in the floodplain clays in the area of the Lower Talus Stratigraphic Trench, beneath the spreading colluvium. These chipped stone artifacts, none temporally diagnostic, were found associated with charcoal from a hearth-like area near the northern end of the Lower Talus Stratigraphic Trench in Zone IV, the lowest unit recognized in the trench (Figure 37). In the case of this activity area or possibly areas, charcoal collected from the upper few centimeters of Zone IV produced a date of 9590±60 B.P. (Beta-85156) while a charcoal sample taken some 35 cm deeper in the zone produced a date of 9960±60 B.P. (Beta-85157). This suggests that this alluvial unit was building during the approximate period represented by Stage III and that the human use of this area of the site dates to about this interval of time. This early evidence of human visitation was also covered in time by the spread of the colluvial sediments.

As the centuries came and passed, there were a great many prehistoric visitors to Beartail Rockshelter. There were never any particularly large groups of people there, and there is no evidence that any one group stayed for a long period of time. In other words, small groups came and camped for a short while, then moved on. Representatives of virtually all of the sequential prehistoric cultural manifestations of the middle Tennessee Valley visited there at one time or another.

Stage III represents the long interval in which Archaic peoples inhabited the middle Tennessee Valley. The Early Archaic period is represented by a series of projectile points associated with both Big Sandy and Kirk Corner Notched horizons. The Big Sandy horizon is represented by the presence of Big Sandy projectile points (Cambron and Hulse 1975; Lewis and Lewis 1960). This horizon dates from approximately 10,000 to 9000 B. P. The next Early Archaic horizon found at the site is represented by Kirk Corner Notched projectile points (Cambron and Hulse 1975; Futato 1983). Based on a series of radiocarbon dates obtained from stratified Early Archaic sites in the Southeast, the Kirk Corner Notched horizon dates from approximately 9000 to 8000 B.P. (Chapman 1975:256-259; Chapman 1985:146; DeJarnette et al. 1962:85-87; Griffin 1974:13).

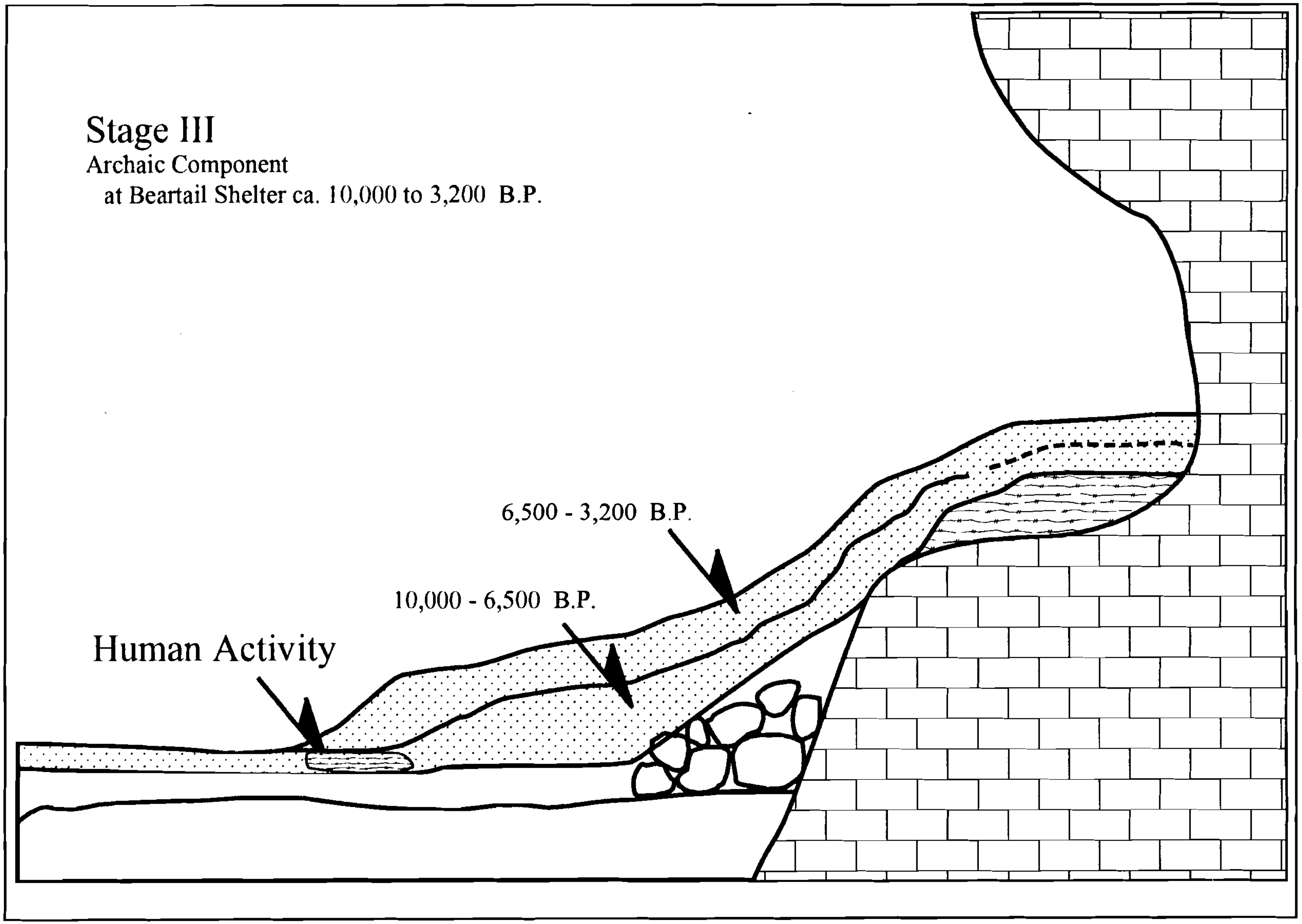


Figure 36. Stage III, Archaic Component.

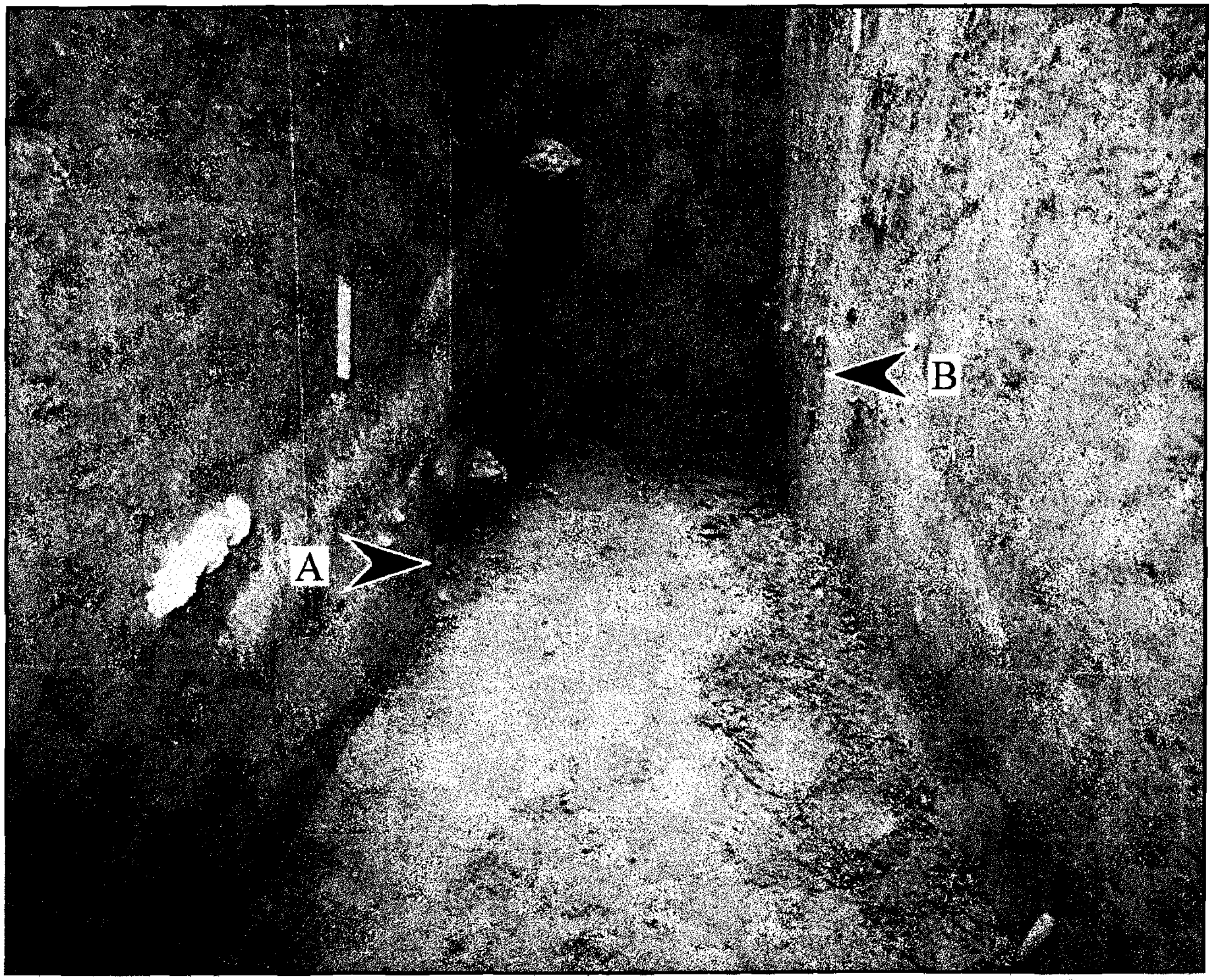


Figure 37. North End of Lower Talus Stratigraphic Trench Showing Location of the Alluvium Beneath Colluvial Fill and (A) Beta-85156 and (B) Beta-85157.

The Middle Archaic period at Beartail Rockshelter is represented by three major horizons. The first is the Kirk Stemmed horizon, which is comprised of both Kirk Stemmed and Kirk Serrated projectile points (Cambron and Hulse 1975; Futato 1983; Justice 1987:82). Although traditionally placed with the Kirk Corner Notched cluster, recent evidence suggests that this horizon postdates the corner notched points by several hundred years and dates from approximately 8500 to 7000 B.P. The second horizon is marked by the Eva/Morrow Mountain projectile point cluster. Eva projectile points (Cambron and Hulse 1975; Futato 1983; Lewis and Lewis 1961) represent the beginning of this horizon, although they do overlap stylistically and temporally with the later Morrow Mountain projectile points. Based on radiocarbon dates from other Eva sites, this component at Beartail Rockshelter dates from 7000 to 6500 B.P. (Lewis and Lewis 1961). Morrow Mountain projectile points (Cambron and Hulse 1975; Coe 1964:122-123; Justice 1987:104-107) mark the terminus of this horizon and date from approximately 7300 to 6000 B.P. (Chapman 1976:164, Chapman 1979:79; DeJarnette et al. 1962; Faulkner 1977:281). The third horizon is represented by the presence of Benton projectile points (Kneberg 1956; Cambron and Hulse 1975). The Benton horizon is assignable to the Seven Mile Island phase, which Futato (1983) dates from 5600 to 5000 B.P. Recent radiocarbon dates, however, of Benton components in both Alabama and Mississippi indicate that the Benton horizon is actually several hundred years older (Driskell 1994, Peterson 1985).

The Late Archaic is represented by the presence of Pickwick, Little Bear Creek, Flint Creek, and McIntire projectile points (Cambron and Hulse 1975; Futato 1983). The Ledbetter horizon, which includes Pickwick projectile points, dates from 5000 to 4000 B.P., and this horizon falls between the earlier Seven Mile Island phase and the later Perry phase (Futato 1983). Oakley and Futato (1975) place Little Bear Creek projectile points within the Perry phase, which dates from approximately 4000 to 3000 B.P. Based on these dates, the Late Archaic period at Beartail Rockshelter dates from roughly 5000 to 3200 B.P.

Artifacts representative of the Archaic groups who visited Beartail Rockshelter are not stratigraphically isolated within the site matrix which developed during the period of time subsumed under Stage III. Nor does the site matrix (Figure 38) purported to have developed during Stage III contain only Archaic artifacts. However, most of the Archaic vintage artifacts recovered from the site were found in this matrix.

The Stage III matrix which developed on the talus is the most consistent in this regard. Beginning at the toe of the talus, Zone IV in the Lower Talus Stratigraphic Trench can be tentatively correlated with Zone IV in TU 7 and Zones III and IV in TU 6, TU 5, and

TU 4. With the exception of the above mentioned archaeological materials in the Lower Talus Stratigraphic Trench, a single uniface blade from 240 cm to 260 cm deep in TU 4, and a single Preform II from 260 cm to 280 cm deep in TU 5, these colluvial deposits appear to be devoid of cultural materials. However, radiocarbon dates in the Lower Talus Stratigraphic Trench (discussed above), three dates from TU 6, in good stratigraphic order and ranging from about 6400 to 9400 B.P., and a single date from TU 5 (about 8000 B.P.) are in logical stratigraphic order and suggest a dating range of about 10,000 to 6500 B.P. for the development of talus deposits in these zones.

The upper talus deposits of Stage III derivation, including Zone III from the Lower Talus Stratigraphic Trench and Zone II from the test units (TU 7, 6, 5, and 4), contain the bulk of archaeological materials recovered which date to Stage III. While no temporally diagnostic artifacts were found in Zone III in the Lower Talus Stratigraphic Trench, artifacts from Zone II in the test units include several Kirk Corner Notched, several Eva, several Benton and a Flint Creek projectile points. Dates for these projectile point types span the range from about 9000 to 3200 B.P., but it seems more consistent to date this upper, artifact bearing matrix developed on the talus during Stage III between 6500 or 7000 to 3200 B.P.

A few artifacts of later vintage were also found in the artifact bearing matrix of the talus purportedly developed during Stage III. These include 18 ceramic sherds (limestone-tempered) and a Hamilton projectile point invasive into Zone II in TU 6.

There is evidence for considerably more mixing of artifacts from the levels assigned to Stage III in the Block Excavation within the shelter. These levels include Zone B from N102 W99, N102 W101, and N102 W103, and Zones B through D in N100 W101 and N100 W103. There is a relative jumble of projectile point types from different levels, with some fairly late or young Archaic points in deep contexts. These include Sykes/White Springs in Level 11 of N100 W101, a Flint Creek in Level 22 of N102 W99, or an Eva, a Morrow Mountain and two Sykes/White Springs below 180 cm in N100 W103. Additionally, several very early, Early Archaic points were recovered from high levels in these strata. Contamination from later cultural components (see Stage IV below) prominently include three shell tempered ceramic sherds and 21 sherds of limestone tempered ceramics in Stage III deposits in N102 W99, a Greenville Cluster projectile point, two limestone tempered sherds and a shell tempered sherd (Level 28) in N102 W101, and two limestone tempered sherds in N100 W101.

Some mixing of Stage III deposits on the talus and considerable mixing of Stage III deposits within the shelter probably results from two site development factors. The first is the presence of large, irregular blocks of stone deriving from the shelter roof and bluff which have created open voids. As these voids are filled from colluvial movement of surrounding material, younger artifacts sometimes drop to lower levels. This site formation factor was dramatically evidenced in TU 4, where an open void was uncovered deep in the excavation which apparently led to an underground cave or stream as running water could be heard from the small, hand-sized opening. The second factor is bioturbation. In addition to the obvious but minute changes wrought by invertebrates such as worms and insects, rodent burrows were recognized in some areas of the excavations, particularly in the Block Excavation within the shelter. To the extent possible, these disturbed areas were separately excavated, but no doubt many disturbances of this type were missed. These factors apparently influenced the depositional characteristics of the succeeding stage of site development (Stage IV) as well.

Stage IV
Ceramic Component

The upper 80 cm to 100 cm of site matrix at the Beartail Rockshelter is characterized by an abundance of ceramic sherds, most of which are Woodland in origin. This part of the site's development is called Stage IV and includes Zone II in the Lower Talus Stratigraphic Trench, Zone I in the talus test units, and Zone A from the Block Excavation (Figure 38).

A very small portion of the Stage IV assemblage relates to the earliest ceramic traditions of the middle Tennessee Valley. The Gulf Formational is vaguely represented at the site. Both the fiber tempered Wheeler culture, ca. 1200 B.C. and 1000 B.C. (Jenkins 1982, Jenkins and Krause 1986), and the sand tempered Alexander culture, ca. 1000 B.C. to 600 B.C. (Walthall and Jenkins 1976), are alluded to in the ceramic assemblage. These traditions are generally associated with the Gulf Coastal Plain, although they did migrate into the Tennessee Valley. Within the Tennessee Valley, their manifestations are strongest in the Pickwick Basin to the west, and it is generally thought that the Wheeler Basin is the eastern-most extension of these cultures. Another early ceramic tradition identified at the Beartail Rockshelter is the Watts Bar. This culture originates in the upper Tennessee Valley of eastern Tennessee and dates between 400 B.C. and A.D. 250 (McCollough and Faulkner 1973). Although the Watts Bar culture is localized to the north of here in the upper Tennessee Valley, Watts Bar ceramics have been sparsely reported for the Guntersville Basin (Futato 1977, Solis and Futato 1987)

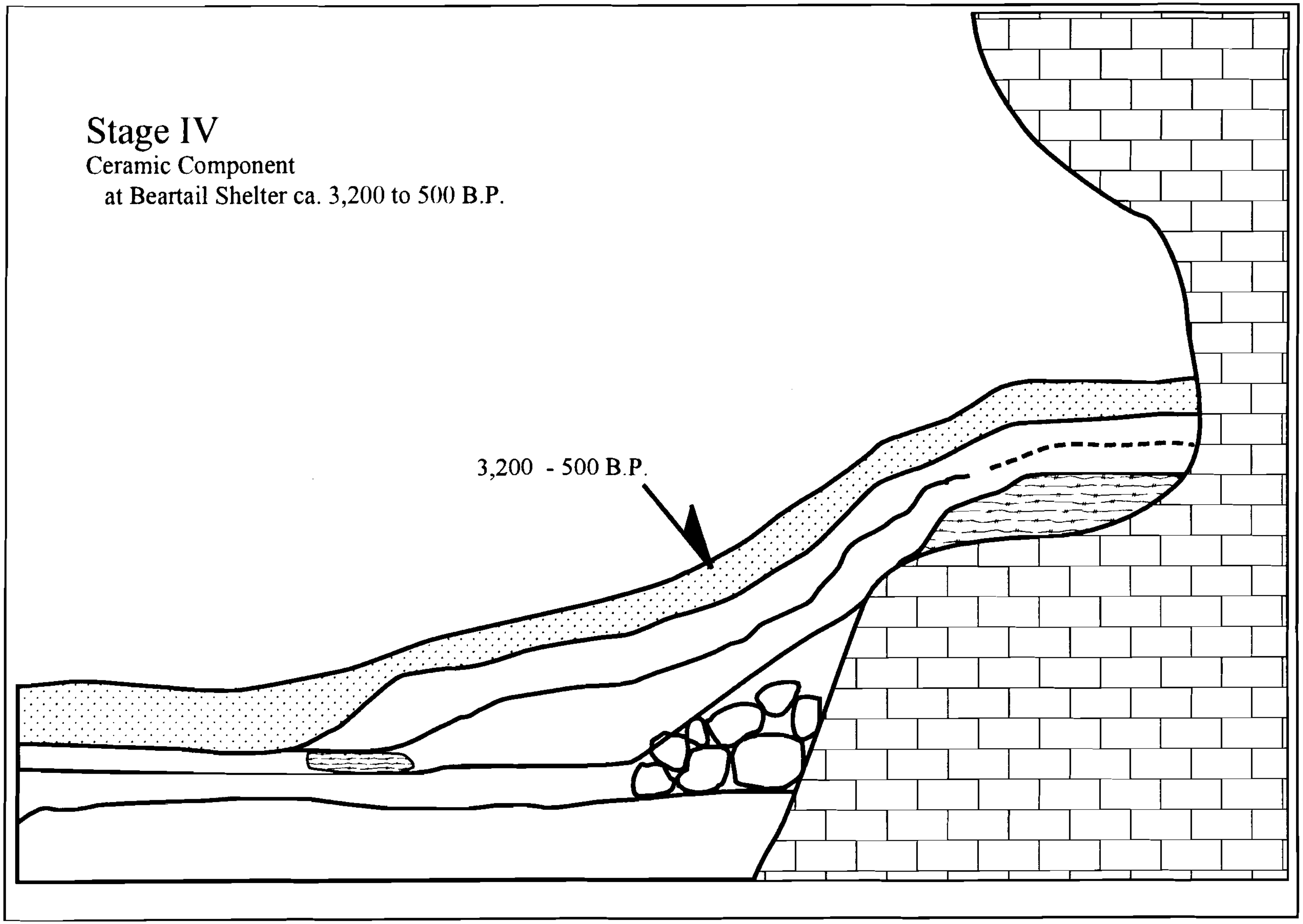


Figure 38. Stage IV, Ceramic Component.

and farther south in the Murphrees Valley (Meyer 1996). Watts Bar is roughly contemporaneous with the Colbert I culture of the Early Woodland. Projectile points common to the Late Archaic and Early Woodland (i.e. Cotaco Creek, Mud Creek, Flint Creek) can also be associated with Wheeler, Alexander, and Watts Bar cultures.

A possible Early Woodland period component may be present at the site, which is identified as the Colbert I culture. The Colbert I culture spans a time frame from approximately 600 B.C. to 300 B.C. (Walthall 1980). It is marked by the appearance of two limestone tempered wares, predominantly Long Branch Fabric Marked and lesser amounts of Mulberry Creek Plain (Futato, In Prep; Knight 1990). Colbert I assemblages are also characterized by Upper Valley and Ebenezer projectile point types (Futato 1977).

Two Middle Woodland cultures are represented at Beartail Rockshelter. The Colbert II culture dates from approximately 300 B.C. to A.D. 100 (Walthall 1980:112) and is manifested in Mulberry Creek Plain and Long Branch Fabric Marked ceramics, like its predecessors. Following the Colbert II culture is the Copena mortuary complex, which is associated with the late Middle Woodland and dates to approximately A.D. 100 to A.D. 500. Copena is represented at the site by Mulberry Creek Plain and Wright Checked Stamped limestone tempered pottery. Projectile points present at the site that are associated with the Middle Woodland include Copena, Sublet Ferry, Knights Island, and Swan Lake. Flint Creek projectile points also continue into the Middle Woodland.

The Late Woodland period at Beartail Rockshelter is marked by two cultures: Baytown and Flint River. The Flint River culture, which dates from circa A.D. 500 to A.D. 1000, is characterized by several grog tempered wares including the roughened or scraped variety of Mulberry Creek Plain, Flint River Brushed, Flint River Cord Marked, and Flint River Incised (Knight 1990; Walthall 1980:132). The Baytown culture is divided into two phases. The first is the McKelvey I phase, which is early Late Woodland and dates to approximately A.D. 500 to A.D. 700. The second is the McKelvey II phase, which dates to around A.D. 700 to A.D. 1000 (Walthall 1980:137-141). Based on the absence of Wheeler Checked Stamped ceramics at the site, analysis suggests that the Late Woodland period at Beartail Rockshelter may have been confined to the McKelvey II phase. The McKelvey II phase is represented by McKelvey Plain and Mulberry Creek Cord Marked ceramics as well as Hamilton and Madison projectile points.

The Mississippian period at the site is marked by the presence of plain shell tempered ceramics as well as Madison and Hamilton projectile points. The Mississippian period in the Wheeler Basin dates from A.D. 1000 to A.D. 1550 and is associated with the Hobb's Island phase (Walthall 1980:236). Preliminary evidence indicates only a small amount of cultural material is associated with this period, suggesting Mississippian occupation at the site was limited.

Stage VI soils appear considerably mixed, no doubt through the mechanisms discussed above. Artifacts from each of the above noted cultural phases are distributed throughout this portion of the midden with little recognizable stratigraphic or chronological patterning.

Stage V
Modern Colluvium

After use of the site sporadically and quite occasionally by late prehistoric people of the middle Tennessee Valley, a small amount of additional colluvium accumulated on top of some of the archaeological deposits (Figure 39), particularly down most of the talus slope. During this most recent 500 years or so of the site's developmental history, there is no evidence of human involvement except the telltale leavings of vandals who, in the very recent past, had scoured out holes around the back walls of the shelter in search of treasure. Although this recent colluvium produced some prehistoric artifacts, the deposit was interpreted as post-occupational because of the limited number of prehistoric artifacts recovered in comparison to levels within Stage IV.

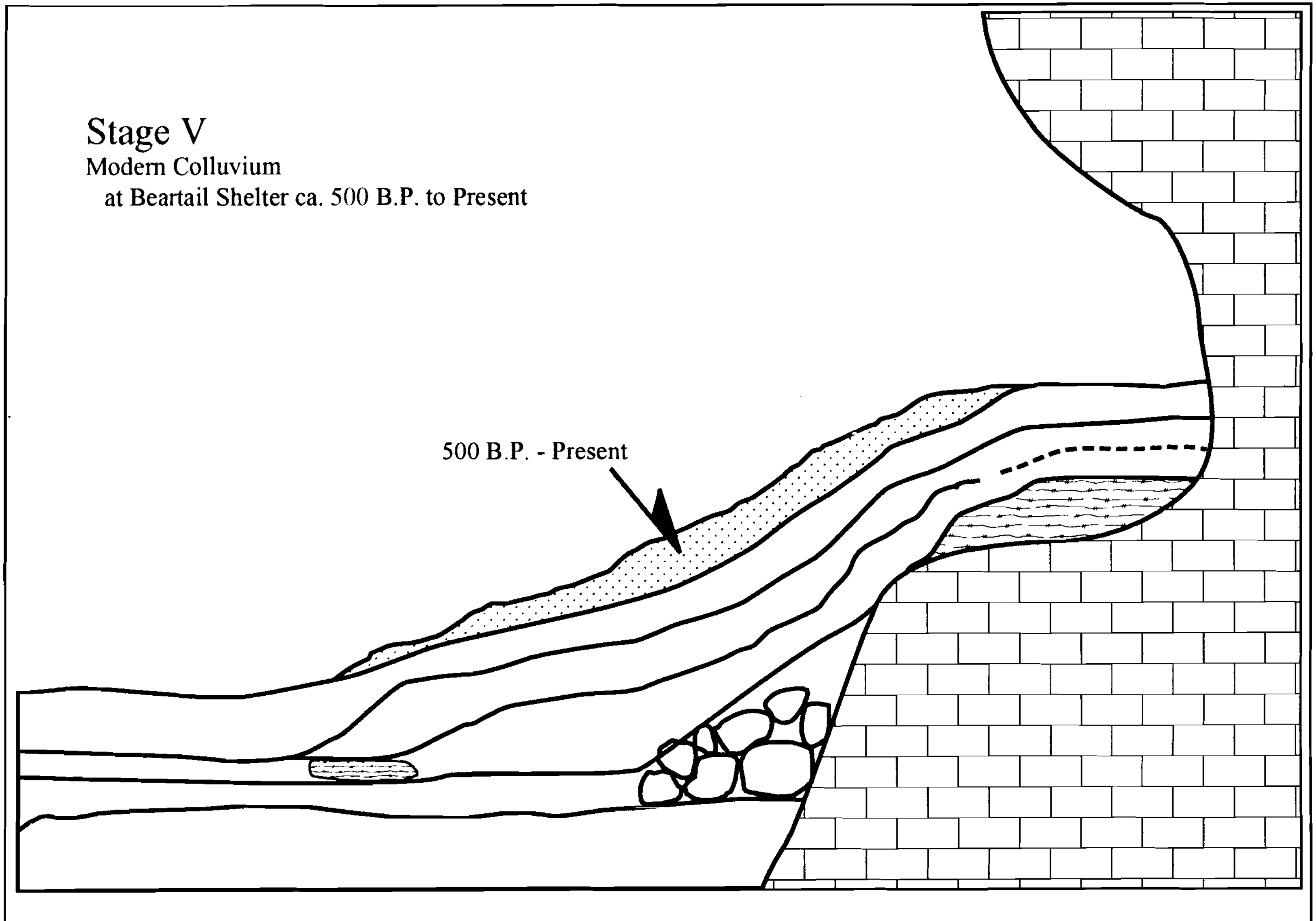


Figure 39. Stage V, Modern Colluvium.

CHAPTER VII

BEARTAIL ROCKSHELTER IN CULTURAL PERSPECTIVE

The archaeological materials excavated from Beartail Rockshelter represent a period of human occupation spanning some 10,500 radiocarbon years. Every prehistoric cultural stage known to exist within the Wheeler Basin is represented at the site, including Paleoindian, Archaic, Gulf Formational, Woodland, and Mississippian. Although the chronology of the site is quite extensive, most of those deposits are stratigraphically tangled. So while they do represent the chronological development of the site, their significance is somewhat limited.

In spite of the disturbed nature of some of the deposits, intensive archaeological, stratigraphic, and geomorphological analyses have lead to an overall understanding of the developmental history of the site, as discussed in detail in the previous chapter. While somewhat speculative concerning some of its developmental details and chronological relationships, this model of site development was organized in five general stages.

Stage I represents the site area prior to human use. Briefly, near the end of the Pleistocene prior to about 10,500 B.P., the shelter and bluffline were intact features but the shelter and bluffline may have been different from that existing today. Most notably, the shelter roof may have been more extensive, since rubble probably from roof and bluffline collapse makes up a large portion of the lower reaches of the present-day talus slope. Also, the north bank of the Tennessee River may have been quite near the south facing shelter.

Stage II (10,500 to 10,000 B.P.) represents the period of initial use of Beartail Rockshelter by some of the earliest humans to inhabit the middle Tennessee Valley. These people, called Late Paleoindians by archaeologists, briefly camped under the shelter. At that time the large steep talus now seen in front of the shelter was not present, although a tangle of rocks fallen from the bluffline may have begun the process of talus formation at the base of the bluff. These people camped in the open shelter and lost or discarded a small number of chipped stone tools and debris which became incorporated into the thin, sandy residual soils present and accumulating on the floor of the shelter. Among these tools were several lanceolate-shaped stone projectile points which are thought to be diagnostic of the time period. Did some of these early people also make and leave the side notched projectile points found in these earliest levels within the shelter? This question is addressed below.

During Stage III (10,000 to 3200 B. P.) the site was used by a secession of Archaic hunters and gatherers as a temporary and short-term camping place. Deposits dating to this stage of site development are somewhat jumbled but can be fairly reliably divided into two components: a lower component representing site development from about 10,000 to 6500 B.P.; and an upper component dated from about 6500 to 3500 B.P. The refuse from these visits, as well as natural processes, developed a rich, organic midden soil that, with the addition of artifacts and detritus from later ceramic-making people (Stage IV), eventually came to be over 1.5 m thick.

Similar patterns of site usage are attested for Stage IV (3200 to 500 B.P.) where people left the detritus of a small, temporary encampment, but these later prehistoric people were pottery makers. Numerically, the largest number of artifacts found at the site were the broken sherds of these prehistoric containers.

During Stage V (500 B.P. to present) continuing natural processes deposited a thin screen of colluvium on a part of the steep talus in front of the rockshelter. Today, the midden within the shelter and down the talus exists as a dark brown, loose, humus-like soil. Groundhogs, ground squirrels and mice have tunneled through it for centuries, building dens and runways. This subterranean activity mixed and blurred the stratigraphic lines, separating and dislocating the tools left behind by its ancient visitors. Many of the artifacts within the loose, dry midden have been moved out of their proper archaeological context. Usually, however, the dens and tunnels did not penetrate into the harder, tightly compacted, rocky colluvium that lies beneath the midden. If they did, they did not go very deep into the hard, rocky subsoil, and the tunnels refilled with the dark midden soil from above. Thus, the cultural deposits contained within the deepest, compact colluvium within the shelter appear to have remained relatively intact.

While this report has recounted excavations and presented the results of analyses pertaining to the whole collection of recovered materials and data that span most of known prehistory of the region, the principal objective of the project was more focused and directed. It is the artifacts and the paleoenvironmental evidence at the bottom of the shelter's midden, and below the top of the yellow cherty colluvium that was the primary target of the Beartail Rockshelter Legacy Project. These deposits are the remnants of a late Pleistocene/early Holocene occupation or occupations yielding radiocarbon dates of around 10,000 B.P.

LATE PLEISTOCENE/EARLY HOLOCENE DEPOSITS
(The Stage II Rockshelter)

The broad, overall goals of the Beartail Rockshelter Legacy Project were to: (1) elucidate late Pleistocene and early Holocene environments in the Beartail Rockshelter and the surrounding area, and (2) to explicate the nature and identity of the human occupations in the project area at that time. During the 1995 field season, deposits were found which demonstrated human presence at the site through about 10,500 years of human history, all contained within 1.5 m of midden. Approximately 40 cm below that, sealed beneath a culturally sterile layer of sand, clay, calcium carbonate precipitate, and rocky breakdown from the roof, was an assortment of chipped stone tools indicating that humans visited the site at an even earlier time. A Quad and Hardaway Side Notched projectile points were retrieved from N102 W99 and N102 W101, one from each excavation unit. Both were buried near the bottom of the midden deposits within 10 cm of the contact between Zone B (midden) and Zone E (underlying colluvium). Unfortunately, neither of the projectiles were found *in situ*, but were found after being dislodged by the shovel. Excavators noted that both occurred at, or just above, the discontinuity. Although the two projectiles are recorded as having been vertically separated by 20 cm to 30 cm, both were, in fact, located just above the discontinuity separating Zone B from Zone E.

The Quad point is a Late Paleoindian projectile point style that is believed to date approximately 10,500 to 10,300 B.P. (Goodyear 1991). The Hardaway specimen is believed to date to 10,300 to 10,000 B.P. (Hardaway projectile points are probably morphological correlates of the San Patrice point style, the former being best known in the Carolinas region and the latter along the western Gulf Coast). Both specimens were recovered from contexts that are familiar to southeastern archaeologists. That is, they were lying at the bottom of a midden on or near the erosional disconformity between the top of the late Pleistocene soil surface and the bottom of the Holocene aggradation. This is a common circumstance encountered by archaeologists working in the Southeastern United States. Goodyear (1991) made this point citing geomorphological, climatological and archaeological evidence.

Not far below the top of the hard, partially cemented, yellow/cherty colluvium was a 20 cm thick layer that was culturally sterile. Underlying the sterile zone was 30 cm that contained a total of 41 chipped stone tools, 22 bifacially worked (including four projectile points) and 19 unifacially worked. Only two of the artifacts fit into a temporally diagnostic projectile point category, two Early Side Notched projectile points. Among the other artifacts was a rounded base leaf-shaped, or lozenge-shaped biface. The other bifaces, except for a biface disc-shaped artifact, were classified as preforms, but instead of having been finished into projectile points, showed evidence of having been used for cutting or slicing, and had been resharpened along their edges. Uniface tools include a variety of knives, scrapers, and blades. These tools seem to be in good archaeological context although the single, fairly reliable radiocarbon date obtained from the deposit would argue for a temporal placement nearer to 10,000 B.P. rather than a bit earlier.

While possibly posing more questions than answered, Beartail Rockshelter is an important and quite rare site. Intact archaeological sites that have been occupied by late Pleistocene/early Holocene cultural groups are difficult to find in the southeastern United States. When these deposits have been found, it is often the case that researchers are unable to focus their investigations on these early deposits because of time and/or budget constraints. Sometimes an archaeologist is lucky, and gets a chance to go back to the site to look deeper. This is the case with Beartail Rockshelter.

Beartail Rockshelter is a rare site, even for the middle Tennessee Valley, where the relative richness of Paleoindian sites is a continuing source of comment by American archaeologists. This is because for much of the middle Tennessee Valley, there has been little accumulation of surface soils since the beginning of the Holocene, except under special circumstances. This means that most of the deposits dating to the earliest occupations (Paleoindian) have not been buried deeply, and, consequently, have been deflated to a common level with later site materials, or impacted or destroyed by more recent events, such as clearing, cultivation, erosion and construction. This is further complicated by the fact that Paleoindian people socialized in very small, apparently quite mobile groups; therefore, their sites are usually ephemeral and difficult to detect.

As a result, there has been very little research into the archaeological record of the late Pleistocene or the early Holocene in Alabama, or the Midsouth. There are a few localized depositional circumstances, however, where deep soil accumulations dating to the appropriate time period have occurred (Gardner 1994, Chapman 1977, Broyles 1971), and funding for such research is generally limited. One research project that has the deposits and funding is Dust Cave (Driskell et al. 1995), a site in Coffee Slough near Florence, Alabama. Beartail Rockshelter is another such example, although not as impressive as Dust Cave. It is important for archaeologists to focus some research on the earliest end of the cultural spectrum in the Southeast because (1) we know so little about the earliest people who lived here, and (2) their sites are being destroyed at such a fast rate. The scarcity of known sites of this early age makes it imperative that archaeologists miss no opportunities. These are the reasons that the Beartail Rockshelter Legacy Project was planned from the onset to focus on the narrow band of time at the Pleistocene-Holocene border. Sites like Beartail Rockshelter are needed to fill in the gaps in our understanding.

IN RETROSPECT

Three field seasons were undertaken at the site to accomplish the goals of the Beartail Rockshelter Legacy Project. In that time period, we have recognized and dated strata which represent the extinct floodplain of the Tennessee River. The point in time when the river channel shifted away from Beartail Rockshelter is suspected to mark the onset of Holocene environmental conditions. Cultural strata that represent the beginning of Holocene aggradation were also dated. Finally, the investigations were able to date a distinctive assemblage of artifacts that was underneath and isolated from other Late Paleoindian artifacts in the bottom of an overlying midden.

From these perspectives, it would seem that our goals were met. Nevertheless, the recovery of Early Side Notched projectile points below Late Paleoindian types has presented a quandary. Although investigations at Beartail Rockshelter were successful in meeting its set goals, it also created other questions.

Side notched projectile points should not be thought of as a technological horizon marker delineating some particular point in time, nor as necessarily marking the attainment of the Archaic stage. If they are truly a distinctive hallmark of a way of life that archaeologists have come to know as Archaic, then we must be prepared to accept that that way of life has deep antecedents. It may have existed contemporary with, but different from, the Paleoindian way of life with a different economic focus. That seems to be what is suggested by the Beartail Rockshelter evidence. The issue of whether the makers of Dalton and other Late Paleoindian projectile points also made and used side notched points is as yet unsolved.

Nevertheless, given the present state of knowledge, one explanation for the Beartail Rockshelter circumstance that should be considered is the concept of coexisting, diverse technological traditions. The model might explain circumstances such as Zone D at Stanfield-Worley where multiple projectile point styles were present (Griffin 1974). It might also help to avoid the complications that arise when projectile point styles (and the cultural units they imply) are presented in a linear, evolutionary, layer-cake way. Recent research in the Southern Hemisphere and its implications for pre-Clovis occupations of North America encourage the consideration of such a concept. Beartail Rockshelter may lend credence to that perspective.

REFERENCES CITED

Anderson, David G.
1992 Models of Paleoindian and Early Archaic Settlement in the Lower Southeast. In *Paleoindian and Early Archaic Period Research in the Lower Southeast: A South Carolina Perspective*, edited by David G. Anderson, Kenneth E. Sassaman, and Christopher Judge, pp. 28-67. Council of South Carolina Professional Archaeologists. Columbia.

Anderson, David G., and Glen T. Hanson
1988 Early Archaic Settlement in the Southeastern United States: A Case Study from the Savannah River Valley. *American Antiquity* 53(2):262-286.

Anderson, David G., R. Jerald Ledbetter, and Lisa O'Steen
1990 PaleoIndian Period Archaeology of Georgia. *University of Georgia, Laboratory of Archaeology Series, Report* 28. Athens.

Anderson, Duane C., and Holmes A. Semkin. Jr. (Editors)
1980 *The Cherokee Excavations: Holocene Ecology and Human Adaptations in Northwestern Iowa*. Academic Press. New York.

Asch, David L., and Nancy B. Asch
1985 Archeobotany. *In* Smiling Dan: Structure and Function at a Middle Woodland Settlement in the Lower Illinois Valley, edited by Barbara D. Stafford and Mark B. Sant, pp. 327-401. *Center for American Archeology, Kampsville Archeological Center, Research Series* 2. Kampsville.

Bense, Judith A. (Editor)
1987 The Midden Mound Project. Report submitted to the United States Army Corps of Engineers, Mobile by the University of West Florida, Office of Cultural and Archaeological Research, Pensacola. *University of West Florida, Office of Cultural and Archaeological Research, Report of Investigations* 6. Pensacola.

Braun, E. Lucy
1950 *The Deciduous Forests of Eastern North America*. Blakiston Company. Philadelphia.

Broyles, Bettye J.
1971 Second Preliminary Report: The St. Albans Site, Kanawha County, West Virginia. *West Virginia Geological and Economic Survey, Report of Archeological Investigations* 3. Morgantown.

Caddell, Gloria M.
1981 Plant Resources, Archaeological Plant Remains, and Prehistoric Plant-Use Patterns in the Central Tombigbee Valley. *In* Biocultural Studies in the Gainesville Lake Area, by Gloria M. Caddell, Anne Woodrick, and Mary C. Hill, pp. 1-90. Archaeological Investigations in the Gainesville Lake Area of the Tennessee-Tombigbee Waterway, Volume 4. Report submitted to the U.S Army Corps of Engineers, Mobile by the University of Alabama, Office of Archaeological Research, University. *University of Alabama, Office of Archaeological Research, Report of Investigations* 14. University.

Caldwell, Joseph R.
1964 Interaction Spheres in Prehistory. *In* Hopewellian Studies, edited by Joseph R. Caldwell and Robert L. Hall, pp. 133-143. *Illinois State Museum, Scientific Paper* 12(6). Springfield.

Cambron, James W.
1955 The Wheeler Point. *Tennessee Archaeologist* 11(2):83-84.

1956 The Pine Tree Site--A Paleo-Indian Habitation Locality. *Tennessee Archaeologist* 12(2):1-10.

Cambron, James W., and David C. Hulse
1960a The Transitional Paleo-Indian in North Alabama and South Tennessee. *Journal of Alabama Archaeology* 6(1):7-33.

1960b An Excavation on the Quad Site. *Tennessee Archaeologist* 16(1):14-26.

1964 *Handbook of Alabama Archaeology: Part I, Point Types*. Archaeological Research Association of Alabama. Birmingham.

1975 *Handbook of Alabama Archaeology: Part I, Point Types*. Archaeological Research Association of Alabama. Birmingham.

Cambron, James W., and Spencer A. Waters
1959 Flint Creek Rock Shelter (Part I). *Tennessee Archaeologist* 15(2):73-87.

1961 Flint Creek Rock Shelter (Part II). *Journal of Alabama Archaeology* 7(1):1-46.

Chapman, Jefferson
1975 The Rose Island Site and the Bifurcate Tradition. *University of Tennessee, Department of Anthropology, Report of Investigations* 14. Knoxville.

1976 The Archaic Period in the Lower Little Tennessee River Valley: The Radiocarbon Dates. *Tennessee Anthropologist* 1(1):1-12.

1977 Archaic Period Research in the Lower Little Tennessee River Valley - 1975: Icehouse Bottom, Harrison Branch, Thirty Acre Island, Calloway Island. Report submitted to the National Park Service, Interagency Archeological Services, Atlanta by the University of Tennessee, Department of Anthropology, Knoxville. *University of Tennessee, Department of Anthropology, Report of Investigations* 18. Knoxville.

1979 Archaeological Investigations at the Howard (40 MR 66) and Calloway Island (40 MR 41) Sites. Report submitted to the Tennessee Valley Authority, Norris by the University of Tennessee, Department of Anthropology, Knoxville. *University of Tennessee, Department of Anthropology, Report of Investigations* 27. Knoxville.

1985 Archaeology and the Archaic Period in the Southern Ridge-and-Valley Province. In *Structure and Process in Southeastern Archaeology*, edited by Roy S. Dickens, Jr. and H. Trawick Ward, pp. 137-153. The University of Alabama Press. University.

Chapman, Jefferson, Paul A. Delcourt, Patricia A. Cridlebaugh, Andrea B. Shea, and Hazel R. Delcourt

1982 Man-Land Interaction: 10,000 Years of American Indian Impact on Native Ecosystems in the Lower Little Tennessee River Valley, Eastern Tennessee. *Southeastern Archaeology* 1(2):115-121.

Chapman, Jefferson, and Andrea B. Shea

1981 The Archaeobotanical Record: Early Archaic Period to Contact in the Lower Little Tennessee River Valley. *Tennessee Anthropologist* 6(1):61-84.

Clausen, C.J., A.D. Cohen, C. Emeliani, J.A. Holman, and J.J. Stipp

1979 Little Salt Spring, Florida: A Unique Underwater Site. *Science* 203:609-14.

Clayton, Margaret V.

1965 Bluff Shelter Excavations on Sand Mountain. *Journal of Alabama Archaeology* 11(1).

1967 Boydston Creek Bluff Shelter Excavations. *Journal of Alabama Archaeology* 13(1):1-41.

Cobb, Richard M., Boyce N. Driskell, and Scott Meeks

1994 Speleoarchaeological Reconnaissance and Test Excavations in the Pickwick Basin. *In* Cultural Resources in the Pickwick Reservoir, edited by Catherine C. Meyer, pp. 217-258. Draft report submitted to the Tennessee Valley Authority, Norris, Tennessee by the University of Alabama Museum of Natural History, Division of Archaeology, Tuscaloosa.

Coe, Joffre L.

1964 The Formative Cultures of the Carolina Piedmont. *Transactions of the American Philosophical Society* 54(4). Philadelphia.

Cole, Gloria G.

1981 The Murphy Hill Site (1Ms300): The Structural Study of a Copena Mound and Comparative Review of the Copena Mortuary Complex. Report submitted to the Tennessee Valley Authority, Chattanooga by the University of Alabama, Office of Archaeological Research, University. *University of Alabama, Office of Archaeological Research, Research Series* 3. University.

Collins, M.B.

1991 Rockshelters and the Early Archaeological Record in the Americas. In *The First Americans: Search and Research*, edited by Tom D. Dillehay and David J. Meltzer, pp. 157-182. CRC Press. Boca Raton.

1995 Observations on the Geomorphology of Ten Cave/Rockshelter Localities in the Pickwick Basin of Colbert and Lauderdale Counties, Alabama. Appendix B, in *Cultural Resources in the Pickwick Reservoir* edited by Catherine C. Meyer. Report of Investigations 75. The University of Alabama, University of Alabama Museums, Office of Archaeological Services. Moundville.

Collins, M.B., and P. Goldberg

n.d. Geoarchaeological Observations at Wheeler Reservoir in the Tennessee Valley of North Central Alabama. Manuscript submitted to The University of Alabama, Alabama Museum of Natural History, Division of Archaeology, Moundville.

Collins, M.B., W.A. Gose, and S. Shaw
1994 Preliminary Geomorphological Findings at Dust and Nearby Caves. *Journal of Alabama Archaeology* 40:35-56.

Curren, Cailup B., Jr.
1973 An Ethnozoological Analysis of the Vertebrate Remains, Little Bear Creek Site (Ct°8). M.A. Thesis. University of Alabama, Department of Anthropology. University.

Daniel, I. Randolph, Jr., and Michael Wisenbaker
1989 Paleoindian in the Southeast: The View from Harney Flats. In *Eastern Paleoindian Lithic Resource Use*, edited by Christopher J. Ellis and Jonathan C. Lothrop, pp. 321-344.

DeJarnette, David L., and Vernon J. Knight, Jr.
1976 LaGrange. *Journal of Alabama Archaeology* 22(1):1-60.

DeJarnette, David L., Edward B. Kurjack, and James W. Cambron
1962 Stanfield-Worley Bluff Shelter Excavations. *Journal of Alabama Archaeology* 8.

Delcourt, Hazel R., and Paul A. Delcourt
1975 The Blufflands: Pleistocene Pathway Into the Tunica Hills. *The American Midland Naturalist*, Volume 94, No. 2, 385-400. University of Notre Dame Press, Indiana.

1979 Late Pleistocene and Holocene Distributional History of the Deciduous Forest in the Southeastern United States. *Contribution No. 12*, Center for Quaternary Studies of the Southeastern United States. Knoxville.

1980 Gashen Springs: Late Quaternary Vegetation Record for Southern Alabama. *Contribution No. 10*, Center for Quaternary Studies of the Southeastern United States. Knoxville.

1984 Late Quaternary Paleoclimates and Biotic Responses in Eastern North America and the Western Atlantic Ocean. Elsevier Science Publishers, 48: 263-284. B.V. Amsterdam, Netherlands.

1985 Quaternary Palynology and Vegetational History of the Southeastern United States. *In* Pollen Records of Late-Quaternary North American Sediments, edited by V.M. Bryant and R.G. Holloway, pp. 1-37. American Association of Stratigraphic Palynologists Foundation. Dallas.

Delcourt, Hazel R., Paul A. Delcourt, and Elliott C. Spiker
1983 A 12,000-Year Record of Forest History from Cahaba Pond, St. Clair County, Alabama. *Ecology* 64(4):874-887.

Dickinson, William C.
1982 Fish Remains From Cheek Bend Cave. In The Paleontology of Cheek Bend Cave: Phase II Report by Walter E. Klippel and Paul W. Parmalee. Report to the Tennessee Valley Authority. Norris.

Driskell, Boyce N.

1992 Stratified Early Holocene Remains at Dust Cave, Alabama. In *Paleoindian and Early Archaic Period Research in the Lower Southeast: A South Carolina Perspective*, edited by David G. Anderson, Kenneth E. Sassaman, and Christopher Judge, pp. 273-278. Council of South Carolina Professional Archaeologists. Columbia.

1994 Stratigraphy and Chronology at Dust Cave. *Journal of Alabama Archaeology* 40:17-34.

Dunbar, James S., Michael K. Faught and S. David Webb

1988 Page/Ladson (8Je591): An Underwater Paleo-Indian Site in Northwestern Florida. *The Florida Anthropologist* 41(3).

Dye, David H.

1973 An Alexander Phase in the Tennessee Valley and Adjacent Areas. Paper presented at the 30th Southeastern Archaeological Conference. Memphis.

1977 A Model for Late Archaic Subsistence Systems in the Western Middle Tennessee Valley During the Bluff Creek Phase. *Tennessee Anthropologist* 2(1):63-80.

1980 Primary Forest Efficiency in the Western Middle Tennessee Valley. Ph.D. Dissertation. Washington University, Department of Anthropology. St. Louis.

Dye, David H., and Jerry R. Galm

1986 Alexander, Tchefuncte, and Black Sand: An Early Gulf Tradition in the Mississippi Valley. *In* The Tchula Period in the Mid-South and Lower Mississippi Valley, edited by David H. Dye and Ronald C. Brister, pp. 28-39. *Mississippi Department of Archives and History, Archaeological Report* 17. Jackson.

Dye, David H., and Charlotte Watrin

1985 Phase I and II Archaeological Investigations at the W. C. Mann Site (22Ts565), Tishomingo County, MS: Draft Report. Report submitted to the United States Army Corps of Engineers, Nashville by the Memphis State University, Department of Anthropology, 1985.

Ensor, H. Blaine

1992 The Clovis Assemblage from the Belle Mina Paleo-Indian Locality, Middle Tennessee Valley, Limestone County, Alabama. Paper presented at the 1992 Annual Meeting of the Alabama Archaeological Society, Montgomery.

Farrand, W.R.

1985 Rockshelter and Cave Sediments. In *Archaeological Sediments in Context*, edited by J.K. Stein and W.R. Farrand, pp. 21-39. Center for the Study of Early Man, University of Main. Orono.

Faulkner, Charles H.
1977 Eoff I Site (40CF32). *In* Fourth Report of the Normandy Archaeological Project: 1973 Excavations on the Hicks I (40CF62), Eoff I (40CF32) and Eoff III (40CF107) Sites, edited by Charles H. Faulkner and Major C.R. McCollough, pp. 65-278. Normandy Archaeological Project, Volume 4. Report submitted to the Tennessee Valley Authority, Chattanooga by the University of Tennessee, Department of Anthropology, Knoxville. *University of Tennessee, Department of Anthropology, Report of Investigations* 19. Knoxville.

Futato, Eugene M.
1977 The Bellefonte Site: 1 Ja 300. Report submitted to the Tennessee Valley Authority, Chattanooga by the University of Alabama, Office of Archaeological Research, University. *University of Alabama, Office of Archaeological Research, Research Series* 2. University.

1980 An Overview of Wheeler Basin Prehistory. *Journal of Alabama Archaeology* 26(2):110-135.

1982 Some Notes on the Distribution of Fluted Points in Alabama. *Archaeology of Eastern North America* 10:30-33.

1983 Archaeological Investigations in the Cedar Creek and Upper Bear Creek Reservoirs. Report submitted to the Tennessee Valley Authority, Norris by the University of Alabama, Office of Archaeological Research, University. *University of Alabama, Office of Archaeological Research, Report of Investigations* 29. University.

1992 Archaeological Overview. *In* William B. Bankhead National Forest: A Cultural Resource Overview, by Eugene M. Futato and Catherine C. Meyer, pp. 43-59. Report submitted to the United States Forest Service, Montgomery by the University of Alabama, Alabama Museum of Natural History, Division of Archaeology, Tuscaloosa. *University of Alabama, Alabama Museum of Natural History, Division of Archaeology, Report of Investigations* 67. Tuscaloosa.

1993 Benton. Paper presented at the 50th Southeastern Archaeological Conference. Raleigh.

n.d. Ceramic Complexes of the Tennessee River Drainage, Alabama. Paper in Preparation.

Gardner, Paul S.
1994 Carbonized Plant Remains from Dust Cave. *Journal of Alabama Archaeology* 40:192-211.

Goad, Sharon I.
1979 Middle Woodland Exchange in the Prehistoric Southeastern United States. *In* Hopewell Archaeology: The Chillicothe Conference, edited by David S. Brose and N'omi Greber, pp. 239-246. *Midcontinental Journal of Archaeology, Special Paper* 3. Kent, Ohio.

Goldberg, P. and S.C. Sherwood
1994 Micromorphology of Dust Cave Sediments: Some Preliminary Results. *Journal of Alabama Archaeology* 40:57-65.

Goldman-Finn, Nurit S., and Boyce N. Driskell

1994 Introduction to Archaeological Research at Dust Cave. *Journal of Alabama Archaeology* 40:1-16.

Goodyear, Albert C., III

1974 The Brand Site: A Techno-Functional Study of a Dalton Site in Northeast Arkansas. *Arkansas Archeological Survey, Research Series* 7. Fayetteville.

1982 The Chronological Position of the Dalton Horizon in the Southeastern United States. *American Antiquity* 47(2):382-395.

1989 A Hypothesis for the Use of Cryptocrystalline Raw Materials Among Paleoindian Groups of North America. *In* Eastern Paleoindian Lithic Resource Use, edited by Christopher J. Ellis and Jonathan C. Lothrop, pp. 1-9. *Investigations in American Archaeology Series*. Westview Press.

1991 *The Early Holocene Occupation of the Southeastern United States: A Geoarchaeological Summary*. South Carolina Institute of Archaeology and Anthropology, University of South Carolina.

Goodyear, Albert C., S.B. Upchurch, M.J. Brooks, and Nancy Goodyer

1983 Paleo-Indian Manifestations in the Tampa Bay Region, Florida. *Florida Anthropologist* 36:40-66.

Griffin, James B.

1939 Report on the Ceramics of Wheeler Basin. *In* An Archeological Survey of Wheeler Basin on the Tennessee River in Northern Alabama, by William S. Webb, pp. 127-165. *Bureau of American Ethnology, Bulletin* 122. Washington.

Griffin, John W.

1974 Investigations in Russell Cave, Russell Cave National Monument, Alabama. *National Park Service, Publication in Archeology* 13. Washington.

Grover, Jennifer E.

1994 Faunal Remains from Dust Cave. *Journal of Alabama Archaeology* 40:116-134

Haag, William G.

1939 Pottery Type Descriptions. *Southeastern Archaeological Conference, Newsletter* 1(1).

1942 A Description and Analysis of Pickwick Pottery. In An Archeological Survey of Pickwick Basin in the Adjacent Portions of the States of Alabama, Mississippi and Tennessee, by William S. Webb and David L. DeJarnette, pp. 509-526. *Bureau of American Ethnology, Bulletin* 129. Washington.

Hale, H. Stephen

1983 Analysis of Faunal Material from Site 1Fr310. *In* Archaeological Investigations in the Cedar Creek and Upper Bear Creek Reservoirs by Eugene M. Futato, pp. 313-334. Report submitted to the Tennessee Valley Authority, Norris by the University of Alabama, Office of Archaeological Research, University. *University of Alabama, Office of Archaeological Research, Report of Investigations* 29. University.

Haynes, C. Vance

1968 Geochronology of Late Quaternary Alluvium. In *Means of Correlation of Quaternary Successions*, edited by R. B. Morrison and H. E. Wright, Jr.,591-631. Proceedings VIII INQUA Congress, University of Utah Press, Salt Lake.

Heimlich, Marion D.

1952 Guntersville Basin Pottery. *Geological Survey of Alabama, Museum Paper* 32. University.

Hester, Thomas R.

1976 Late Pleistocene Aboriginal Adaptations in Texas. *Center for Archaeological Research, Special Report* 3. University of Texas at Sand Antonio.

Hogue, S. Homes

1994 Human Skeletal Remains from Dust Cave. *Journal of Alabama Archaeology* 40:173-191.

Hubbert, Charles M.

1978 A Model of Paleo-Indian Settlement Behavior in the Tennessee River Valley of North Alabama. Paper presented at the Alabama Academy of Science meeting, Florence, Alabama.

1980 An Overview of Prehistoric Sites on TVA Land in the Pickwick Basin. Unpublished report submitted to TVA, Norris, Tennessee, by Charles M. Hubbert.

1989 Paleo-Indian Settlement in the Middle Tennessee Valley: Ruminations from the Quad Paleo-Indian Locale. *Tennessee Anthropologist* 14(2):148-164.

1996 Archaeological and Geoarchaeological Investigations at Beartail Rock Shelter: 1995. Unpublished report submitted to U.S. Army Missile Command, Huntsville, Alabama, by The University of Alabama, Office of Archaeological Services.

Irwin, Henry T., and H. Marie Wormington

1970 Paleo-Indian Tool Types in the Great Plains. *American Antiquity* 35(1):24-34.

Jenkins, Ned J., and Richard A. Krause

1986 *The Tombigbee Watershed in Southeastern Prehistory*. The University of Alabama Press. University.

Jenkins, Ned J.

1974 Subsistence and Settlement Patterns in the Western Middle Tennessee Valley During the Transitional Archaic-Woodland Period. *Journal of Alabama Archaeology* 20(2):183-193.

1975 The Wheeler Series and Southeastern Prehistory. *The Florida Anthropologist* 28(1):17-26.

1982 Archaeology of the Gainesville Lake Area: Synthesis. Archaeological Investigations in the Gainesville Lake Area of the Tennessee Tombigbee Waterway, Volume 5. Report submitted to the United States Army Corps of Engineers, Mobile by the University of Alabama, Office of Archaeological Research, University. *University of Alabama, Office of Archaeological Research, Report of Investigations* 23. University.

Johnson, Jay K., and Samuel O. Brookes
1989 Benton Points, Turkey Tails, and Cache Blades: Middle Archaic Exchange in the Midsouth. *Southeastern Archaeology* 8(2): 134-145.

Justice, Noel D.
1987 *Stone Age Spear and Arrow Points of the Midcontinental and Eastern United States.* Indiana University Press. Bloomington.

Kelly, Robert L., and Lawrence C. Todd
1988 Coming into the Country: Early Paleoindian Hunting and Mobility. *American Antiquity* 53(2):231-244.

Kneberg, Madeline
1956 Some Important Projectile Point Types Found in the Tennessee Area. *Tennessee Archaeologist* 12(1):17-28.

Knight, Vernon J., Jr.
1990 Excavation of the Truncated Mound at the Walling Site: Middle Woodland Culture and Copena in the Tennessee Valley. Report submitted to the City of Huntsville, Alabama by the University of Alabama, Alabama State Museum of Natural History, Office of Archaeological Research, Tuscaloosa. *University of Alabama, Alabama State Museum of Natural History, Office of Archaeological Research, Report of Investigations* 56. Tuscaloosa.

Knox, James C.
1976 Concept of the Braided Stream. In *Theories of Landform Development* by Wilton N. Mehorn and Ronald C. Flemal, pp. 169-198. Publications in Geomorphology, State University of New York, Binghamton.

1984 Responses of River Systems to Holocene Climates. In *Late-Quaternary Environments of the United States*, Volume 2. The Holocene, edited by H. E. Wright, Jr., pp. 26-41. University of Minnesota Press, Minneapolis.

Laville, H.
1975 Climatology et chronologie du Paleolithique en Perigord: etude sedimentologique de depots en grottes et sous abris. *Etudes Quaternaires, Memoire* 4. Laboratoire de Paleontologie Humaine et de Prehistoire. Universite de Provence.

1976 Deposits in Calcareous Rockshelters: Analytical Methods and Climatic Interpretation. In *Geoarchaeology: Earth Science and the Past*, edited by D.A. Davidson and M.L. Shackley, pp. 137-155. Duckworth. London.

Laville, H., J.P. Rigaud, and J. Sackett
1980 *Rock Shelters of the Perigord.* Academic Press. New York.

Lewis, Thomas M.N., and Madeline K. Lewis
1961 *Eva: An Archaic Site.* The University of Tennessee Press. Knoxville.

Martin, P.S., and R.G. Klein (editors)
1984 *Quaternary Extinctions: A Prehistoric Revolution.* The University of Arizona Press, Tucson.

Mason, Rondald Jr., and Carol Irwin
1960 An Eden-Scottsbluff Burial in Northeastern Wisconsin. *American Antiquity* 26(1).

McCollough, Major C.R., and Charles H. Faulkner
1973 Excavation of the Higgs and Doughty Sites: I-75 Salvage Archaeology. Report submitted to the Tennessee Department of Highways, Nashville, by the University of Tennessee, Department of Anthropology, Knoxville. *Tennessee Archaeological Society, Miscellaneous Paper* 12. Knoxville.

Meeks, Scott C.
1994 Lithic Artifacts from Dust Cave. *Journal of Alabama Archaeology* 40:79-106.

Meeks, Scott C., Catherine C. Meyer, and Boyce N. Driskell
1995 Synopsis of the 1994 Season and Research Design for the 1995 Season, Beartail Shelter, Redstone Arsenal. Submitted to U.S. Army Missile Command, Redstone Arsenal, Alabama by the University of Alabama Museums, Office of Archaeological Services, Tuscaloosa.

Meltzer, David J., and Bruce D. Smith
1986 Paleoindian and Early Archaic Subsistence Strategies in Eastern North America. *In* Foraging, Collecting, and Harvesting: Archaic Period Subsistence and Settlement in the Eastern Woodlands, edited by Sarah W. Neusius, pp. 3-31. *Southern Illinois University at Carbondale, Center for Archaeological Investigations, Occasional Paper* 6. Carbondale.

Meyer, Catherine C.
1996 Ceramic Analysis. *In* (Draft) Data Recovery at the Blackburn Fork Site: A Prehistoric Occupation in the Murphrees Valley of Northeastern Alabama, by Michael R. Finn, pp. 215-280. Draft report submitted to the Alabama Department of Transportation, Montgomery, by The University of Alabama, Office of Archaeological Services, University.

Moore, Clarence B.
1915 Aboriginal Sites on Tennessee River. *Journal of the Academy of Natural Sciences of Philadelphia* 16(2):169-428.

Morse, Dan F.
1969 Introducing Northeastern Arkansas Prehistory. *The Arkansas Archeologist* 10(1-3):12-28.

1973 Dalton Culture in Northeast Arkansas. *The Florida Anthropologist* 26(1):23-38.

1994 Comments on the Dust Cave Investigation. *Journal of Alabama Archaeology* 40:232-236.

Nielsen, Jerry J.
1972 Archaeological Salvage Investigations on the Right of Way of Interstate 65, Morgan County, Alabama, Site 1Mg74. *Journal of Alabama Archaeology* 18(2)67-136.

O'Hear, John W.
1990 Archaeological Investigations at the Sanders Site (22Cl917), an Alexander Midden on the Tombigbee River, Clay County, Mississippi. Report submitted to the United States Army Corps of Engineers, Mobile by the Mississippi State University, Cobb Institute of Archaeology, Mississippi. *Mississippi State University, Cobb Institute of Archaeology, Report of Investigations* 6. Mississippi State.

O'Hear, John W., and David L. DeJarnette
1974 Cypress Creek Watershed Archaeological Site Survey. Report submitted to the United States Soil Conservation Service, Auburn by the University of Alabama, Department of Anthropology, University.

O'Steen, L.D., R.J. Lebetter, D.T. Elliott, and W.W. Barker
1986 Paleo-Indian Sites of the Inner Piedmont of Georgia: Observations of Settlement in the Oconee Watershed. *Early Georgia* 13.

Oakley, Carey B., and Boyce N. Driskell
1987 Archaeological Investigations at Sites 1Ma285 and 1Ma126, Redstone Arsenal, Alabama. *Journal of Alabama Archaeology* 33(2).

Oakley, Carey B., and Eugene M. Futato
1975 Archaeological Investigations in the Little Bear Creek Reservoir. Report submitted to the Tennessee Valley Authority, Chattanooga by the University of Alabama, Office of Archaeological Research, University. *University of Alabama, Office of Archaeological Research, Research Series* 1. University.

Parmalee, Paul W.
1962 Faunal Remains from the Stanfield-Worley Bluff Shelter, Colbert County, Alabama. *In* Stanfield-Worley Bluff Shelter Excavations, by David L. DeJarnette, Edward B. Kurjack, and James W. Cambron. *Journal of Alabama Archaeology* 8:112-114.

Patterson, Leland W.
1989 Early Notched Points in Texas. *Current Research in the Pleistocene* 6:34-36.

Peebles, Christopher S.
1971 Moundville and Surrounding Sites: Some Structural Considerations of Mortuary Practices II. *In* Approaches to the Social Dimensions of Mortuary Practices, edited by James A. Brown, pp. 68-91. *Society for American Archaeology, Memoir* 25. Washington.

1978 Determinants of Settlement Size and Location in the Moundville Phase. In *Mississippian Settlement Patterns*, edited by Bruce D. Smith, pp. 369-416. Academic Press. New York.

Peebles, Christopher S., and Susan M. Kus
1977 Some Archaeological Correlates of Ranked Societies. *American Antiquity* 42(3):421-448.

Peterson, Drexel A., Jr.
1985 Radiocarbon Determinations. *In* Phase I and II Archaeological Investigations at the W.C. Mann Site (22Ts565), Tishomingo County, Mississippi: Draft Report, edited by David H. Dye and Charlotte Wartin, Appendix G. Report submitted to the Nashville District Corps of Engineers by the Department of Anthropology, Memphis State University, Memphis, Tennessee.

Sassaman, Kenneth E.

1990 Introduction to the Prehistory and Archaeological Investigation of the Savannah River Site. *In* Native American Prehistory of the Middle Savannah River Valley: A Synthesis of Archaeological Investigations on the Savannah River Site, Aiken and Barnwell Counties, South Carolina, by Kenneth E. Sassaman, Mark J. Brooks, Glen T. Hanson, and David G. Anderson, pp. 1-17. *University of South Carolina, South Carolina Institute of Archaeology and Anthropology, Savannah River Archaeological Research Program, Occasional Paper* 1. Columbia.

Sassaman, Kenneth E., and David G. Anderson

1990 Typology and Chronology. *In* Native American Prehistory of the Middle Savannah River Valley: A Synthesis of Archaeological Investigations on the Savannah River Site, Aiken and Barnwell Counties, South Carolina, by Kenneth E. Sassaman, Mark J. Brooks, Glen T. Hanson, and David G. Anderson, pp. 143-215. *University of South Carolina, South Carolina Institute of Archaeology and Anthropology, Savannah River Archaeological Research Program, Occasional Paper* 1. Columbia.

Scarry, C. Margaret

1990a Plant Remains. *In* Archaeological Investigations at the Sanders Site (22Cl917), an Alexander Midden on the Tombigbee River, Clay County, Mississippi, by John W. O'Hear, PP. 80-96. Report submitted to the United States Army Corps of Engineers, Mobile by the Mississippi State University, Cobb Institute of Archaeology, Mississippi. *Mississippi State University, Cobb Institute of Archaeology, Report of Investigations* 6. Mississippi State.

1990b Plant Remains from the Walling Truncated Mound: Evidence for Middle Woodland Horticultural Activities. *In* Excavation of the Truncated Mound at the Walling Site: Middle Woodland Culture and Copena in the Tennessee Valley, by Vernon J. Knight, Jr., pp. 115-129. *University of Alabama, Alabama State Museum of Natural History, Division of Archaeology, Report of Investigations* 56. Tuscaloosa.

Sears, William H., and James B. Griffin

1950 Fiber-Tempered Pottery of the Southeast. In *Prehistoric Pottery of the Eastern United States*, edited by James B. Griffin. University of Michigan, Museum of Anthropology. Ann Arbor.

Sellards, E.H.

1940 Pleistocene Artifacts and Associated Fossils from Bee County, Texas. *Bulletin of the Geological Society of America* 51.

Shaw, Scott

1996 (Draft) Cultural Resources in the Wheeler Reservoir. Draft report submitted to the Tennessee Valley Authority, Norris, Tennessee by the University of Alabama, Office of Archaeological Services, University.

Smith, Bruce D.

1975 Middle Mississippian Exploitation of Animal Populations. *Museum of Anthropology, Anthropological Papers* 57. University of Michigan, Ann Arbor.

1985a The Role of *Chenopodium* as a Domesticate in Pre-Maize Garden Systems of the Eastern United States. *Southeastern Archaeology* 4(1):51-72.

1985b Mississippian Patterns of Subsistence and Settlement. In *Alabama and the Borderlands: From Prehistory to Statehood*, edited by R. Reid Badger and Lawrence A. Clayton, pp. 64-79. The University of Alabama Press. University.

Soday, Frank J.
1954 The Quad Site, a Paleo-Indian Village in Northern Alabama. *Tennessee Archaeologist* 10(1):1-20.

Solis, Carlos, and Eugene M. Futato
1987 Cultural Resource Investigations in the Guntersville Reservoir Area, Marshall and Jackson Counties, Alabama and Marion County, Tennessee. Report submitted to the Tennessee Valley Authority, Norris by the University of Alabama, Alabama State Museum of Natural History, Office of Archaeological Research, University. *University of Alabama, Alabama State Museum of Natural History, Office of Archaeological Research, Report of Investigations* 48. University.

Steponaitis, Vincas P.
1986 The University of Alabama Excavations at 1Tu50, a Moundville I Phase Center in the Black Warrior Valley. Paper presented at the 43rd Southeastern Archaeological Conference. Nashville.

Stoltman, J.B., and D. Baerreis
1983 The Evolution of Human Ecosystems in the Eastern United States. In *Late Quaternary Environments of the United States: The Holocene*, edited by H.E. Wright, Jr., pp. 252-268. University of Minnesota Press. Minneapolis.

Stowe, Noel R.
1970 Prehistoric Cultural Ecology in Northwest Alabama. M.A. Thesis. University of Alabama, Department of Anthropology. University.

Struever, Stuart
1964 The Hopewell Interaction Sphere in Riverine-Western Great Lakes Culture History. *In* Hopewellian Studies, edited by Joseph R. Caldwell and Robert L. Hall, pp. 85-106. *Illinois State Museum, Scientific Paper* 12(3). Springfield.

Walthall, John A.
1980 *Prehistoric Indians of the Southeast: Archaeology of Alabama and the Middle South*. The University of Alabama Press. University.

Walthall, John A., and Ned J. Jenkins
1976 The Gulf Formational Stage in Southeastern Prehistory. *Southeastern Archaeological Conference, Bulletin* 19:43-49.

Watts, W.A.
1975 Vegetation Record for the Last 20,000 Years from a Small Marsh on Lookout Mountain, Northwestern Georgia. *Geological Society of America, Bulletin* 86:287-291.

1980 Late Quaternary Vegetation History at White Pond on the Inner Coastal Plain of South Carolina. *Quaternary Research* 13:187-189.

Webb, S. David, Jerald T. Milanich, Roger Alexon, and James S. Dunbar
1984 A *Bison Antiquus* Kill Site, Wacissa River, Jefferson County, Florida. *American Antiquity* 49(2):384-392.

Webb, William S.
1939 An Archaeological Survey of Wheeler Basin on the Tennessee River in Northern Alabama. *Bureau of American Ethnology, Bulletin* 122. Washington.

Webb, William S., and David L. DeJarnette
1942 An Archeological Survey of Pickwick Basin in the Adjacent Portions of the States of Alabama, Mississippi and Tennessee. *Bureau of American Ethnology, Bulletin* 129. Washington.

1948 The Flint River Site, Ma° 48. *Alabama Museum of Natural History, Museum Paper* 23. University.

1948 The Whitesburg Bridge Site, Ma^v 10. *Alabama Museum of Natural History, Museum Paper* 24. University.

Weigel, Robert D., J. Alan Holman, and Andreas A. Paloumpis
1974 Vertebrates from Russell Cave. *In* Investigations in Russell Cave, Russell Cave National Monument, Alabama, by John W. Griffin, pp. 81-85. *National Park Service, Publication in Archeology* 13. Washington.

Weir, F.A.
1985 An Early Holocene Burial at the Wilson-Leonard Site in Central Texas. *Mammoth Trumpet* 2(1):1-3.

Woodrick, Anne
1981 An Analysis of the Faunal Remains from the Gainesville Lake Area. In Biocultural Studies in the Gainesville Lake Area, by Gloria M. Caddell, Anne Woodrick, and Mary C. Hill, pp. 91-168. Archaeological Investigations in the Gainesville Lake Area of the Tennessee-Tombigbee Waterway, Volume 4. Report submitted to the U.S Army Corps of Engineers, Mobile by the University of Alabama, Office of Archaeological Research, University. *University of Alabama, Office of Archaeological Research, Report of Investigations* 14. University.

Wyckoff, Don G.
1985 The Packard Complex: Early Archaic, Pre-Dalton Occupations on the Prairie-Woodlands Border. *Southeastern Archaeology* 4(1): 1-26.

1989 Accelerator Dates and Chronology at the Packard Site, Oklahoma. *Current Research in the Pleistocene.*

APPENDIX

Table 1. Chipped Stone Artifacts from Test Unit 1.

	0-20 cm	20-40 cm	40-60 cm	60-80 cm	80-100 cm	100-120 cm	120-140 cm	140-160 cm	160-180 cm	180-200 cm	TOTAL COUNT
Bifaces											
Preform I	-	-	-	-	-	-	-	-	-	-	0
Preform II	-	-	-	-	-	-	-	-	-	-	0
Biface I	-	-	-	-	-	1	-	-	-	-	1
Biface II	2	-	2	-	-	-	-	-	-	-	4
Hafted Biface Fragment	1	-	-	-	-	-	-	-	-	-	1
Unidentified Hafted Biface Base	-	-	-	-	-	-	-	1	-	-	1
Hafted Biface Scraper	-	1	-	-	-	-	-	-	-	-	1
Microlith Drill	-	-	-	-	-	-	-	-	-	-	0
Shaft Drill	-	-	-	-	-	-	-	-	-	-	0
Stemmed Drill	-	-	-	-	-	-	-	-	-	-	0
Drill Fragment	-	-	-	-	-	-	-	-	-	-	0
Hafted Bifaces											
Benjamin	-	-	-	-	-	-	-	-	-	-	0
Benton	-	-	-	-	1	-	-	-	-	-	1
Big Sandy	-	-	-	-	-	-	-	-	-	-	0
Copena Triangular	-	-	-	-	-	-	-	-	-	-	0
Cotaco Creek	-	-	-	-	-	-	-	-	-	-	0
Eva	-	-	-	-	-	-	-	-	-	-	0
Flint Creek	-	-	-	-	-	-	-	-	-	-	0
Flint River Spike	-	-	-	-	-	-	-	-	-	-	0
Hamilton	2	-	-	-	-	-	-	-	-	-	2
Kirk Corner Notched	-	-	-	-	-	-	-	-	-	-	0
Kirk Serrated	-	-	-	-	-	-	-	-	-	-	0
Knights Island	-	-	-	-	-	-	-	-	-	-	0
Little Bear Creek	-	-	1	-	-	-	-	-	-	-	1
Madison	-	-	-	-	-	-	-	-	-	-	0
McIntire	-	-	-	-	-	-	-	-	-	-	0
Pickwick	-	-	-	-	-	-	-	-	-	-	0
Sublet Ferry	-	-	-	-	-	-	-	-	-	-	0
Swan Lake	-	-	-	-	-	-	-	-	-	-	0
Sykes/White Springs	-	-	-	-	-	-	-	-	-	-	0
Unifaces											
Hafted Uniface Scraper	-	-	-	-	-	-	-	-	-	-	0
Uniface Blade	-	-	-	-	-	-	-	-	-	-	0
Uniface Scraper Fragment	-	1	-	-	-	-	-	-	-	-	1
TOTAL COUNT	5	2	3	0	1	1	0	1	0	0	13

Table 2. Chipped Stone Artifacts from Test Unit 4 (South-Half).

	0-20 cm	20-40 cm	40-60 cm	60-80 cm	80-100 cm	100-120 cm	120-140 cm	TOTAL COUNT
Bifaces								
Preform I	-	-	-	-	-	-	1	1
Preform II	-	-	-	-	-	-	-	0
Biface I	-	-	-	-	-	1	-	1
Biface II	-	-	1	-	3	1	4	9
Hafted Biface Fragment	-	-	-	-	2	2	1	5
Unidentified Hafted Biface Base	-	-	-	-	-	-	1	1
Hafted Biface Scraper	-	-	-	-	-	-	-	0
Microlith Drill	-	-	-	1	-	-	-	1
Shaft Drill	-	-	-	-	-	-	1	1
Stemmed Drill	-	-	-	-	-	1	1	2
Drill Fragment	-	-	-	-	-	-	-	0
Hafted Bifaces								
Benjamin	-	-	-	-	-	-	-	0
Benton	-	-	-	-	-	-	-	0
Big Sandy	-	-	-	-	-	-	1	1
Copena Triangular	-	-	-	-	-	-	-	0
Cotaco Creek	-	-	-	-	1	-	1	2
Eva	-	-	-	-	-	-	-	0
Flint Creek	-	-	-	-	-	-	-	0
Flint River Spike	-	-	-	1	-	-	-	1
Hamilton	-	-	-	1	-	-	1	2
Kirk Corner Notched	-	-	-	-	-	1	-	1
Kirk Serrated	-	-	-	-	-	-	1	1
Knights Island	-	-	-	-	-	-	-	0
Little Bear Creek	-	-	-	-	-	-	1	1
Madison	-	-	-	-	-	-	-	0
McIntire	-	-	-	-	-	-	-	0
Pickwick	-	-	-	-	-	-	-	0
Sublet Ferry	-	-	-	-	-	-	-	0
Swan Lake	-	-	-	-	-	-	-	0
Sykes/White Springs	-	-	-	-	-	1	-	1
Unifaces								
Hafted Uniface Scraper	-	-	-	-	-	-	-	0
Uniface Blade	-	-	-	-	-	-	-	0
Uniface Scraper Fragment	-	-	-	-	-	-	-	0
TOTAL COUNT	0	0	1	3	6	7	14	31

Table 3. Chipped Stone Artifacts from Test Unit 4 (North-Half).

	0-20 cm	20-40 cm	40-60 cm	60-80 cm	80-100 cm	100-120 cm	120-140 cm	140-160 cm	160-180 cm	180-200 cm	200-220 cm	220-240 cm	240-260 cm	260-280 cm	TOTAL COUNT
Bifaces															
Preform I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Preform II	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Biface I	-	-	2	1	-	-	-	1	-	-	-	-	-	-	4
Biface II	1	1	4	1	-	1	-	1	-	-	-	-	-	-	9
Hafted Biface Fragment	-	3	1	2	-	1	-	1	-	-	-	-	-	-	8
Unidentified Hafted Biface Base	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Hafted Biface Scraper	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Microlith Drill	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
Shaft Drill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Stemmed Drill	-	-	-	-	1	1	-	-	-	-	-	-	-	-	2
Drill Fragment	-	-	-	-	-	1	1	-	-	-	-	-	-	-	2
Hafted Bifaces															
Benjamin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Benton	-	-	-	1	1	-	1	-	-	-	-	-	-	-	3
Big Sandy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Copena Triangular	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Cotaco Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Eva	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Flint Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Flint River Spike	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Hamilton	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1
Kirk Corner Notched	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Kirk Serrated	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Knights Island	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Little Bear Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Madison	-	-	2	-	-	-	-	-	-	-	-	-	-	-	2
McIntire	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
Pickwick	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Sublet Ferry	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Swan Lake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Sykes/White Springs	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Unifaces															
Hafted Uniface Scraper	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
Uniface Blade	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Uniface Scraper Fragment	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
TOTAL COUNT	2	5	10	7	2	5	3	4	0	0	0	0	1	0	39

Table 4. Chipped Stone Artifacts from Test Unit 5 (South-Half).

	0-20 cm	20-40 cm	40-60 cm	60-80 cm	80-100 cm	100-120 cm	120-140 cm	TOTAL COUNT
Bifaces								
Preform I	-	-	-	-	-	-	-	0
Preform II	-	-	-	-	-	-	-	0
Biface I	-	-	-	-	-	-	1	1
Biface II	-	-	-	-	-	2	2	4
Hafted Biface Fragment	-	-	-	-	2	-	-	2
Unidentified Hafted Biface	-	-	-	-	-	-	-	0
Hafted Biface Scraper	-	-	-	-	-	-	-	0
Microlith Drill	-	-	-	-	-	-	-	0
Shaft Drill	-	-	-	-	-	-	-	0
Stemmed Drill	-	-	-	-	-	-	-	0
Drill Fragment	-	-	-	-	-	-	-	0
Hafted Bifaces								
Benjamin	-	-	-	-	-	-	-	0
Benton	-	-	-	-	-	-	-	0
Big Sandy	-	-	-	-	-	-	-	0
Copena Triangular	-	-	-	-	1	-	-	1
Cotaco Creek	-	-	-	-	-	-	-	0
Eva	-	-	-	-	-	-	-	0
Flint Creek	-	-	-	-	-	-	-	0
Flint River Spike	-	-	-	-	-	-	-	0
Hamilton	-	-	-	-	1	2	-	3
Kirk Corner Notched	-	-	-	-	-	-	-	0
Kirk Serrated	-	-	-	-	-	-	-	0
Knights Island	-	-	-	-	-	-	-	0
Little Bear Creek	-	-	-	-	-	-	1	1
Madison	-	-	-	-	-	-	-	0
McIntire	-	-	-	-	-	-	-	0
Pickwick	-	-	-	-	-	-	-	0
Sublet Ferry	-	-	-	-	-	-	-	0
Swan Lake	-	-	-	-	-	1	-	1
Sykes/White Springs	-	-	-	-	-	-	-	0
Unifaces								
Hafted Uniface Scraper	-	-	-	-	-	-	-	0
Uniface Blade	-	-	-	-	-	-	-	0
Uniface Scraper Fragment	-	-	-	-	-	-	-	0
TOTAL COUNT	0	0	0	0	4	5	4	13

Table 5. Chipped Stone Artifacts from Test Unit 5 (North-Half).

	0-20 cm	20-40 cm	40-60 cm	60-80 cm	80-100 cm	100-120 cm	120-140 cm	140-160 cm	160-180 cm	180-200 cm	200-220 cm	220-240 cm	240-260 cm	260-280 cm	280-300 cm	TOTAL COUNT
Bifaces																
Preform I	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
Preform II	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	2
Biface I	-	-	-	-	-	1	2	-	1	-	-	-	-	1	-	5
Biface II	2	-	-	-	-	2	5	-	1	-	-	-	-	-	-	10
Hafted Biface Fragment	-	1	1	-	-	1	1	-	2	-	-	-	-	-	-	6
Unidentified Hafted Biface Base	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Hafted Biface Scraper	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Microlith Drill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Shaft Drill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Stemmed Drill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Drill Fragment	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Hafted Bifaces																
Benjamin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Benton	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Big Sandy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Copena Triangular	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Cotaco Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Eva	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Flint Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Flint River Spike	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Hamilton	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Kirk Corner Notched	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Kirk Serrated	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Knights Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Little Bear Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Madison	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
McIntire	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Pickwick	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1
Sublet Ferry	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Swan Lake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Sykes/White Springs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Unifaces																
Hafted Uniface Scraper	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Uniface Blade	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Uniface Scraper Fragment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
TOTAL COUNT	2	1	2	0	0	6	11	0	5	0	0	0	0	1	0	28

Table 6. Chipped Stone Artifacts from Test Unit 6 (South-Half).

	0-20 cm	20-40 cm	40-60 cm	60-80 cm	80-100 cm	100-120 cm	120-140 cm	140-160 cm	160-180 cm	180-200 cm	200-220 cm	220-240 cm	240-260 cm	260-280 cm	280-300 cm	300-320 cm	320-340 cm	340-360 cm	360-380 cm	380-400 cm	TOTAL COUNT
Bifaces																					
Preform I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Preform II	-	-	-	-	-	-	1	-	1	1	-	-	-	-	-	-	-	-	-	-	3
Biface I	-	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-	1	-	-	-	4
Biface II	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Hafted Biface Fragment	-	-	-	-	1	5	1	2	-	-	-	-	-	-	-	-	-	-	-	-	9
Unidentified Hafted Biface Base	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	2
Hafted Biface Scraper	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Microlith Drill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Shaft Drill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Stemmed Drill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Drill Fragment	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	2
Hafted Bifaces																					
Benjamin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Benton	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Big Sandy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Copena Triangular	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Cotaco Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Eva	-	-	-	-	-	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	3
Flint Creek	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Flint River Spike	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Hamilton	-	-	-	-	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Kirk Corner Notched	-	-	-	-	-	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	3
Kirk Serrated	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Knights Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Little Bear Creek	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Madison	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
McIntire	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Pickwick	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Sublet Ferry	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Swan Lake	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Sykes/White Springs	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Unifaces																					
Hafted Uniface Scraper	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Uniface Blade	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Uniface Scraper Fragment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
TOTAL COUNT	0	0	0	1	4	14	8	7	2	2	0	0	0	0	0	0	2	0	0	0	40

Table 7. Chipped Stone Artifacts from Test Unit 6 (North-Half).

	0-20 cm	20-40 cm	40-60 cm	TOTAL COUNT
Bifaces				
Preform I	-	-	-	0
Preform II	-	-	-	0
Biface I	-	-	-	0
Biface II	-	1	-	1
Hafted Biface Fragment	-	-	-	0
Unidentified Hafted Biface	-	1	-	1
Hafted Biface Scraper	-	-	-	0
Microlith Drill	-	-	-	0
Shaft Drill	-	-	-	0
Stemmed Drill	-	-	-	0
Drill Fragment	-	-	-	0
Hafted Bifaces				
Benjamin	-	1	-	1
Benton	-	1	-	1
Big Sandy	-	-	-	0
Copena Triangular	-	-	-	0
Cotaco Creek	-	-	-	0
Eva	-	-	-	0
Flint Creek	-	-	-	0
Flint River Spike	-	-	-	0
Hamilton	-	1	-	1
Kirk Corner Notched	-	-	-	0
Kirk Serrated	-	-	-	0
Knights Island	-	-	-	0
Little Bear Creek	-	-	-	0
Madison	-	-	-	0
McIntire	-	-	-	0
Pickwick	-	-	-	0
Sublet Ferry	-	-	-	0
Swan Lake	-	-	-	0
Sykes/White Springs	-	-	-	0
Unifaces				
Hafted Uniface Scraper	-	-	-	0
Uniface Blade	-	-	-	0
Uniface Scraper Fragment	-	-	-	0
TOTAL COUNT	0	5	0	5

Table 8. Chipped Stone Artifacts from Test Unit 7 (North-Half).

	0-20 cm	20-40 cm	40-60 cm	60-80 cm	80-100 cm	100-120 cm	120-140 cm	140-160 cm	160-180 cm	180-200 cm	TOTAL COUNT
Bifaces											
Preform I	-	-	-	-	-	-	-	-	-	-	0
Preform II	-	-	-	-	-	-	-	-	-	-	0
Biface I	-	-	-	-	-	-	-	-	-	-	0
Biface II	2	2	1	-	1	-	-	-	-	-	6
Hafted Biface Fragment	-	2	1	-	-	-	-	-	-	-	3
Unidentified Hafted Biface Base	1	-	-	-	-	-	-	-	-	-	1
Hafted Biface Scraper	-	-	-	-	-	-	-	-	-	-	0
Microlith Drill	-	-	-	-	-	-	-	-	-	-	0
Shaft Drill	-	-	-	-	-	-	-	-	-	-	0
Stemmed Drill	-	-	-	-	-	-	-	-	-	-	0
Drill Fragment	-	-	-	-	-	-	-	-	-	-	0
Hafted Bifaces											
Benjamin	-	-	-	-	-	-	-	-	-	-	0
Benton	-	-	-	-	-	-	-	-	-	-	0
Big Sandy	-	-	-	-	-	-	-	-	-	-	0
Copena Triangular	-	-	-	-	-	-	-	-	-	-	0
Cotaco Creek	-	-	-	-	-	-	-	-	-	-	0
Eva	-	-	-	-	-	-	-	-	-	-	0
Flint Creek	-	-	1	-	-	-	-	-	-	-	1
Flint River Spike	-	-	-	-	-	-	-	-	-	-	0
Hamilton	1	-	2	-	-	-	-	-	-	-	3
Kirk Corner Notched	-	-	-	-	-	-	-	-	-	-	0
Kirk Serrated	-	-	-	-	-	-	-	-	-	-	0
Knights Island	-	-	-	-	-	-	-	-	-	-	0
Little Bear Creek	-	-	-	-	-	-	-	-	-	-	0
Madison	-	-	-	-	-	-	-	-	-	-	0
McIntire	-	-	-	-	-	-	-	-	-	-	0
Pickwick	-	-	-	-	-	-	-	-	-	-	0
Sublet Ferry	-	-	-	-	-	-	-	-	-	-	0
Swan Lake	-	-	-	-	-	-	-	-	-	-	0
Sykes/White Springs	-	-	-	-	-	-	-	-	-	-	0
Unifaces											0
Hafted Uniface Scraper	-	-	-	-	-	-	-	-	-	-	0
Uniface Blade	-	-	-	-	-	-	-	-	-	-	0
Uniface Scraper Fragment	-	-	-	-	-	-	-	-	-	-	0
TOTAL COUNT	4	4	5	0	1	0	0	0	0	0	14

Table 9. Projectile Points/Knives from N100 W101.

	0-20 cm	20-40 cm	40-60 cm	60-80 cm	80-100 cm	100-120 cm	140-150 cm	150-160 cm	160-170 cm	170-180 cm	190-200 cm	230-240 cm	TOTAL COUNT
Bakers Creek	-	-	-	1	-	-	-	-	-	-	-	-	1
Bradley Spike	-	-	-	-	1	-	-	-	-	-	-	-	1
Early Side Notched	-	-	-	-	-	-	2	-	-	-	-	-	2
Elora	-	-	2	1	1	-	-	-	-	-	-	-	4
Eva	-	-	1	-	-	-	-	-	-	-	-	-	1
Flint Creek	2	-	1	-	1	-	-	-	-	-	-	-	4
Hamilton	2	2	-	1	-	-	-	-	-	-	-	-	5
Kirk Serrated	-	-	-	-	-	-	-	-	-	-	-	2	2
Lerma-like	-	-	-	-	-	-	-	-	-	-	2	-	2
Little Bear Creek	-	-	-	-	-	1	-	-	-	-	-	-	1
Madison	4	-	-	-	-	-	-	-	-	-	-	-	4
Morrow Mountain	-	-	-	-	-	-	-	-	-	2	-	-	2
Pickwick	-	-	-	2	-	-	-	-	-	-	-	-	2
Pine Tree	-	-	-	-	-	-	-	-	1	-	-	-	1
Sykes/White Springs	-	-	-	1	-	1	4	1	-	1	-	-	8
TOTAL COUNT	8	2	4	6	3	2	6	1	1	3	2	2	40

Table 10. Projectile Points/Knives from N100 W103.

	0-20 cm	20-40 cm	40-60 cm	60-80 cm	80-100 cm	100-120 cm	180-230 cm	TOTAL COUNT
Bakers Creek	1	-	-	-	-	-	-	1
Cotaco Creek	-	-	-	-	1	-	-	1
Dalton	-	-	1	-	-	-	-	1
Eva	-	-	-	-	-	-	1	1
Flint Creek	-	1	1	-	-	-	-	2
Gary	-	1	-	-	-	1	-	2
Little Bear Creek	-	-	1	-	-	-	-	1
Madison	-	2	-	-	-	-	-	2
Morrow Mountain	-	-	-	-	-	-	1	1
Motley	-	-	-	-	1	-	-	1
Mud Creek	-	1	-	-	1	-	-	2
Mulberry Creek	-	-	-	1	-	-	-	1
McIntire	-	1	-	-	-	-	-	1
Nodena	1	-	-	-	-	-	-	1
Pickwick	-	-	-	1	1	2	-	4
Swan Lake	1	-	1	-	-	-	-	2
Sykes/White Springs	-	-	-	-	-	-	2	2
TOTAL COUNT	3	6	4	2	4	3	4	26

Table 11. Projectile Points from Test Unit N102 W99.

	35-40 cm	40-45 cm	45-50 cm	55-60 cm	65-70 cm	70-75 cm	75-80 cm	80-85 cm	85-90 cm	95-100 cm	110-120 cm	120-130 cm
PROJECTILE POINTS												
Bakers Creek	-	-	-	1	-	-	-	-	-	-	-	-
Benton	-	-	-	-	-	-	-	-	-	1	2	-
Buzzard Roost Creek	-	1	-	-	-	-	-	-	-	-	-	-
Candy Creek	-	-	-	-	-	1	-	-	-	-	-	-
Dalton	-	-	-	-	-	-	-	-	-	-	-	-
Early Side Notched	-	-	-	-	-	-	-	-	-	-	-	-
Flint Creek	-	-	-	-	-	-	1	-	-	-	-	1
Gary	-	-	-	-	-	-	-	-	-	-	-	-
Greenville Cluster	-	-	-	-	-	-	-	-	-	-	-	-
Hamilton	-	-	-	1	-	-	-	-	-	-	-	-
Kirk Corner Notched	-	-	-	-	-	-	-	-	1	-	-	-
Lerma-like	1	-	-	-	-	-	-	-	-	-	-	-
Limestone	-	-	-	-	-	-	-	-	-	-	-	-
Little Bear Creek	-	-	1	1	1	-	-	1	-	1	1	-
Madison	-	-	1	-	-	-	-	-	-	-	-	-
Morrow Mountain	-	-	-	-	-	-	-	-	-	-	-	-
Motley	-	-	1	-	-	-	-	1	-	-	-	-
Mulberry Creek	-	1	-	-	-	-	-	-	-	-	-	-
Pickwick	-	-	-	1	-	-	-	-	-	-	-	-
Stanley	-	-	-	-	-	-	-	-	-	-	-	-
Wade	1	1	-	-	-	-	-	-	-	-	-	-
White Springs	-	-	-	-	-	-	-	-	-	-	-	-
Total Projectile Points	2	3	3	4	1	1	1	2	1	2	3	1

Table 11. Projectile Points from Test Unit N102 W99 (continued.)

	130-140 cm	140-150 cm	150-160 cm	160-170 cm	170-180 cm	180-190 cm	220-230 cm	TOTAL COUNT
PROJECTILE POINTS								
Bakers Creek	-	-	-	-	-	-	-	1
Benton	1	-	-	1	1	-	-	6
Buzzard Roost Creek	-	-	-	-	-	-	-	1
Candy Creek	-	-	-	-	-	-	-	1
Dalton	-	-	-	-	1	-	-	1
Early Side Notched	-	-	-	-	-	-	1	1
Flint Creek	1	1	-	-	-	-	-	4
Gary	-	-	-	-	2	-	-	2
Greenville Cluster	1	-	-	-	-	-	-	1
Hamilton	-	-	-	-	-	-	-	1
Kirk Corner Notched	-	-	1	1	-	-	-	3
Lerma-like	-	-	-	-	-	-	-	1
Limestone	1	-	-	-	-	-	-	1
Little Bear Creek	-	-	1	-	-	-	-	7
Madison	-	-	-	-	-	-	-	1
Morrow Mountain	-	-	-	-	1	1	-	2
Motley	-	-	-	-	-	-	-	2
Mulberry Creek	-	-	-	-	-	-	-	1
Pickwick	-	-	-	-	-	-	-	1
Stanley	1	-	-	-	-	-	-	1
Wade	-	-	-	-	-	-	-	2
White Springs	-	-	-	-	1	-	-	1
Total Projectile Points	5	1	2	2	6	1	1	42

Table 12. Projectile Points from Test Unit N102 W101.

	0-10 cm	20-30 cm	40-50 cm	70-80 cm	80-90 cm	90-100 cm	100-110 cm	130-140 cm	160-170 cm	170-180 cm	180-190 cm	190-200 cm	200-210 cm	210-220 cm	TOTAL COUNT
PROJECTILE POINTS															
Benton	-	-	-	-	-	1	1	1	-	1	-	2	1	3	10
Big Sandy	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Cotaco Creek	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1
Flint Creek	-	-	-	-	-	1	-	1	-	-	-	1	1	-	4
Greenville Cluster	-	-	-	-	-	-	-	-	-	1	1	-	-	1	3
Hamilton	-	-	-	-	1	-	-	-	-	-	-	1	-	-	2
Jacks Reef Corner Notched	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Kays Stemmed	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
Kirk Corner Notched	-	-	-	-	-	1	-	-	-	-	-	-	1	1	3
Leaf shaped-rounded base	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
Ledbetter	-	-	1	-	-	1	-	-	-	-	-	-	-	-	2
Little Bear Creek	-	1	-	-	-	-	-	-	-	-	-	-	2	-	3
Madison	3	-	-	2	-	-	1	-	-	-	1	-	-	-	7
Morrow Mountain	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Mulberry Creek	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Quad	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Sykes-White Springs	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Total Projectile Points	3	2	1	3	1	4	2	2	1	2	3	4	8	7	43

Table 13. Projectile Points/Knives from N102 W103.

	30-35 cm	35-40 cm	45-50 cm	50-55 cm	55-60 cm	60-80 cm	80-100 cm	100-120 cm	120-130 cm	130-140 cm	140-150 cm	150-160 cm	190-200 cm	200-210 cm	TOTAL COUNT
Benton	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1
Bradley Spike	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Early Side Notched	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Hamilton	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Jude	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Kirk Serrated	-	-	-	-	-	-	-	-	-	-	1	1	-	-	2
Madison	1	-	1	-	-	-	-	-	1	-	-	-	-	-	3
Morrow Mountain	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1
Mud Creek	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
New Market	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
Pickwick	-	-	1	-	2	-	-	-	-	-	-	-	-	-	3
Swan Lake	-	-	-	1	-	-	1	1	-	-	-	-	-	-	3
Sykes/White Springs	-	2	-	-	-	-	-	-	-	1	-	-	-	-	3
TOTAL COUNT	1	2	2	1	2	2	1	2	2	1	2	2	1	1	22

Table 14. Ceramics from Test Unit 1.

CERAMICS	0-20 cm	20-40 cm	40-60 cm	60-80 cm	80-100 cm	100-120 cm	120-140 cm	140-160 cm	160-180 cm	TOTAL COUNT
Shell Tempered										
Plain	1	-	-	-	-	-	-	-	-	1
Limestone Tempered										
Mulberry Creek Plain, *var. Mulberry Creek*	2	1	-	1	-	2	2	-	-	8
Mulberry Creek Plain, *var. Hamilton*	3	-	-	-	1	-	-	-	-	4
Flint River Cord Marked	1	1	-	-	1	-	-	-	1	4
Wright Check Stamped	1	1	-	1	-	1	-	-	-	4
Incised (Unclassified)	-	1	-	-	-	-	-	-	-	1
Residual Decoration	-	-	-	-	-	1	-	-	-	1
Total Ceramics	8	4	-	2	2	4	2	-	1	23

Table 15. Ceramics from Test Unit 4.

CERAMICS	0-20 cm	20-40 cm	40-60 cm	60-80 cm	80-100 cm	100-120 cm	120-140 cm	140-160 cm	160-180 cm	TOTAL COUNT
Shell Tempered										
Plain	2	7	49	14	6	1	-	-	-	79
Limestone Tempered										
Mulberry Creek Plain, *var. Mulberry Creek*	1	26	60	27	48	13	-	-	-	175
Mulberry Creek Plain, *var. Hamilton*	-	3	5	5	-	-	-	-	-	13
Flint River Cord Marked	-	-	-	-	3	-	-	-	-	3
Long Branch Fabric Impressed	-	2	16	4	1	1	-	-	-	24
Wright Check Stamped	-	-	5	-	-	-	-	-	-	5
Bluff Creek Simple Stamped	-	-	-	-	2	-	-	-	-	2
Residual Decoration	-	-	-	2	1	-	-	-	-	3
Grog Tempered										
McKelvey Plain	-	-	3	1	-	1	-	-	-	5
Residual	-	-	-	1	-	-	-	-	2	3
Mulberry Creek Cord Marked	-	-	1	1	-	-	-	-	-	2
Grog-Limestone Tempered										
Plain	-	2	1	1	-	-	-	-	-	4
Grog-Limestone-Shell Tempered Plain	-	1	-	-	-	-	-	-	-	1
Sand-Limestone Tempered										
Brushed	-	-	-	-	2	-	-	-	-	2
Sand Tempered										
Plain	-	-	-	-	-	2	-	-	-	2
Brushed	-	-	-	-	1	-	-	-	-	1
Fiber Tempered										
Incised	-	-	-	-	-	-	1	-	-	1
Total Ceramics	3	41	140	56	64	18	1	-	2	325

Table 16. Ceramics from Test Unit 5.

CERAMICS	0-20 cm	20-40 cm	40-60 cm	60-80 cm	80-100 cm	100-120 cm	120-140 cm	140-160 cm	160-180 cm	TOTAL COUNT
Shell Tempered										
Plain	-	1	5		1	6	-	-	-	13
Limestone Tempered										
Mulberry Creek Plain, *var. Mulberry Creek*	1	10	20	22	28	32	23	-	-	136
Mulberry Creek Plain, *var. Hamilton*	-	1	6	-	3	5	4	-	-	19
Flint River Cord Marked	-	-	-	-	-	-	1	-	-	1
Long Branch Fabric Impressed	-	-	-	-	-	-	1	-	-	1
Grog Tempered										
McKelvey Plain	-	-	-	-	2	-	-	-	-	2
Grog-Limestone Tempered										
Plain	-	-	1	-	-	-	-	-	-	1
Sand Tempered										
Plain	-	-	-	-	1	-	-	-	-	1
Total Ceramics	1	12	32	22	35	43	29	-	-	174

Table 17. Ceramics from Test Unit 6.

CERAMICS	0-20 cm	20-40 cm	40-60 cm	60-80 cm	80-100 cm	100-120 cm	120-140 cm	140-160 cm	160-180 cm	180-200 cm	200-220 cm	220-240 cm	TOTAL COUNT
Shell Tempered													
Plain	-	2	-	1	7	4	3	-	-	-	-	-	17
Limestone Tempered													
Mulberry Creek Plain, *var. Mulberry Creek*	6	10	-	9	4	52	32	13	-	1	-	1	128
Mulberry Creek Plain, *var. Hamilton*	3	1	-	-	2	4	3	1	-	-	-	-	14
Flint River Cord Marked	-	2	-	-	-	-	2	1	-	-	-	-	5
Long Branch Fabric Impressed	-	-	-	-	-	-	-	1	-	-	-	-	1
Wright Check Stamped	1	-	-	-	-	-	1	-	-	-	-	-	2
Flint River Brushed	-	-	-	-	-	-	1	-	-	-	-	-	1
Residual Decoration	-	-	-	1	-	1	2	-	-	-	-	-	4
Grog-Limestone Tempered													
Plain	-	-	-	-	1	-	-	-	-	-	-	-	1
Punctated	1	-	-	-	-	-	-	-	-	-	-	-	1
Sand Tempered													
Plain	-	1	-	-	-	-	-	-	-	-	-	-	1
Total Ceramics	11	16	-	11	14	61	44	16	-	1	-	1	175

Table 18. Ceramics from Test Unit 7.

CERAMICS	0-20 cm	20-40 cm	40-60 cm	60-80 cm	80-100 cm	100-120 cm	120-140 cm	140-160 cm	160-180 cm	180-200 cm	200-220 cm	220-240 cm	TOTAL COUNT
Shell Tempered													
Plain	4	1	3	-	-	-	-	-	-	-	-	-	8
Limestone Tempered													
Mulberry Creek Plain, *var. Mulberry Creek*	22	48	60	21	-	-	-	-	-	-	-	-	151
Mulberry Creek Plain, *var. Hamilton*	-	-	1	-	-	-	-	-	-	-	-	-	1
Flint River Cord Marked	1	1	-	-	-	-	-	-	-	-	-	-	2
Long Branch Fabric Impressed	-	1	-	-	-	-	-	-	-	-	-	-	1
Wright Check Stamped	1	-	-	-	-	-	-	-	-	-	-	-	1
Residual Decoration	-	1	-	-	-	-	-	-	-	-	-	-	1
Grog Tempered													
McKelvey Plain	-	-	1	3	-	-	-	-	-	-	-	-	4
Grog-Limestone Tempered													
Plain	1	2	1	-	-	-	-	-	-	-	-	-	4
Sand-Limestone Tempered													
Brushed	-	-	-	-	-	-	-	-	-	-	-	-	0
Total Ceramics	29	54	66	24	-	-	-	-	-	-	-	-	173

Table 19. Ceramics from N100 W101.

CERAMICS	0-20 cm	20-40 cm	40-60 cm	60-80 cm	100-120 cm	150-160 cm	TOTAL COUNT
Shell Tempered							
Plain	2	2	3	1	-	-	8
Limestone Tempered							
Mulberry Creek Plain, *var. Mulberry Creek*	25	41	23	-	1	-	90
Mulberry Creek Plain, *var. Hamilton*	1	8	8	-	-	-	17
Flint River Cord Marked	1	-	-	-	-	-	1
Long Branch Fabric Impressed	-	6	3	-	-	-	9
Wright Check Stamped	-	-	1	-	-	-	1
Eroded	7	6	9	2	-	1	25
Sand-Limestone Tempered							
Fabric Impressed	-	1	-	-	-	-	1
Sand Tempered							
Watts Bar Fabric Impressed	-	-	1	-	-	-	1
Eroded	-	-	1	-	-	-	1
Total Ceramics	36	64	49	3	1	1	154

Table 20. Ceramics from N100 W103.

CERAMICS	0-20 cm	20-40 cm	40-60 cm	60-80 cm	80-100 cm	TOTAL COUNT
Shell Tempered						
Plain	1	2				3
Limestone Tempered						
Mulberry Creek Plain, *var. Mulberry Creek*	59	45	32	32	30	198
Mulberry Creek Plain, *var. Hamilton*	1	3	3	2	3	12
Flint River Cord Marked	1	3	5			9
Long Branch Fabric Impressed	7	6	1	2	3	19
Wright Check Stamped	6	4				10
Bluff Creek Simple Stamped		1		1		2
Flint River Brushed	-	-	-	-	2	2
Punctated	1	-	-	-	-	1
Eroded	8	2	3	3	5	21
Sand Tempered						
Alexander Incised, *var. Unspecified*	-	1	-	-	-	1
Alexander Incised, *var. Smithsonia*	-	-	1	1	-	2
Watts Bar Fabric Impressed	-	13	2	-	-	15
Eroded		6	-	-	-	6
Total Ceramics	84	86	47	41	43	301

Table 21. Ceramics from N102 W99.

CERAMICS	35-40 cm	40-45 cm	45-50 cm	50-55 cm	55-60 cm	60-65 cm	65-70 cm	70-75 cm	75-80 cm	80-85 cm	90-95 cm	95-100 cm	100-110 cm	120-130 cm	130-140 cm	150-160 cm	TOTAL COUNT	%
Shell Tempered																		
Plain	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	1	3	1.10%
Limestone Tempered																		
Mulberry Creek Plain, *var. Mulberry Creek*	12	5	22	4	10	1	1	6	1	1	1	1	2	3	3	-	73	79.12%
Mulberry Creek Plain, *var. Hamilton*	-	-	-	1	-	-	-	-	1	-	-	-	3	-	-	-	5	4.40%
Flint River Cord Marked	2	-	-	-	1	-	-	1	-	-	-	-	-	2	-	-	6	6.59%
Long Branch Fabric Impressed	2	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	4	4.40%
Wright Check Stamped	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	1.10%
Eroded	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2	2.20%
Grog Tempered																		
McKelvey Plain	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	1.10%
Total Ceramics	16	6	22	6	11	1	1	8	2	1	1	2	7	7	3	1	95	100.00%

Table 22. Ceramics from N102 W101.

CERAMICS	0-20 cm	20-25 cm	25-30 cm	30-35 cm	35-40 cm	40-45 cm	45-50 cm	50-55 cm	55-60 cm	60-65 cm	65-70 cm	70-75 cm	75-80 cm
Shell Tempered													
Plain	3	-	1	1	-	1	3	3	-	-	1	1	3
Limestone Tempered													
Mulberry Creek Plain, *var. Mulberry Creek*	13	1	8	2	1	4	7	8	2	1	2	1	-
Mulberry Creek Plain, *var. Hamilton*	2	-	-	2	-	1	1	3	3	3	2	1	2
Flint River Cord Marked	-	-	1	-	-	3	3	2	1	-	1	-	-
Long Branch Fabric Impressed	1	1	-	-	-	1	1	-	-	1	-	-	-
Wright Check Stamped	-	-	-	-	-	2	1	-	-	1	-	-	-
Bluff Creek Simple Stamped	2	-	-	-	-	-	-	-	-	-	-	-	-
Residual Decoration	1	-	-	-	-	-	-	-	-	-	-	-	-
Eroded	-	-	1	1	2	-	1	-	-	-	-	-	-
Grog Tempered													
McKelvey Plain	2	1	-	-	-	-	1	1	-	-	-	-	-
Grog-Limestone Tempered													
Plain	-	-	-	2	-	-	-	1	-	-	-	-	-
Sand Tempered													
Plain	1	-	-	-	-	-	-	-	-	-	-	-	-
Fiber Tempered													
Eroded	-	-	-	-	-	-	1	-	-	-	-	-	-
Total Ceramics	25	3	11	8	3	12	19	18	6	6	6	3	5

Table 2. Ceramics from Test Unit N102 W101 (Continued).

	80-85 cm	85-90 cm	90-95 cm	90-95 (B) cm	95-100 cm	100-110 cm	10-120 (E cm	20-130 (E cm	130-140 cm	80-190 (E cm	00-210 (E cm	TOTAL COUNT	%
Shell Tempered													
Plain	2	-	-	-	-	-	-	-	-	-	1	20	13.07%
Limestone Tempered													
Mulberry Creek Plain, *var. Mulberry Creek*	-	3	-	1	1	2	5	2	4	2	-	70	45.75%
Mulberry Creek Plain, *var. Hamilton*	-	-	-	-	-	-	1	-	-	-	-	21	13.73%
Flint River Cord Marked	-	-	-	-	-	-	-	-	-	-	-	11	7.19%
Long Branch Fabric Impressed	-	-	-	-	-	1	-	-	-	-	-	6	3.92%
Wright Check Stamped	-	-	-	-	-	-	-	-	-	-	-	4	2.61%
Bluff Creek Simple Stamped	-	-	-	-	-	-	-	-	-	-	-	2	1.31%
Residual Decoration	-	-	2	-	-	-	-	-	-	-	-	3	1.96%
Eroded	-	-	-	-	1	-	-	-	-	-	-	6	3.92%
Grog Tempered													
McKelvey Plain	-	-	-	-	-	-	-	-	-	-	-	5	3.27%
Grog-Limestone Tempered													
Plain	-	-	-	-	-	-	-	-	-	-	-	3	1.96%
Sand Tempered													
Plain	-	-	-	-	-	-	-	-	-	-	-	1	0.65%
Fiber Tempered													
Eroded	-	-	-	-	-	-	-	-	-	-	-	1	0.65%
Total Ceramics	2	3	2	1	2	3	6	2	4	2	1	153	100.00%

Table 23. Ceramics from N102 W103.

CERAMICS	55-60 cm	60-80 cm	80-100 cm	100-120 cm	120-130 cm	TOTAL COUNT
Shell Tempered						
Plain	3	-	1	-	-	4
Limestone Tempered						
Mulberry Creek Plain, *var. Mulberry Creek*	7	26	26	31	10	100
Mulberry Creek Plain, *var. Hamilton*		1	3	3	1	8
Long Branch Fabric Impressed	3	4	-	4	-	11
Flint River Brushed			2	15	7	24
Punctated	1	1	-	-	-	2
Eroded	-	1	-	-	-	1
Total Ceramics	14	33	32	53	18	150